



## **ENVIRONMENTAL PLANS VOLUME 1**

# **TEMPORARY CONSTRUCTION LANDS AND INFRASTRUCTURE ENVIRONMENTAL PROTECTION PLAN FOR THE TRANS MOUNTAIN PIPELINE ULC TRANS MOUNTAIN EXPANSION PROJECT NEB CONDITION 78 UPDATE**

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## TABLE OF CONCORDANCE

National Energy Board (NEB) Condition 78 is applicable to the following legal instruments: AO-003-OC-2 (OC2), AO-002-OC-49 (OC49), XO-T260-007-2016 (Temp), XO-T260-008-2016 (Pump 1) Pump 1, XO-T260-009-2016 (Pump 2), XO-T260-010-2016 (Tanks) and MO-015-2016 (Deact). OC2, OC49, Pump 1 and Pump 2 legal instruments are addressed by the Facilities Environmental Protection Plan (EPP) (Volume 3 of the Environmental Plans). Table 1 describes how this EPP addresses the Condition requirements applicable to temporary construction lands and infrastructure (Temp).

**TABLE 1**

### LEGAL INSTRUMENT CONCORDANCE WITH NEB CONDITION 78

NEB Condition 78	XO-T260-007-2016 (Temp)
<p>Trans Mountain must file with the NEB for approval, at least 3 months prior to commencing construction at the facilities (terminals, pump stations, temporary facilities, and associated infrastructure), an updated Project-specific Facilities EPP for the construction at the facilities.</p> <p>The updated EPP must be a comprehensive compilation of all environmental protection procedures, mitigation measures, and monitoring commitments, as set out in Trans Mountain's Project application, its subsequent filings, or as otherwise committed to during the OH-001-2014 proceeding. The updated plan must describe the criteria for implementing all procedures and measures using clear and unambiguous language that confirms Trans Mountain's intention to implement all of its commitments.</p> <p>The updated EPP must include the following:</p> <p>a) environmental procedures (including site-specific plans), criteria for implementing these procedures, mitigation measures, and monitoring applicable to all Project phases and activities;</p>	<p>Environmental procedures, criteria for implementing these procedures, mitigation measures, and monitoring applicable to all Project phases and activities are described throughout this EPP</p> <p>Site-specific plans are provided in the accompanying Resource Specific Mitigation Tables (Appendix D of this EPP)</p>
<p>b) policies and procedures for environmental training and the reporting structure for environmental management during construction, including the qualifications, roles, responsibilities, and decision-making authority for each job title identified in the updated EPP;</p>	<p>The Compliance Management Plan (Volume 10 of the Environmental Plans)</p>
<p>c) any additional measures arising from supplemental pre-construction studies and surveys;</p>	<p>Resource Specific Mitigation Tables (Appendix D of this EPP)</p>
<p>d) updated contingency plans and management plans;</p>	<p>Updated contingency plans are provided in Appendix B of this EPP</p> <p>Updated management plans are provided in the accompanying Volume 6 of the Environmental Plans</p>
<p>e) updated facility drawings including relevant site-specific resources and mitigations;</p>	<p>Appendix E of this EPP</p>
<p>f) a description of how Trans Mountain has taken available and applicable Aboriginal Traditional Land Use (TLU) and Traditional Ecological Knowledge (TEK) into consideration in developing the plan, including demonstration that those Aboriginal persons and groups that provided Aboriginal TLU information and TEK, as reported during the OH-001-2014 proceeding and/or pursuant to Condition 97, had the opportunity to review and comment on the information; and</p>	<p>Section 1.3 and Appendix G of this EPP</p>
<p>g) a summary of its consultations with Appropriate Government Authorities, potentially affected Aboriginal groups and affected landowners/tenants. In its summary, Trans Mountain must provide a description and justification for how Trans Mountain has incorporated the results of its consultation, including any recommendations from those consulted, into the plan.</p>	<p>Appendix G of this EPP</p>

## ABBREVIATIONS AND ACRONYMS

Abbreviation/Acronym	Full Name
AEP	Alberta Environment and Parks
AER	Alberta Energy Regulator
AMP	Access Management Plan
AT	Alberta Transportation
ATK	Aboriginal Traditional Knowledge
ATV	all-terrain vehicle
BC	British Columbia
BC MFLNRO	British Columbia Ministry of Forests, Lands and Natural Resource Operations
BC MOE	British Columbia Ministry of Environment
BC MWLAP	British Columbia Ministry of Water, Land and Air Protection
BC OGC	British Columbia Oil and Gas Commission
CAPP	Canadian Association of Petroleum Producers
CMP	Compliance Management Plan
COP	Code of Practice
DFO	Fisheries and Oceans Canada
EAP	Enhanced Approval Process
EHS	Kinder Morgan Canada Inc.'s Environmental, Health and Safety Management System, as adopted by Trans Mountain Pipeline ULC for the Trans Mountain Expansion Project
EPP	Environmental Protection Plan
ERP	Emergency Response Plan
ESA	Environmental and Socio Economic Assessment
FVRD	Fraser Valley Regional District
HDD	Horizontal directional drill
ISLMS	Integrated Safety and Loss Management System
KEEP	Knowledge and Experience Enhancement Program
KMC	Kinder Morgan Canada Inc.
KP	Kilometre Post
MOC	Management of Change
MOU	Memorandum of Understanding
MWR	<i>Municipal Wastewater Regulation</i>
NEB	National Energy Board
NEB OPR	<i>National Energy Board Onshore Pipeline Regulations</i>
O.D.	outside diameter
Project	Trans Mountain Expansion Project
Program	Environmental and Compliance Education Program
QAES	Qualified Aquatic Environment Specialist
QEP	Qualified Environmental Professional
SARA	<i>Species at Risk Act</i>
SSR	<i>Sewerage System Regulation</i>
TACMP	Traffic and Access Control Management Plan
TBD	to be determined
TDL	Temporary Diversion Licence
TEK	Traditional Ecological Knowledge
TFA	Temporary Field Authorization
TLU	Traditional Land Use
TMEP	Trans Mountain Expansion Project
TMPL	Trans Mountain Pipeline
Trans Mountain	Trans Mountain Pipeline ULC
TWS	temporary workspace
UTM	Universal Transverse Mercator coordinate system
WHMIS	Workplace Hazardous Materials Information System
WVMP	Weed and Vegetation Management Plan

## GLOSSARY

Term	Definition
air quality	A measure of the chemical pollutant loading in the atmosphere. As a measure or metric, it is generally related to human health endpoints, odour thresholds or environmental effects that are developed and regulated by municipal, provincial or federal regulatory authorities. Ambient air quality objectives or standards have been developed to reflect the more stringent effect and measured or predicted levels are commonly compared to these values as a gauge of compliance, as well as the degree of quality of the air.
ancillary sites	For the purpose of this Temporary Construction Lands and Infrastructure EPP, ancillary sites include pipe storage areas, temporary construction camps and contractor yards. Examples of uses for ancillary sites include construction staging, material storage, equipment rig-up and marshalling areas, setting up temporary construction trailers, fabrication work, safety and environmental training.
Appropriate Government Authority	The regulators and relevant government authorities that are to be consulted prior to and during construction regarding approvals, notifications, constraints and the direction of activities.
borrow material	Imported, non-native soil, aggregate or consolidated materials that are used during ancillary site construction.
construction site	For the purpose of this Temporary Construction Lands and Infrastructure EPP, the construction site consists of select temporary lands or infrastructure required for construction, which include temporary camps, stockpile sites, equipment staging areas, borrow pits and access roads.
development area	The non-vegetated, gravel padded or paved area located within the boundaries of a temporary construction lands and infrastructure site or the area located within the temporary construction lands and infrastructure construction site where infrastructure is located ( <i>i.e.</i> , not temporary workspace).
droughty soils	Soils with low plant available soil moisture due to light texture or high soil moisture diffusivity that contributes to low sod strength, high soil pulverization and erosion potential.
<i>Environment, Health and Safety Policy</i>	This refers to Kinder Morgan Canada Inc.'s Environment, Health and Safety Management System, which has been adopted by Trans Mountain. This is the formalization of Trans Mountain's commitment to conduct business in a safe and environmentally responsible manner supported through a series of commitments.
Environmental and Compliance Education Program	An Environmental and Compliance Education Program (the Program) has been designed to ensure that all Project personnel have adequate knowledge of environmental protection and mitigation measures, as well as the Compliance Management Plan. The Program ensures that work is conducted in accordance with all applicable legal requirements, regulations, permits, approval conditions and all commitments made by Trans Mountain.
existing line	Consists of existing and currently active 610 mm (NPS 24) O.D. pipeline segments from Edmonton to Edson, Alberta, Hargreaves to Darfield, British Columbia (BC) and Kamloops to Burnaby, BC and the 762 mm (NPS 30) O.D. pipeline segment from Black Pines to Kamloops, BC. The Existing Line will also include two deactivated segments from 610 mm (NPS 24) O.D. segments from Edson, Alberta to Hargreaves, BC and Darfield to Black Pines, BC that will be reactivated.
environmental feature	Environmental feature includes rare plants and rare ecological communities, wildlife species at risk, wildlife habitat, archaeological features, Traditional Land Use sites and any other sensitive environmental or cultural features.
feasible	Capable of being reasonably accomplished or brought about, given environmental and economic consideration.
Footprint ( <i>i.e.</i> , Project Footprint)	<p><b>Project Footprint:</b> includes the area directly disturbed by surveying, construction, clean-up and operation of the pipeline, as well as associated physical works and activities (including the temporary construction lands and infrastructure, the pipeline, reactivation, facilities, the Westridge Marine Terminal, and access roads). For clarity, specific components of the Project Footprint are further described by Trans Mountain below.</p> <ul style="list-style-type: none"> <li>• Temporary construction lands and infrastructure refers to preparatory works to support Project construction and includes temporary camps, stockpile sites, equipment staging areas and borrow pits as well as access roads within the first 10 km of each designated construction spread. For ease of assessing Project interactions, these access roads are considered as part of the overall access road network.</li> <li>• Pipeline construction footprint refers to the total area used to construct the pipeline and includes the right-of-way and temporary workspace.</li> <li>• Reactivation of currently deactivated pipeline segments include an engineering assessment under Section 45 of the <i>Onshore Pipeline Regulation</i> and associated construction activities. Currently known ground disturbance activities and associated access (as of December 2016), were assessed to determine the Project interactions. For ease of assessing Project interactions, these access roads were considered as part of the overall access road network.</li> <li>• Facilities refer to pump stations, terminals (Edmonton, Sumas and Burnaby), and associated infrastructure (<i>i.e.</i>, traps), most of which are located on land that has been previously disturbed. Westridge Marine Terminal has infrastructure located on land and in the marine environment, and is included in the Facilities component of the Project.</li> <li>• Access roads include new temporary and permanent roads and existing roads that may require upgrades or improvements. For ease of assessing Project interactions, this includes the access roads to be developed as part of temporary construction lands and infrastructure, as well as those accesses associated with reactivation.</li> </ul>
Forest District	Subregions or forest land governed by the BC Ministry of Forests, Lands and Natural Resource Operations.
Kinder Morgan Canada Inc.	Kinder Morgan Canada Inc. is a corporation owned by Kinder Morgan Inc. Kinder Morgan Canada Inc. operates Trans Mountain Pipeline L.P., a general partner of Trans Mountain Pipeline ULC.
Lower Fraser Valley	A geographic area located approximately west of Yarrow, BC to Vancouver, BC.
merchantable timber	Timber that will be salvaged and meets the minimum salvage specifications.



Term	Definition
mitigation measures	Measures for the elimination, reduction or control of a project's adverse environmental effects, including restitution for any damage to the environment caused by such effects through replacement, restoration, compensation or any other means.
National Energy Board	An independent federal agency established in 1959 by the Parliament of Canada to regulate international and interprovincial pipelines and associated facilities.
non-salvageable timber	Timber that does not meet the minimum salvage specifications and will not be processed or used during pipeline construction.
Noxious weeds	A plant designated in accordance with the regulations as a Noxious weed and includes the plant's seeds. A person shall control a Noxious weed that is on land the person owns or occupies (Alberta and BC <i>Weed Control Act</i> ).
Pit Development Plan	A plan that specifies the site preparation, excavation and environmental protection measures that would be implemented when developing a new borrow site or extracting material (e.g., gravel and sand) from an existing borrow site.
practical	Capable of or suitable to being put into effect, given environmental and economic consideration.
Contractor	The main company contracted for the coordination, supervision and completion of the Trans Mountain Expansion Project.
right-of-way	A legally defined strip of land with defined boundaries in which the pipeline runs through properties owned by others.
root zone material	The upper layer of soil in non-agricultural areas.
sensitive wildlife species	Refers to those wildlife species considered wildlife species at risk, but also includes wildlife species that have increased potential to be affected by Project activities due to spatial or temporal overlap with the Project during sensitive life stages and therefore have identified setbacks and timing windows (e.g., migratory or nesting habitats or periods).
shoo-flies	Vehicle and equipment access to the Project Footprint from each side of a feature where vehicle and equipment travel on the right-of-way is not practical.
species at risk	Refers to those wildlife species listed as Special Concern, Threatened or Endangered federally on Schedule 1 of the SARA and/or by the Committee on the Status of Endangered Wildlife in Canada, and provincially designated as Endangered, Threatened or Special Concern in Alberta or Red or Blue-listed in BC or listed under the BC <i>Wildlife Act</i> . Species at risk also include vegetation as defined in the Rare Ecological Community and Rare Plant Population Management Plan (Volume 6 of the Environmental Plans) for the purpose of this EPP.
temporary construction lands and infrastructure	Preparatory works to be conducted prior to Project construction including temporary camps, stockpile sites, equipment staging areas and borrow pits, as well as works on access roads within the first 10 km of each designated construction spread. For the purpose of this Temporary Construction Lands and Infrastructure EPP, the environmental protection measures apply to any access roads, whether or not they are in the first 10 km of the construction spread.
topsoil	The upper layer of soil, usually the top 10-40 cm in agricultural areas. It has the highest concentration of organic matter and micro-organisms and is distinct from subsoil usually by colour.
warranted	Justify or necessitate a course of action.

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## 1.0 INTRODUCTION

Trans Mountain Pipeline ULC (Trans Mountain) submitted a Facilities Application (the Application) to the National Energy Board (NEB) in December 2013 for the Trans Mountain Expansion Project (the Project or TMEP). A Certificate of Public Convenience and Necessity (CPCN) and other authorizations allowing the Project to proceed, subject to 157 conditions, were issued and became effective on December 1, 2016. This Temporary Construction Lands and Infrastructure Environmental Protection Plan (EPP) (Volume 1 of the Environmental Plans) was prepared to address part of NEB Condition 78.

NEB Condition 78 requires an updated Facilities EPP, including temporary facilities and associated infrastructure. Temporary construction lands and infrastructure are defined for the Project as preparatory works to support Project construction and includes temporary camps, stockpile sites, equipment staging areas and borrow pits, as well as works on access roads within the first 10 km of each designated construction spread. Many of the sites addressed in this Temporary Construction Lands and Infrastructure EPP are on lands that have been previously disturbed. This EPP only addresses works related to temporary construction lands and infrastructure as defined above. Permanent facilities (i.e., pressure control station, pump stations and terminals) are covered under the Facilities EPP (Volume 3 of the Environmental Plans). Measures to address clean-up and reclamation of temporary construction lands and infrastructure following construction are covered under the Pipeline EPP (Volume 2 of the Environmental Plans).

A draft of the Temporary Construction lands and Infrastructure EPP was submitted to Appropriate Government Authorities, potentially affected Aboriginal groups and affected landowners/tenants in February 2017 for review. Feedback was requested by April 14, 2017. Trans Mountain incorporated any feedback into this final EPP or has provided rationale for why input has not been included, as summarized in Appendix G.

Since the February 2017 release of the draft Temporary Construction Lands and Infrastructure EPP, site selection of camps, stockpile sites, construction yards, and access roads for the first 10 km of each pipeline construction spread has continued to progress and there have been updates to the proposed locations.

There are four new sites included in this EPP Update that have not previously been submitted to the NEB, and that is at Enoch (ENO055), Coquihalla Development Stockpile and Office/Yard (HOP052), Cheam Apple Road (CHE053) and Cheam Gravel Pit (CHE054). A summary of the Coquihalla Development Stockpile and Office/Yard located near Hope, BC (HOP052) is currently being finalized and will be provided for consultation by September 6, 2017. On June 30, 2017 Trans Mountain reported a revision to the Edson Stockpile and Office/Yard (EDS003.2) and added a site at 2115 Commissioner Street, Vancouver BC known as the VersaCold site (VAN048). Information about this site was filed in an Addendum dated June 30, 2017 (Filing ID [A5R9R7](#)). Several sites that were included in the EPP and addenda are no longer being considered, and have been deleted from Table 2 and the updated maps. The current and complete list of temporary construction lands and infrastructure sites are listed in Table 2. Updated maps of the current and complete list of sites are included in Appendix A of this Addendum. The site locations and configurations are subject to change and Trans Mountain will submit an updated list with finalized site locations to the NEB as changes arise. Future updates to the ESA (e.g., if additional sites are required) will also follow these general objectives, strategies and criteria. Future submissions will be included with this ESA update as an individual appendix, for clarity.

### 1.1 Project Description

Trans Mountain filed its Application with the NEB in December 2013. In developing its Application, Trans Mountain commenced an engagement and communications program of extensive discussions with landowners, engagement with Aboriginal groups and consultation with affected stakeholders. This program was intended to gather input from these groups into the Application and supporting Environmental and Socio-Economic Assessment (ESA), and to continue to assist Trans Mountain in the design and execution of the Project. Trans Mountain is also working with Appropriate Government Authorities to carry out the necessary reviews, studies and assessments required for the Project.

For ease of description, the following terms are used:

Kilometre Post (KP): describes distances measured along the centreline of the pipeline.

Project Footprint: includes the area directly disturbed by surveying, construction, clean-up and operation of the pipeline, as well as associated physical works and activities (including the temporary construction lands and infrastructure, the pipeline, reactivation, facilities, the Westridge Marine Terminal and access roads). For clarity, specific components of the Project Footprint are further described by Trans Mountain below.

- Temporary construction lands and infrastructure refers to preparatory works to support Project construction and includes temporary camps, stockpile sites, equipment staging areas and borrow pits as well as access roads within the first 10 km of each designated construction spread. For ease of assessing Project interactions, these access roads are considered as part of the overall access road network.
- Pipeline construction footprint refers to the total area used to construct the pipeline and includes the right-of-way and temporary workspace (TWS).
- Reactivation of currently deactivated pipeline segments include an engineering assessment under Section 45 of the *Onshore Pipeline Regulation* and associated construction activities. Currently known ground disturbance activities and associated access (as of December 2016), were assessed to determine the Project interactions. For ease of assessing Project interactions, these access roads were considered as part of the overall access road network.
- Facilities refer to pump stations, terminals (Edmonton, Sumas and Burnaby), and associated infrastructure (i.e., traps), most of which are located on land that has been previously disturbed. Westridge Marine Terminal has infrastructure located on land and in the marine environment, and is included in the Facilities component of the Project.
- Access roads include new temporary and permanent roads and existing roads that may require upgrades or improvements. For ease of assessing Project interactions, this includes the access roads to be developed as part of temporary construction lands and infrastructure, as well as those accesses associated with reactivation.

Contingency Alternate Routes: refer to three alternate pipeline route segments that have been assessed for use if construction on the preferred route is not feasible. These are not included in the Project Footprint defined above since they are considered contingency alternates.

- Raft River, in British Columbia (BC) (KP 713.1 to KP 714.4), is an alternate open cut contingency alignment. The preferred primary crossing method, a horizontal directional drill (HDD), does not support an open cut contingency crossing method at the same location.
- Pembina River, in Alberta (KP 133.0 to KP 134.7), is an alternate open cut contingency alignment. Similar to Raft River, the preferred primary crossing method (HDD) does not support an open cut contingency crossing method at the same location.
- Westridge Delivery Lines (WDL KP 0.0 to WDL KP 3.4) is an alternate contingency alignment for a trenched installation around the Burnaby Conservation Area in BC. The preferred pipeline corridor requires tunnel construction and does not support a trenched contingency option; therefore, an alternate trenched contingency alignment has been identified.

Variances: as part of the Project Footprint update that occurred in December 2016, a number of route revisions located outside of the Project corridor were identified. Trans Mountain will seek approval from the NEB in 2017 for these route realignments. All of the variances have been reviewed in consideration of impacts to this Plan and no revisions were required as a result, with the exception of minor adjustments to KP ranges, where applicable.

The Project has selected site options of temporary construction lands and infrastructure sites, excluding borrow pits (*i.e.*, camps, stockpile sites, and construction yards). Selection for borrow pits has not yet been completed, however commercial borrow pits will be used to the extent feasible. Each site option was reviewed for site-specific environmental features. Results of the environmental desktop review, and associated mitigation measures are presented in the Resource Specific Mitigation Tables (Appendix D of this EPP). Environmental Site Drawings detailing the site options can be found in Appendix D of this EPP. A current list of sites can be found in Appendix I, Table I-1. It is anticipated Project planning revisions will continue to occur. Locations of the temporary construction lands and infrastructure are indicated on Figures 1 and Figure 2.

- Camp Locations – there are 5 identified camps.
- Stockpile Sites – there are 9 identified for stockpile sites.
- Contractor Staging Areas – there are 7 identified staging areas. Additional contractor staging areas may be required for construction, but will utilize previously disturbed commercial areas (*e.g.*, railway sidings, commercial facilities) to the extent feasible.
- Constructions Yards – there are 16 identified construction yards (*i.e.*, office/yards).
- Parking Areas – there is 1 parking area.
- Access Roads – New temporary access roads associated with the first 10 km of each pipeline construction spread are indicated on Figure 1 and Figure 2 and are listed in Table 2, however, these are subject to change as Trans Mountain continues to negotiate road use agreements and prepare applications for provincial permits.
- Borrow Pits – commercial borrow pits will be utilized to the extent feasible. Contractor input will consider the need for additional non-commercial borrow pits.

**TABLE 2**

**LIST AND DIMENSIONS OF ACCESS ROADS FOR THE FIRST 10 KM OF EACH PIPELINE SPREAD**

Administration Area	Start UTM (Zone)	End UTM (Zone)	Road Status	Road Length
Strathcona County	E344536; N5934102 (12)	E344624; N5934261 (12)	New Temporary Access	206 m
	E345127; N5928502 (12)	E344555; N5927836 (12)	Deactivated / Overgrown Access	965 m
Fraser Fort George Regional District	E349265 N5875705 (11)	E349474 N5875865 (11)	New Temporary Access	270 m
	E346820 N5874125 (11)	E346832 N5874110 (11)	Deactivated / Overgrown Access	19 m
	E345636 N5873075 (11)	E345628 N5873105 (11)	Deactivated / Overgrown Access	33 m
	E345636 N5873075 (11)	E345463 N5872806 (11)	Deactivated / Overgrown Access	329 m
	E345445 N5872803 (11)	E345463 N5872806 (11)	New Temporary Access	18 m
	E344636 N5872397 (11)	E345006 N5872582 (11)	Deactivated / Overgrown Access	554 m
	E343888 N5871048 (11)	E342785 N5870552 (11)	New Temporary Access	1,288 m
	E342785 N5870552 (11)	E342094 N5870668 (11)	Deactivated / Overgrown Access	717 m
	E340671 N5871232 (11)	E342094 N5870668 (11)	Deactivated / Overgrown Access	1,672 m
Thompson Nicola Regional District	E341788 N5775391 (11)	E341823 N5775400 (11)	Deactivated / Overgrown Access	38 m
	E341713 N5772866 (11)	E341720 N5773020 (11)	New Temporary Access	159 m
	E341649 N5772809 (11)	E341713 N5772866 (11)	Deactivated / Overgrown Access	92 m
	E341087 N5770866 (11)	E341118 N5770831 (11)	Deactivated / Overgrown Access	47 m
	E341118 N5770831 (11)	E341271 N5771098 (11)	Deactivated / Overgrown Access	313 m
	E341029 N5770982 (11)	E341087 N5770866 (11)	Deactivated / Overgrown Access	143 m
	E341271 N5771098 (11)	E341297 N5771188 (11)	Deactivated / Overgrown Access	94 m
	E339896 N5766900 (11)	E339506 N5765676 (11)	Deactivated / Overgrown Access	1,351 m
	E341001 N5770008 (11)	E339895 N5766900 (11)	Deactivated / Overgrown Access	3,596 m
	E341292 N5770357 (11)	E340998 N5770006 (11)	Deactivated / Overgrown Access	476 m
	E692170 N5643757 (10)	E692111 N5643737 (10)	Deactivated / Overgrown Access	70 m

**TABLE 2 Cont'd**

Administration Area	Start UTM (Zone)	End UTM (Zone)	Road Status	Road Length
Fraser Valley Regional District	E640051 N5497233 (10)	E640069 N5497105 (10)	New Temporary Access	288 m
	E639702 N5496775 (10)	E639649 N5496753 (10)	New Temporary Access	61 m
	E636960 N5495149 (10)	E637410 N5494997 (10)	Deactivated / Overgrown Access	479 m
	E635662 N5495268 (10)	E636960 N5495149 (10)	Deactivated / Overgrown Access	1,337 m
	E637446 N5494961 (10)	E637442 N5494934 (10)	New Temporary Access	28 m
	E637406 N5494989 (10)	E637446 N5494961 (10)	Deactivated / Overgrown Access	53 m
	E637439 N5495027 (10)	E637410 N5494997 (10)	Deactivated / Overgrown Access	44 m
	E637410 N5494997 (10)	E637408 N5494996 (10)	Deactivated / Overgrown Access	2 m
	E637408 N5494996 (10)	E637406 N5494989 (10)	Deactivated / Overgrown Access	7 m
	E635625 N5495213 (10)	E635635 N5495139 (10)	New Temporary Access	75 m
	E635644 N5495304 (10)	E635497 N5495314 (10)	Deactivated / Overgrown Access	166 m
	E635492 N5495316 (10)	E635453 N5495327 (10)	Deactivated / Overgrown Access	40 m
	E635497 N5495314 (10)	E635492 N5495316 (10)	Deactivated / Overgrown Access	5 m
	E635453 N5495327 (10)	E635456 N5495329 (10)	New Temporary Access	3 m
	E635412 N5495302 (10)	E635453 N5495327 (10)	New Temporary Access	628 m
	E635453 N5495327 (10)	E634026 N5495353 (10)	Deactivated / Overgrown Access	1,467 m
	E591314 N5448452 (10)	E591441 N5448445 (10)	New Temporary Access	135 m
	E591314 N5448460 (10)	E591314 N5448452 (10)	New Temporary Access	8 m

The Temporary Construction Lands and Infrastructure EPP is based on:

- Kinder Morgan Canada Inc.'s (KMC's) Integrated Safety and Loss Management System (ISLMS), as required by the *NEB Onshore Pipeline Regulations (OPR)*;
- Volumes 5A and 5B of the ESA filed for the Project;
- Volume 6B (Pipeline EPP) of the filed ESA for the Project;
- ESA Section 58 Temporary Construction Lands and Infrastructure (Section 2.0 of Volume 6 of the Environmental Plans) prepared to meet NEB Condition 60;
- results of the biophysical and engineering field programs completed to date;
- feedback obtained through engagement;
- Traditional Ecological Knowledge (TEK)/Traditional Land Use (TLU) information;
- Trans Mountain's commitments made in the ESA, to Appropriate Government Authorities and to the public;
- industry standard/best management documents (e.g., *Pipeline Associated Watercourse Crossings* [Canadian Association of Petroleum Producers {CAPP} *et al.* 2012], *Environmental Handbook for Pipeline Construction* [Alberta Environment 1988], *Environmental Protection and Management Guide* [BC Oil and Gas Commission {OGC} 2015]); and
- professional experience based upon over 30 years of pipeline planning in western Canada.

The timing and respective season of construction for temporary construction lands and infrastructure has been selected based on when the site is required for use during construction of the pipeline and other considerations. Clean-up and reclamation will proceed once temporary facilities and associated infrastructure are no longer required by the Project, and these activities are addressed in the Pipeline

EPP (Volume 2 of the Environmental Plans). This EPP only addresses temporary construction lands and infrastructure construction. Other activities at facilities are covered under the Facilities EPP (Volume 3 of the Environmental Plans). Measures to address clean-up and reclamation of the temporary construction lands and infrastructure are covered under the Pipeline EPP (Volume 2 of the Environmental Plans). Construction is expected to commence as early as September 1, 2017 and will continue as needed for the duration of construction.



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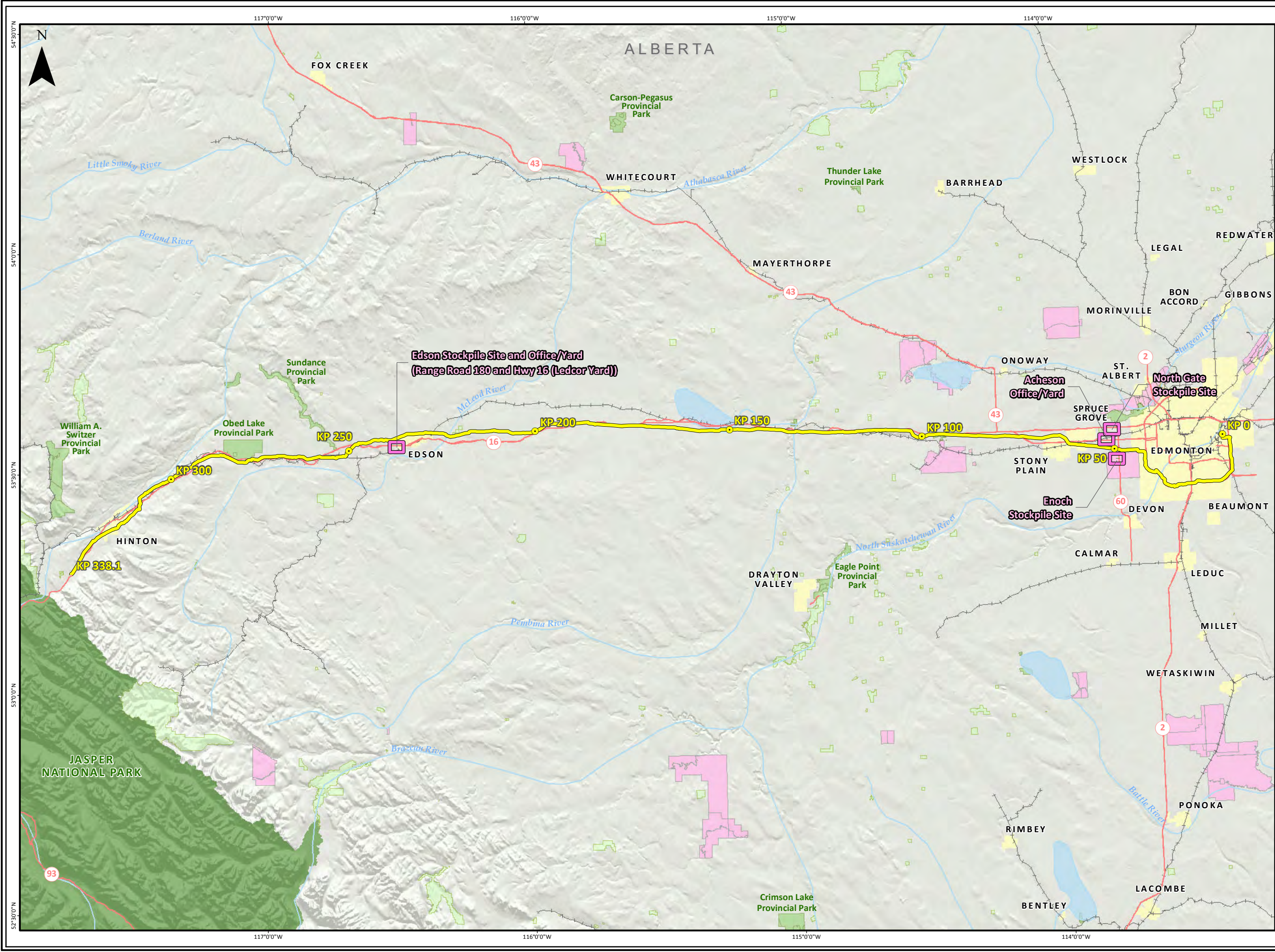


FIGURE 1  
REGIONAL LOCATION OF  
TEMPORARY CONSTRUCTION LANDS AND  
INFRASTRUCTURE IN ALBERTA  
TRANS MOUNTAIN EXPANSION PROJECT

- KP Marker
- TMEP Pipeline
- Temporary Construction Lands and Infrastructure Location
- Deactivated / Overgrown Access Road
- New Temporary Access Road
- Highway
- Railway
- Waterbody
- City / Town / District Municipality
- Indian Reserve / Métis Settlement
- National Park
- Provincial Park
- Ecological Reserve / Conservancy Area

Projection: NAD 1983 UTM Zone 11N.  
Pipeline SSEID005.1, KPs & Footprint provided by UPI April 3, 2017;  
Access Roads provided by UPI Feb 6, 2017 (AB) and Apr 3, 2017 (BC);  
Camps provided by KMC August 11, 2017; Transportation: BC  
MFLNRO 2012 & NRCAN 2015; Geopolitical Boundaries: NRCAN 2003,  
AltaUS 2016, BC MFLNRO 2007 & ESRI 2005; First Nation Lands:  
AltaUS 2010 & Government of Canada 2016; Parks and Protected  
Areas: AltaUS 2012, ATPR 2012, BC MFLNRO 2008 & NRCAN 2016;  
Hydrology: NRCAN 2010; Hillshade: TERA Environmental Consultants  
2008.

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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.



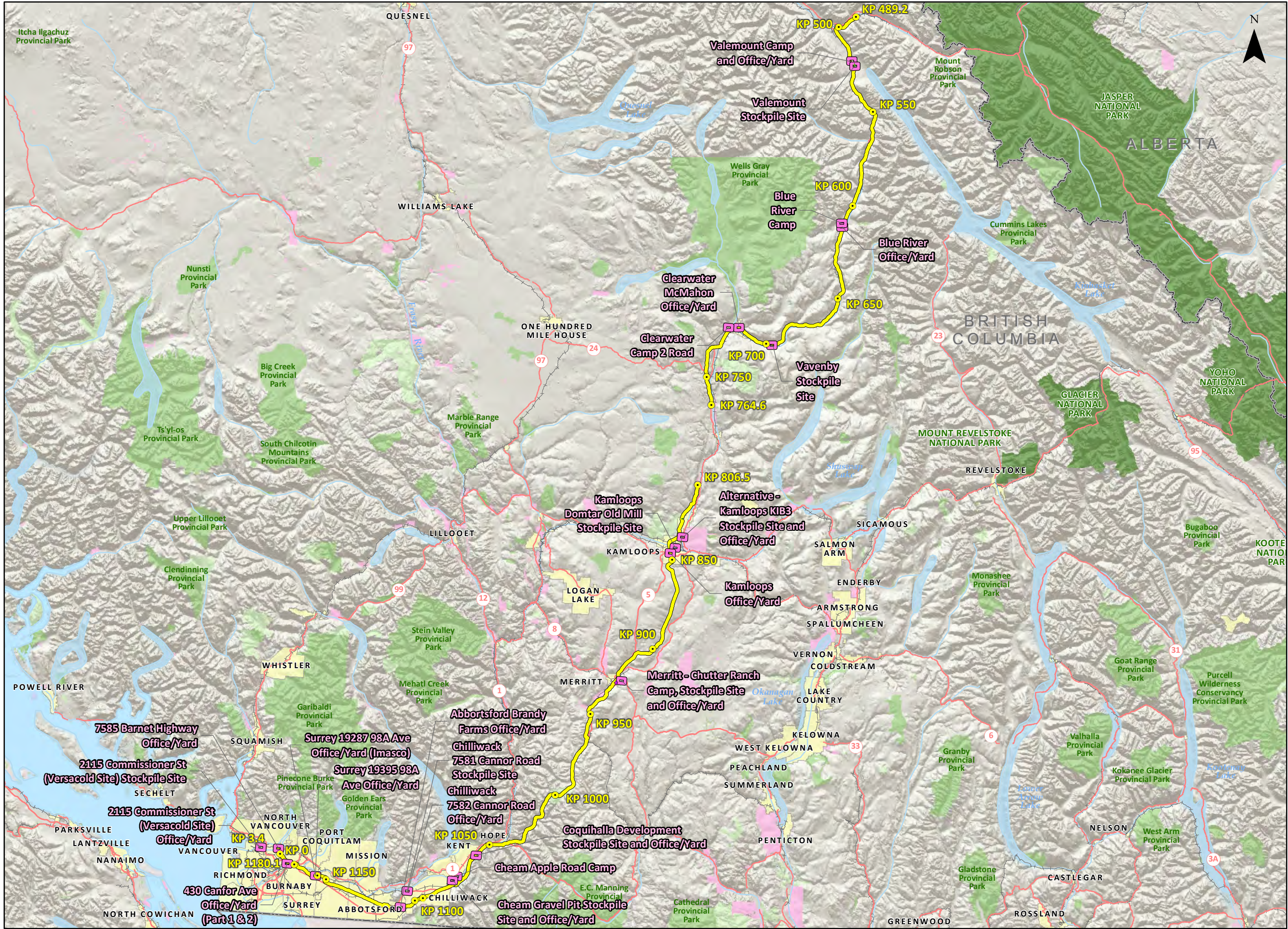
MAP NUMBER 201701_MAP_CH2M_FAC_00989_REV_F1		PAGE SHEET 1 OF 1
DATE August 2017	CH2M REF. 687945	REVISION F
SCALE 1:900,000	PAGE SIZE 11x17	DISCIPLINE FAC
DRAWN JRO	CHECKED DJN	DESIGN CMR

0 10 20 30 40 km

ALL LOCATIONS APPROXIMATE



201701\_MAP\_CH2M\_FAC\_00989\_RevF\_F2.mxd



**FIGURE 2**  
**REGIONAL LOCATION OF**  
**TEMPORARY CONSTRUCTION LANDS AND**  
**INFRASTRUCTURE IN BRITISH COLUMBIA**  
**TRANS MOUNTAIN EXPANSION PROJECT**

-  KP Marker
-  TMEP Pipeline
-  Temporary Construction Lands and Infrastructure Location
-  Deactivated / Overgrown Access Road
-  New Temporary Access Road
-  Highway
-  Railway
-  Waterbody
-  Provincial Boundary
-  City / Town / District Municipality
-  International Boundary
-  Indian Reserve / Métis Settlement
-  National Park
-  Provincial Park
-  Ecological Reserve / Conservancy Area

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Projection: KMC.  
Pipeline SSEID005.1, KPs & Footprint provided by UPI April 3, 2017;  
Access Roads provided by UPI Feb 6, 2017 (AB) and Apr 3, 2017 (BC);  
Camps provided by KMC August 11, 2017; Transportation: BC MFLNRO 2012 & NRCAN 2015; Geopolitical Boundaries: NRCAN 2003, BC MFLNRO 2007 & ESRI 2005; First Nation Lands: Atlas 2010 & Government of Canada 2016; Parks and Protected Areas: Atlas 2012, ATPR 2012, BC MFLNRO 2008 & NRCAN 2016; Hydrology: NRCAN 2010; Hillshade: TERA Environmental Consultants 2008 & ESRI 2009.

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.



MAP NUMBER	201701_MAP_CH2M_FAC_00989_REV_F2	PAGE	SHEET 1 OF 1
DATE	August 2017	CH2M REF.	687945
SCALE	1:1,750,000	PAGE SIZE	11x17
DRAWN	JRO	CHECKED	DJN
		DESIGN	CMR

0 15 30 45 60 75 km  
ALL LOCATIONS APPROXIMATE



## 1.2 Purpose

The purpose of the Temporary Construction Lands and Infrastructure EPP is to communicate Trans Mountain's environmental procedures and mitigation measures to Project construction and inspection personnel in a clear, concise format. These potential environmental procedures and mitigation measures are to be implemented during construction of temporary construction lands and infrastructure to avoid or reduce potential adverse environmental effects. Specifically, the Temporary Construction Lands and Infrastructure EPP:

- identifies mitigation measures to be implemented during development of the temporary construction lands and infrastructure;
- provides instructions for carrying out construction activities in a manner that will avoid or reduce adverse environmental effects; and
- serves as reference information to support decision-making and provides direction to more detailed information (e.g., resource specific mitigation measures, management and contingency plans).

This Temporary Construction Lands and Infrastructure EPP is intended to be a comprehensive compilation of all environmental protection procedures, mitigation measures and monitoring commitments, as set out in Trans Mountain's Application, its subsequent filings, or as otherwise committed to during the NEB proceedings. Trans Mountain confirms its intention to implement all of its commitments pursuant to NEB Conditions 2 and 6.

## 1.3 Traditional Ecological Knowledge and Traditional Land Use

Aboriginal Traditional Knowledge (ATK) is typically documented as a means to preserve historical and familial connections, territorial occupation, land and resource use, and temporal execution strategies. ATK includes but is not limited to the collection of TEK during biophysical field survey participation for the Project and TLU study information from potentially affected Aboriginal groups. Preliminary background ATK data was compiled for the Application and was consulted during the development of the NEB Condition Plans, which helped determine the mitigation measures included in the Temporary Construction Lands and Infrastructure EPP. The following sources were used:

- publicly available ATK, TEK and TLU reports;
- open houses and community gatherings;
- meetings and conversations with Aboriginal group representatives;
- public record of comparable past projects or previous environmental assessments;
- published reports from regulatory authorities involved in administering or regulating a specified area or resource (e.g., integrated resource plans, land and resource management plans, etc.); and
- Geographical Information System tools to determine spatial relationships of source data to the Project.

TEK was collected during biophysical field surveys conducted for the Project. Trans Mountain has reviewed information provided in TLU reports from participating Aboriginal groups and traditional knowledge. Trans Mountain will continue to take available and applicable Aboriginal TLU and TEK into consideration in developing the Temporary Construction Lands and Infrastructure EPP and other NEB Condition Plan. TEK and TLU information collected is provided in the relevant NEB Condition Plans. Trans Mountain has incorporated available Aboriginal TLU and TEK into this updated Temporary Construction Lands and Infrastructure EPP, where appropriate.

## 2.0 ENVIRONMENTAL PROTECTION PLAN ORGANIZATION

This section provides an overview of the organization and scope of the Temporary Construction Lands and Infrastructure EPP.

### 2.1 Organization

The Temporary Construction Lands and Infrastructure EPP identifies the mitigation measures that may be implemented during pre-construction, construction and post-construction activities associated with the temporary construction lands and infrastructure, as well as contingency plans to address potential effects, events or conditions that may arise during construction. Management plans (see Volume 6 of the Environmental Plans) describe the specific environmental management procedures that may apply to ongoing, planned events associated with construction. In addition, the Temporary Construction Lands and Infrastructure EPP outlines environmental inspection and construction inspection roles and responsibilities.

Environmental mitigation measures are identified under the heading "Measures" by "Activity/Concern" in accordance with the progression of construction activities. The Resource Specific Mitigation Tables (provided in Appendix D) provide specific locations where environmental resources relevant to temporary construction lands and infrastructure and the corresponding mitigation measures that may be implemented during construction have been identified. Locations along the pipeline route are referred to by Kilometre Posts (KPs), which describe distances measured along the centre line of the pipeline.

The Temporary Construction Lands and Infrastructure EPP provides:

- an understanding of the general environmental and socio-economic background of the temporary construction lands and infrastructure;
- the extent and limitations of the Temporary Construction Lands and Infrastructure EPP;
- information to identify specific or unique mitigation measures to be implemented to address environmental and socio-economic issues associated with temporary construction lands and infrastructure construction activities; and
- general mitigation measures or industry-accepted standards and procedures that are typically applied to a pipeline project. These measures are generally provided in accordance with the sequence of development activities associated with temporary construction lands and infrastructure or are grouped by Project component (e.g., ancillary sites, borrow sites and access roads).

This version of the Temporary Construction Lands and Infrastructure EPP is comprised of the following Sections and Appendices.

- **Section 1.0 Introduction** provides an introduction to the Project and outlines the purpose of the Temporary Construction Lands and Infrastructure EPP.
- **Section 2.0 EPP Organization** provides details regarding the layout and general scope and limitations of the Temporary Construction Lands and Infrastructure EPP.
- **Section 3.0 Consultation and Engagement** provides details on the program conducted for the Project in relation to the Temporary Construction Lands and Infrastructure EPP, pursuant to NEB Condition 78.
- **Section 4.0 Environmental Compliance** provides information regarding the tools, decision-making processes and documentation to facilitate compliance with all legislation, regulatory approvals, permits, commitments and the specific requirements set forth in the Temporary Construction Lands and Infrastructure EPP.
- **Section 5.0 Notification of Interested Parties** provides details pertaining to specific activities to be followed to ensure Appropriate Government Authorities, potentially affected Aboriginal groups,

landowners/tenants and other applicable interested parties are properly notified prior to commencing temporary construction lands and infrastructure construction activities or, as warranted during the construction period.

- **Section 6.0 Initial Construction Activities** outlines the mitigation measures that may be implemented prior to commencement of temporary construction lands and infrastructure construction activities, as well as pre-construction surveys. These measures include: delineations of the temporary construction lands and infrastructure and temporary and permanent access roads, including identification and marking of environmental resources; underground utilities; and pre-construction vegetation management of weed-infested lands encountered by construction of the temporary construction lands and infrastructure.
- **Section 7.0 General Mitigation Measures** provides an overview of the general measures that may be implemented during the construction phase of the temporary construction lands and infrastructure in all applicable work areas.
- **Section 8.0 Site Preparation Mitigation Measures** outlines the mitigation measures that may be implemented during each activity phase of temporary construction lands and infrastructure and access road construction. This section includes: vegetation removal and disposal; topsoil/root zone materials handling and grading; and water crossings.
- **Section 9.0 Access Roads** outlines the specific mitigation measures associated with access roads (including shoo-flies), vehicle crossings, snow/ice roads, drainage and erosion control, access closure and culverts that will be implemented during and immediately following construction.
- **Section 10.0 Ancillary Sites** outlines the specific mitigation measures associated with the development and use of construction camps, pipe stockpile sites, and Contractor marshalling and staging yards.
- **Section 11.0 Borrow Sites** outlines the specific mitigation measures associated with borrow sites including site preparation, excavation and dust control that will be implemented during and immediately following construction.
- **Section 12.0 References** lists the sources and reference material used to create the mitigation measures and strategies cited in the Temporary Construction Lands and Infrastructure EPP.
- **Appendices** to the Temporary Construction Lands and Infrastructure EPP include the following:
  - Appendix A of this EPP (Contacts) provides the contact information of the Appropriate Government Authorities that will be consulted and/or contacted in case of an emergency.
  - Appendix B of this EPP (Contingency Plans) provides measures to mitigate potential unforeseen environmental effects that are not anticipated to occur during construction activities.
  - Appendix C of this EPP (Drawings) illustrates and describes select mitigation measures that are outlined in the Temporary Construction Lands and Infrastructure EPP.
  - Appendix D of this EPP (Resource Specific Mitigation Tables) details resource-specific features that have been identified at the ancillary sites.
  - Appendix E of this EPP (Environmental Site Drawings for temporary construction lands and infrastructure) illustrates the environmental considerations at each site.
  - Appendix F of this EPP (Checklists) contains the on-site checklist for vehicle crossings of watercourses and wetlands.
  - Appendix G of this EPP (Consultation and Engagement) contains a summary of the consultation efforts completed by Trans Mountain for the Project.
  - Appendix H of this EPP (Aboriginal Consultation) contains a summary of the Aboriginal groups identified for consultation and the consultation activities that have occurred with those groups.

### **3.0 CONSULTATION AND ENGAGEMENT**

Consultation and engagement activities related to the Project, including temporary construction lands and infrastructure, were conducted between May 2012 and August 2017, with Appropriate Government Authorities, potentially affected Aboriginal groups and affected landowners/tenants. Opportunities to discuss temporary construction lands and infrastructure, including identification of issues or concerns and mitigation measures, were provided to public stakeholders through online information, workshops, meetings and ongoing engagement activities during the reporting period. Appendix G of this EPP includes a comprehensive record of these engagement activities, stakeholder feedback and Trans Mountain responses.

The draft Plan was released on February 8, 2017 for review. An Addendum to the Temporary Construction Lands and Infrastructure EPP was released on March 15, 2017. The review and feedback period closed on April 14, 2017. Trans Mountain incorporated any feedback and provided rationale for why input has not been included, in the initial submission of the Temporary Construction Lands and Infrastructure EPP which was filed on June 1, 2017 (Filing ID [A84142](#)).

Since the June 1, 2017 ESA was released, sites have been added and removed in consultation with the directly affected parties. Relevant updates that occurred during summer 2017 are included in Appendix G of this ESA. As the temporary construction lands and infrastructure sites continue to be refined, consultation with Appropriate Government Authorities, potentially affected Aboriginal groups and affected landowners/tenants will be ongoing. Updated Temporary Site Summaries for Acheson, Edson, Valemount, Clearwater, Merritt and Abbotsford were provided for consultation on August 16, 2017. To date, no feedback was received. Further, summaries for Kamloops, Hope, Chilliwack, Surrey, Burnaby and New Westminster were be provided for consultation on September 6, 2017.

## **4.0 ENVIRONMENTAL COMPLIANCE**

Environmental compliance is facilitated through sharing of information, providing orientations/training, retaining qualified personnel and providing on-site inspection of activities through a proactive and adaptive inspection program.

Trans Mountain has developed a Compliance Management Plan (CMP) (Volume 10 of the Environmental Plans) to support the construction execution plan and to ensure full compliance with all applicable legal requirements, regulations, permits, approval conditions and commitments made by Trans Mountain. In addition, an Environmental and Compliance Education Program has been designed to ensure that all Project personnel are trained and aware of roles and responsibilities, as well as imparting critical information regarding environmental protection, mitigation and compliance requirements. A description of the Environmental and Compliance Education Program was previously found in Section 4.3 of this Temporary Construction Lands and Infrastructure EPP, and has now been relocated to Section 4.2 of the CMP (Volume 10 of the Environmental Plans). Roles and responsibilities can be found in Section 1.5, and Appendix A of the CMP (Volume 10 of the Environmental Plans) (previously found in Section 4.4 of this Temporary Construction Lands and Infrastructure EPP) and the Project Organizational Structure prepared to meet NEB Condition 88 (Section 1.0 of Volume 6 of the Environmental Plans).

As part of the CMP, Trans Mountain established the ISLMS pursuant to Section 6 of the 2013 *NEB OPR*. The NEB expects that companies have effective management systems and protection programs that provide for continual improvement. The management system must apply to all the company's activities including the design and construction of a pipeline. The ISLMS outlines KMC's commitment to establishing, implementing and monitoring processes and controls to ensure that it is conducting business in a safe, environmentally responsible and sustainable manner. ISLMS describes how the company operates in a way that minimizes risk to its employees, Contractors, the public and the environment throughout the lifecycle of the Project. Information of the ISLMS was previously found in Section 4.2 of the Temporary Construction Lands and Infrastructure EPP, but has been relocated to Section 1.0 of the CMP (Volume 10 of the Environmental Plans).

During the course of construction, it may be necessary to modify or create new procedures to address site conditions not previously identified in the Temporary Construction Lands and Infrastructure EPP. Field based decision making and Project approved contingency plans will be implemented to address unexpected conditions, as described in Field Level Environmental Change Management in Section 4.4 of the CMP. Section 2.7 of the CMP includes the Management of Change (MOC) processes, which outline the process for the development or modification of procedures. Information for the MOC processes was previously found in Section 4.7 of the Temporary Construction Lands and Infrastructure EPP, but has been relocated to Section 2.7 of the CMP (Volume 10 of the Environmental Plans).

### **4.1 Potential Permits, Approvals and Authorizations**

Trans Mountain will work with the Appropriate Government Authorities to determine which environmental permits, approvals and authorizations are necessary prior to the commencement of construction activities. A list of potential federal and provincial permits, approvals and authorizations are provided in Tables 3 and 4, respectively. Trans Mountain will work with municipalities to provide filing demonstration of conformance applicable to the Project prior to the commencement of construction. While these tables are comprehensive, they are not exhaustive and additional permits may be required. Hard copy permits, approvals and authorization will be assembled in binders per construction spread with the applicable documents on file and will remain at the construction offices throughout the construction and commissioning phases of the Project.

Trans Mountain Pipeline (TMPL) is regulated by the NEB, a fully independent agency of the Government of Canada. As an NEB, federally regulated entity, TMPL requires approval from the NEB prior to the construction of TMEP. TMPL also complies with all ancillary legislation unless it conflicts with or frustrates federal legislation, in which case TMPL will comply with federal legislation as ultimately determined by the NEB.

**TABLE 3**

**POTENTIAL FEDERAL ENVIRONMENTAL PERMITS, APPROVALS AND AUTHORIZATIONS**

Regulatory Authority	Legislation	Permit, Approval, Authorization and/or Notification	Activity/Trigger
NEB	<i>NEB Act</i>	Section 58 of the <i>NEB Act</i>	Approval for the construction of the Project.
Indigenous and Northern Affairs Canada	<i>Indian Act</i>	Section 28 Approval to cross an Indian Reserve	Approval for the temporary construction lands and infrastructure if located on reserve lands.
Environment and Climate Change Canada	<i>Species at Risk Act (SARA)</i>	Permit pursuant to Section 73 of SARA - Species at Risk Permit	Activities that affect ( <i>i.e.</i> , kill, harm, harass and/or capture) a species at risk on Schedule 1 of SARA as endangered or threatened (including wildlife and fish species) and its critical habitat or residence.
Fisheries and Oceans Canada (DFO)	<i>Fisheries Act, Section 35(2)</i>	Self-Assessment, Request for Review and Application for Authorization	Authorization under Section 35(2) of the <i>Fisheries Act</i> will be required if Self-Assessment determines that construction will result in serious harm to fish or fish habitat.
	Section 52 of <i>Fishery (General) Regulation</i>	Authorization of Fish Collection for Scientific, Experimental, Educational or Public Display Purposes	Approval to collect salmon or SARA-listed species during scientific studies or fish salvages.
	SARA	Permit pursuant to Section 73 Aquatic Species of SARA - Species at Risk Permit	Activities that may affect ( <i>i.e.</i> , kill, harm, harass, capture) at risk fish species, its critical habitat or residence.
Industry Canada	<i>Radiocommunication Act</i>	Radio Licence	Radio communication.
Transport Canada	<i>Canada Shipping Act</i>	An act respecting shipping and navigation	Achieve compliance of vessels with relevant marine regulations.

**TABLE 4**

**POTENTIAL PROVINCIAL ENVIRONMENTAL PERMITS, APPROVALS AND AUTHORIZATIONS**

Regulatory Authority	Permit, Approval, Authorization and/or Notification
<b>ALBERTA</b>	
Alberta Culture and Tourism	<ul style="list-style-type: none"> <li><i>Historical Resources Act</i> Clearance.</li> </ul>
Alberta Environment and Parks (AEP)	<ul style="list-style-type: none"> <li><i>Public Lands Act</i> approval (<i>e.g.</i>, Department Pipeline Lease, Department License of Occupation, Temporary Field Authorization [TFA]) for activities on Crown land.</li> <li>TFA for temporary use (<i>e.g.</i>, access roads and TWSs) on Crown land not covered under <i>Public Lands Act</i> disposition.</li> <li>Damage control permits for beaver lodge and beaver dam removal.</li> <li>Notification under the Code of Practice for Watercourse Crossings.</li> <li><i>Environmental Protection and Enhancement Act</i>.</li> <li>Hazardous Waste Storage Guidelines.</li> </ul>
Alberta Energy Regulatory (AER)	<ul style="list-style-type: none"> <li>Directive 055 - Storage Requirements for the Upstream Petroleum Industry; and</li> <li>Directive 068 - Oilfield Waste Management Requirements for the Upstream Petroleum Industry</li> </ul>
Alberta Transportation (AT)	<ul style="list-style-type: none"> <li>Roadside Development Permit.</li> <li>Permits for dangerous goods, overweight transport, canal/ditch crossing and placement of an oil/gas pipeline.</li> </ul>
<b>BC</b>	
BC OGC	<ul style="list-style-type: none"> <li>NEB Pipeline Provincial Authorization Application for: <ul style="list-style-type: none"> <li>temporary occupation of Crown land for ancillary land uses (<i>e.g.</i>, camps, access and TWS); and</li> <li>authorizations under Section 11 of the <i>Water Sustainability Act</i> (changes in and about a stream) for stream or waterbody crossings.</li> </ul> </li> <li>Road use permits under Section 117 of the <i>Forest Act</i>.</li> <li>Road permits under Section 39 of the <i>Land Act</i>.</li> <li>Temporary Crown land access approval under Section 39 of the <i>Land Act</i>.</li> <li>Section 10 <i>Water Sustainability Act</i> Approval for short-term diversion or use of water.</li> <li>General wildlife permit under Section 11 of the <i>Water Sustainability Act</i> for beaver dam removal.</li> <li>Aggregate Operations and Borrow Pit Permit.</li> </ul>



**TABLE 4 Cont'd**

Regulatory Authority	Permit, Approval, Authorization and/or Notification
BC Ministry of Forests, Lands and Natural Resource Operations (MFLNRO)	<ul style="list-style-type: none"> <li>• Authorization under Section 40 of the BC <i>Wildlife Act</i> (temporary closure to hunting, trapping and guide outfitting, if necessary, during a construction activity).</li> <li>• Authorization under Section 4 of the <i>Wildlife Act</i> for work in Wildlife Management Areas.</li> <li>• Exemption permits under the <i>Wildlife Act</i>.</li> <li>• <i>Heritage Conservation Act</i> permits (Heritage Alteration Permit [Section 12], Heritage Inspection Permit – Clearance and Fossil Resource Permit).</li> <li>• Works Permit, Consent to Connect under Section 16 under the <i>Forest Act</i>.</li> </ul>
BC Ministry of Environment (MOE)	<ul style="list-style-type: none"> <li>• Section 14 Permit under the BC <i>Environmental Management Act</i> for the introduction of waste into the environment: <ul style="list-style-type: none"> <li>– Waste Discharge Permit for testing and disposing of water with additives; and</li> <li>– Waste Storage Permit for disposing sewer in remote camps.</li> </ul> </li> </ul>
BC Ministry of Transportation and Infrastructure (MOTI)	<ul style="list-style-type: none"> <li>• Various permits under the <i>Transportation Act</i>, including: <ul style="list-style-type: none"> <li>– Sign Permit;</li> <li>– Structure Permit;</li> <li>– Work Notification or Land Closure Request Permit;</li> <li>– Works on the Right-of-way (burning, pipeline crossing, etc.);</li> <li>– Clearing and Grubbing Permit; and</li> <li>– Revegetation Permit.</li> </ul> </li> <li>• Various permits under the <i>Industrial Roads Act</i>, including: <ul style="list-style-type: none"> <li>– Highway Access Permit;</li> <li>– Controlled Highway Access Permit;</li> <li>– Access/Road Construction within Right-of-way; and</li> <li>– Commercial Vehicle Permit under the <i>Commercial Transport Act</i>.</li> </ul> </li> </ul>
Vancouver Fraser Port Authority (VFPA)	<ul style="list-style-type: none"> <li>• Canada Marine Act</li> </ul>

## 5.0 NOTIFICATION OF INTERESTED PARTIES

### Introduction

Notification of the construction schedule and timing of specific construction activities will facilitate awareness of upcoming activities and allow Appropriate Government Authorities, Aboriginal groups, landowners/tenants and other applicable interested parties to plan, as appropriate, for construction activities in the area of interest. The following measures will be implemented by Trans Mountain, the Contractor and/or the sub-contractor to ensure notification of interested parties for construction of the temporary construction lands and infrastructure. Notifications will be coordinated with the Trans Mountain Stakeholder Engagement and Communications team. Regulatory notifications and permit applications will be coordinated with the Trans Mountain Regulatory and Compliance Team.

### Objective

The objectives of notification of interested parties are to ensure that:

- work adheres to applicable approval conditions;
- interruptions to other land use activities are limited during construction of temporary construction lands and infrastructure;
- applicable interested parties are aware of construction activities; and
- Appropriate Government Authority representatives are kept informed throughout construction of temporary construction lands and infrastructure.

<b>Contacts</b>	<b>Notification Measures</b>
<i>Federal Authorities</i>	<ol style="list-style-type: none"> <li>1. Notify the NEB as per NEB Condition 62 of the anticipated construction schedule, identifying the major construction activities expected, and on a monthly basis, on the first working day of each calendar month from the commencement of construction until after commencing operations, provide updated detailed construction schedules.</li> <li>2. Submit monthly construction progress reports to the NEB as per NEB Condition 106, from commencement of construction until after commencing operations. Monthly reports are to include any environmental issues and non-compliance that occurred; and measures conducted to resolve these environmental issues and non-compliance.</li> <li>3. Ensure that the necessary notifications are provided for applicable permits that must be obtained prior to beginning activities. A list of the potential federal permits, approvals and authorizations is provided in Table 3. Additional permits beyond those listed in Table 3 may be required.</li> </ol>
<i>Provincial Authorities -</i>	<ol style="list-style-type: none"> <li>4. Ensure that the necessary notifications are provided for applicable permits that must be obtained prior to beginning activities. A list of the potential provincial permits, approvals and authorizations is provided in Table 4. Additional permits beyond those listed in Table 4 may be required.</li> </ol>

Contacts	Notification Measures
<i>Provincial Authorities - Alberta</i>	<ol style="list-style-type: none"> <li>5. Notify AEP prior to entering Crown lands to acquire confirmation numbers before conducting activities on Crown lands in Alberta, as required by Crown disposition approval conditions.</li> <li>6. Notify AEP a minimum of 14 days prior to any work on a water crossing in Alberta, in accordance with the <i>Code of Practice for Watercourse Crossings</i> (Government of Alberta 2013a) and the <i>Water (Ministerial) Regulation</i>. Notify the Regional Director within 24 hours in the event of a contravention of the above Code of Practice (COP).</li> <li>7. Obtain a Temporary Diversion Licence (TDL) from AEP under the Alberta <i>Water Act</i> if water withdrawal is required to accommodate construction activities (e.g., ice and/or snow bridge construction).</li> </ol>
<i>Provincial Authorities - BC</i>	<ol style="list-style-type: none"> <li>8. Notify BC Environmental Assessment Office prior to entry on Crown lands in BC, as required by the BC Environmental Assessment Office permit conditions.</li> <li>9. Obtain BC <i>Water Sustainability Act</i> approval under Sections 10 and 11 from BC OGC, where warranted, for the short-term use of water and changes in and about a watercourse or wetland and about a stream or wetland. Ensure that a copy of the required approvals is on-site prior to withdrawal. Adhere to all approval conditions.</li> <li>10. A notice of Construction Start must be submitted to the BC OGC 48 hours prior to equipment arriving on location at the start of construction.</li> </ol>
<i>Municipal Authorities</i>	<ol style="list-style-type: none"> <li>11. TMPL is regulated by the NEB, a fully independent agency of the Government of Canada. As an NEB federally regulated entity, TMPL requires approval from the NEB prior to the construction of TMEP. TMPL also complies with all ancillary legislation unless it conflicts with or frustrates federal legislation, in which case TMPL will comply with federal legislation as ultimately determined by the NEB.</li> <li>12. Notify the appropriate municipal authority prior to the anticipated construction schedule a minimum of 30 working days prior to construction (see Appendix A of this EPP). Ongoing communication of activities will be through the TMEP Communications and Notification Plan.</li> </ol>
<i>Aboriginal Groups</i>	<ol style="list-style-type: none"> <li>13. Provide Aboriginal groups with the anticipated construction schedule and maps a minimum of 30 days prior to the commencement of construction in the vicinity of their respective communities.</li> </ol>
<i>Landowners and Lessees</i>	<ol style="list-style-type: none"> <li>14. Inform the applicable Crown land authority or landowners and lessees of the construction location and schedule to allow for sufficient time to plan and implement alternative land use decisions. In addition, adjacent landowners and lessees will be notified so that livestock can be relocated in advance of construction of temporary construction lands and infrastructure.</li> </ol>
<i>Trappers, Guides and Outfitters and Resource Users</i>	<ol style="list-style-type: none"> <li>15. Notify trappers, guides and outfitters in the area of temporary construction lands and infrastructure 30 days prior to the commencement of construction.</li> <li>16. Place an announcement in local newspapers notifying domestic hunters, trappers, fishers, recreation users, guides and outfitters of the location and timing of construction activities prior to commencement of temporary construction lands and infrastructure construction activities.</li> </ol>

Contacts	Notification Measures
<i>Project Notice</i>	<p>17. Contact identified recreation user groups prior to construction activities a minimum of 30 days prior to the commencement of construction. Provide maps and schedules of the construction activities to enable them to select alternate areas for activity. Ensure that any notable changes in the construction schedule are communicated, as warranted.</p> <p>18. Provide notification to residents of construction within urban areas through methods determined in collaboration with municipal and regional authorities.</p> <p>19. Provide Project contact information to residents, land users and Aboriginal groups for management of construction-related concerns.</p> <p>20. Install signs at recreation access points notifying users of construction activities in the vicinity.</p> <p>21. Install signs at secondary road access points and within the vicinity of construction activities near secondary roads and highways to notify land users (e.g., Forest Management Agreement holders [in Alberta] and Forest License holders [in BC]) of the construction of temporary construction lands and infrastructure.</p>
<i>Construction Schedule Change</i>	<p>22. Review the individuals and groups that were initially notified of the construction schedule and notify of any changes in the construction schedule.</p>

**Note:** - See Appendix A of this EPP for contacts.

## 6.0 INITIAL CONSTRUCTION ACTIVITIES

### Introduction

This section describes the mitigation measures that may be implemented prior to construction to ensure protection of environmental features, delineation of workspace boundaries of temporary construction lands and infrastructure sites, as well as the marking of buried and overhead utilities. The following mitigation measures will be implemented, as warranted, by Trans Mountain, its Contractors and subcontractors prior to the commencement of construction activities at temporary construction lands and infrastructure.

### Objectives

The objectives of these mitigation measures are to ensure:

- identified environmental resources occurring on or immediately adjacent to the temporary construction lands and infrastructure are properly identified and marked in the field prior to construction to avoid or reduce potential Project-related adverse environmental effects;
- the temporary construction lands and infrastructure are properly delineated to prevent inadvertent trespass; and
- all approved access to and from the work sites is properly and clearly marked.

Activity/Concern	Mitigation Measures
<i>Construction Documentation</i>	1. Refer to measures regarding Temporary Construction Lands and Infrastructure EPP distribution provided in the CMP (Volume 10 of the Environmental Plans).
<i>Notification</i>	2. Review notification requirements identified in Section 5.0 of this EPP and ensure that notifications have been completed.
<i>Approvals</i>	3. If required, obtain a Fisheries Act Authorization (Section 35(2)) from DFO for activities that are likely to cause residual serious harm to fish, prior to the commencement of marine construction.
<i>Review Mitigation Measures for Environmental Features</i>	4. The Environmental Inspector will review mitigation measures to be implemented during construction to avoid or reduce effects on environmental features ( <i>i.e.</i> , rare plants and rare ecological communities, wildlife species at risk, archaeological features, TLU sites and any other sensitive environmental or cultural features) along or in proximity to temporary construction lands and infrastructure sites (see Volume 7 [Resource Specific Mitigation Tables]). This review will be conducted in advance of construction at known locations where the above features are known to be present to ensure that suitable and appropriate procedures have been selected and can be implemented prior to construction where applicable. An Environmental Inspector is responsible for monitoring compliance with environmental and socio-economic commitments, undertakings and conditions of permits and approvals, as well as applicable environmental legislation, Trans Mountain's policies, procedures, and industry-accepted standards. An Environmental Inspector may designate responsibility for environmental and socio-economic compliance monitoring in certain cases based on the nature of the activity and the availability of appropriate alternative personnel ( <i>e.g.</i> , Activity Inspector) (see the Compliance Management Plan in Volume 10 of the Environmental Plans).

Activity/Concern	Mitigation Measures
<i>Pre-Construction Surveys</i>	<ol style="list-style-type: none"> <li>5. Complete environmental surveys (e.g., supplemental biophysical assessments, wildlife habitat features) that are required prior to the commencement of construction and provide the key results of the surveys and any associated mitigation to Project inspection personnel and the Contractor. Identify any resource specific locations in the field where mitigation is necessary and mark the locations accordingly.</li> <li>6. Complete migratory bird nest sweeps as necessary prior to construction, depending upon the timing of construction (refer to Section 7.0 of this EPP under the heading Wildlife).</li> </ol>
<i>Extra Workspace</i>	<ol style="list-style-type: none"> <li>7. Identify the need for ETWS prior to construction where possible. There may be a need to take ETWS at: <ul style="list-style-type: none"> <li>• side slopes to ensure sufficient storage space for graded material;</li> <li>• locations for storage of coarse woody debris is necessary to retain materials for use during reclamation. Refer to management plans pertaining to wildlife habitat and the Reclamation Management Plan (Sections 6.0 and 9.0 of Volume 6); and</li> <li>• vehicle water crossings to ensure sufficient space to allow storage of topsoil/root zone material and allow for installation of the vehicle crossing; note that a vegetative buffer is to be left in place at watercourse crossings unless otherwise approved by the Environmental Inspectors.</li> </ul> </li> <li>8. Locate ETWS outside of riparian areas where possible except where adjacent upland is lacking functional riparian vegetation (i.e., adjacent land is cultivated or disturbed up-to the wetland boundary). See the mitigation measures under the heading Riparian Areas in Section 7.0 of this EPP for the size of boundaries surrounding watercourse and wetland riparian areas.</li> <li>9. In the event that a change to the Project Footprint is deemed necessary (e.g., addition of ETWS or modification of TWS), the Construction Manager and Lead Environmental Inspector will work through the Project MOC process in consultation with the Project Manager to determine what additional approvals and notifications may be required.</li> </ol>
<i>Weeds</i>	<ol style="list-style-type: none"> <li>10. Develop weed control plans in accordance with the requirements of local municipalities, the line list and the Weed and Vegetation Management Plan (WVMP) (see Section 5.5 of Volume 6 of the Environmental Plans). Flag areas identified as having weed infestations prior to commencement of construction of the temporary construction lands and infrastructure.</li> </ol>

Activity/Concern	Mitigation Measures
<i>Weeds (cont'd)</i>	<p>11. Flag areas identified as having high weed infestations prior to commencement of construction. Control weeds (<i>i.e.</i>, using proper application of chemical, mechanical or manual measures, or a combination of all) to a level that is consistent with current weed management practices on land adjacent to the Project Footprint to reduce the potential for weed infestations following construction. Mitigation measures to be implemented for weeds can be found in:</p> <ul style="list-style-type: none"> <li>• Section 7.0 of this EPP;</li> <li>• the Weed and Vegetation Management Plan (Section 5.5 of Volume 6 of the Environmental Plans);</li> <li>• the Agricultural Management Plan (Section 2.2 of Volume 6 of the Environmental Plans); and</li> <li>• the Biosecurity Management Plan (Section 2.5 of Volume 6 of the Environmental Plans).</li> </ul>
<i>Monitoring</i>	<p>12. Monitoring will be necessary at select locations prior to start of construction to assess the possible effects on resource specific features (<i>e.g.</i>, archaeological monitoring, rare plants and nesting birds) as determined by an Environmental Inspector. Determine the permits and/or approvals that may be necessary and ensure they are in place to allow monitoring to be conducted.</p>
<i>Hydrogeology</i>	<p>13. Determine if monitoring is necessary prior to, during and/or following construction at select wells during specific construction activities (<i>e.g.</i>, wells located in close proximity to blasting sites). A Hydrogeological Resource Specialist will determine if wells located within the vicinity of the footprint will be sampled for water quality and flow rate prior to the commencement of construction. Refer to the Groundwater Management Plan (Section 4.2 of Volume 6 of the Environmental Plans) for additional information and detailed mitigation measures for groundwater resources.</p>
<i>Staking/Flagging</i>	<p>14. Stake or flag all boundaries of the temporary construction lands and infrastructure sites including temporary access roads and shoo-flies. Use short, painted stakes or lathe where livestock are present. Stake or flag environmental features and buffers (<i>e.g.</i>, archaeological site, rare plant species and wildlife habitat features) on or adjacent to the temporary construction lands and infrastructure sites prior to commencing construction to avoid the site.</p> <p>15. Snow fencing may be necessary to delineate sensitive environmental features on and/or adjacent to the temporary construction lands and infrastructure sites.</p> <p>16. Confirm locations of environmental features and ensure staking, flagging, or snow fencing is maintained during construction.</p> <p>17. Stake or flag any shrubs or trees to be salvaged and replaced at wetlands and other water crossings prior to construction.</p> <p>18. Install localized drainage and siltation control, and grade temporary construction lands and infrastructure sites with consideration of areas susceptible to ponding.</p>

Activity/Concern	Mitigation Measures
<i>Signage</i>	<p>19. Post signs in the vicinity of environmental features to alert construction personnel of their presence. Recommended setback distances are resource specific, and should be determined in consultation with an Environmental Inspector and/or Resource Specialist, if required. Use site identification numbers to ensure confidentiality and protection of resources, where warranted.</p> <p>20. Post signs (including name, number, and KP as applicable) 100 m from each watercourse crossing at the top of the approach slope, whichever is greater, following clearing to alert construction personnel of the upcoming watercourse or wetland and the refueling and servicing restrictions within the watercourse/wetland buffer. Identify (e.g., stake, flag, sign, and/or posts and rope) riparian buffer areas associated with watercourse and wetland crossings.</p> <p>21. Install signs to notify construction personnel of key traffic restrictions, cleaning requirements, equipment refuelling and servicing restrictions and prohibited materials pertaining to construction activities on or within an 8 m buffer of organic fields (see Agricultural Management Plan provided in Section 2.2 of Volume 6).</p>
<i>Survey Slash Lines</i>	<p>22. Fell timber onto the temporary construction lands and infrastructure sites and away from watercourses and wetlands, during survey line clearing. Remove fallen trees that inadvertently land off the footprint or into watercourses or wetlands in a manner that minimizes disturbance.</p> <p>23. Fell all timber onto the of temporary construction lands and infrastructure sites during clearing to minimize damage to vegetation off the Project Footprint.</p>



## 7.0 GENERAL CONSTRUCTION MITIGATION MEASURES

### Introduction

The general mitigation measures provided in this section may be applicable to temporary construction lands and infrastructure throughout various phases of construction. These general mitigation measures will be implemented, as warranted, by Trans Mountain, its Contractors and subcontractors prior to and during construction, and will be followed for construction or development of temporary construction lands and infrastructure.

### Objective

The objective of the following mitigation measures is to avoid or reduce potential adverse environmental effects associated with general construction of the temporary construction lands and infrastructure. Construction will be completed in a manner that avoids or reduces adverse effects on residents in the area, land users and socio-economic and environmental features. Refer to the Socio-Economic Management Plan (within NEB Condition 72) for broad mitigation measures related to socio-economic effects and reference to Plans that contain more specific mitigation on socio-economic matters. Refer to the Socio-Economic Effects Monitoring Plan prepared for NEB Condition 13 for the monitoring approach and Project-specific indicators related to select socio-economic effects. Contractor requirements pertaining to worker accommodation during construction and further details on the worker code of conduct can be found in the Worker Accommodation Strategy prepared for NEB Condition 59. These plans are contained in Section 2.0 of Volume 6 of the Environmental Plans.

Activity/Concern	Mitigation Measures
<i>At Risk or Sensitive Species</i>	<ol style="list-style-type: none"> <li>Where at risk or sensitive species are discovered during future vegetation, aquatics and wildlife habitat studies or during construction, implement the applicable Management Plan in Volume 6 of the Environmental Plans and Contingency Plans (see Appendix B of this EPP).</li> <li>Ensure sighting records for sensitive species or species at risk are provided to an Environmental Inspector. Records will be maintained and made available for reporting to applicable regulatory</li> </ol>
<i>Species at Risk</i>	<ol style="list-style-type: none"> <li>Ensure that mitigation measures concerning fish, wildlife or plant species of concern are communicated to construction personnel and supported by an Environmental Inspector. Refer to the environmental Resource Specific Mitigation Tables for aquatics, vegetation and wildlife species at risk or their habitats provided in Sections 7.0, 5.0, and 4.0 of Volume 7 of the Environmental Plans, respectively.</li> <li>Suspend activity if previously unidentified species at risk are encountered at temporary construction lands and infrastructure sites during construction. Implement the following plans as appropriate: <ul style="list-style-type: none"> <li>Rare Ecological Communities or Rare Plant Species of Concern Discovery Contingency Plan (see Appendix B of this EPP);</li> <li>Wildlife Conflict Management Plan (see Section 6.5 of Volume 6 of the Environmental Plans); and</li> <li>Wildlife Species of Concern Encounter and Discovery Contingency Plan (see Appendix B of this EPP).</li> </ul> </li> <li>Report observations of species at risk immediately to an Environmental Inspector. The Environmental Inspector will record the location in the daily reports and locate and mark sightings for future reference in Environmental As-Built documentation.</li> </ol>

Activity/Concern	Mitigation Measures
<i>Wildlife</i>	<ol style="list-style-type: none"> <li>6. Initiate or complete clearing activities outside of the migratory bird nesting period (see below), where feasible, to reduce the risk of encountering migratory birds nesting. <ul style="list-style-type: none"> <li>• April 17 to August 24 (KP 0 to KP 144.8);</li> <li>• April 22 to August 24 (KP 144.8 to KP 338.0);</li> <li>• April 14 to August 19 (KP 489.2 to KP 609.0);</li> <li>• April 4 to August 18 (KP 609.0 to KP 764.6 and KP 806.5 to KP 968.6);</li> <li>• March 23 to August 16 (KP 968.6 to 999.9 and KP 1023.7 to KP 1078.6); and</li> <li>• March 26 to August 17 (KP 999.9 to KP 1023.7; KP 1024.1 to KP 1024.2; KP 1078.6 to KP 1180.1; KP 0.000 to 3.396 [Westridge Lateral] ).</li> </ul> </li> <li>7. Clear or mow areas of vegetation (in particular, trees, grasslands, pasture) outside of the migratory bird nesting period to reduce the risk of migratory birds nesting where work is scheduled to occur during the migratory bird nesting period.</li> <li>8. In the event that clearing or construction activities are scheduled to commence within the migratory bird nesting period or there are extended periods of inactivity between construction activities (<i>i.e.</i>, a period greater than 7 days), Wildlife Resource Specialists will use non-intrusive methods to conduct an area search for evidence of nesting (<i>e.g.</i>, presence of territorial males, alarm calls, distraction displays, adults carrying nesting material/food). Searches for evidence of nesting should occur within 7 days prior to the construction activity.</li> <li>9. In the event that an active nest is found, it will be subject to site-specific mitigation measures (<i>e.g.</i>, a clearly marked species-specific buffer around the nest or non-intrusive monitoring). The appropriate mitigation measures will be selected by an Environmental Inspector, in consultation with a Wildlife Resource Specialist (see also the Wildlife Species of Concern Encounter and Discovery Contingency Plan provided in Appendix B of this EPP).</li> <li>10. Implement the Wildlife Species of Concern Encounter and Discovery Contingency Plan and the Wildlife Conflict Management Plan (see Appendix B of this EPP and Section 6.5 of Volume 6 of the Environmental Plans, respectively) in the event of an encounter with wildlife during construction, either at the construction site or on the commute to or from the construction site. Report any incidents or collisions with wildlife to an Environmental Inspector who will consult with the Appropriate Government Authorities and the local conservation officer, if applicable. Follow the incident reporting processes outlined in the Project Emergency Response Plan (NEB Condition 89) for safety related incidents.</li> <li>11. Adhere to applicable setback distances and associated timing constraints (see Appendix D of this EPP), to the extent feasible, during construction activities to avoid noise-related disturbances during sensitive periods, unless otherwise approved by the Appropriate Government Authority.</li> <li>12. Do not harass or feed wildlife. Do not store food in beds of pick-up trucks or areas readily accessible to wildlife.</li> <li>13. Prohibit all Project personnel from having pets on the construction site.</li> </ol>

Activity/Concern	Mitigation Measures
<i>Wildlife (cont'd)</i>	<ol style="list-style-type: none"> <li>14. Prohibit all Project personnel from having firearms on the construction site or in Project vehicles.</li> <li>15. Prohibit recreational hunting by Project personnel on or in the vicinity of the construction site. Crews staying in construction camps will not be allowed to hunt during scheduled work cycles.</li> <li>16. Prohibit the recreational use of all-terrain vehicles (ATVs) or snowmobiles by Project personnel at construction sites.</li> <li>17. Report wildlife or site-specific wildlife habitat features (e.g., nest and den) discovered during construction activities to an Environmental Inspector who will contact the Appropriate Regulatory Authorities, when warranted.</li> <li>18. Construct temporary construction lands and infrastructure in a well-organized and efficient manner to limit the duration of sensory disturbance to wildlife.</li> <li>19. Obtain an AEP Wildlife Damage Control License, where necessary, for the removal of beaver dams or lodges (i.e., if trapping of beaver or disturbance to active beaver dams or lodges is necessary). Confirm permitting requirements with the Wildlife Resource Specialist and AEP, where required.</li> <li>20. Submit a notification to the appropriate regional Habitat Officer of the BC OGC at least 45 days prior to beaver dam removal, as per Section 11 of the Water Sustainability Act in BC.</li> <li>21. Conduct a self-assessment in accordance with DFO's Measures to Avoid Causing Harm to Fish and Fish Habitat (DFO 2013) to determine if the removal of a beaver dam will result in serious harm to fish. Consult a qualified Fish Biologist to assist in the self-assessment.</li> </ol>
<i>Heritage Resources</i>	<ol style="list-style-type: none"> <li>22. Follow applicable recommendations identified in the Historical Resources Impact Assessment (Alberta) and the Archaeological Impact Assessment (BC).</li> <li>23. Refer to the environmental Resource Specific Mitigation Table for historical resources, provided in Appendix D of this EPP.</li> <li>24. Suspend work in proximity (i.e., within 30 m or other distance, as specified in the applicable regulatory permit) to archaeological or paleontological sites (e.g., arrowheads, modified bone, pottery fragments and fossils) discovered during construction and notify an Environmental Inspector and Construction Manager, who will contact the Environmental Manager. No work at that particular location shall continue until permission is granted by the Environmental Manager, in consultation with a Resource Specialist or, if warranted, the Appropriate Government Authority. For more information, refer to Heritage Resources prepared for NEB Condition 100 (Section 2.4 of Volume 6 of the Environmental Plans).</li> <li>25. Prohibit the collection of any historical, archaeological or paleontological resources by Project personnel.</li> <li>26. Avoid disturbance of geodetic or legal survey monuments, to the extent feasible. If a geodetic monument is disturbed during construction activities, the Construction Manager or designate will immediately report such disturbance to a Trans Mountain representative for reporting to the Appropriate Government Authority. The monument will be re-established, where feasible, in accordance with the instructions of the Dominion Geodesist.</li> </ol>

Activity/Concern	Mitigation Measures
<i>Traditional Land and Resource Use</i>	<p>27. Implement the contingency measures identified in the TLU Sites Discovery Contingency Plan (see Appendix B of this EPP) in the event that TLU sites not previously identified are found. Notify an Environmental Inspector who will collaborate with an Aboriginal Monitor for protection of these features.</p> <p>28. Refer to the Resource Specific Mitigation Tables for TLU features (Section 3.0 of Volume 7 of the Environmental Plans).</p> <p>29. If plant gathering sites in areas of moderate and high risk of contamination will be impacted during construction, the appropriate Aboriginal group(s) will be notified about the potential for contamination.</p> <p>30. After final cleanup, the site will be seeded and planted according to specifications in the Reclamation Management Plan.</p> <p>31. In the event that previously unidentified contamination is encountered in plant gathering areas, implement the Contamination Discovery Contingency Plan (Appendix B) and notify the affected Aboriginal group.</p> <p>32. Install signs notifying the user of contaminated sites on or around plant gathering sites.</p>
<i>Noise Emissions</i>	<p>33. Schedule intermittent noise-producing events to avoid sensitive periods for wildlife, livestock and residents, where feasible</p> <p>34. Adhere to applicable federal (<i>i.e.</i>, Environment Canada, Motor Vehicle Safety Act and Oil and Gas Occupational Safety and Health Regulations) and provincial (<i>i.e.</i>, Directive 038: Noise Control, BC Noise Control Best Practices Guideline [BC OGC 2009], Section 7.2 of the Occupational Health and Safety Regulations) and municipal guidelines and legislation regarding noise management, where feasible. Noise abatement equipment and construction scheduling will be considered at noise-sensitive locations (<i>e.g.</i>, neighbouring residents) and during noise-sensitive periods, to the extent feasible.</p> <p>35. Noise abatement equipment and construction scheduling will be considered at noise-sensitive locations (<i>e.g.</i>, neighbouring residents) and during noise-sensitive periods.</p> <p>36. Enforce vehicle speed limits. The use of engine retarder braking in urban areas is prohibited.</p> <p>37. Maintain equipment in a good working condition and in accordance with manufacturer guidelines.</p> <p>38. Ensure that tools and equipment utilized are proportionate to the construction activity being conducted to limit excessive noise. Locate compressors and generators away from noise receptors, to the extent feasible.</p>
<i>Air Emissions</i>	<p>39. Work with Trans Mountain representatives to ensure that landowners and/or occupants are appropriately notified of the potential to be affected by emissions from construction activities. Notification must occur prior to commencement of these activities in proximity to lands owned or occupied by the respective landowners and/or occupants.</p>
<i>Weed Monitoring</i>	<p>40. Monitor topsoil/root zone material piles during the course of construction and conduct corrective measures (<i>e.g.</i>, spraying) to address weed growth, as necessary.</p>

Activity/Concern	Mitigation Measures
<i>Water Wells</i>	41. Re-establish or replace a potable water supply as required should a registered or known water well be damaged ( <i>i.e.</i> , diminishment in quantity and/or quality) by construction. Refer to the Groundwater Management Plan provided in Section 4.2 of Volume 6 of the Environmental Plans for more information and detailed mitigation measures for groundwater resources.
<i>Buried Utility Lines</i>	42. Locate and flag all existing buried utility lines and cables to be crossed prior to the commencement of ground disturbance activities by using line-locating services in addition to direct contact with utility owners.
<i>Encountering Contamination</i>	<p>43. Review known areas of contamination in Condition 60, for known areas of contamination. Refer mitigation measures to be implemented during construction refer to the Contamination Identification and Assessment Plan (Section 3.2 of Volume 6) Condition 46.</p> <p>44. Implement the Contamination Discovery Contingency Plan (see Appendix B of this EPP) in the event that contaminated soils are discovered during construction. Adhere to applicable measures provided in the Waste Management Plan (see Section 3.1 of Volume 6 of the Environmental Plans) for handling of contaminated material.</p>
<i>Scheduling</i>	<p>45. Review and abide by all applicable timing restrictions and least risk biological windows, as shown in the Resource Specific Mitigation Tables (see Appendix D of this EPP). When construction activities are scheduled outside of preferred construction timing windows, ensure necessary regulatory approvals are in place.</p> <p>46. In the event that a permit or approval is likely to expire prior to the completion of the applicable construction activities, notify Trans Mountain well in advance (<i>e.g.</i>, one month) of the expiration date to obtain renewal or extension of the permit and/or approval.</p> <p>47. Schedule construction of the temporary construction lands and infrastructure in consideration of applicable approval conditions and municipal bylaws, where feasible.</p> <p>48. Schedule construction of the temporary construction lands and infrastructure to reduce interference with landowners and agricultural operations in accordance with the Line List.</p>
<i>Extreme Weather</i>	<p>49. Check weather reports daily to allow for schedule changes and contingency planning.</p> <p>50. Install additional drainage control measures prior to or during wet conditions and extreme weather events, to ensure the protection of sensitive environments. Consult the Flood and Excessive Flow Contingency Plan, the Soil Erosion and Sediment Control Contingency Plan and the Wet/Thawed Soils Contingency Plan provided in Appendix B of this EPP if an extreme weather event occurs on-site that may pose risks to the environment or the ability to implement environmental protection measures.</p>

Activity/Concern	Mitigation Measures
<i>Construction Traffic</i>	<p>51. Establish speed limits, approved by Trans Mountain, and in compliance with provincial regulation, on the Project Footprint and access roads. Post signs stating the applicable speed limits for construction traffic.</p> <p>52. Transport construction personnel to and from the facility site by multi-passenger vehicle, to limit the potential for vehicle/wildlife interactions. Contractor work force will be encouraged to use multi-person vehicles, while those requiring mobility from along the Project footprint such as supervisory roles, inspection roles, etc., will need to travel independently.</p> <p>53. Conduct dust suppression measures near berry farms and other agricultural crops susceptible to dust damage, in consultation with an Environmental Inspector.</p> <p>54. Shovel and sweep clean any mud, soil debris or foreign material tracked onto roads as quickly as practical following equipment crossings.</p>
<i>Public Access</i>	<p>55. Use signs and access barriers, where appropriate, to deter unauthorized access in accordance with the Access Management Plan (AMP) (see Section 2.1 in Volume 6 of the Environmental Plans).</p>
<i>Trappers</i>	<p>56. Prohibit the vandalism or theft of trapper equipment or trapped animals if they are observed on the construction site prior to clearing or construction activities.</p>
<i>Fishing</i>	<p>57. Prohibit recreational fishing by personnel employed on the Project at waterbodies intercepted by temporary construction lands and infrastructure construction sites or access roads. Project personnel would be allowed to fish in the vicinity of the Project Footprint when they are not on active duty and must possess a valid provincial fishing licence.</p>
<i>Livestock</i>	<p>58. Report livestock encountered on the construction site to an Environmental Inspector who will inform the Project's Land Department to contact the applicable landowner and/or occupant or land authority. Consult the Agricultural Management Plan (Section 2.2 of Volume 6 of the Environmental Plans).</p>
<i>Rare Plants/ Rare Ecological Communities</i>	<p>59. Review mitigation of rare plants and rare ecological communities with an Environmental Inspector and the Contractor in advance of construction to ensure there is full understanding of the procedures involved. See the Rare Ecological Community and Rare Plant Population Management Plan (see Section 5.3 of Volume 6 of the Environmental Plans) for mitigation measures to be used during construction.</p> <p>60. Suspend activity if previously unidentified rare plants and rare ecological communities are encountered on temporary construction lands and infrastructure during construction where harmful effects to the plants and/or adjacent communities are anticipated as a result of construction, as determined by a Rare Plant Resource Specialist. Implement the Rare Plant Species Discovery Contingency Plan (Appendix B of this EPP).</p> <p>61. Implement the resource specific mitigation measures associated with vascular and non-vascular plant species at risk as well as rare and unique plant communities on or adjacent to the staked construction boundaries, as outlined in the environmental Resource Specific mitigation measures for rare plants and rare ecological communities provided in Appendix D of this EPP. See the Temporary Bridge/Rare Plants Dwg. 1 provided in Appendix C of this EPP.</p>

Activity/Concern	Mitigation Measures
<i>Weeds/ Invasive Plants</i>	<p>62. Ensure that equipment arrives at temporary construction lands and infrastructure construction sites clean and free of soil or vegetative debris. Inspect, verify and document clean equipment</p> <p>63. Consider placing matting (e.g., construction mats and swamp mats) and geotextile fabric over infested areas to reduce construction equipment transporting weed seed or plant material if topsoil/root zone material is not to be salvaged. Ensure that mats are free of soil, vegetation and debris prior to removing from the site.</p> <p>64. Clean equipment (i.e., shovel and sweep, pressurized water or compressed air) involved in topsoil/root zone material handling at weed-infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site (see Equipment Cleaning – Compressed Air and High Pressure Water Dwg. 2 in Appendix C of this EPP and the Biosecurity Management Plan in Section 2.5 of Volume 6 of the Environmental Plans). Clean equipment involved in topsoil handling at weed-infested sites prior to leaving the location.</p> <p>65. Clean equipment in accordance the Biosecurity Management Plan or by agreements in place with the landowner and/or occupant prior to entering organic farms, or registered and/or certified seed grower lands in order to reduce the risk of introducing weeds (see Agricultural Management Plan and the Biosecurity Management Plan provided in Section 2.2 and 2.5 of Volume 6 of the Environmental Plans).</p> <p>66. Record all sites where equipment was specifically cleaned to address weed concerns and communicate these locations to an Environmental Inspector.</p> <p>67. Additional mitigation to reduce weed growth (i.e., seeding with a short-lived cover crop) may be warranted where topsoil/root zone material replacement is delayed due to temporary construction lands and infrastructure construction scheduling.</p>
<i>Use of Herbicides</i>	<p>68. Restrict the application of herbicides to licensed applicators.</p> <p>69. Consult with potentially affected Aboriginal groups prior to the use of herbicides.</p> <p>70. Restrict the application of herbicide within 30 m of known rare plant populations or rare plant communities. Spot spraying, wicking, mowing or hand picking are acceptable weed control measures in proximity to rare plants and rare plant communities.</p> <p>71. Follow all regulatory requirements for herbicide use adjacent to waterbodies and wells.</p>

Activity/Concern	Mitigation Measures
<i>Terrestrial Biosecurity</i>	<p>72. Install signs at facilities that are under a biosecurity mandate to limit entry, and mandate vehicle cleaning. Clean equipment after construction at the site to prevent transfer of soil pathogens or other crop diseases (e.g., Clubroot, Potato Nematode, Phytophthora ramorum), debris, invasive plants to other locations. Refer to the Agricultural Management Plan (Section 2.2 of Volume 6 of the Environmental Plans), the Biosecurity Management Plan (see Section 2.5 of Volume 6 of the Environmental Plans), and the Line List for specific measures to be implemented.</p> <p>73. Apply tackifier or other erosion control measures to topsoil/root zone material windrows in areas of known disease (e.g., clubroot) concern when there is potential for topsoil transfer during windy conditions, or if topsoil windrows are to be maintained over the winter, to prevent the potential spread of clubroot or other disease.</p> <p>74. Adhere to the site-specific biosecurity protocols requested by Landowners (see the Line List) for nurseries, poultry farms or livestock operations. Refer to the Agricultural Management Plan (see Section 2.2 of Volume 6 of the Environmental Plans) and Biosecurity Management Plan (see Section 2.5 of Volume 6 of the Environmental Plans) for specific measures and cleaning procedures to be implemented on these lands if no biosecurity protocols are specified in the Line List.</p>
<i>Aquatic Biosecurity</i>	<p>75. Clean equipment after construction within a watercourse or wetland where aquatic pests are present (e.g., didymo, Myxobolus cerebralis - the parasite that causes whirling disease in fish). Refer to the Biosecurity Management Plan for additional mitigation measures and cleaning requirements when working in watercourses or wetlands with aquatic pests.</p>
<i>Watercourses</i>	<p>76. Adhere to applicable water crossing requirements provided in the the Alberta Code of Practice for Watercourse Crossings (GoA, 2013a) notifications and BC OGC access road applications.</p> <p>77. No instream construction activity will occur within the restricted activity period (RAP) (in Alberta) or outside the instream work window of least risk (in BC) for any watercourse unless: it is dry or frozen to the bottom at the time of construction; trenchless techniques are employed; or approval from the Appropriate Government Authorities to work during the RAP or outside the window of least risk has been granted.</p> <p>78. Ensure disturbed areas on the approach to any watercourse crossed by the access roads are reduced, stabilized and reclaimed.</p> <p>79. Implement appropriate precautions to prevent deleterious substances (e.g., gasoline, sediment, oil, cement or concrete residue) from entering watercourses, wetlands or lakes. Cleaning, fuelling, and servicing of equipment are to be conducted in an area, or in a manner, where spills or wash water will not contaminate surface water or groundwater resources. An emergency spill kit appropriate for the work being conducted is to be available on-site at all times.</p> <p>80. Prevent construction materials and debris from entering watercourses.</p> <p>81. Install and maintain appropriate drainage control measures (e.g., Sediment Fence Dwg. 3 provided in Appendix C of this EPP) to prevent sediments from disturbed areas from being transported into watercourses.</p> <p>82. Ensure conditions and measures from applicable watercourse crossing permits and approvals are incorporated into planned construction activities.</p>



Activity/Concern	Mitigation Measures
<i>Wetlands</i>	<p>83. Ensure approvals are in place prior to works in and around wetlands.</p> <p>84. Prevent ground disturbance by using a protective layer such as frost packing, snow, ice, or matting between wetland vegetation mat/seedbed and construction equipment.</p> <p>85. Clearly mark the wetland boundaries using signage, flagging or fencing and limit traffic in the vicinity of the flagged/fenced off area, to the extent practical. See Narrow Down Fencing Dwg. 4 in Appendix C of this EPP.</p> <p>86. Restrict grading to areas adjacent to the wetland boundary to the extent feasible. Direct grading away from wetlands.</p> <p>87. Re-establish surface drainage patterns in wetlands characteristic of their pre-construction (baseline) contours during restoration to maintain natural drainage patterns and avoid the creation of steep shorelines/embankments, except where it is not safe to do so due to the risk of slope failure.</p> <p>88. Maintain sediment fences in place at wetland boundaries, where warranted, until a vegetation cover has established, or the surrounding area is stabilized.</p> <p>89. Allow wetlands to recover naturally (<i>i.e.</i>, do not seed wetland areas).</p>
<i>Riparian Areas</i>	<p>90. Riparian areas include a minimum of 10 m from the boundary of a wetland.</p> <p>91. In Alberta, riparian areas include a minimum of:</p> <ul style="list-style-type: none"> <li>• 30 m from a Class A, B or C (fish-bearing [FB] or permanent) watercourse; and</li> <li>• 10 m from a Class C (nonfish bearing [NFB] drainage) watercourse.</li> </ul> <p>92. In BC, riparian areas include a minimum of:</p> <ul style="list-style-type: none"> <li>• 50 m from a S1-A, B (FB);</li> <li>• 30 m from a S2 (FB);</li> <li>• 20 m from a S3 (FB);</li> <li>• 15 m from a S4 (FB); and</li> <li>• 10 m from a S5 or S6 (NFB).</li> </ul> <p>Refer to the Riparian Habitat Management Plan (Section 8.7 of Volume 6 of the Environmental Plans) for mitigation measures to be implemented when working within riparian areas, and for storage and replacement of coarse woody debris.</p> <p>93. Use natural regeneration, seeding and planting of rooted plant materials as specified in the Reclamation Management Plan (Section 9.1 of Volume 6 of the Environmental Plans) and Riparian Habitat Management Plan (Section 8.7 of Volume 6 of the Environmental Plans). Seed mixes, species lists, and seeding/planting prescriptions are provided in these plans. The reclamation strategy will be compatible with the existing land use and the construction Line List.</p>

Activity/Concern	Mitigation Measures
<i>Air Quality/ Odour/Greenhouse Gas Emissions</i>	<p>94. Restrict the duration that vehicles and equipment are allowed to sit and idle to less than 1 hour, unless the air temperature is less than 0°C. Abide by municipal non-idling bylaws, where applicable.</p> <p>95. Conduct burning in accordance with burning permit requirements and A Smoke Management Framework for BC (BC MOE 2011), as applicable. Comply with local government bylaws, the Forest and Prairie Protection Act (Alberta) and the Open Burning Smoke Control Regulation (BC), and the Forest Fire Prevention and Suppression Regulation (BC) when burning slash, as permitted. Burning is prohibited in the Lower Fraser Valley and Greater Vancouver areas from KP 1075.0 to KP 1180.1, and the Westridge Delivery Lines (KP 0 to KP 3.4).</p>
<i>Drainage</i>	<p>96. Maintain drainage across or around the construction site during all phases of construction and use of the site.</p> <p>97. Reduce the potential for soil erosion by water during construction activities by avoiding ponding of water or the unintentional channelization of surface water flow.</p> <p>98. Inspect constructed water conveyance installations (e.g., ditches and culverts) encountered by the Project and ensure they are functioning appropriately. Take appropriate action prior to and during the spring freshet to clear culverts blocked by ice or debris</p>
<i>Wet/Thawed Soil Conditions</i>	<p>99. Adhere to the measures outlined in the Wet/Thawed Soils Contingency Plan (see Appendix B of this EPP) if wet soil conditions are encountered prior to the removal of topsoil/rootzone material from the development area.</p>
<i>Erosion and Sedimentation</i>	<p>100. Install drainage control measures, as approved by an Environmental Inspector. Implement structures and materials (e.g., berms), as outlined in the Soil Erosion and Sediment Control Contingency Plan (see Appendix B of this EPP) to ensure that sediment in surface water draining from the construction site does not adversely affect the surrounding terrain or any watercourses or wetlands (see Sediment Fence Dwg. 3 provided in Appendix C). In particular, control erosion on the banks of watercourses and grade cuts disturbed by construction activities associated with temporary construction lands and infrastructure.</p> <p>101. Construction activities will be undertaken in a manner that avoids or minimizes erosion and the discharge of sediment or other deleterious substances into any nearby watercourses, wetlands, lakes or connecting drainage systems.</p> <p>102. Temporary drainage, erosion and sediment control measures will be put in place, and will remain in place and be maintained over the course of construction activities. The control measures will be inspected to ensure they will function in the event of adverse weather conditions. Any deficiencies that are observed in drainage, erosion and sediment control measures will be immediately corrected.</p>

Activity/Concern	Mitigation Measures
<i>Erosion and Sedimentation (cont'd)</i>	<p>103. Maintain or remove drainage and erosion control devices and materials at all sites that are no longer in use when the area is stabilized, including:</p> <ul style="list-style-type: none"> <li>• temporary roads;</li> <li>• borrow sites;</li> <li>• spoil disposal sites;</li> <li>• stock pile sites; and</li> <li>• work pads.</li> </ul>
<i>Waste Disposal</i>	<p>104. Collect all construction waste materials on a regular basis and dispose of at a KMC approved waste disposal facility and in accordance with the Waste Management Plan (see Section 3.1 of Volume 6 of the Environmental Plans) and the Spill Contingency Plan (see Appendix B). Ensure that wastes are recycled, reused or recovered, where practical.</p> <p>105. Ensure that the temporary construction lands and infrastructure construction sites are left in a tidy and organized condition at the end of each day.</p> <p>106. Store all garbage in wildlife-proof containers in locations where potential wildlife/human conflicts may occur.</p>
<i>Waste and Hazardous Waste Storage</i>	<p>107. Follow measures outlined in the Waste Management Plan (see Section 3.1 of Volume 6 of the Environmental Plans) for storage of waste or hazardous wastes on the work site.</p> <p>108. Personnel will be made aware of their responsibilities for proper handling, identification, documentation and storage of hazardous wastes and wastes.</p> <p>109. Personnel handling hazardous and non-hazardous wastes will possess valid Workplace Hazardous Materials Information System (WHMIS) training (Health Canada 2015).</p> <p>110. An appropriate number and type of portable toilets will be made available to ensure that crews have ready access to washroom facilities. The facilities will be serviced and cleaned regularly, and will be adequately secured.</p> <p>111. Store bulk hazardous wastes in accordance with applicable regulatory requirements. Store wastes in designated areas and dispose in accordance with the Waste Management Plan (see Section 3.1 of Volume 6 of the Environmental Plans).</p> <p>112. Store bulk tanks containing hazardous wastes (e.g., fuel for construction equipment) in a bermed area lined with an impervious polyethylene liner or in tanks with integral secondary containment, as approved by the Environmental Inspector. Secondary containment for fuel storage tanks is required for volumes exceeding 1,000 L. Oversized secondary containment for hydrocarbons will be designed and sized in accordance with appropriate provincial and federal requirements. Remove any rainwater that accumulates within the containment structure if directed by an Environmental Inspector. If there is a visible hydrocarbon sheen, the water in the containment structure will be collected for proper storage and disposal at a KMC approved waste disposal facility. Temporary fuel storage tanks will be installed to meet the requirements of the Petroleum Storage and Distribution Facilities Stormwater Regulation in BC.</p>

Activity/Concern	Mitigation Measures
<i>Waste and Hazardous Waste Storage</i>	113. Visually inspect fuel tanks on a regular basis as well as when the tank is refilled. Maintain inspection records for each tank, where warranted. Take remedial action as soon as a crack, dent or leak is detected.
<i>Spill Prevention</i>	<p>114. Report spills immediately to an Environmental Inspector who will notify the Senior Compliance Advisor for reporting to the Appropriate Government Authority in accordance with the Spill Contingency Plan (see Appendix B of this EPP).</p> <p>115. Place an impervious tarp or drip tray underneath equipment and vehicles or strip the topsoil/root zone material when performing service and routine maintenance (e.g., oil changes and servicing of hydraulic systems).</p> <p>116. Maintain appropriate spill equipment at all work sites. Assess the risk of spills to determine the appropriate type and the quantity of spill response equipment and materials to be stored on-site and a suitable location for storage. Ensure that Operators and On-site Construction Foremen are trained to contain spills or leakage from equipment when they arrive on-site.</p> <p>117. Store all hazardous substances and fuels in proper containment systems, to prevent release to the environment. Handle all hazardous wastes in accordance with applicable WHMIS protocols.</p> <p>118. Ensure that during construction no fuel, lubricating fluids, hydraulic fluids, methanol, antifreeze, herbicides, biocides or other chemicals are dumped on the ground or into watercourses, wetlands or lakes. In the event of a spill, implement the Spill Contingency Plan (see Appendix B of this EPP).</p> <p>119. Transport, handle, use and dispose of hazardous wastes in accordance with provincial and federal regulatory requirements, and as identified in the Waste Management Plan (see Section 3.1 in Volume 6 of the Environmental Plans).</p> <p>120. Ensure that bulk fuel trucks, service vehicles and pick-up trucks equipped with box-mounted fuel tanks carry spill prevention, containment and clean-up materials that are suitable for the volume of fuels or oils carried. Carry spill response supplies on bulk fuel and service vehicles that are suitable for use on land and water (e.g., sorbent pads, sorbent boom and rope).</p> <p>121. Conduct refuelling a minimum of 100 m from a watercourse, wetland or lake, unless otherwise approved by an Environmental Inspector. Employ the following measures to limit the risk of fuel spills in water if refuelling within 100 m of a watercourse, wetland or lake is approved by an Environmental Inspector:</p> <ul style="list-style-type: none"> <li>• all containers, hoses and nozzles are free of leaks;</li> <li>• all fuel nozzles are equipped with automatic shut-offs;</li> <li>• Operators are stationed at both ends of the hose during fuelling, unless the ends are visible and readily accessible by one Operator; and</li> <li>• fuel remaining in the hose is returned to the storage facility.</li> </ul> <p>122. Do not wash equipment or machinery in or near watercourses, wetlands or lakes. Control wastewater from construction activities to avoid discharge directly into a waterbody.</p>

## 8.0 SITE PREPARATION MITIGATION MEASURES

### Introduction

The following mitigation measures will be implemented by Trans Mountain, its Contractors and subcontractors during the construction of temporary construction lands and infrastructure.

### Objective

The objective of these mitigation measures is to ensure construction of the temporary construction lands and infrastructure is conducted in a manner that reduces adverse effects on residents in the area, land users and socio-economic and environmental resources.

## 8.1 Vegetation Removal and Disposal

### Introduction

The following mitigation measures will be implemented by Trans Mountain, its Contractors and subcontractors during the surveying and vegetation removal phase for the development of temporary construction lands and infrastructure. Refer to the Old Growth Management Areas Mitigation and Replacement Plan prepared to meet NEB Condition 76 (Section 5.2 of Volume 6 of the Environmental Plans) if construction of temporary construction lands and infrastructure is within an Old Growth Management Area.

### Objective

The objective of these mitigation measures is to:

- delineate the Project Footprint; and
- limit disturbance of vegetation (*i.e.*, native vegetation) to the extent practical to the areas required for construction of the temporary construction lands and infrastructure.

Activity/Concern	Mitigation Measures
<i>Clearing/ Mowing</i>	1. Refer to brushing and mowing mitigation provided under the Wildlife heading of Section 7.0 of this EPP.
<i>Staking/Flagging</i>	2. Refer to mitigation measures provided under the Staking/Flagging and Signage headings in Section 6.0 of this EPP. Confirm the placement of stakes, flags and signage of the temporary construction lands and infrastructure site following pre-clearing and prior to clearing. Replace any stakes, flags and signage damaged during pre-clearing.
<i>Extra TWS</i>	3. Follow the Project MOC process for changes or additions to extra temporary workspace in the MOC process is in the CMP (Volume 10 of the Environmental Plans).
<i>Schedule</i>	4. Refer to measures pertaining to migratory bird nest protection provided under the Wildlife heading of Section 7.0 of this EPP. 5. Schedule hauling of timber potentially infected by a forest parasite ( <i>e.g.</i> , mountain pine beetle) for the period either before or after the beetle flight period (May 1 to September 30), to the extent feasible, unless otherwise approved by a qualified Timber or Forest Health Resource Specialist in consultation with applicable provincial forestry authorities.

Activity/Concern	Mitigation Measures
<i>Clearing Limits</i>	<ol style="list-style-type: none"> <li>6. Confine all clearing/mowing within the staked/flagged site boundaries. Do not clear, mow or grade beyond the stakes. Clear vegetation from only those areas essential for construction. Adhere to clearing restrictions associated with special environmental features and buffer areas in addition to those areas outlined in the Resource Specific Mitigation Table (see Appendix D of this EPP).</li> <li>7. Install drainage control measures such as sediment fences as soon as feasible following clearing to reduce the risk of erosion, as directed approved by an Environmental Inspector (see Sediment Fence Dwg. 3 provided in Appendix C of this EPP).</li> <li>8. Use methods that leave the sod/vegetation layer (<i>i.e.</i>, deciduous woody root layer) intact during brushing/mowing activities.</li> </ol>
<i>Watercourses</i>	<ol style="list-style-type: none"> <li>9. Refer to applicable vegetation removal guidelines for protection of streams and wetlands provided by AEP and in the Environmental Protection and Management Guidelines (BC OGC 2015).</li> <li>10. Reduce the removal of vegetation in wetlands, to the extent practical. Maintain low vegetation or vegetated ground mat within the riparian buffer zone of watercourses and wetlands, to the extent practical, by walking-down low vegetation so low-lying vegetation remains intact.</li> <li>11. Leave a vegetative ground mat and a root structure intact at watercourse riparian buffers when pre-brushing/mowing is necessary. Brushing and grading within the vegetated buffer is subject to approval of an Environmental Inspector after considering: <ul style="list-style-type: none"> <li>• slope gradient before grading and after slope has been graded out;</li> <li>• potential for sedimentation (<i>i.e.</i>, soil texture);</li> <li>• vehicle crossing method and schedule; and</li> <li>• potential for re-establishment of riparian vegetation.</li> </ul> </li> <li>12. Each vehicle crossing installation requires pre-planning, including an environmental assessment and crossing plan to be reviewed and approved by an Environmental Inspector prior to the commencement of construction activities.</li> <li>13. Level the area within the vegetated buffer with geotextile and/or subsoil, matting where a temporary vehicle crossing is to be installed. Maintain low vegetation or a vegetative ground mat within the buffer zone of watercourses, to the extent practical, by walking-down vegetation to facilitate construction activities.</li> </ol>
<i>Wetlands</i>	<ol style="list-style-type: none"> <li>14. Clearly mark the wetland boundaries using flagging and limit traffic in the vicinity of the flagged area. Utilize appropriate machinery (<i>i.e.</i>, wide pad machines) and clean swamp mats or equivalent under non-frozen soil conditions.</li> </ol>

Activity/Concern	Mitigation Measures
<i>Forest Health Measures – General</i>	<p>15. Reduce or avoid damage to trees on the edge of the temporary construction land and infrastructure site to limit the potential for infection and the spread of forest health pathogens. Remove trees that are inadvertently damaged or determined to be a danger tree.</p> <p>16. Avoid stacking fallen infested trees near healthy standing or felled trees.</p> <p>17. Report and track the potential discovery of any previously unidentified forest health concerns encountered during construction to an Environmental Inspector, who will consult a qualified Timber or Forest Health Resource Specialist if required.</p>
<i>Forest Health Measures – BC</i>	<p>18. Carefully control the movement of woody debris and follow the relevant guidelines and restrictions of the local Forest Districts for control of mountain pine beetle and other forest pests, as warranted.</p> <p>19. Dispose of timber infested with mountain pine beetle (or other forest parasite) by burning or mulching to eliminate the risk of spread of forest parasites. Burning is prohibited in the Lower Fraser Valley and Greater Vancouver areas from KP 1075.0 to KP 1180.1. Where root disease is present, infested stumps should be removed by push falling or extraction.</p> <p>20. Cut Douglas-fir and spruce stumps below a height of 45 cm.</p>
<i>Salvageable Timber</i>	<p>21. Salvage timber with equipment that is appropriate for the terrain conditions and that limits damage to salvaged timber and harvests timber that meet the receiving mill's requirements. Refer to the Timber Salvage Management Plan prepared to meet NEB Conditions 72 and 78 for more information on handling timber (Section 5.1 of Volume 6 of the Environmental Plans).</p>
<i>Grubbing</i>	<p>22. Postpone root grubbing until immediately prior to grading within the site boundary, if practical, and where there is a potential for soil erosion to occur, due to sloping terrain and erodible soils.</p>
<i>Slash Piling</i>	<p>23. Leave an appropriate fuel break based on risk and surrounding fuels, as determined by qualified personnel.</p>
<i>Slash Disposal</i>	<p>24. Confirm slash disposal requirements where disposal methods are subject to agreements with AEP or BC MFLNRO.</p> <p>25. Dispose of slash through burning or mechanical mulching, unless otherwise directed by an Environmental Inspector or the Appropriate Government Authority. Mulch or chip in place on non-agricultural lands, or chip and/or haul slash to an approved disposal location.</p> <p>26. Obtain the necessary burning permits prior to disposal and conduct burning in accordance with burning permit requirements and applicable regulations (see Sections 4.0 and 5.0 of this EPP for applicable permits and regulations).</p> <p>27. Burning is prohibited in the Lower Fraser Valley and Greater Vancouver regions (KP 1075.0 to KP 1180.1 and the Westridge Delivery lines KP 0 to KP 3.4). Mulch in place on non-agricultural lands, or haul slash to an approved disposal location.</p> <p>28. Notify the Appropriate Government Authority prior to commencement of burning slash. Obtain and record the fire ratings daily to determine whether it is safe to burn. During slash disposal activities, maintain communication on a daily basis regarding the time of ignition, the location, the extent and the anticipated duration of burning activities.</p>

Activity/Concern	Mitigation Measures
<i>Slash Disposal (cont'd)</i>	<p>29. Follow the BC Open Burning Smoke Control Regulation (this legislation is currently undergoing revision) as well as the BC Wildfire Act and Wildfire Regulation when burning in BC. Adhere to the AEP Forest and Prairie Protection Regulations in Alberta.</p> <p>30. Avoid locating burn piles on peat-rich soils in order to limit the risk of residual fires following construction of the temporary construction lands and infrastructure. Locate burn piles on exposed mineral soils (<i>i.e.</i>, where topsoil/root zone material salvage has occurred).</p> <p>31. Monitor weather forecast and ventilation index prior to burning. Schedule burning or consider alternative activities and disposal methods to limit the effects of smoke in the vicinity of sensitive receptors. Unless otherwise approved, do not burn slash debris within 100 m of neighbouring residences and business, or within 500 m of schools (when in session), hospitals and facilities used for continuing care. In consultation with an Environmental Inspector, consider weather conditions and prevailing winds before burning debris piles in the vicinity of highways, airports or roads.</p> <p>32. Pile slash in a manner that allows for clean, efficient burning of all material. Implement techniques to limit smoke production, including limiting pile size, reducing fuel moisture content and maintaining loose burning piles free of soil.</p> <p>33. Monitor burning at all times and prevent fire from spreading. Extinguish burning embers before leaving the site and monitor burn sites to ensure that no smouldering debris remains. Remaining ashes from burn piles must be spread and mixed with water or snow to ensure they are properly extinguished.</p> <p>34. Ensure that slash burning crews have firefighting equipment on hand that is capable of controlling any fire that may occur as a result of their activities. Adhere to the measures outlined in the Fire Contingency Plan (see Appendix B of this EPP).</p>
<i>Hay/Crops</i>	<p>35. Where applicable, arrange for landowners and/or tenants to harvest crops ahead of construction, if practical. Mow any remaining crops on the temporary construction lands and infrastructure construction sites to facilitate topsoil handling.</p>
<i>Gates</i>	<p>36. Install locked gates to block unauthorized travel into temporary construction lands and infrastructure sites. Keep gates locked and assign security personnel, if warranted, to block access. Refer to the Access Management Plan for additional access control measures (Section 2.1 of Volume 6 of the Environmental Plans).</p> <p>37. Install gates in fences crossed by access roads. Ensure that gates are located within the boundaries of the access roads, are the same height as the adjacent fence and are adequately sized to allow passage of all construction equipment. Close gates after use.</p>



## 8.2 Topsoil/Root Zone Material Handling and Grading

### Introduction

The following mitigation measures may be implemented during topsoil/root zone material handling and grading during construction of the temporary construction lands and infrastructure.

### Objective

The objectives of these mitigation measures are to avoid or reduce effects on topsoil/root zone material productivity, surface drainage patterns, land use and wildlife habitat, and to conserve surface material in order to facilitate reclamation of disturbed areas.

Activity/Concern	Mitigation Measures
<i>Resource Specific Features</i>	<ol style="list-style-type: none"> <li>1. Refer to mitigation measures provided under the Staking/Flagging and Signage headings in Section 6.0 of this EPP. Confirm the placement of stakes, flags and signage prior to topsoil/root zone material handling and grading. Replace any damaged stakes, flags and signage.</li> <li>2. Review resource specific locations to be avoided during topsoil/root zone material salvage and grading activities. Review and finalize the Temporary Construction Lands and Infrastructure Grade Plan prepared by the Contractor to ensure that resource-specific locations are identified and will be avoided or otherwise mitigated.</li> <li>3. Do not allow soils handling or grading in proximity (<i>i.e.</i>, 30 m unless otherwise specified) to known archaeological sites unless mitigation measures have been implemented in accordance with the applicable approvals (<i>i.e.</i>, Historical Resources Act clearance [Alberta] or Heritage Conservation Act permits [BC]), or otherwise approved by the Appropriate Government Authority.</li> </ol>
<i>Watercourse/Wetland Signage</i>	<ol style="list-style-type: none"> <li>4. Post signs, stakes, flagging and/or post and rope a minimum of 100 m from watercourse and/or wetland vehicle crossings to identify them to the Contractor.</li> <li>5. Clearly mark, with staking, flagging and signage, locations requiring special soil handling techniques.</li> <li>6. Stake and label topsoil/root zone material windrows to assist in identification of topsoil/root zone material versus spoil, as warranted, where the piles are not easily distinguished or will be left in place through different construction seasons.</li> </ol>
<i>Monitoring of Topsoil/Root Zone Material Windrows</i>	<ol style="list-style-type: none"> <li>7. Monitor topsoil/root zone material windrows and piles for erosion and weed growth until the soil is replaced. Implement additional mitigation measures to control erosion and weed growth, when warranted as outlined in the Soil Erosion and Sediment Control Contingency Plan (Appendix B of this EPP) and the Weed and Vegetation Management Plan (Section 5.5 of Volume 6 of the Environmental Plans).</li> </ol>

Activity/Concern	Mitigation Measures
<i>Dust Control</i>	<p>8. Consult with land agents to provide opportunity for landowners and/or tenants with the potential to be affected by dust emissions from construction of ancillary sites to report on issues related to dust emissions so that corrective actions can be implemented.</p> <p>9. Identify suitable water withdrawal locations for use as dust suppression prior to water withdrawal.</p> <p>10. Water down the temporary construction lands and infrastructure construction site, when warranted, to reduce or avoid the potential for dust emissions due to soil pulverization. Increase the frequency of watering roads and temporary construction lands and infrastructure sites during periods of high risk (e.g., high winds). Additional dust abatement measures will be implemented, when warranted and approved by an Environmental Inspector.</p> <p>11. Ensure that the watering of roads and/or the temporary construction lands and infrastructure construction site does not generate excessive formation of surface water accumulation (i.e., puddles or excessive mud generation) or result in overland water flow or sedimentation of nearby watercourses, wetlands or lakes.</p>
<i>Extra TWS</i>	<p>12. Follow the Project MOC process for changes or additions to extra temporary workspace in the MOC process is in the CMP (Volume 10 of the Environmental Plans).</p>
<i>Timing</i>	<p>13. Ensure construction activities do not cause excessive rutting, soil compaction or pulverization. Consider alternate soil handling measures and adhere to the measures outlined in the Wet/Thawed Soils Contingency Plan.</p>
<i>Snow Management and Windrow Gaps</i>	<p>14. Locate gaps in topsoil/root zone material, and spoil and snow windrows to facilitate wildlife, livestock and equipment movement and trapper lines, in places that also facilitate construction such as at slope changes, crossings (i.e., watercourse, road, and railway) and bends. The locations will be approved in the field by an Environmental Inspector. Remove or pack down snow to increase frost penetration into the soil during the winter. During mid to late winter, pack snow to avoid premature thawing of the upper soils. Grade snow, if necessary, to improve driving conditions.</p> <p>15. Use snow to create a level work surface, to the extent feasible, in order to avoid disturbance of the vegetation mat on cleared ungrubbed construction footprint and in watercourse or wetland vegetated riparian buffer areas. Grade the spoil area or grade snow over the spoil area on cultivated lands to smooth furrows and facilitate removal of spoil during backfilling.</p>
<i>Sod/ Vegetation Mat Conservation</i>	<p>16. Retain sod and the vegetation mat if ground conditions are considered competent enough to support equipment traffic without rutting or mixing soils (i.e., are frozen and are not expected to thaw before completion of the work) on lands with thick sod or vegetation layers (e.g., grasslands, hay tame pasture), or that are matted where grading is not required.</p>

Activity/Concern	Mitigation Measures
<i>Topsoil/Root Zone Material Handling Contingency Measures</i>	<p>17. Implement the Soil Handling Contingency Plan (see Appendix B of this EPP) during topsoil/root zone material salvage if any of the following are encountered:</p> <ul style="list-style-type: none"> <li>• little or no topsoil/root zone material;</li> <li>• poor colour separation between topsoils and subsoils;</li> <li>• stony soils;</li> <li>• uneven surface on tame pasture;</li> <li>• wetlands; and</li> <li>• high winds or requests for alternate topsoil handling methods by a landowner and/or occupant.</li> </ul> <p>18. Salvage topsoil/root zone material in areas of equipment and vehicle travel where it is determined that soils may be prone to pulverization (see Soil/Sod Pulverization Contingency Plan provided in Appendix B of this EPP). Implement measures in the Soil/Sod Pulverization Contingency Plan where sod integrity on hay and/or tame pasture lands or topsoil has been disturbed to the extent that the soil/sod will not infill naturally in a reasonable time frame, or there is an unacceptably high risk of soil erosion. Pulverization may occur on unsalvaged, well-sodded lands, particularly on sandy soil and on cultivated lands with clay-textured soils.</p> <p>19. Implement the Wet/Thawed Soils Contingency Plan (see Appendix B of this EPP) during wet or thawed soil conditions when soils that are too wet for a particular activity. Soils will be considered to be excessively wet when the planned activity could cause damage to soils either due to rutting through the surface material into the subsoil; soil structure damage during soil handling; or compaction and associated pulverization of surface material due to heavy traffic. The decision to continue or suspend particular construction activities on lands with excessively wet/thawed soils will be made by the Construction Manager in consultation an Environmental Inspector.</p>
<i>Landowner Requests</i>	<p>20. Refer to the Line List or approval conditions received from the applicable Crown land authority for topsoil/root zone material handling requirements. Record any locations where requested topsoil/root zone materials handling methods differ from the planned method(s).</p>
<i>Topsoil/Root Zone Material Salvage – Non-Frozen Conditions</i>	<p>21. Salvage topsoil/root zone material from the footprint (<i>i.e.</i>, spoil storage and work areas) on level terrain, and from all areas to be graded on all land uses during non-frozen conditions (see Topsoil Salvage – Site Development Area Dwg. 5 provided in Appendix C of this EPP).</p> <p>22. Disc well-sodded lands prior to topsoil/root zone material salvage in order to facilitate topsoil salvage operations.</p> <p>23. Complete topsoil/root zone material salvage prior to freeze-up in areas where construction is initiated in non-frozen conditions, if feasible.</p>

Activity/Concern	Mitigation Measures
<i>Topsoil/ Root Zone Material Salvage – Camps and Stockpile Sites</i>	<p>24. Separate frozen topsoil/root zone material to the same depth as the salvage requirements using the Frost Plow, a frozen topsoil cutter or topsoil mulcher (or equivalent).</p> <p>25. Map the locations and install signage of topsoil/root zone material piles on as-built drawings to ensure that they can be easily located in the future to support reclamation efforts at the site.</p> <p>26. Should quantities of salvaged topsoil/root zone material reduce the practicality of on-site storage, apply for extra workspace adjacent to the site or haul excess material off-site for disposal at an approved location or as approved by Trans Mountain.</p> <p>27. If off-site movement of salvaged topsoil/root zone material or subsoil is required, adhere to conditions specified in the applicable permits.</p>
<i>Topsoil/Root Zone Material Salvage – Access Roads</i>	<p>28. Salvage topsoil/root zone material at access roads where grading, bar ditches, fill or other materials are necessary.</p> <p>29. Store all salvaged topsoil/root zone material from the new permanent or temporary access road bed area in windrows preferably along one, but maybe on both edges of the access road in a manner that does not alter natural drainage patterns.</p> <p>30. Implement appropriate weed control and erosion and sediment control measures on topsoil/root zone material stockpiles (see the WVMP provided in Section 5.5 of Volume 6 of the Environmental Plans).</p>
<i>Topsoil/Root Zone Material Salvage - Temporary Construction Lands and Infrastructure Development Area</i>	<p>31. Salvage topsoil/root zone material from the development area at all construction sites (see Topsoil Salvage – Site Development Area Dwg. 5 provided in Appendix C of this EPP).</p>
<i>Topsoil/Root Zone Material Salvage Depth</i>	<p>32. Salvage all available topsoil (minimum 10 cm and maximum 40 cm) and root zone material (minimum 15-20 cm or 50% organic material and 50% mineral soil). Where soils are not readily distinguishable by colour, an Environmental Inspector and Resource Specialist will provide direction based on an evaluation of soil texture and structure.</p>
<i>Peaty Soils</i>	<p>33. Salvage surface material in unsaturated wetlands and maintain dormant root stocks for replacement, where feasible. Salvage a maximum of 40 cm of surface soil if the peat is deeper than 40 cm or to the depth of colour change where there is less than 40 cm of surface material. Ensure a minimum of 15 cm of surface and subsoil is stripped if peat is less than 15 cm.</p>
<i>Stony Soils</i>	<p>34. Attempt to use conventional equipment (e.g., grader or dozer) to salvage stony topsoil/root zone material.</p>
<i>Treed/Shrub Land</i>	<p>35. Salvage the litter layer in addition to the surface soil.</p> <p>36. Salvage very shallow surface soils (i.e., organic and mineral soils) to at least a 15 cm depth, unless the material is unsuitable (e.g., bedrock, gravel and rock).</p>

Activity/Concern	Mitigation Measures
<i>Infrastructure and Utility Crossings</i>	<p>37. Salvage topsoil/root zone material from the area to be excavated at crossings of roads, rail lines and foreign lines to accommodate grading.</p> <p>38. Salvage topsoil from the area to be excavated plus 1 m on either side during frozen soil conditions.</p> <p>39. Salvage topsoil from an area larger than the excavation to allow feathering-out of spoil over the salvaged area.</p>
<i>Storage of Salvaged Topsoil/Root Zone Material</i>	<p>40. Store salvaged topsoil/root zone material as shown on the applicable soil handling drawings (See Topsoil Salvage – Site Development Area Dwg. 5 provided in Appendix C of this EPP). Consider the excavation equipment to be used, the depth and the width of the area to be salvaged, the local topography and the presence of nearby existing utilities when determining the location of salvaged topsoil/root zone material stockpiles on ancillary site.</p> <p>41. Place topsoil/root zone material windrows adjacent to the ancillary site, where practical. Maintain separation between topsoil/root zone material and grade spoil.</p>
<i>Wind Erosion</i>	<p>42. Tackify or apply water if the soils are likely to be prone to erosion by wind (see Soil Erosion and Sediment Control Contingency Plan in Appendix B of this EPP).</p> <p>43. Assess the wind erosion hazard, competency of the sod and potential for soil pulverization due to droughty soils. Implement measures applicable to droughty, wind erodible soils to reduce the effect of soil pulverization and wind erosion (see Soil/Sod Pulverization Contingency Plan provided in Appendix B of this EPP).</p>

Activity/Concern	Mitigation Measures
<i>Grading – Access Roads</i>	<p>44. Reduce grading along the access road, where practical and safe to do so. This measure applies within riparian areas and where ground conditions are considered competent enough to support equipment traffic without rutting or mixing soils (<i>i.e.</i>, are either frozen, have competent sod or vegetation or are matted).</p> <p>45. Limit grading on steep longitudinal slopes, except on sideslopes, which have to be graded for trafficability, unless safety concerns are identified.</p> <p>46. Store grade spoil on the boundary of the temporary construction lands and infrastructure construction site on relatively level ground. Take into consideration local topography and drainage when determining spoil storage locations. Maintain a minimum of 1 m separation between grade spoil storage piles and topsoil/root zone material stockpiles. Where separation cannot be maintained, utilize a physical barrier (<i>e.g.</i>, straw barrier, burlap, tarps or other material approved by an Environmental Inspector).</p> <p>47. Locate gaps in grade spoil windrows as outlined under the heading Snow Management and Windrow Gaps in this section of the Pipeline EPP.</p> <p>48. Store grade spoil in discrete piles or windrows for replacement during rough clean-up.</p> <p>49. Ensure that graded spoil does not migrate off the site by way of erosion or slumping. Containment berms may be required.</p> <p>50. Ensure that graded spoil is not mixed with topsoil or foreign material such as coarse woody debris.</p> <p>51. Clearly identify the topsoil/root zone material piles and grade spoil piles with signs or staking.</p> <p>52. Implement measures to prevent pooling and control surface water runoff.</p>
<i>Grading Near Watercourses and Wetlands</i>	<p>53. Install erosion and sediment control measures, where warranted, prior to commencing grading in the riparian buffer areas at water crossings.</p> <p>54. Salvage willows and/or other shrubs prior to grading at locations adjacent to watercourses and/or wetlands.</p> <p>55. Minimize grading at watercourses and wetlands to the area required to install the pipeline and provide access where required.</p> <p>56. Grade away from watercourses and wetlands into upland areas to reduce the risk of introduction of soil and organic debris. Keep organic wetland soils separate from mineral upland soils</p>
<i>Temporary Berms/ Sediment Fences</i>	<p>57. Erect sediment fence(s) around approach ramps to vehicle crossings at watercourses following grading of access roads (see Sediment Fence Dwg. 3 provided in Appendix C of this EPP). Inspect the temporary sediment control structures on a daily basis and repair, if warranted.</p>
<i>Monitor Soil Windrows</i>	<p>58. Monitor soils windrows during the growing season for erosion and weed growth until the soils are replaced. Implement additional mitigation measures to control erosion and weed growth, when warranted, as indicated in the Soil Erosion and Sediment Control Contingency Plan (Appendix B of this EPP).</p>

### 8.3 Vehicle Crossings at Watercourses

#### Introduction

The following mitigation measures may be implemented by Trans Mountain, its Contractors and/or subcontractors during the installation of vehicle and equipment crossings of watercourses and wetlands during construction of the temporary construction lands and infrastructure. Additional details regarding specific water crossings are provided in Appendix D of this EPP.

#### Objective

The objectives of these mitigation measures are to:

- avoid or reduce adverse environmental effects on fish and fish habitat, water quality and quantity;
- comply with the fish and fish habitat protection provisions of the federal *Fisheries Act*;
- comply with all applicable provincial regulatory requirements, including the AEP *Code of Practice for Watercourse Crossings* (Government of Alberta 2013b), the *Enhanced Approval Process* (EAP) - *Integrated Standards and Guidelines* (Government of Alberta 2013c), the Operating Conditions EAP (Government of Alberta 2011a), the Best Management Guidelines EAP (Government of Alberta 2011b), the BC OGC *Environmental Protection and Management Guide* (BC OGC 2015) and the BC *Water Sustainability Act* and *Water Regulation*;
- comply with all regulatory, permit and approval conditions;
- utilize environmentally and economically responsible construction practices at all times, and in accordance with applicable industry standards;
- maintain habitat quality at all vehicle crossings of watercourses;
- protect riparian areas in proximity to vehicle crossings of watercourses; and
- maintain the ecosystem function of riparian and wetland areas.

Activity/Concern	Mitigation Measures
Notification/ Approvals	<ol style="list-style-type: none"><li>1. Refer to permitting and notification requirements provided in Section 5.0 of this EPP. Ensure completion of the on-site checklist for vehicle crossings provided in Appendix F of this EPP for each classified watercourse and wetland prior to, during and following vehicle crossing construction. These checklists will be filled out by an Environmental Inspector. Retain these checklists as a permanent record of watercourse and wetland vehicle crossing installation.</li><li>2. Notify the Environmental Inspector 72 hours (minimum) prior to the commencement of bridge installation (vehicle crossing construction) (including activities within the riparian buffer).</li><li>3. Comply with notification and warning of recreational boaters under NEB guidelines or approvals, if applicable during vehicle crossing construction (see Section 5.0 of this EPP). Refer to the Navigation and Navigation Safety Plan (NEB Condition 48) provided in Section 8.5 of Volume 6 of the Environmental Plans.</li></ol>

Activity/Concern	Mitigation Measures
<i>Vehicle Crossings of Watercourses/Wetlands</i>	<ol style="list-style-type: none"> <li>4. Install the access at each watercourse and wetland using approved techniques as outlined in the Watercourse Crossing Inventory(Section 8.8 of Volume 6 of the Environmental Plans) unless otherwise approved. Ensure that the technique is implemented as per the reports, notifications and/or applications provided to applicable regulatory authorities.</li> <li>5. Ensure that all necessary equipment, personnel and materials are on-site and ready for vehicle crossing installation. Complete work as quickly as practical to limit the duration of disturbance.</li> <li>6. Prevent construction debris from entering a watercourse or wetland.</li> </ol>
<i>Guidelines - BC</i>	<ol style="list-style-type: none"> <li>7. Adhere to the best practices and measures for access road development in the vicinity of a watercourse or wetland, and adhere to the best practices and measures as follows including: <ul style="list-style-type: none"> <li>• A Users' Guide for Working in and Around Water (BC MOE 2005).</li> <li>• Standards and Best Practices for Instream Works (BC Ministry of Water, Land and Air Protection [BC MWLAP] 2004); and</li> <li>• Environmental Protection and Management Guideline (BC OGC 2016).</li> </ul> </li> </ol>
<i>COP for Watercourse Crossings - Alberta</i>	<ol style="list-style-type: none"> <li>8. Abide by procedures presented in the Qualified Aquatic Environment Specialist (QAES) reports and/or notifications prepared to satisfy the COP requirements for Watercourse Crossing.</li> </ol>
<i>Beaver Dams</i>	<ol style="list-style-type: none"> <li>9. Refer to Section 5.0 of this EPP for permitting/notification requirements pertaining to beaver dam removals. Breach the beaver dam in a controlled manner to avoid the rapid release of water that could cause erosion of the bed and banks, as well as subsequent sedimentation of downstream waters.</li> </ol>
<i>Floods Avoidances</i>	<ol style="list-style-type: none"> <li>10. Postpone vehicle crossing construction of watercourses if excessive flows or flood conditions are present or anticipated. Resume activities when water levels have subsided or equipment and/or techniques suitable for conditions are deployed. Implement the Flood and Excessive Flow Contingency Plan provided in Appendix B of this EPP.</li> </ol>
<i>Equipment</i>	<ol style="list-style-type: none"> <li>11. Wash equipment used instream where aquatic pests are an issue to ensure they are not transferred between watercourses.</li> <li>12. Review and adhere to the general mitigation measures provided in Section 7.0 of this EPP related to equipment washing, inspection of hydraulic, fuel and lubrication systems of equipment, equipment servicing and refuelling, as well as fuel storage in proximity to watercourses and wetlands during construction.</li> <li>13. Adhere to the measures outlined in the Biosecurity Management Plan (see Section 2.5 of Volume 6 of the Environmental Plans) for cleaning associated with aquatic pests.</li> <li>14. Ensure all equipment, including hoses and pumps are in good working condition and no leaks are observed.</li> </ol>



Activity/Concern	Mitigation Measures
<i>Equipment (cont'd)</i>	<p>15. Use non-toxic, biodegradable hydraulic fluids in all equipment that will work instream if flowing water will be encountered during watercourse crossing construction or in wetlands, as approved by an Environmental Inspector. In the event of a release, implement the measures in the Spill Contingency Plan (Appendix B of this EPP).</p> <p>16. The Contractor will ensure that all equipment, including hoses, is in good working condition and that no leaks are observed.</p>
<i>Riparian Buffers</i>	<p>17. Adhere to mitigation measures provided in Section 7.0 of this EPP regarding maintaining buffers within the vicinity of watercourses and wetlands. Refer to the Riparian Habitat Management Plan prepared to meet NEB Condition 71 (Section 8.7 of Volume 6 of the Environmental Plans) for more details about riparian areas.</p> <p>18. Reduce vegetation removal, particularly riparian vegetation removal for bridges, to only that which is necessary for safety and operational needs.</p> <p>19. Adhere to the measures provided in Section 7.0 of this EPP related to the maintenance of a vegetative mat within the riparian buffer zone on both sides of watercourse or wetland crossings.</p> <p>20. Ensure disturbance of the right-of-way is reduced within the functional riparian area of any watercourse or wetland.</p>
<i>Sediment Control</i>	<p>21. Install a temporary sediment barrier (e.g., sediment fences), where warranted, to eliminate the flow of sediment from soil material storage piles and disturbed areas into nearby watercourses or wetlands (see Sediment Fence Dwg. 3 provided in Appendix C of this EPP).</p> <p>22. Collect and filter sediment resulting from the washing of gravel and other streambed materials.</p> <p>23. Inspect temporary sediment control structures (e.g., sediment fences and subsoil berms) installed on approach slopes on a regular basis during construction of the temporary construction lands and infrastructure. Repair the structures, if warranted.</p>
<i>Topsoil/Root Zone Material Handling and Grading</i>	<p>24. Follow the measures outlined for topsoil/root zone material handling and grading in the vicinity of watercourses and wetlands provided in Section 7.0 of this EPP.</p>

## 9.0 ACCESS ROADS

### Introduction

The following mitigation measures may be implemented, as appropriate, by Trans Mountain, its Contractor and/or subcontractors on access roads during the construction the Project. Temporary construction lands and infrastructure is defined for the Project as preparatory works to be conducted prior to Project construction and includes works on access roads within the first 10 km of each designated construction spread. However, for the purpose of this Temporary Construction Lands and Infrastructure EPP, the environmental protection measures included for access roads encompass the whole road, not just the portion close to the pipeline right-of-way. An Access Road Planning Sheet will be prepared for temporary construction lands and infrastructure under or on deactivated/overgrown and new access roads prior to construction to address resource specific key issues and mitigation measures.

### Objective

The objective of these mitigation measures is to ensure that new temporary access roads and upgrades to existing roads and trails for use during pipeline construction are selected, designed, constructed, used and, where warranted, reclaimed in a manner that reduces or avoids adverse environmental effects.

Activity/Concern	Mitigation Measures
<i>Access Road Selection</i>	<ol style="list-style-type: none"> <li>1. Use existing access roads and trails, where they are available and can be safely and efficiently used to transport personnel and equipment, rather than develop new access.</li> <li>2. Align new access roads, where needed, to avoid watercourse crossings, wetlands, steep slopes, and sidehill terrain to the extent practical. Review the AMP (see Section 2.0 of Volume 6 of the Environmental Plans) for procedures developed to manage public access to areas with resource specific features and Crown and private grazing lands in interior BC.</li> </ol>
<i>Environmental Features</i>	<ol style="list-style-type: none"> <li>3. Align new access roads and complete upgrades to existing access roads during access road development (e.g., topsoil/root zone material salvage, grading and fill and gravel hauling/placement), in a manner to avoid environmental features, to the extent feasible.</li> </ol>
<i>Approvals</i>	<ol style="list-style-type: none"> <li>4. Review the notification and approval information provided in Section 5.0 of this EPP and ensure that all approvals and permits that are necessary for the development of new access roads or upgrades to existing roads or trails are in place prior to commencing access road development activities. Approvals may be necessary for the overall access road as well as associated issues or activities (e.g., heritage resources, clearing, vehicle crossings, watercourse and/or wetland crossings, blasting and water withdrawal).</li> </ol>
<i>Road Grade</i>	<ol style="list-style-type: none"> <li>5. Develop and/or upgrade deactivated/overgrown and new access roads only to the extent necessary to accommodate the intended construction traffic during the period of planned use.</li> </ol>

Activity/Concern	Mitigation Measures
<i>Staking/Flagging</i>	<ol style="list-style-type: none"> <li>6. Refer to mitigation measures provided under the Staking/Flagging and Signage headings in Section 6.0 of this EPP.</li> <li>7. Apply appropriate measures (e.g., signs, boundary markers, gates and fences) to ensure that construction vehicles remain on the designated access road right-of-way. Adhere to measures provided in the AMP (see Section 2.0 in Volume 6 of the Environmental Plans).</li> <li>8. Source borrow material for access roads from approved sites. Borrow material must be inspected and approved by an Environmental Inspector prior to import.</li> <li>9. Consider the use of geotextile to conserve borrow materials during access road development.</li> </ol>
<i>Extra TWS</i>	<ol style="list-style-type: none"> <li>10. Refer to measures pertaining to procedures regarding changes to Project Footprint provided in the CMP (Volume 10 of the Environmental Plans).</li> </ol>
<i>Access Road Development Schedule</i>	<ol style="list-style-type: none"> <li>11. Clear or mow areas of native vegetation outside the migratory bird nesting season to reduce the risk of birds nesting on new access roads and access roads requiring upgrading.</li> </ol>
<i>Socio-Economic</i>	<ol style="list-style-type: none"> <li>12. Ensure that construction vehicles abide by traffic control requirements (see AMP in Section 2.0 in Volume 6 of the Environmental Plans) to reduce effects of increased construction traffic to local residents, and reduce dust and noise.</li> <li>13. Adhere to the mitigation measures provided in the Traffic and Access Control Management Plan, prepared pursuant to NEB Condition 73.</li> </ol>
<i>Wildlife</i>	<ol style="list-style-type: none"> <li>14. Report all wildlife incidents to an Environmental Inspector who will take the necessary action, in consultation with the Appropriate Government Authority. Adhere to the measures outlined in the Wildlife Species of Concern Encounter and Discovery Contingency Plan (see Appendix B of this EPP).</li> </ol>
<i>Snow Management</i>	<ol style="list-style-type: none"> <li>15. Ensure snow bladed off roads is not windrowed at a height that prohibits proper visibility for drivers. If banks must be higher, gaps in the windrow will be placed to provide for wildlife passage at locations identified by an Environmental Inspector.</li> <li>16. Leave gaps in snow at obvious drainages, wildlife and trapping trails.</li> </ol>
<i>Access Road Topsoil or Root Zone Material Salvage</i>	<ol style="list-style-type: none"> <li>17. Salvage topsoil/root zone material at access roads where grading, bar ditches, fill or other materials are necessary.</li> <li>18. Salvage all topsoil or the upper 15 cm of root zone material, where present, for use during clean-up and closure of new access roads and access roads requiring upgrades, as approved by an Environmental Inspector.</li> <li>19. Store all salvaged topsoil or root zone material from the permanent access road bed area in windrows along one side preferably, but maybe on both sides of the access road in a manner that does not alter natural drainage patterns.</li> <li>20. Implement appropriate weed control and erosion and sediment control measures on topsoil/root zone material stockpiles (see the WVMP provided in Section 5.5 of Volume 6 of the Environmental Plans).</li> </ol>

Activity/Concern	Mitigation Measures
<i>Borrow Materials</i>	<p>21. Source borrow material for access roads from nearby sites, to the extent feasible. Borrow material must be reviewed and approved by an Environmental Inspector prior to import.</p> <p>22. Consider the use of geotextile to conserve borrow materials, snow or ice during access road development.</p>
<i>Drainage and Erosion Control</i>	<p>23. Ensure adequate drainage by maintaining the proper grade and installing culverts to allow for cross drainage. Outslope the crown of the road so that it is higher than at least one shoulder to allow the road surface to drain.</p> <p>24. Implement measures to control drainage and erosion (e.g., check dams, sediment traps and culverts), as warranted, during the development and use of new access roads and upgrading of existing roads or trails.</p> <p>25. Top the road with clean gravel, where warranted, from a source reviewed and approved by an Environmental Inspector. Consider using underlay felt liners, geotextile, filter mats or matting if the soil conditions and drainage are poor and there is potential for rutting and erosion.</p> <p>26. Monitor and repair erosion control measures and/or implement supplemental erosion and sediment control measures, as warranted, particularly in areas with increased risk of erosion and in the vicinity of watercourses and wetlands.</p> <p>27. Seed disturbed side slopes and bar ditches (if present) on new and upgraded roads with an approved seed mix (see the Reclamation Management Plan provided in Section 9.0 of Volume 6 of the Environmental Plans).</p> <p>28. Notify the applicable road authority of any planting activity, as necessary.</p>
<i>Culvert Installation</i>	<p>29. Ensure that culvert installation is conducted in accordance with DFO's Measures to Avoid Causing Harm to Fish and Fish Habitat (DFO 2013). In BC, adhere to the conditions listed in the Forest Road Engineering Guidebook in BC (BC Ministry of Forests 2002) and Section 11 of the Water Sustainability Act for changes in or about a stream. In Alberta, adhere to the Code of Practice for Watercourse Crossings (Government of Alberta 2013a) and the Design Guidelines for Bridge Size Culverts (AT 2004). Refer to the Association of Professional Engineers and Geoscientists of Alberta (APEGA) standards and guidelines, as appropriate and in consultation with the Project Engineer.</p> <p>30. Install culverts, where warranted, to prevent water ponding and allow surface runoff to cross under built-up access roads.</p> <p>31. Place rock armour at both ends of culverts to prevent erosion.</p> <p>32. In consultation with the Project Engineer, ensure that culverts of proper size, number and alignment are in place to handle peak runoff events for the period/duration that the culverts will be in place and to reduce water movement along ditches and road surface.</p> <p>33. Maintain natural drainage patterns by aligning culverts with the drainage.</p> <p>34. Ensure culverts are outfitted with appropriate cages where there is a higher risk of beaver activity.</p> <p>35. Provide adequate spillways, such as rock ditches or aprons, for culverts in unstable areas or where road-fill materials are unprotected.</p>

Activity/Concern	Mitigation Measures
<i>Culvert Installation (cont'd)</i>	<p>36. Provide sediment catch basins at the entrance to major culverts (<i>i.e.</i>, at the edges of the watercourse), as deemed necessary by the Appropriate Government Authorities.</p> <p>37. Install downspouts to transport runoff down a slope into constructed ditches where the outflow ends of culverts are located near the top of fill slopes. Do not obtain rock to be used in the construction of aprons (to be installed or repaired at culvert inlets or outlets) from within the normal high water level of a watercourse, wetland or lake. Place rocks at a slope similar to the culvert and channel in a manner that will not interfere with fish passage or constrict the channel width.</p> <p>38. Flag culvert ends. Periodically monitor culverts for blockages of flow and erosion at either end of the culvert. Conduct remedial measures, where warranted, to maintain cross drainage.</p>
<i>Culvert Maintenance</i>	<p>39. Monitor the effectiveness of culverts in handling surface drainage across temporary access roads following installation to ensure that surface drainage is not disrupted; implement remedial measures (<i>e.g.</i>, steaming of culverts), when warranted, to ensure that icings do not result in flooding or damage to vegetation in proximity to a culvert.</p> <p>40. Ensure culvert maintenance (<i>i.e.</i>, removing debris blockages and controlling erosion at a culvert inlet or outlet) is conducted in accordance with DFO's Measures to Avoid Causing Harm to Fish and Fish Habitat (DFO 2013) and adhere to the conditions listed in the Design Guidelines for Bridge Size Culverts in Alberta (Alberta Transportation 2004) and the Forest Road Engineering Guidebook in BC (BC Ministry of Forests 2002), as appropriate.</p> <p>41. Schedule culvert maintenance on fish-bearing watercourses to commence within the least-risk window (in BC) or outside of the applicable RAP (in Alberta) unless otherwise approved by the Appropriate Government Authority.</p> <p>42. Remove accumulated debris in a controlled and incremental manner to reduce the risk of flow surges, erosion and/or sedimentation of downstream areas. Remove or otherwise stabilize removed debris to prevent the debris from re entering the watercourse, wetland or lake.</p> <p>43. Consider the use of culvert screening, PVC piping, fencing or other beaver deterrents at culvert locations that are prone to damming by beaver. Ensure an Environmental Inspector is present during beaver dam removal and/or instream vehicle crossing modification activities and prepare a monitoring report of the activities.</p>
<i>Ditches</i>	<p>44. Ensure that ditches do not drain directly into a watercourse, wetland or lake unless limited by topography and approved by the Appropriate Government Authority. Install ditch blocks, where required.</p> <p>45. Rock-line "V" ditches where required on steep grades and slopes, and on scraper or rounded ditches, to minimize erosion and gulling.</p> <p>46. Adhere to the CAPP Environmental Operating Practices for the Upstream Petroleum Industry for BC – Geophysics (CAPP 2001) and the Field Guide for Erosion and Sediment Control (Government of Alberta 2011c) for recommended spacing gaps in berm installation to direct water to ditches.</p>

Activity/Concern	Mitigation Measures
<i>Peatland Areas</i>	<p>47. Use suitable materials (e.g., rip-rap or matting) in peatlands and other poorly drained areas to:</p> <ul style="list-style-type: none"> <li>• increase the load-bearing capacity;</li> <li>• prevent mixing of subgrade and fill; and</li> <li>• allow for the passage of water.</li> </ul> <p>48. Cross peatland areas only with winter roads (within Alberta and interior BC) and avoid permanent construction access, unless otherwise approved. Where this is not feasible, roads crossing peatland must preserve flow patterns within the area by having sufficient and frequent cross drainage to avoid flooding.</p> <p>49. Enhance vehicle support across peatlands (within Alberta and interior BC) by driving down the frost and decreasing the insulating snow cover. The Contractor will develop a frost packing plan for approval by an Environmental Inspector.</p> <p>50. Ensure that measures are taken to prevent breaking the surface crust of any peatland surface.</p> <p>51. Ensure that grade preparation does not compromise long-term wetland function.</p>
<i>Access Road Use and Maintenance</i>	<p>52. Do not use de-icer or salt for access road maintenance. Prevent sand used for maintenance purposes from entering watercourses by restricting use of sand within 10 m of watercourses, wetlands or lakes.</p> <p>53. Apply only water or non-toxic and non-persistent chemical products approved by an Environmental Inspector or designate to access roads for dust control at park locations or resource specific features including agricultural crop production areas, especially berry crops.</p> <p>54. Do not apply dust control chemicals to roads during windy conditions or within 300 m of a watercourse, wetland or lake or sensitive agricultural crops (e.g., berries, nurseries and organic farms). Dust control chemicals are to be approved by the Environmental Manager, or designate, in advance of application.</p> <p>55. Maintain side cuts in roads in a stabilized or revegetated condition to the extent feasible. Control chronic slumping problems that have the potential to contribute sediment to nearby watercourses.</p> <p>56. Remove access impediments (e.g., posts, large boulders and fencing) installed on existing roads that have been approved for construction access. Allow impediment removal for the purpose of facilitating access during active construction in the area. Install temporary blockades after work hours, where warranted, to control public access until permanent access control measures are re established. Control access during the work day where requested as per the Access Management Plan provided in Section 2.0 of Volume 6 of the Environmental Plans to be developed prior to the commencement of construction.</p> <p>57. During construction, use flagging, staking, fences or signs to delineate the boundaries of access roads, and environmental features of concern that require protection.</p> <p>58. Restrict construction traffic to the approved and marked access road, avoiding areas that are marked and abiding by any restrictions on in/out privileges that are implemented in areas requiring special protection.</p>

Activity/Concern	Mitigation Measures
<i>Access Road Use and Maintenance (cont'd)</i>	59. Apply appropriate measures (e.g., signs, boundary markers, gates and fences) to ensure that Project vehicles remain on the designated access.
<i>Speed Limits</i>	60. Ensure that all construction traffic adheres to posted speed limits on all access roads.
<i>Access Road Closure</i>	61. Where approved, block access to the public along new roads located within sensitive areas. Use adequate barricades such as jersey barriers, large boulders, fences or locking gates, where approved. Monitor road use and, where warranted, implement additional or alternative measures to ensure access is blocked.
<i>Access Road Reclamation</i>	<p>62. Avoid equipment access across watercourses once restoration measures have been implemented unless approved watercourse crossing installations are in place.</p> <p>63. Deactivate and reclaim temporary construction access that does not have a third-party disposition to native vegetation or pre-construction land use. Implement access controls on deactivated temporary roads.</p> <p>64. Remove and reclaim new temporary access roads developed for the Project upon completion of pipeline construction as outlined in the Access Management Plan and Reclamation Management Plan (Sections 2.1 and 9.0 of Volume 6 of the Environmental Plans), unless otherwise approved. Timing of removal and reclamation will vary depending on the season of construction.</p> <p>65. Close access roads no longer needed for the operation and maintenance of the pipeline. Where warranted and requested by the Appropriate Government Authority or private landowner, implement measures to deactivate and reclaim the access road including:</p> <ul style="list-style-type: none"> <li>• remove vehicle crossings at watercourses and reclaim associated disturbances;</li> <li>• remove cross drainage culverts and excavate a shallow ditch;</li> <li>• block off the access with the use of permanent fences with locked gates, boulders, ditches, rollback or other method suitable for the site;</li> <li>• alleviate compaction if warranted, recontour the road right-of-way and replace salvaged topsoil/root zone material;</li> <li>• install permanent erosion control structures such as cross ditches and berms; and</li> <li>• seed disturbed areas with an approved cover crop and/or grass mix and, where warranted, install biodegradable erosion control measures.</li> </ul>

## 9.1 Vehicle/Equipment Watercourse Crossings

The following mitigation measures may be implemented by Trans Mountain, its Contractors and/or subcontractors during the installation of vehicle/equipment crossings on access roads.

Activity/Concern	Mitigation Measures
<i>Vehicle Crossing Selection</i>	<ol style="list-style-type: none"> <li>1. Locate vehicle crossings at straight and stable reaches of watercourses, where practical.</li> <li>2. Use the vehicle crossing method identified on the Watercourse Crossing Inventory (Section 8.8 of Volume 6 of the Environmental Plans) for watercourses crossed by access roads, unless otherwise approved.</li> <li>3. Ensure that upgraded or new vehicle crossing structures are appropriate for the watercourse approaches, channel width and configuration, anticipated streamflows during the period of use, planned vehicle loads, and overall period/duration of use.</li> <li>4. Install temporary vehicle crossings in a manner that protects the bed and banks of watercourses from erosion, maintains flow, does not disrupt fish passage and does not interfere with or impede navigation.</li> <li>5. Consider alternate methods of vehicle crossings on a site-specific basis. The decision-making process will include the Contractor, the Construction Manager, an Environmental Inspector and, a QAES/Qualified Environmental Professional (QEP), and will follow the MOC process (see the CMP, Volume 10 of the Environmental Plans). Criteria to be considered when making a vehicle/equipment crossing structure decision will include protection of the riparian vegetation, bank height and material, channel width, anticipated streamflow volumes during the period of use and fisheries values associated with the crossing location, navigability, the time of year and duration the crossing is required for, as well as applicable legislation and guides.</li> </ol>
<i>Bridges</i>	<ol style="list-style-type: none"> <li>6. Ensure that bridges are clean prior to installation (see Vehicle Crossing – Typical Clear Span Dwg. 6 provided in Appendix C of this EPP).</li> <li>7. Abide by plans and/or notifications submitted to DFO and the Alberta Energy Regulator (AER)/BC OGC/BC MFLNRO when installing vehicle crossing structures across wetlands. Ensure that all vehicle crossings are installed in accordance with the applicable provincial COP requirements and BC Water Sustainability Act requirements for changes in and about a stream.</li> <li>8. Ramp wetlands with clean snow and ice from the surrounding area, if feasible, when constructing during frozen conditions.</li> <li>9. Plow and store snow for use in snowfill vehicle crossings prior to commencing earth-moving activities in order to maintain the snow in a clean condition and suitable for use in the construction of a snowfill vehicle crossing</li> <li>10. Ensure that bridge installation does not alter the streambed or banks, or require infilling of the channel. Install the entire bridge, including footings and armouring, above the high watermark of the watercourse, unless otherwise approved by the appropriate regulatory authorities.</li> <li>11. Create approaches to the water crossing perpendicular to the channel of the watercourse.</li> </ol>



Activity/Concern	Mitigation Measures
<i>Bridges (cont'd)</i>	<p>12. Implement erosion and sediment controls on bridge decks, side rails and approaches, immediately following installation, and maintain the bridge in working order during use. Remove bridge support structures and approach fills after use and re-establish and stabilize banks. Ensure that the applicable regulatory authority (e.g., AER, BC OGC and/or BC MFLNRO) is notified if the bridge is planned to remain in place through spring breakup or other flood prone periods. Ensure that bridges are designed for potential spring floods and ice jams if the bridge is to remain in place year-round.</p> <p>13. Remove bar ditch ramps and reclaim temporary access to stable conditions.</p> <p>14. Stabilize and revegetate areas disturbed during installation and removal of a bridge; install erosion and sediment control measures, where warranted, to control surface erosion and sedimentation until vegetation is established.</p>
<i>Temporary Fords</i>	<p>15. Limit the use of fords on the Project. Ensure that all forded crossings are approved by an Environmental Inspector and, where applicable, a QAES/QEP.</p> <p>16. Confine the use of fords to watercourses or segments of watercourses with low, stable banks and a stable substrate composed of materials such as gravel or bedrock, or to seasonally dry streambeds. Do not grade banks to create a ford. (see Vehicle Crossing – Typical Ford Dwg. 7 in Appendix C of this EPP).</p> <p>17. Ensure a one-time only crossing (i.e., over and back) if a ford is required and approved by an Environmental Inspector to facilitate a vehicle crossing installation and/or removal.</p> <p>18. Confine fording to periods of low flow when water depth will not impede passage of equipment.</p> <p>19. Install matting, where warranted, to protect the bed and banks of a watercourse to be forded.</p>
<i>Closed and Open Culverts</i>	<p>20. Use closed bottom culverts to provide temporary vehicle access at nonfish-bearing watercourses. Ensure compliance with all respective provincial guidelines (e.g., BC MOE, BC OGC and, COPs [Alberta]) when installing closed bottom culverts (see Vehicle Crossing – Ramp and Culvert Dwg. 8 in Appendix C).</p> <p>21. Use open bottom culverts on both fish-bearing and nonfish-bearing watercourses. Ensure compliance with all respective provincial guidelines (e.g., BC MOE, BC OGC and, COPs [Alberta]) when installing open bottom culverts (see Vehicle Crossing – Ramp and Culvert Dwg. 8 in Appendix C).</p>

The following is an example of the information that will be included on Access Road Planning Sheets to be prepared for all additional access roads developed at the field level.

**Access Road:** \_\_\_\_\_ **Name:** \_\_\_\_\_ **Nearest KP or Landmark:** \_\_\_\_\_

**Land Reservation:** \_\_\_\_\_ **Use Period:** \_\_\_\_\_

**UTMs:** \_\_\_\_\_ **to** \_\_\_\_\_

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### APPLICABLE KEY MITIGATION MEASURES

**Access Road Description**

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**Water Crossing:**

Yes: \_\_\_ No: \_\_\_

Vehicle Crossing Type: \_\_\_\_\_

Instream Period of Least Risk (BC): \_\_\_\_\_

Restricted Activity Period (Alberta): \_\_\_\_\_

**Vegetation Removal:**

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**Blasting:**

Timing Constraint: \_\_\_\_\_

**Topsoil/Root Zone Material  
Salvage and Grading:**

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**Fill Source Material:**

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**Washing Requirements  
(e.g., weeds)**

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**Reclamation:**

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## 10.0 ANCILLARY SITES

### Introduction

The following mitigation measures will be implemented by Trans Mountain, its Contractor and/or sub-contractors, as warranted, during construction of temporary construction lands and infrastructure to support pipeline construction. Due to the remote location of portions of the Project area, ancillary sites are necessary at various locations throughout construction. Ancillary sites, including pipe storage areas, temporary construction camps and contractor yards (e.g., construction staging, material storage, equipment rig-up and marshalling areas, setting up temporary construction trailers, fabrication work, safety and environmental training) were selected within previously disturbed areas, to the extent feasible. A Temporary Construction Lands and Infrastructure Planning Sheet (see example provided at the end of this section) will be prepared prior to construction to address resource specific key issues and mitigation measures to be implemented for each site.

### Objective

The objective of the following mitigation measures is to ensure that temporary construction lands and infrastructure needed to support pipeline construction are located, designed, constructed, used and, where warranted, reclaimed in a manner that reduces or avoids adverse environmental effects.

Activity/Concern	Mitigation Measures
<i>Ancillary Site Selection</i>	<ol style="list-style-type: none"> <li>1. In the event that the selected ancillary site needs to be relocated prior to the commencement of construction, to the extent feasible, combine various temporary facilities at common sites to reduce the overall Project Footprint and centralize supply points.</li> <li>2. In the event that temporary construction camp locations are reselected, locate new temporary construction camps on flat, well-drained mineral soils (avoid gravel pits, unless sewage will be contained) on previously disturbed areas and near existing infrastructure, where feasible.</li> </ol>
<i>Reduce Disturbances</i>	<ol style="list-style-type: none"> <li>3. Avoid creating new disturbances and the use of treed areas or native grasslands for temporary construction lands and infrastructure, to the extent feasible.</li> <li>4. Reduce grading to promote the restoration of native vegetation following use of the site where disturbance of native vegetation cannot be avoided.</li> </ol>
<i>Approvals and Permits</i>	<ol style="list-style-type: none"> <li>5. Refer to measures pertaining to permitting/notifications provided in Sections 4.0 and 5.0, respectively of this EPP.</li> </ol>
<i>Staking/Flagging/Fencing</i>	<ol style="list-style-type: none"> <li>6. Refer to mitigation measures provided under the Staking/Flagging/Fencing and Signage headings in Section 6.0 of this EPP.</li> </ol>
<i>Fire Prevention</i>	<ol style="list-style-type: none"> <li>7. Ensure that ancillary sites are located in previously cleared areas or natural clearing, wherever feasible, and at a recommended distance of not less than 30 m to the closest standing timber, where feasible.</li> </ol>
<i>Lighting</i>	<ol style="list-style-type: none"> <li>8. Direct lighting for ancillary sites downward and positioned to avoid or reduce interference of wildlife and nearby residents and land users, if applicable.</li> </ol>
<i>Access Roads</i>	<ol style="list-style-type: none"> <li>9. Adhere to the measures related to access road construction provided in Section 9.0 of this EPP.</li> </ol>
<i>Riparian Areas</i>	<ol style="list-style-type: none"> <li>10. Ensure that selected sites are located outside of riparian areas.</li> </ol>
<i>Site Fencing</i>	<ol style="list-style-type: none"> <li>11. Install temporary fencing around construction camps to reduce the attraction of wildlife and to provide security for the site.</li> </ol>

Activity/Concern	Mitigation Measures
<i>Extra TWS</i>	12. Obtain approval from the Construction Manager or designate and an Environmental Inspector prior to taking TWS in the field. Refer to the MOC process outlined in the CMP (Volume 10 of the Environmental Plans) when modification of the Temporary Construction Lands and Infrastructure EPP measures are warranted.
<i>Topsoil/Root Zone Material Handling and Grading</i>	13. Salvage topsoil/root zone material, where present, from all sites to be graded. 14. Grade the surface to facilitate surface drainage into water conveyance features (e.g., ditches and culverts). 15. Ensure that graded material does not spread off-site. 16. Refer to Section 8.2 of this EPP for further information on topsoil/root zone material handling and grading.
<i>Gravel</i>	17. In areas where a gravel pad is required (i.e., where temporary infrastructure will be installed and in areas that will be subject to travel that may cause excessive dust) grade the gravel pad in such a manner as to ensure that the pad does not interfere with the local surface drainage pattern.
<i>Erosion and Sediment Control</i>	18. Install temporary erosion and sediment control structures, where warranted. Install sediment fences in select areas around the perimeter of ancillary sites to restrict sediment-laden runoff from flowing into a watercourse, wetland or lake, if warranted.
<i>Snow Management</i>	19. Stockpile excess snow to the edge of the site or at a location where it will not interfere with site operations. Store mixtures of snow and soil in a manner that prevents sedimentation of watercourses and/or wetlands during spring breakup and install sediment control structures, where warranted.
<i>Potable Water</i>	20. Haul potable water to the construction camps or source from permitted water wells in accordance with approval conditions.
<i>Water Withdrawal and Discharge Procedures</i>	21. Refer to the Water Withdrawal and Discharge Procedures Management Plan (see Section 8.6 in Volume 6 of the Environmental Plans).
<i>Construction Camp Waste Disposal</i>	22. Adhere to all federal, provincial, regional and municipal waste legislation and regulations. 23. Ensure that the wastewater disposal facilities are operated by qualified personnel. 24. Collect, transport, store and dispose of solid waste in such a manner that: <ul style="list-style-type: none"> <li>• insects and wildlife are not attracted;</li> <li>• disease vectors are eliminated;</li> <li>• health and safety hazards do not result;</li> <li>• unsightly conditions do not develop;</li> <li>• odour emissions are avoided or reduced; and</li> <li>• secondary pollution problems do not develop due to runoff, leachates or emissions.</li> </ul>

Activity/Concern	Mitigation Measures
<i>Construction Camp Waste Disposal (cont'd)</i>	<p>25. Ensure that wastes are recycled, where practical.</p> <p>26. Store kitchen waste indoors prior to incineration.</p> <p>27. Burn combustible garbage in a camp incinerator designed and operated in accordance with applicable provincial requirements. Compact and haul non-combustible garbage to approved disposal sites.</p> <p>28. Ensure the applicable provincial permits and/or authorizations are in place prior to incinerating waste (e.g., in BC, an air emissions permit is required for incineration of solid waste at camps with more than 100 persons).</p> <p>29. Process and dispose of sewage and grey water generated by construction camps in accordance with provincial legislation, regional and municipal requirements.</p>
<i>Sewage Handling - BC</i>	30. Design and operate sewage facilities in accordance with the BC Sewage System Regulation or the BC Municipal Wastewater Regulation (MWR) and the BC Industrial Camp Regulations under the Public Health Act. Sewage facilities in camps of more than 100 people are subject to requirements of a permit issued by the regional Health Authority.
<i>Sewage Handling - Alberta</i>	31. Implement sewage treatment at temporary construction camps as outlined in the Alberta Private Sewage Systems Standard of Practice (Alberta Private Sewage Codes and Standards 2009).
<i>Fuel Storage at Temporary Construction Lands and Infrastructure</i>	<p>32. Use borrow material to level the fuel storage site, where warranted.</p> <p>33. Store above ground fuel storage tanks in accordance with applicable National Fire Code of Canada (National Research Council of Canada 2015) requirements, as outlined in the Fire Contingency Plan (see Appendix B of this EPP). Adhere to conditions for Petroleum Storage Tanks (National Research Council of Canada 2014) and conditions listed in A Field Guide to Fuel Handling, Transportation and Storage in BC (BC MWLAP 2002).</p>
<i>Fuel Storage Facilities at Construction Camps</i>	34. Storage of fuel at construction camps will be limited to quantities required only for several days of construction activities. Fuel, oil or hazardous wastes required to be stored on-site will be stored within secondary containment that is to be located greater than 100 m from a watercourse, wetland or lake.
<i>Fuel Delivery to Construction Camps</i>	35. Deliver fuel to the storage site at the construction camps by truck from bulk fuel suppliers.
<i>Equipment Storage at Construction Camps</i>	36. Store equipment, consumables, tools, parts and miscellaneous materials in an orderly manner.
<i>Construction Camp Rules</i>	37. Restrict or prohibit leisure hour access to areas where environmentally sensitive habitats, heritage resource sites, or other resources, have been specifically identified and formalized in camp rules as areas not to be disturbed.

## EXAMPLE TEMPORARY CONSTRUCTION LANDS AND INFRASTRUCTURE PLANNING SHEET

The following is an example of the information that will be included on Temporary Construction Lands and Infrastructure Planning Sheets to be prepared for each site. Note that not all of the features listed below will be applicable for each site.

### TEMPORARY CONSTRUCTION LANDS AND INFRASTRUCTURE OVERVIEW

Site Information:	Site No.:	Reservation No.:	UTM: Northing:	Nearest KP:	Hectares:
	_____	_____	_____	_____	_____
			Easting: _____		
Site Use Period:	_____ to _____				
Planned Use:	_____ _____				
Site Status (New/Previously Disturbed):	_____ _____				
Access Road Status (New/Existing):	_____ _____				
Environmental/ Socio-Economic Issue(s):	_____ _____ _____ _____				

### APPLICABLE KEY MITIGATION MEASURES

Equipment Siting (e.g., lighting, wind sock for helipads and pipe):	_____
Vegetation Removal:	_____ _____
Wildlife:	Timing Constraint: _____
Soil Salvage and Grading:	_____ _____ _____
Source Material:	_____
Fuel Storage:	_____ _____ _____
Reclamation:	_____

### TEMPORARY CONSTRUCTION CAMP OVERVIEW

**Construction Camp Site:**      **Name:** \_\_\_\_\_      **Nearest KP:** \_\_\_\_\_  
   **Reservation No.:** \_\_\_\_\_      **Use Period:** \_\_\_\_\_  
   **UTMs:** \_\_\_\_\_      **to** \_\_\_\_\_  
   **Hectares:** \_\_\_\_\_

**Site Status**  
**(New/Previously Disturbed):** \_\_\_\_\_

**Access Road Status**  
**(New/Existing):** \_\_\_\_\_

**Environmental /**  
**Socio-Economic Issue(s):** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### APPLICABLE KEY MITIGATION MEASURES

**Equipment Siting**  
**(e.g., sewage lagoon, fuel**  
**storage, generator[s]):** \_\_\_\_\_  
\_\_\_\_\_

**Vegetation Removal:** \_\_\_\_\_  
\_\_\_\_\_

**Wildlife:** \_\_\_\_\_  
\_\_\_\_\_

**Soil Salvage and Grading:** \_\_\_\_\_  
\_\_\_\_\_

**Sewage Lagoon:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Fuel Storage:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Reclamation:** \_\_\_\_\_



## 11.0 BORROW SITES

### Introduction

Borrow material will be required for facility site pads and access roads. Sand and gravel may also be used to produce cement. The following will be taken into consideration by Trans Mountain, the Contractor and sub-contractors:

- quantities and locations where borrow material is required may change;
- borrow sources may not have sufficient quantity or quality of material once they are explored prior to development and additional sources may be required; or
- environmental, ownership and permitting concerns may arise over specific borrow sources.

The environmental mitigation measures provided are applicable to all work areas throughout the development, operation and, when warranted, reclamation of borrow sites. A Borrow Site Planning Sheet will be prepared prior to construction to address resource specific key issues and mitigation measures to be implemented for each site (see example at the end of Section 11.0 of this EPP).

### Objective

The objective of the following mitigation measures is to ensure potential adverse environmental effects associated with development, operation and, when warranted, reclamation of borrow sites for the Project are reduced or avoided.

Activity/Concern	Mitigation Measures
<i>Approvals and Permits</i>	1. Refer to measures pertaining to notifications and permitting provided in Section 5.0 of this EPP.
<i>Resource Specific Environmental and Socio-Economic Features</i>	2. Refer to measures pertaining to staking/flagging/fencing provided in Section 6.0 of this EPP.
<i>Pit Development Plan</i>	3. Review the Pit Development Plan (to be developed by the pit operator and provided under separate cover prior to construction) and ensure all conditions and approvals are in place prior to the commencement of pit development.
<i>Access Roads</i>	4. Adhere to the measures related to access road construction provided in Section 9.0 of this EPP.
<i>Site Fencing</i>	5. Install temporary fences around borrow sites to reduce harm to wildlife and provide security for the site.
<i>Lighting</i>	6. Direct lighting for borrow sites downward and, where feasible, position it to avoid or reduce annoyance of nearby residents and land users.
<i>Visual Screen</i>	7. Maintain an undisturbed vegetation screen between a new borrow site and an adjacent road, where applicable.
<i>Slash Disposal</i>	8. Refer to Section 8.1 of this EPP for protection measures associated with slash disposal.

Activity/Concern	Mitigation Measures
<i>Topsoil/Root Zone Material Salvage</i>	<p>9. Salvage topsoil/root zone material, subsoils (e.g., B &amp; C soil horizons) in separate lifts to a maximum depth of 1.2 m, prior to removing overburden, where present, from new borrow sites and portions of existing borrow sites where the excavation is to be expanded, from material stockpile sites and material processing or other equipment sites. Extend soil salvage a minimum of 5 m beyond the planned rim of the excavation, material stockpile site or other equipment site.</p> <p>10. Store salvaged topsoil/root zone material, subsoils and overburden separately, to avoid admixing, in low berms along the upslope boundaries of the borrow pit or elsewhere that will avoid disruption of natural drainage and subsequent disturbance during operation of the site.</p> <p>11. Refer to Section 8.2 of this EPP for further information on topsoil/root zone material handling.</p>
<i>Fuel Storage</i>	<p>12. Store above ground fuel storage tanks in accordance with applicable National Fire Code of Canada (Government of Canada 2015) requirements, as outlined in the Spill Contingency Plan (see Appendix B). Furthermore, adhere to conditions for Petroleum Storage Tanks (AEP 2013) in Alberta and conditions listed in A Field Guide to Fuel Handling, Transportation and Storage in BC (BC MWLAP 2002).</p>
<i>Waste Disposal</i>	<p>13. Adhere to the waste disposal measures outlined in the Waste Management Plan (see Section 3.1 in Volume 6 of the Environmental Plans).</p>
<i>Dust Control</i>	<p>14. Adhere to the measures provided in Section 8.2 of this EPP for dust control.</p> <p>15. Install dust skirts on stockpiling and loading equipment to limit dust emissions where the potential for generation of large quantities of fugitive dust exists.</p>
<i>Excavation Depth</i>	<p>16. Ensure that the excavation of borrow material does not extend within 1 m minimum of a water table.</p>
<i>Drainage</i>	<p>17. Grade borrow sites, where feasible, to maintain natural surface drainage or drainage structures. Install ditches or berms to direct stormwater surface drainage around the borrow site.</p>
<i>Retention/Settling Ponds</i>	<p>18. Create retention ponds, where warranted, using the BC Dam Safety Review Guidelines (BC MFLNRO 2014), Canadian Dam Safety Guidelines (Canadian Dam Association 2007), Stormwater Management Guidelines for the Province of Alberta (Alberta Environmental Protection 1999), and Aggregate Operators Best Management Practices Handbook for BC (BC Ministry of Energy and Mines 2002) as a guide to hold sediment-laden stormwater run-off until the sediment has settled.</p> <p>19. Conduct discharge of water from retention ponds as outlined in the Water Withdrawal and Discharge Procedures Management Plan (see Section 8.0 in Volume 6 of the Environmental Plans). Size settling ponds created, where warranted, to hold wash water and allow sediment to settle to allow a capacity of 110% minimum of the volume of the wash water.</p>

Activity/Concern	Mitigation Measures
<i>Water Withdrawal and Discharge</i>	<ol style="list-style-type: none"> <li>20. Ensure that applicable approvals are in place prior to the withdrawal or discharge of water used for washing or arising from other operations at borrow sites. Follow all approval conditions.</li> <li>21. Ensure that withdrawal rates do not exceed 10% of the natural volume of the source waterbody, unless otherwise approved by the Appropriate Government Authority.</li> <li>22. Suspend or reduce the rate of water withdrawal in the event that the approved minimum flow or depth of water in the watercourse or wetland is reached during a water withdrawal. Maintain suspended or reduced withdrawal rates until the water flows or depths exceed the approved levels. Discharge water from a settling pond, retention pond or other stormwater site onto the borrow site, if feasible. Avoid discharging this water into a watercourse/wetland without the approval of an Environmental Inspector and acquisition of applicable approvals.</li> <li>23. Do not exceed the provincial or federal water quality limits (e.g., Canadian Council of Ministers of the Environment 2012, BC Water Quality Guidelines) of wash or other water discharged from a borrow site directly into a watercourse, wetland or lake that supports fish or provides fish habitat.</li> <li>24. Discharge locations will be preferentially selected to dewater onto stable terrain areas rather than directly into a watercourse, wetland or lake where the water will be filtered through vegetation and soils prior to returning to a watercourse or wetland. Locations for dewatering will be into bar ditches, if feasible, or onto non-arable lands. Sediment reduction methods will be implemented on the bed, banks and approaches to the water source or discharge site, if warranted, to protect downstream fish, fish habitat and water users from increased sedimentation or reduced water quality. Discharge locations will be monitored to ensure that no erosion, flooding or icing occurs.</li> <li>25. Reduce water energy with the use of a dissipater and protective rock rip-rap, sheeting, tarpaulins or other equivalent materials to reduce or avoid the potential for erosion of soils during water discharge activities. The rate of discharge will also be reduced if downstream or terrestrial flooding appears to be imminent, particularly when discharge occurs during frozen conditions.</li> </ol>
<i>Flood Plain Sites</i>	<ol style="list-style-type: none"> <li>26. Avoid developing new borrow pits in flood plains, to the extent feasible. If feasible, existing and new borrow pits in upland environments will be selected for use before a new pit is developed in a flood plain. Avoid stockpiling materials excavated from a borrow site on ice, in a wetland or on a flood plain that shows evidence of active lateral migration, as determined by the appropriate regulatory authority.</li> <li>27. Maintain 100 m minimum buffer zone between the channel zone and the active portion of the borrow site if situated on a flood plain.</li> <li>28. Ensure that the depth of excavation within an active flood plain does not extend into the water table.</li> <li>29. Remove borrow equipment and/or construct dikes prior to a flooding event to avoid flows through a borrow site.</li> <li>30. Prohibit the storage of fuels, lubricants and other materials hazardous to fish and wildlife at borrow sites located on flood plains.</li> </ol>

Activity/Concern	Mitigation Measures
<i>Flood Plain Sites</i> <i>(cont'd)</i>	31. Ensure that borrow sites located on an active flood plain are not located on the outside of watercourse bends or adjacent to actively eroding banks.
<i>Noise Emissions</i>	32. Consider the type and placement of equipment to be used at the borrow site during the preparation of the Pit Development Plan for each borrow site in order to reduce the noise disturbance of residents and sensitive wildlife in the vicinity.

## EXAMPLE BORROW SITE PLANNING SHEET

The following is an example of the information that will be included on Borrow Site Planning Sheet to be prepared for each borrow site.

### BORROW SITE OVERVIEW

<b>Borrow Site:</b>	<b>Site No.:</b> _____	<b>Reservation No.:</b> _____	<b>UTM:</b> Northing: _____ Easting: _____	<b>Nearest KP:</b> _____
<b>Borrow Site Development Period:</b>	_____ to _____			
<b>Extraction/Hauling Period(s):</b>	_____ to _____			
<b>Site Status (New/Previously Disturbed):</b>	_____			
<b>Access Road Status (New/Existing):</b>	_____			
<b>Environmental/ Socio-Economic Issue(s):</b>	_____ _____ _____ _____ _____			

### APPLICABLE KEY MITIGATION MEASURES

<b>Equipment Siting (e.g., crusher, settling pond and lighting):</b>	_____ _____
<b>Water Crossing:</b>	Yes: ____ No: ____ Vehicle Crossing Type: _____ Instream Period of Least Risk (BC): _____ Restricted Activity Period (Alberta): _____
<b>Vegetation Removal: Flood Plain:</b>	_____ _____
<b>Blasting:</b>	_____
<b>Topsoil/Root Zone Material Salvage:</b>	_____ _____
<b>Fuel Storage:</b>	_____ _____ _____
<b>Washing Requirements and Source Water:</b>	_____ _____
<b>Settling Pond:</b>	_____
<b>Reclamation:</b>	_____

## 12.0 MARINE CONSTRUCTION MITIGATION MEASURES

### Introduction

Sites that involve marine construction are outlined in Table D-1.

### Objective

The objective of the following mitigation measures is to avoid or reduce potential adverse environmental effects associated with marine construction of the temporary construction lands and infrastructure.

Activity/Concern	Mitigation Measures
<i>Permits and Approvals</i>	1. If required, obtain a <i>Fisheries Act</i> Authorization (Section 35(2)) from DFO for activities that are likely to cause residual serious harm to fish, prior to the commencement of marine construction.
<i>Permit Conditions</i>	2. Comply with conditions outlined in authorizations and/or permits and approvals during marine construction.
<i>Schedule</i>	3. Schedule work for daylight hours, where feasible. Refer to mitigation for lighting below for construction activities undertaken during the night. 4. Conduct in-water impact pile driving during daylight hours only. 5. Conduct in-water installation of temporary trestle piles, mooring piles, and spuds during the DFO least-risk work window for Burrard Inlet (August 16 to February 28).
<i>Lighting</i>	6. Where feasible, prevent sky-lighting by: <ul style="list-style-type: none"> <li>• using low-level and low-intensity lighting;</li> <li>• using no lighting in areas where no work is planned; using downturned shaded fixtures in light standards; and</li> <li>• using a higher lumen/watt (light out to power in) ratio, such as metal halide lighting.</li> </ul> 7. During periods of bird migration and/or during extreme weather events, bird strike warnings will be issued to marine construction vessels with a request to reduce deck lighting. 8. Direct lighting for construction activities downward and, where feasible, position lighting to avoid or reduce annoyance of nearby residents. 9. Use lighting in the yellow spectrum, where feasible, to reduce disruption to nocturnal fish activities and to limit bird strikes.
<i>Spill Prevention</i>	10. Report spills immediately to an Environmental Inspector, who will notify the Senior Compliance Advisor for reporting to the Appropriate Government Authorities in accordance with the Spill Contingency Plan (see Appendix B of this EPP). 11. Maintain appropriate spill equipment at work sites. Assess the risk of spills in advance of construction, or in advance of new construction activities, to determine the appropriate type and the quantity of spill response equipment and materials to be stored on-site in a suitable location. Verify that Operators and on-site Construction Foremen are trained to contain spills or leakage from equipment.

Activity/Concern	Mitigation Measures
<i>Spill Prevention (cont'd)</i>	<ol style="list-style-type: none"> <li>12. Post specific instructions at the field construction offices and in construction environmental training handbooks regarding applicable contacts and appropriate response actions to be taken in the event of a spill, including the measures provided in the Spill Contingency Plan (see Appendix B of this EPP) and contacts for spill reporting (see Appendix A of this EPP).</li> <li>13. Place an impervious tarp or drip tray underneath equipment and vehicles when performing service and routine maintenance (e.g., oil changes and servicing of hydraulic systems).</li> <li>14. Store hazardous substances and fuels in proper containment systems, to reduce potential for release to the environment. Handle hazardous wastes in accordance with applicable WHMIS protocols.</li> <li>15. During construction, no fuel, lubricating fluids, hydraulic fluids, methanol, antifreeze, herbicides, biocides or other chemicals will be dumped onto the ground or into the marine environment. In the event of a spill onshore that does not have the potential to migrate into the marine environment, implement the Spill Contingency Plan (see Appendix B of this EPP). In the event of a spill in the marine environment or onshore with the potential to migrate into the marine environment, implement the Marine Spill Contingency Plan (see Appendix B of this EPP).</li> <li>16. Bulk fuel trucks, service vehicles and pick-up trucks equipped with box-mounted fuel tanks will carry spill prevention, containment and clean-up materials that are suitable for the volume of fuels or oils carried. Carry spill response supplies on bulk fuel and service vehicles that are suitable for use on land and water (i.e., sorbent pads, sorbent boom and rope).</li> <li>17. Employ the following measures to limit the risk of fuel spills into waterbodies if refueling within 100 m of the marine environment is necessary and is approved by an Environmental Inspector: <ul style="list-style-type: none"> <li>• containers, hoses and nozzles are free of leaks;</li> <li>• fuel nozzles are equipped with automatic shut-offs;</li> <li>• Operators are stationed at both ends of the hose during fuelling, unless the ends are visible and readily accessible by one Operator; and</li> <li>• fuel remaining in the hose is returned to the storage facility.</li> </ul> </li> <li>18. Do not wash equipment or machinery in the marine environment.</li> </ol>

Activity/Concern	Mitigation Measures
<i>Access</i>	<p>19. For access to the marine construction area with the Contractor's registered marine vessels, vessels will be approved for the Project, inspected and certified fit for use by the Contractor or their designate.</p> <p>20. Identify terrestrial access routes to the marine construction footprint from designated staging and/or laydown areas.</p> <p>21. Maintain a list of personnel and vessels eligible to access the marine construction site.</p> <p>22. Use existing roads for access to the Commissioner Street (VersaCold) [VAN048] construction footprint. If additional temporary access roads are required at or near the shoreline, they will be constructed of granular fill over a geotextile and removed after construction is completed. Discuss access road siting and mitigation requirements (e.g., sediment fencing) with an Environmental Inspector.</p>
<i>Recreational Activities</i>	<p>23. Prohibit marine recreational activities (e.g., boating, fishing, swimming and diving) by Project personnel on or in the vicinity of the two waterlots at the VersaCold site.</p>
<i>Construction Vessel Traffic</i>	<p>24. Verify that Project vessels are equipped with a high-frequency radio with appropriate channels to monitor vessel traffic in the Project area.</p> <p>25. Verify that construction vessel traffic is confined to the general work site, where feasible, and that vessel anchoring or other disturbance only occurs in Trans Mountain approved locations, unless required in an emergency situation.</p> <p>26. Verify that pile hammers working in-water utilize vegetable-based hydraulic fluids and lubricants during this work, if practical.</p> <p>27. Operate Project-related vessels at slow speeds (&lt; 10 knots) and avoid rapid acceleration to limit the intensity of acoustic emissions (both above and below the water surface) and to decrease the likelihood of striking marine mammals, infrastructure or other vessels.</p> <p>28. Inform Project-related vessel operators of the potential for birds to collide with vessel structures at night due to deck lighting or inclement weather, and for vessels to collide with marine mammals. Report bird, mammal and structure strikes/collisions as soon as is practical to the Chief Activity Inspector and/or the Environmental Inspector.</p>
<i>Noise</i>	<p>29. Project-related vessels will be maintained in good working condition to reduce acoustic emissions (both above and below the water surface).</p> <p>30. Use vibratory methods of pile installation, to the extent feasible (e.g., where geophysical conditions allow). Limit in-water impact pile driving to daytime only.</p>
<i>Waste Disposal</i>	<p>31. Manage marine-related solid and liquid waste in accordance with the <i>Canadian Shipping Act</i>.</p> <p>32. Verify that solid materials, including construction materials, will not be discharged into the marine environment.</p> <p>33. Conduct a site clean-up at the end of each day to prevent accumulation of waste materials.</p> <p>34. Keep vessel and dock surfaces free of construction materials (e.g., concrete fines) to prevent their entry into the marine environment.</p>



Activity/Concern	Mitigation Measures
<i>Marine Sedimentation</i>	35. Reduce the risk of sedimentation from upland areas into the marine environment by properly installing appropriate terrestrial erosion and sediment control measures (refer to erosion and sedimentation mitigation described in Section 7.0 of this EPP).
<i>Pile Installation</i>	<p>36. Conduct pile installation activities in accordance with applicable permits and/or approvals.</p> <p>37. Use a vibratory method of pile installation preferentially over an impact hammer, where feasible, and in accordance with engineering design criteria, to reduce the intensity of underwater noise and pressure emitted to the marine environment.</p> <p>38. Where an impact hammer is required for pile installation, deploy a bubble curtain around the full wetted length of the pile to reduce underwater noise and pressure levels.</p> <p>39. Upon commencement of impact pile installation or recommencement of such activities after a delay of 30 minutes or more, conduct a pile installation ramp-up procedure starting with less frequent impact strikes of lower force.</p> <p>40. Monitor underwater noise and pressure levels outside of the bubble curtain continuously during impact pile driving. If monitoring indicates an exceedance of 30 kPa (<math>\approx 209.5</math> dB re 1 <math>\mu</math>Pa [peak]) during the DFO least risk window for Burrard Inlet (August 16 to February 28) or 22.5 kPa (<math>\approx 207</math> dB re 1 <math>\mu</math>Pa [peak]) outside of the DFO least risk window for Burrard Inlet (March 1 to August 15), or a fish kill is observed, stop impact pile driving immediately and review and modify methods, as appropriate, in consultation with DFO.</p> <p>41. Prior to the commencement of impact pile driving, conduct visual monitoring (by trained, qualified personnel) for cetaceans and marine mammal species at risk within an initial marine mammal exclusion zone, set to a radius of 1 km from active locations of impact pile driving. Conduct simultaneous visual monitoring within a harbour seal-specific exclusion zone, set to a radius of 150 m. Impact pile driving may only commence if no marine mammals are observed within their respective exclusion zones for 30 minutes prior to the start of the activity. The exclusion zone for cetaceans and marine mammal species at risk will encompass the area within which underwater noise levels exceed 160 dB re: 1 <math>\mu</math>Pa. Underwater noise level field verification will be conducted during the first several days of impact pile driving to define the radius of this zone.</p> <p>42. Conduct field verification of underwater noise levels when there are changes to impact pile driving equipment (e.g., hammer size and pile size) or substantial changes to pile locations to allow for adjustments to the radius of the cetacean and marine mammal species at risk exclusion zone.</p> <p>43. Conduct constant visual monitoring of the marine mammal exclusion zones during impact pile driving. If a cetacean or marine mammal species at risk, or a harbour seal, is observed within its respective exclusion zone, temporarily suspend impact pile driving (or reschedule if deemed necessary) until the marine mammal(s) has left the exclusion zone or does not reappear within 30 minutes.</p>

Activity/Concern	Mitigation Measures
<i>Concrete Management</i>	<ol style="list-style-type: none"> <li>44. Isolate concrete work from the marine environment.</li> <li>45. Wash tools, pumps, pipes, hoses and trucks used for finishing, placing or transporting fresh concrete in designated areas, away from the marine environment.</li> <li>46. Avoid depositing, directly or indirectly, any concrete, mortars or other lime-containing construction materials into or near the marine environment. Forms, if applicable, shall be examined by qualified Inspector(s) prior to pour to verify that they are tight.</li> <li>47. Verify that properly sealed chutes are present to avoid spillage, if concrete is discharged or placed directly into the formwork. If the concrete is being placed in the formwork with a concrete pump, properly seal and lock hose and pipe connections to limit potential for line leaks or uncoupling. Do not overfill concrete forms.</li> <li>48. Maintain complete isolation of cast-in-place concrete and grouting from the marine environment for a minimum of 48 hours if the ambient air temperature is above 0°C and for a minimum of 72 hours if the ambient air temperature is below 0°C.</li> <li>49. Verify that concrete work is completed during dry conditions and properly contained within formwork, such that no concrete products enter the surrounding marine environment. Concrete must be set before a change in tidal conditions results in coverage.</li> <li>50. Use anti-washout admixtures in any concrete or cement grout that must be placed underwater.</li> <li>51. Collect all stormwater, surface water runoff and wash water generated from construction activities that contains or may contain suspended concrete materials and/or particles. Monitor pH as per the Canadian Water Quality Guidelines for the Protection of Aquatic Life. If the pH of the water is above acceptable levels, it may be adjusted in the water treatment unit. Verify that pH and turbidity levels in the marine environment are monitored when dust or fines from grinding incompletely cured concrete enter the water column. In the event that levels exceed the acceptable water quality guidelines (<i>i.e.</i>, Canadian Water Quality Guidelines for the Protection of Aquatic Life), introduce preventative measures (<i>i.e.</i>, implementation of turbidity curtains to contain the suspended solids and prevent marine mammals or fish from entering the area).</li> <li>52. Utilize industry-accepted construction practices for placing concrete over water and take reasonable precautions to contain and neutralize spills in the event that concrete material is released into the marine environment. Report any spill to the Senior Compliance Advisor who will report to the appropriate regulatory authorities. Conduct ongoing monitoring of pH and turbidity during and following clean-up of the spill and compare to confirm that water quality guidelines for pH and turbidity are reached and maintained.</li> <li>53. Implement the Marine Spill Contingency Plan (see Appendix B of this EPP), in the event of a concrete fines spill or material release.</li> <li>54. Remove concrete and affiliated equipment or materials upon completion of concrete works.</li> </ol>

Activity/Concern	Mitigation Measures
<i>Marine Mammals</i>	<p>55. Discuss marine mammal issues that are identified during construction, with the Environmental Inspector, the Marine Resource Specialist and the appropriate regulatory authorities.</p> <p>56. Implement marine mammal-specific mitigation measures outlined under relevant activities (e.g., impact pile installation above).</p> <p>57. Implement the Terrestrial or Marine Wildlife Species of Concern and Discovery Contingency Plan (see Appendix B of this EPP, which now also applies to marine wildlife species), in the event of encountering a marine mammal species at risk.</p>
<i>Marine Fish and Fish Habitat</i>	<p>58. Discuss marine fish and fish habitat issues that are identified during construction with the Environmental Inspector, the Marine Resource Specialist and the appropriate regulatory authorities.</p> <p>59. Barges will be anchored or spudded in appropriate areas where potential for effects to intertidal and subtidal marine habitats is limited. Grounding is prohibited, unless authorized by VFPA. Avoid sensitive marine habitats, where feasible.</p> <p>60. Have the Environmental Inspector report immediately to DFO if the extent or nature of permanent alteration or destruction of fish habitat during any marine construction phase is outside of the scope defined in permits and approvals or if there is an occurrence of unpermitted serious harm to fish, or an increase in the risk of serious harm to fish.</p>
<i>Species at Risk/ Sensitive Species</i>	<p>61. Verify that mitigation measures associated with onshore and marine wildlife species at risk are communicated to Project personnel.</p> <p>62. Report sightings of sensitive species or species at risk immediately to the Environmental Inspector. Implement the Wildlife Species at Risk and Discovery Contingency Plan (see Appendix B of this EPP, which now also applies to marine wildlife species), as appropriate. The Environmental Inspector will record the location in the daily reports.</p>
<i>Invasive Marine Species</i>	<p>63. Verify that Project-related vessels follow the requirements for ballast water management, as outlined in the <i>Canadian Shipping Act</i> (c.26) and the <i>Canadian Ballast Water Control and Management Regulations</i> (SOR/2011-237), to reduce the risk of importing invasive marine species into the WMT area.</p>

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**APPENDIX A**  
**EMERGENCY CONTACTS**



**TABLE A-1**  
**EMERGENCY CONTACTS**

Contact	Location	Phone Number
<b>FEDERAL</b>		
NEB	Canada	1-800-899-1265
Department of Fisheries and Oceans Observe, Record and Report Hotline	Alberta and BC	1-800-465-4336
<b>ALBERTA</b>		
RCMP/Police	Edmonton Stony Plain Edson Hinton	911 or 1-780-412-5424 1-780-968-7200 1-780-723-8822 1-780-865-2455
Alberta Health Services: Emergency Medical Services (Ambulance)	Gateway EMS Station (Edmonton) West View Health Centre (Stony Plain) Edson Healthcare Centre (Edson) Hinton Healthcare Centre (Hinton)	911 or 1-780-342-1172 1-780-968-3600 1-780-723-3331 1-780-865-3333
Hospital/Clinic	University of Alberta Hospital (Edmonton) Royal Alexandra Hospital (Edmonton) West View Health Centre (Stony Plain) Edson Healthcare Centre (Edson) Hinton Healthcare Centre (Hinton)	1-780-407-8822 1-780-735-4111 1-780-968-3600 1-780-723-3331 1-780-865-3333
Fire	Edmonton Stony Plain Edson Hinton	911 or 311 1-780-442-5445 1-780-963-3551 1-780-723-3178 1-780-865-6020
AER 24-hour Emergency Line	Energy/Environmental Emergency & Operational Complaint Number	1-800-222-6514
Alberta Environment and Parks- 24-Hr Emergency Hotline	Edmonton	1-800-222-6514
WCSS Oil Spill Co-operative – 24-Hr Emergency	Alberta	1-866-541-8888
Forest Fires	Alberta	310-FIRE (3473)
Trans Mountain – Environmental, Health and Safety Management System (EHS)	Edmonton	1-780-449-5903
Trans Mountain Operations Supervisor	Stoney Plain/Edmonton	1-780-449-5980
Trans Mountain – 24-hour Emergency Line	Alberta	1-888-876-6711
<b>BC</b>		
RCMP/Police	Valemount Clearwater Barriere Kamloops Merritt Hope Abbotsford Burnaby	911 or 1-250-566-9800 1-250-674-2237 1-250-672-9918 1-250-828-3000 1-250-378-4262 1-604-869-7750 1-604-859-5225 1-604-294-7922
Emergency Medical Services (Ambulance)	Valemount Clearwater Barriere Kamloops Merritt Hope Abbotsford Burnaby	911 or 1-250-566-4703 1-250-674-3344 1-250-672-9244 1-250-828-4770 1-250-378-5912 1-604-869-5112 1-800-461-9911 1-604-872-5151

**TABLE A-1 Cont'd**

Contact	Location	Phone Number
Hospital/Clinic	Valemount Health Centre (Valemount)	1-250-566-9138
	Dr. Helmcken Memorial Hospital (Clearwater)	1-250-674-2244
	Barriere Community Health Centre (Barriere)	1-250-672-9731
	Royal Inland Hospital (Kamloops)	1-250-374-5111
	Nicola Valley Health Centre (Merritt)	1-250-378-2242
	Fraser Canyon Hospital (Hope)	1-604-860-7732
	Abbotsford Regional Hospital (Abbotsford)	1 604-851-4700
	Burnaby Hospital (Burnaby)	1-604-434-4211
Fire		911
	Valemount	1-250-566-9800
	Clearwater	1-250-674-3733
	Barriere	1-250-672-9711
	Kamloops	1-250-372-5131
	Merritt	1-250-378-5626
	Hope	1-604-869-5671
	Abbotsford	1-604-853-3566
	Burnaby	1-604-294-7190
BC MOE 24-hour Spill Line	BC	1-800-663-3456
BC MOE Spill Response	BC	1-877-952-7277
BC OGC 24-hour Incident Reporting	BC	1-800-663-3456
Conservation Officer Service	BC	1-250-356-7669
WCSS Oil Spill Co-operative – 24-hour Emergency	BC	1-866-541-8888
Forest Fires	BC Forest Fires Reporting Centre	1-800-663-5555
Trans Mountain – EHS	Burnaby	1-604-268-3008
Trans Mountain – EHS (Kamloops)	Kamloops	1-250-371-4017
Trans Mountain Operations Supervisor	Burnaby	1-604-268-3040
Trans Mountain Operations Supervisor	Sumas	1-604-268-3080
Trans Mountain Operations Supervisor	Kamloops	1-604-268-4040
Trans Mountain Operations Supervisor	Clearwater	1-250-587-6350
Trans Mountain – 24-hour Emergency Line	BC	1-888-876-6711

## **APPENDIX B**

### **CONTINGENCY PLANS**

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## LIST OF ATTACHMENTS

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## **1.0 CONTAMINATION DISCOVERY CONTINGENCY PLAN**

### **1.1 Pre-Job Planning**

A list of areas with moderate to high potential risk for contamination is provided in the Contamination Identification and Assessment Plan (Section 3.2 of Volume 6 of the Environmental Plans). In accordance with the Contamination Identification and Assessment Plan, a Contamination Resource Specialist will ensure the appropriate response and mitigation is carried out during construction in the identified high risk areas. When working in areas of moderate risk, the Environmental Inspector will ensure workers are aware of the potential to encounter contamination. In the event that unexpected contamination is encountered, this Contamination Discovery Contingency Plan will be initiated.

#### **Recognition and Response**

##### *Identification of Contamination*

Soil, surface water and groundwater contamination can generally be recognized by one or more of the following:

- unusual, hydrocarbon or chemical odor;
- visual sheen;
- visual free product (oil or other product);
- visual staining. and/or
- high soil vapour concentrations.

Stop work in the immediate area where contamination is identified during the construction phase of the Project to allow an assessment to be undertaken of the contaminated area.

##### *Notification Framework*

Upon the identification of contamination, work in the area will cease immediately and the Environmental Inspector will be notified. The Environmental Inspector will immediately notify the Senior Compliance Advisor of the discovery. The Senior Compliance Advisor will ensure the timely notification to the NEB and other Appropriate Government Authorities.

A Contaminated Sites Resource Specialist with experience in contaminated sites will be contacted and required to be present at the identification site to verify the indications of potential soil and groundwater contamination (*i.e.*, sheen and adjacent soil staining) and assist in monitoring and mitigation.

Signage will be posted in areas with moderate to high potential risk for contamination to alert workers of the increased risk.

The Land Agents and/or Lands Group, Stakeholder Engagement and Communication Team, and the Aboriginal Engagement Team will notify affected landowners and/or occupants, and Aboriginal groups, as required. This Contingency Plan will be updated and submitted to the Board prior to construction, as required.

##### *Health and Safety*

Upon discovery of contamination, the health and safety of personnel and the public is the first priority. Contractors and personnel on-site will suspend all work in the area, shut equipment down and immediately notify the Construction Manager or designate and an Environmental Inspector. Appropriate personal protective equipment, will be worn and all reasonable measures will be taken to ensure that health and safety of anyone in the immediate area is preserved. Personnel and Contractors will employ all measures and requirements outlined in Construction Health and Safety Management Plan as well as any other measures or requirements.

### Interim Mitigation

The Environmental Inspector and Contaminated Sites Resource Specialist must be consulted when determining the necessary mitigation measures that are to be implemented when it is safe to do so. In all instances, the migration of the contamination from the disturbed area must be minimized. Mitigation measures may include:

- segregating contaminated soil for later sampling and/or analysis and disposal;
- placing contaminated soil onto an impermeable surface;
- covering contaminated soil with an impermeable cover in cases where precipitation may cause runoff;
- constructing berms to control runoff, in cases where runoff is imminent;
- stopping contaminated water discharge;
- storing contaminated water in tanks for later sampling and/or analysis and disposal; and
- if sampling is required, laboratory analytical parameters for soil and groundwater should be based on site history and land use. Potential contaminants of concern are outlined in the Contamination Identification and Assessment Plan (Volume 6 of the Environmental Plans).
- Signage will be posted in the area of suspected contamination to alert workers of the increased risk.
- Mitigation measures will be implemented as soon as possible following the discovery of contamination. The implementation of mitigation measures will be based on the severity and risk of the contamination that is discovered.
- If asbestos or asbestos containing materials (ACMs) are discovered through field screening during construction:
  - Excavation activities are to cease; and engineering controls are to be enacted to mitigate dust. Mitigation will include soaking the area of suspected asbestos with water.
  - If necessary to continue work, personnel in the area affected by asbestos will wear appropriate PPE including half mask or full mask respirators with HEPA filters for which they have previously been fit-tested. Personnel air sampling will be required to demonstrate engineering control enacted to mitigate dust are effective.
  - Soils containing, or suspected to contain asbestos will be segregated, wetted, and covered until appropriate disposal is determined, following receipt of laboratory analyses.

### Contamination Management Requirements

In the event contamination is discovered during Project construction, follow the measures outlined in the NEB's Remediation Process Guide.

Contaminated material will be disposed of at approved facilities in accordance with provincial and federal regulations. Facilities for disposal must be pre-approved by Trans Mountain. This includes third party waste brokers, transporters, consultants and contractors. A list of Alberta and BC approved waste landfills for disposing of contaminated material are provided in Appendices D and E, respectively of the Waste Management Plan". The updated plan will be submitted to the Board prior to construction.

Excavations in which contaminated soil and/or groundwater has been discovered must not be backfilled until authorization has been given by the Construction Manager and Environmental Inspector. Soil brought on-site to fill excavations must be approved by the Environmental Inspector prior to use.

Contaminated soil and water must not be transported off-site or disposed of until analytical results have been received as per applicable federal and provincial regulations and as outlined in the Contamination Identification Assessment Plan (Section 3.2 of Volume 6 of the Environmental Plans). The Construction Manager and the Environmental Inspector will provide notification as to when excavations can be backfilled.

## 2.0 FIRE CONTINGENCY PLAN

The Prime Contractor(s) will develop a Fire Contingency Plan (Volume 4C, Section 5.2.7) and a Fire Prevention Plan (Volume 4C, Section 5.2.8) as part of their Emergency Response Plan (ERP) that will include, at a minimum, the guidelines provided in the TMEP Health and Safety Management Program and associated Emergency Management Program. Specifically, the following fire prevention and contingency measures will be incorporated into the Prime Contractor(s) ERP.

### In the Event of a Wildfire

The following response measures will be implemented, as warranted, in the event of a fire.

- Commence fire suppression measures immediately upon detection of a fire provided that current fire behaviour allows personnel to safely proceed.
- Initiate the Emergency Response Line (ERL) process as required. The ERL process can be found in the Project Construction Health and Safety Management Plan.
- Report location of fire as well as size, wind direction, fuels burning and immediate values at risk to the Fire Boss.
- The Fire Boss will report all wildfires immediately and relay general fire information to the Senior Compliance Advisor who will advise the appropriate provincial, municipal or federal authorities.
- All equipment and personnel shall be made available to control the fire. Suppression efforts will take into consideration fire behaviour, safety, training and fitness of personnel as well as equipment availability.
- The Fire Boss will inspect the fire as soon as possible and take charge of directing suppression measures until relieved by a responding authority official.
- Moveable material, particularly explosive or flammable materials and/or vehicles will be promptly moved to a safe location whenever there is a possibility of being endangered by fire.
- Fire suppression efforts shall continue until the fire is extinguished, until it is no longer safe for Project personnel to respond to the fire, or until otherwise notified by the appropriate jurisdictional authority (*i.e.*, AEP, BC MFLNRO).
- The Fire Boss will ensure that all burning embers are extinguished and will monitor burn area for smouldering material. If available, employ infrared scanning equipment to detect any residual hot spots.

### To Report a Wildfire

Alberta: 310-FIRE (3473)

BC: 800-663-5555 (or \*5555 on most cellular networks)

### General Fire Information

When a fire is encountered on or adjacent to the temporary construction lands or infrastructure site, make note of the following fire and site conditions prior to reporting the fire:

- crew contact information;
- location of the fire;
- fuel the fire is burning in (*e.g.*, trees and grass);
- approximate size of the fire;
- how quickly the fire is spreading;
- colour of the smoke; and
- values at risk (lives, property and structures)



### 3.0 FLOOD AND EXCESSIVE FLOW CONTINGENCY PLAN

Notify the Environmental Inspector or the Construction Manager that contingency measures have been initiated as a result of flooding or excessive stream flow so that a record of the location, timing and reason for implementation of the contingency plan is maintained. The Senior Compliance Advisor must be notified, who will notify the Appropriate Government Authorities (*i.e.*, AEP, BC MOE and NEB), as warranted and as soon as practical, that contingency measures are being/have been implemented (see Contacts provided in Appendix A of this EPP).

Weather conditions will be monitored by the Environmental Inspectors on a daily basis. If a major storm is predicted or occurs, watercourse crossings where construction is in progress or has been completed will be monitored to determine whether any preventative or corrective actions need to be implemented.

If the potential for increased sediment concentrations, or sedimentation in a watercourse due to Contractor activity is predicted, the Soil Erosion and Sediment Control Contingency Plan (see Section 6.0 of this appendix) will be implemented. At watercourses where an isolated crossing method is preferred, the isolation crossing techniques may not be feasible during periods of excessive flow or unusually wet seasons. Excessive flows are flows that are greater than the seasonally expected normal range based on existing and predicted flow data, and the ability of the isolation method to accommodate those flows.

The following contingency measures will be implemented progressively or individually, as warranted, if excessive flow or flood conditions, heavy precipitation or snowmelt events are anticipated prior to commencing watercourse crossing construction.

- Assess the capability to handle the forecasted flow rate for the duration of the instream works, with the crossing method being used.
- Defer instream work for the watercourse crossing construction to a later time when flows have subsided, or weather related threat has passed.

The following contingency measures will be implemented 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 waste from potential flood areas.
- Relocate all topsoil/root zone material piles as approved by the Environmental Inspectors.
- Relocate spoil storage piles, to the extent feasible, to a position above the anticipated high water level.
- Remove all stationary and mobile equipment deployed at the crossing site to a safe area above the anticipated high water level.
- Remove any instream flume or dam equipment that may impede stream flow, if safe work conditions allow.
- Restrict the use of bridges and other vehicle crossing structures until it is determined whether adequate free-board is present on bridges and adequate capacity is available in culverts.
- Take corrective measures, if warranted, to avoid flooding of adjacent lands.

## 4.0 HERITAGE RESOURCES DISCOVERY CONTINGENCY PLAN

***\*\*Note: Personnel are NOT permitted to collect and/or keep any heritage resources.***

The following procedures provide contingency measures for the discovery of heritage resources prior to and during construction of the Project.

### Heritage Resource Discovery during Construction

In the event that suspected heritage resource sites are discovered during construction, implement the measures listed below.

- Notify the Environmental Inspector, who will notify the Construction Manager, Trans Mountain Environment, who will determine if the services of a qualified Heritage Resource Specialist may be necessary, and the Senior Compliance Advisor, who will notify the appropriate regulatory authority as required.
- Determine the need for Contractor security personnel to secure the site pending approval from the Appropriate Government Authority.
- Prohibit the collection of any historical, archaeological or palaeontological resources by Project personnel except for qualified Heritage Resource Specialists acting as authorized by the appropriate regulator/permit.
- Suspend work immediately in the vicinity (*i.e.*, within 30 m) of any newly identified archaeological, palaeontological or historical resource sites (*e.g.*, modified bone, pottery fragments and fossils). Work at that location may not resume until the measures below are implemented. Clearly mark the site using fencing and flagging to secure avoidance where appropriate.
- As and where required, a qualified Heritage Resource Specialist will develop, if warranted, an appropriate mitigation plan in consultation with the Contractor, Environmental Inspector, the Construction Manager, the appropriate government authority, as well as the applicable Aboriginal groups. The mitigation measure options available include those measures for site avoidance, systematic data recovery and monitoring/surveillance as described above.

### Human Remains Discovered During Construction

In the event that suspected human remains are discovered during construction, implement the mitigation measures listed below.

- Suspend work immediately in the vicinity (*i.e.*, within 30 m) of the newly identified human remains. Work at that location may not resume until the measures below have been implemented.
- The Environmental Inspector will notify the Construction Manager, the Chief Activity Inspector, Trans Mountain Environment, who will determine if the services of a qualified Heritage Resource Specialist may be necessary, and the Senior Compliance Manager who will, if warranted, notify the local police and appropriate regulatory authorities.
- Determine the need for Contractor security personnel to secure the site pending approval from the Appropriate Government Authority.
- If there is potential for disturbance to the site due to trafficability or high public visibility, assign employees to stand watch until the local police and Heritage Resource Specialist arrives.
- Stake or flag off the location to secure avoidance.
- Cover any exposed remains with clean plastic sheeting, tarpaulin, blanket or other covering until the local police and Heritage Resource Specialist is present.

- Do not backfill. If excavated fill has been loaded into a truck, empty the excavated fill at a nearby secure location for the local police and Heritage Resource Specialist to inspect.
- The Contractor will only resume work in that area once the archaeological and forensic studies are complete, clearance has been granted by the local police and appropriate government authority, and Trans Mountain has been advised that work can continue.

## **5.0 RARE ECOLOGICAL COMMUNITIES OR RARE PLANT SPECIES DISCOVERY CONTINGENCY PLAN**

Field studies for rare ecological communities and rare plant species will be completed prior to construction, and known locations and mitigation are included in the Resource-Specific Mitigation Tables (Appendix D of this EPP). In the event that previously unidentified potential ecological communities or rare plants (vascular plant or bryophyte including moss or liverwort or lichens) are discovered on or within 30 m of the temporary construction lands and infrastructure site prior to or during construction, Contractor personnel will follow the measures outlined below.

- Note the location of the potential rare plant or ecological community relative to the construction footprint.
- Notify an Environmental Inspector. The Environmental Inspector will contact Trans Mountain Environment to discuss the need for a Vegetation Resource Specialist.
- Send a photograph of the potential rare element and any additional details (e.g., habitat characteristics) regarding the element and the site to the Resource Management Specialist to provide to the Vegetation Resource Specialist.
- Avoid further disturbance within 10 m of the location until the Vegetation Resource Specialist has been consulted.
- If warranted, the Vegetation Resource Specialist will be required to visit the site and will determine if site-specific mitigation measures are required.
- The Vegetation Resource Specialist will develop an appropriate site-specific mitigation plan based on the Rare Ecological Community and Rare Plant Population Management Plan (see Section 5.3 of Volume 6 of the Environmental Plans); this site-specific plan will be developed in consultation with the Environmental Inspector.

## 6.0 SOIL EROSION AND SEDIMENT CONTROL CONTINGENCY PLAN

Where soil erosion by wind or water is evident during construction, all necessary Contractor equipment and personnel will be made available to control the erosion. The Environmental Inspector in consultation with the Construction Manager or designate, Environmental Manager will determine appropriate procedures to be implemented to control soil erosion and other soil handling problems that may be encountered. The Senior Compliance Advisor must be notified, who will notify the Appropriate Government Authorities (*i.e.*, AEP, BC MOE and NEB), as required and as soon as practical, that contingency measures are being/have been implemented (see Contacts provided in Appendix A of this EPP). A record will be made of the location, timing, reason for implementation and measures implemented.

One or more of the following erosion control options listed below will be implemented, as warranted, where soil erosion is observed. Similar procedures to control erosion will be followed during the operational phase.

### Soil Erosion by Water

- Temporarily shut-down construction at the location where erosion is occurring until the risk of erosion has been reduced or conditions improve; the decision to shut-down construction will be made following a discussion involving the Contractor, the Construction Manager or designate and an Environmental Inspector.
- Install sediment fences near the base of slopes if adjacent to watercourses.
- Construct and/or install temporary berms of subsoil, logs, timber, coir logs, or sandbags on slopes where the risk of erosion is high during construction.
- Implement the following measures if regrading:
  - salvage topsoil/root zone material and store away from the area to be regraded;
  - construct temporary berms to direct water flow off the footprint if practical;
  - regrade rills and gullies; and
  - replace salvaged topsoil/root zone material.
- Implement one or a combination of the following long-term mitigation techniques:
  - construct cross ditches or berms, decreasing the spacing on steeper slopes or on more erodible soils;
  - armour the upslope face of berms with geotextile, logs or sandbags;
  - apply erosion control blanket, mulch or tackifier to hold soil; and
  - reseed and hand rake an annual cover crop, hydroseed or apply seed, install erosion control blankets.

### Soil Erosion by Wind

#### *Topsoil/Root Zone Material*

- Temporarily shut-down construction at the location where erosion is occurring until the risk of erosion has been reduced or conditions improve; the decision to shut-down construction will be made following a discussion involving the Contractor, the Construction Manager and an Environmental Inspector.
- Consider using the following techniques if soil erosion by wind of the topsoil/root zone material windrow is of concern:
  - apply water or tackifier (at rate recommended by the distributor) the topsoil/root zone material windrow; or
  - tamp the topsoil/root zone material windrow with suitable equipment.

Consider using one or a combination of the following techniques if soil erosion by wind is of concern after topsoil/root zone material replacement:

- seed with an annual or biannual cereal or short-lived perennial grass cover crop species;
- conduct straw crimping (straw to be sourced prior to construction, contact Agricultural Fieldman or Crop Specialist in Alberta or the BC Ministry of Agriculture Representative in BC for local, high quality straw suppliers); apply hydromulch or tackifier;
- use a packing roller (e.g., Accuroller) to lightly compact sandy or pulverized soils;
- import small diameter woody slash, spread out and walk down with equipment;
- apply locally available manure (sourced or approved by the landowner) and cultivate; or
- install wind fences.

### *Soil Erosion/Sedimentation at Streambanks*

Depending on the rate of flow, water will transport particles of varying size and quantity. The faster the flow, the larger the size of the particle and the greater the amount of particles transported. Particles are deposited when the particle load is excessive for the level of flow, causing sedimentation.

### In the Event of Potential Sedimentation to a Waterbody

An Environmental Inspector will communicate that contingency measures have been initiated and will maintain a record of the location, timing and reason for implementation of the contingency measures. The Senior Compliance Advisor will notify the NEB as soon as practical that contingency measures have been implemented. In the event that unacceptable levels of sedimentation of a watercourse or wetland is occurring during water crossing construction or in-water work, suspend construction activities and review the measures presented in the HDD/Trenchless Planning and Procedures Management Plan (see Section 8.3 of Volume 6 of the Environmental Plans).

Should an extreme precipitation and/or stream flow event threaten, or other circumstances occur that may render the existing erosion and sediment control measures inadequate, the procedures outlined below will be implemented progressively or individually, as warranted.

- Prohibit the operation of construction equipment close to the banks of watercourses where there is a risk of bank sloughing, failure of the vehicle crossing, flooding of the work area or damage to sensitive aquatic species and/or habitat.
- Install additional sediment fencing to prevent sediment-laden water from entering watercourses.
- Excavate cross ditches to divert runoff away from watercourses, wetlands and/or lakes.
- Construct berms of subsoil, sandbags, rock, timber, straw/hay bales or coir logs on approach slopes and/or banks to divert runoff from the construction footprint and onto well-vegetated lands or sediment retention ponds. The location and method of erosion and sediment control will be approved by an Environmental Inspector.
- Install erosion control blanket or coir matting on disturbed areas such as the banks and approach slopes to assist in the control of erosion and potential for sedimentation of watercourses, wetlands and/or lakes.
- Import sandbags and place strategically to help stabilize and add height to the banks in order to prevent flooding of nearby areas, especially where vegetation has been removed.
- Implement additional erosion and sedimentation control measures provided in the Flood and Excessive Flow Contingency Plan (Section 3.0 of this appendix).

- Implement one or a combination of the following mitigation techniques for long-term protection measures:
  - plant rooted stock plants in the spring or fall;
  - transplant dormant shrubs and trees from areas adjacent to or within the vicinity of the crossing location (see Shrub Staking and Live Shrub Transplanting Dwg. 9 in Appendix C of this EPP;
  - apply erosion control blanket following seeding; and
  - reconstruct the stream profile to remove scour holes or instream obstructions.

## **7.0 SOIL HANDLING CONTINGENCY PLAN**

The following soil handling related problems may arise during construction, which may result in loss of soil productivity if not addressed. Mitigation measures are suggested that may lessen the effects associated with construction.

### Little or no Topsoil on Cultivated Lands

- Salvage to colour change or to 15 cm, whichever is greatest.

### Little or no Topsoil on Native Grassland, Tame Pasture or Hay

- Salvage to colour change or to 15 cm, whichever is greatest

### Stony Subsoils or Topsoil/Root Zone Material

- Attempt to use conventional equipment (e.g., dozers) to salvage topsoil/root zone material. Employ excavators with clean-up buckets, if dozers are ineffective.

### Uneven Boundary between Topsoil/Root Zone Material and Subsoil

- Utilize equipment capable of fine depth adjustments when salvaging topsoil/root zone material. Avoid overstripping and admixing of topsoil/root zone material with subsoil.

### Soil Pulverization

- Refer to the Soil/Sod Pulverization Contingency Plan (Section 8.0 of this appendix).

### Uneven Surface on Native Grassland, Hay or Tame Pasture

- Salvage topsoil from the spoil pile area on hay and tame pasture.
- Consider salvaging topsoil from the spoil storage area on native grasslands where the surface is uneven.
- Minimize scalping of the sod layer by:
  - using equipment with fine depth control, such as a clean-up bucket or fly swatter, to backfill spoil that was stored directly on top of the sod layer; and
  - considering use of a prairie protector rubber blade on a clean-up bucket.



## 8.0 SOIL/SOD PULVERIZATION CONTINGENCY PLAN

The NEB will be notified as soon as practical after the implementation of soil/sod pulverization contingency measures.

### Criteria for Implementation

Pulverization may occur on unsalvaged, well-sodded lands, and on cultivated lands with silt or clay-textured soils. The Soil/Sod Pulverization Contingency Plan will be implemented where sod integrity on hay and/or tame pasture lands or topsoil has been disturbed to the extent that the soil/sod will not infill naturally within the same time frame as the adjacent soil, or there is an unacceptably high risk of soil erosion by wind.

The following contingency measures will be implemented where pulverization is occurring and topsoil was not fully salvaged from the working area of the Project Footprint. Locations where these measures apply will be determined by an Environmental Inspector in consultation with the landowner and/or occupant or the applicable Crown land authority.

- Provide alternative access to the construction footprint to avoid areas prone to soil/sod pulverization.
- Minimize traffic, particularly rubber-tired vehicles, in areas where pulverization is prone to occur.
- Use equipment with low-ground pressure tires/tracks (e.g., wide pad tracks) during salvaging and replacement of topsoil.
- Salvage a wider area of topsoil from the Project Footprint.

Salvage topsoil from all travel areas in silty soil.

- Implement other suitable mitigation measures depending on conditions encountered during construction (e.g., availability of extra TWS, soil moisture levels and land use).

Implement the following measures during clean-up and reclamation activities along portions of the construction footprint where soil/sod pulverization occurred prior to contingency measures being implemented.

- Lightly cultivate the affected areas in two directions with a spike cultivator or a scarifier.
- Cultivate an area approximately 1 m wider than the disturbed area.
- Harrow the area to prepare a seedbed.
- Drill or broadcast seed the area, as appropriate, and lightly harrow the area again to incorporate seed and compact the seedbed, if broadcast.
- Straw crimp, if deemed necessary by an Environmental Inspector, on erosion prone soils.

## 9.0 SPILL CONTINGENCY PLAN

### 9.1 Introduction

Guidelines for the safe handling, storage, use and disposal of potentially hazardous waste as well as spill prevention measures and guidelines for the refuelling and servicing of equipment are provided in Trans Mountain's Waste Management Plan (Section 3.1 of Volume 6 of the Environmental Plans).

The timeline in which the reporting is to take place is dependent on the size of the spill. An immediately reportable spill is defined as a release of a substance that is likely to be an imminent environmental or human health hazard and/or meets or exceeds reportable volumes listed below, with more information provided in the Compliance Management Plan (Volume 10 of the Environmental Plans). Such spills will be immediately reported to the appropriate federal and/or provincial authorities. Spills with volumes that are not immediately reportable or the substance is not likely to be an imminent environmental or human health hazard are not required to be reported to the applicable federal and/or provincial authorities. Rather, these spills will be tracked and documented by the Environmental Inspectors and submitted to Trans Mountain operations for inclusion in their spill-tracking databases.

If there is any doubt that the quantity spilled exceeds reportable levels, the spill will be treated as a reportable spill. The Trans Mountain Regulatory and Compliance Team will determine if the spill should be reported to the appropriate provincial and/or federal authorities (refer to the NEB Incident Report provided in the CMP [Volume 10 of the Environmental Plans]). Crucial information that will be provided to Trans Mountain Management via the Environmental Inspector includes name and telephone number of the caller, date and time of the call, material(s) spilled, location of the spill, estimated quantity spilled, cause of spill, actions taken to-date, assistance required, injuries and weather conditions (KMC 2017).

In Alberta, a reportable spill is defined by the Alberta *Environmental Protection and Enhancement Act* as:

- the release has caused, is causing or may cause impairment of or damage to the environment, human health or safety, or property;
- the amount exceeds the quantities or emission levels set out for the substance (see MSDS and Trans Mountain's Environmental Compliance Plan);
- the release is into a watercourse or into the groundwater or surface water in any quantity; and/or
- the release is 200 L or more (Transport Canada 1992 immediate reporting quantity for flammable liquids [class 3]) (see Attachment B1).

In BC, a reportable spill is defined by the BC *Environmental Management Act* as:

- a release of 100 L or more of: hydraulic oil, engine/lube oil, gasoline, diesel or solvents;
- a release of 25 L or more of waste oil;
- a release of 5 L or more of engine coolant;
- a release of 25 kg or more of contaminated soils; and/or
- any release to a waterbody or watercourse (see Attachment B1).

Spill reporting in BC must be completed in accordance with the Spill Reporting Regulation under the *Environmental Management Act*.

All spills no matter what size or type material will be reported by the worker discovering the spill to Environmental Inspector, Environmental Manager and Chief Activity Inspector

Any sites contaminated by a spill will be assessed, remediation will be designed and disposal sites will be identified in accordance with the NEB Remediation Process Guide (NEB 2011). This document will be provided to the Construction Manager or designate, the Environmental Inspector as part of the Environmental Education Program. Emergency contacts are presented in Appendix A of this EPP.

## 9.2 General Measures

The following general measures are to be adhered to during construction of the TMEP.

- Maintain appropriate spill equipment at all work sites based on risk. The risk potential for site-specific spills will be used to determine the appropriate type of response equipment to be stored on-site and suitable location for storage.
- Post specific instructions regarding applicable contacts and appropriate response actions to be taken in the event of a spill in the field construction offices.

## 9.3 Initial Response

The following actions will be taken upon detection of a **construction spill** specific to the TMEP.

- Ensure personal safety and the safety of others on-site and don appropriate personal protective equipment.
- The first person on the scene will execute the actions presented in the Spill Scene Checklist (Attachment B1).
- Report the spill to an Environmental Inspector, Environmental Manager and Chief Activity Inspector.
- When notified of a reportable spill, an Environmental Inspector or designate will immediately ensure that the following actions are taken, where applicable:
  - action is taken to ensure safety of workers and the public;
  - an on-site Emergency Response Coordinator is designated;
  - the necessary equipment and personnel are mobilized, and measures are being implemented to stop the source of the spill, if safe to do so, and commence clean-up; and
  - Trans Mountain Management are immediately notified of the spill; and
  - Trans Mountain Management notifies the Senior Compliance Advisor, who will immediately notify the applicable provincial and federal agencies, and the NEB of the spill if it meets the reporting threshold.
- The Contractor will make all resources available to contain and clean-up the spill.

In the event of an **oil spill associated with the existing TMPL**, the Contractor must immediately notify Trans Mountain via the 24-Hour Control Center Emergency Line (1-888-876-6711). In addition, the following actions will be taken:

- ensure action is taken to ensure safety of workers and the public; and
- attempt to contain the spill to the greatest possible extent without endangering the welfare of workers as directed by Trans Mountain until TMPL emergency spill responders arrive.

The Contractor will make all resources available to TMPL emergency spill responders to facilitate the containment and clean-up the spill.

In the event of a **spill associated with a third party foreign pipeline**, the Contractor must immediately notify Trans Mountain via the 24-Hour Control Center Emergency Line (1-888-876-6711). In addition, the following actions will be taken:

- ensure action is taken to ensure safety of workers and the public;
- coordinate the containment of the spill to the greatest possible extent without endangering the welfare of workers until the third party pipeline owner's emergency spill responders arrive.

The Contractor will, upon request of the third party pipeline owner, make resources available to facilitate the containment and clean-up the spill.

## **9.4 General Spill Containment Procedures**

The successful containment of a spill on land or water depends on a variety of factors including: ground cover and topography; hydrogeology; solubility of the material; viscosity of the liquid; water currents; soil permeability; and weather conditions.

The following general guidelines will be followed for containment of spills of hazardous waste.

- Ensure personal safety and safety of others on-site. The first person on the scene will execute the actions listed in the Spill Scene Checklist. This includes a review of the MSDS sheets.
- Assess the safety hazards of the situation and don appropriate personal protective equipment.
- Remove sources of ignition, if safe to do so.
- Identify the product, stop source and physically contain spill as soon as 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 clean-up more difficult.
- Minimize traffic on contaminated soils.
- Use berms constructed with materials and equipment in proximity to the site to physically contain a spill on land. Deployment of booms will be necessary to contain a spill and prevent contamination spread on water.
- Clean-up will not be attempted without advice from the Environmental Inspector and Trans Mountain.

### **9.4.1 Spot Spills**

Effects from small spot spills can generally be minimized and will not result in the suspension of activities if the appropriate actions listed below are promptly implemented. All small spills of fuels or hazardous waste must be contained, cleaned up and reported immediately to an Environmental Inspector.

- An Environmental Inspector will approve methods to remove or reclaim contaminated soils, in consultation with a qualified specialist if warranted. Heavily contaminated soil and vegetation will be disposed of at a KMC approved waste disposal facility as outlined in the Waste Management Plan (Section 3.1 of Volume 6 of the Environmental Plans).
- Locations where spot spills occur are to be recorded.
- In lightly contaminated soil areas where *in situ* restoration is feasible; soil will be fertilized, incorporated by hand or cultivated to a depth below the depth of contamination. Repeat or apply other approved remedial measures, as necessary.

#### **9.4.2      *Spills Occurring During On-site Transportation***

The general guidelines listed below will be followed for the containment of materials spilled during transportation.

- Contain spilled product.
- Pump tanker truck or transportation vessel dry (into appropriate containers or alternative tanker truck).
- Remove tanker truck or transportation vessel from the site.
- Recover spilled product.
- Clean up contaminated area.
- Dispose of sorbent pads, heavily contaminated soil and vegetation at a KMC approved disposal facility in accordance with the Waste Management Plan (Section 3.1 of Volume 6 of the Environmental Plans). On lightly contaminated soil areas where remediation is feasible, add amendments, sample soil and seed as appropriate. Repeat or apply other approved remedial measures, as necessary.

#### **9.4.3      *Spills Adjacent to or into a Watercourse or Wetland***

The general guidelines listed below will be followed for spills adjacent to or into a watercourse or wetland.

- Construct berms and/or trenches to contain spilled product prior to entry into a watercourse or wetland.
- Deploy booms, skimmers and/or sorbents, if feasible, to contain and recover spilled material from a watercourse or wetland.
- Collect spilled product.
- Clean up contaminated area including downstream shorelines.
- Dispose of heavily contaminated soil and vegetation at a KMC approved waste disposal facility. If residual contamination remains once the initial spill cleanup is completed, in situ remedial measures may be evaluated to further address the residual contamination. In situ remediation measures would include the addition of amendments and be followed by sampling and vegetation restoration as needed. For wetlands, during revegetation, phyto-remedial appropriate vegetation may be used to enhance remediation of the wetland.

## **10.0 MARINE SPILL CONTINGENCY PLAN**

### **10.1 Introduction**

The Marine Spill Contingency Plan has been prepared for construction activities being completed in marine environments. This plan demonstrates that Trans Mountain has appropriate response capabilities and measures in place to effectively address potential releases during construction in marine environments.

#### Purpose and Scope

Spill reporting procedures are applicable to all Trans Mountain construction activities. These procedures are specific to the marine environment and will be followed in the event of a spill or release, within this facility or contamination of coastal waters during construction activities associated with the Project.

The purpose of this plan is to provide direction on how to quickly, safely and effectively respond to a construction phase marine spill in the marine environment to ensure the protection of the public, employees and Contractors, the environment and company property. In addition, this plan will ensure that all releases of hazardous materials are reported to the appropriate authority, as required. As a federally regulated company, Trans Mountain is responsible for reporting any volume of spill in the marine environment to the NEB.

This Marine Spill Contingency Plan identifies the lines of authority and responsibility, establishes proper reporting and communication procedures and outlines an action plan, to be implemented in the event of a marine spill. This Marine Spill Contingency Plan applies to fuel, hydrocarbons, chemicals and other potentially harmful substance released in the marine environment.

#### Response Organization

All spills into or threatening a body of water are considered reportable through the Emergency Response Line process, as a reportable incident, to the Senior Compliance Advisor. The Senior Compliance Advisor must report any incident of a spill or release in the marine environment directly to the NEB, as soon as practical, and take appropriate measures to remediate the contamination. The NEB also requires notification of the contamination, in writing, to the Secretary of the Board (NEB 2011). Details regarding the reporting and notification requirements are contained in Section 9.0 of this Appendix.

Emergency spill response equipment will be located, as a responsibility of the contractor, at each marine adjacent work site. The location and contents of the emergency spill response equipment will be discussed intermittently during daily safety meetings. Further information regarding this equipment can be obtained from the Contractor.

Immediate notification of a spill to the Construction Supervisor is crucial. Immediately contact local emergency response in the event of a spill involving danger to human life.

For marine pollutant or spills in Vancouver harbour, call Vancouver Traffic VHF 12/11/74/16 immediately. For a spill to the marine environment, immediate notification to Canadian Coast Guard Marine Communications and Traffic Services (MCTS) is required (see <http://www.ccg-gcc.gc.ca/e0003876>). All accidental over side discharges should be reported immediately to the Operations Centre (1-604-665-9086). If the discharges contain oil or other deleterious substances, the vessel must immediately notify the MCTS and activate its pollution response plan. The Port Information Guide (VFPA 2016) provides more information and clarification regarding reporting requirements (see <http://www.portvancouver.com/wp-content/uploads/2015/03/Port-Information-Guide-12-Port-of-Vancouver-August-2016-amended.pdf>).

#### Contractor Responsibilities

Contractors will be responsible for prevention, preparedness, response and reporting on their work sites during the construction phase of the Project. Contractors must maintain an up-to-date inventory and location knowledge of response materials at the worksite. The Contractor must provide training, prior to work, and implement regular emergency response exercises to enable TMEP workers and subcontractors to perform

their designated emergency responsibilities. It will be the Contractor's responsibility to immediately inform TMEP management and the Senior Compliance Advisor in the event of a spill or release.

### Equipment

Emergency response equipment and materials will be provided by the Contractors to be stored on-site, as close to the area of work as feasible. These materials will include, but are not be limited to: booms; skimmers and other collection devices; sea-water pumps; hoses; sorbents; fire nozzles; containment vessels; spill kits; and personal protective equipment. Any concerns regarding additional response equipment should be directed to the Construction Supervisor, who will be able to source supplementary equipment through local service providers in the area.

### Initial Assessment

In the event of any incident, the location and circumstances will be assessed to determine the safety hazards, human and environmental resources at risk of adverse effect and potential of the incident escalating into a greater incident. This assessment will be conducted by the Environmental Inspector or the Construction Supervisor, depending on the circumstances. The priorities of the Environmental Inspector in the event of a release incident are to:

- protect people and environment;
- stop the source, if safe to do so; and
- contain the release.

### Recovery

After the initial assessment is complete, recovery of free product or materials with high concentrations of spilled product should be performed as soon as feasible to reduce the extent of effects to the shoreline, sediment and water.

### Detailed Assessment

After the initial assessment and recovery activities are complete, a detailed assessment of effects resulting from the spill is required. This assessment will: investigate the effects to the shoreline, sediment and water in detail; provide comparisons of concentrations of parameters of concern with applicable guideline concentrations; and provide recommendations for remedial activities, if warranted.

### Remediation

Remedial activities recommended in the detailed assessment should be implemented as soon as feasible following the spill to bring sediment and water conditions into compliance with regulations. Long-term monitoring may be required as a result of certain spills. A remediation report is required to be submitted to the appropriate bodies.

### Closure

Once the site has been brought back into compliance with applicable regulations and monitoring activities are complete, a closure report is required to be submitted to the appropriate bodies.

## **11.0 TRADITIONAL LAND USE SITES DISCOVERY CONTINGENCY PLAN**

### **11.1 Traditional Land Use Sites Identified Prior to Construction**

In the event that TLU sites are identified during supplemental studies with Aboriginal groups prior to construction for the Project, the sites will be assessed and appropriate mitigation measures will be determined. Newly discovered TLU sites will be assessed based on the following criteria:

- the location of the TLU site with respect to the area of development;
- the relative importance of the TLU site to the applicable First Nation community; and
- the potential for an alteration of construction activities to reduce or avoid sensory disturbance.

The mitigation measures listed below have been successful in mitigating effects on TLU sites. Alternative site-specific mitigation strategies may also be recommended by Aboriginal groups, or the Aboriginal Monitor(s) for the construction area. The mitigation measures that may be implemented will be dependent on the type of site identified and its proximity to the temporary construction lands and infrastructure site.

#### Hunting

Hunting and wildlife sites are areas where large mammals such as elk, moose, deer, caribou and bear are commonly harvested. Key wildlife species are identified both in community discussion and by observed game ambushes, blinds and hunting stands, dry meat racks and butchered animal remains. Furthermore, locales where game can be expected, such as mineral licks, calving areas and well-used game trails, are typically prized hunting areas.

Successful and accepted mitigation measures for hunting sites may include:

- adhering to species-specific timing constraints, to the extent feasible;
- leaving breaks in the pipeline trench to allow animals to cross; and
- limiting or restricting the use of chemical applications to control invasive vegetation.

#### Trapping

Aboriginal individuals continue the practice of trapping and snaring for food and pelts. These traps and snares may or may not be located within registered trap lines.

To avoid accidental damage where the temporary construction lands or infrastructure contacts a trap line, mitigation measures may include:

- maintaining access to the trap line during construction; and
- moving of trap line equipment by the trapper prior to construction.

#### Fishing

The practice of traditional fisheries relates to the species harvested, fishing techniques and the nature of specific reaches of lakes and rivers. Fishing methods may include but are not limited to angling, gigging, spear-fishing, dip netting, gill netting and the construction and use of fish traps and weirs. While fishing activities vary with changes in seasonal water flow and variation in fish stocks, fisheries often exhibit habitual repeated use. Fishing areas include waterbodies that are often in proximity to staging areas and/or access points to the waters. Secondary fishing activities relate to the processing of harvests, and may include processing yards, smokehouses, drying racks and fish-grease rendering features.

Standard and effective mitigation measures for fishing areas may include:

- recording and mapping of fishing locales; and



- strict adherence to the regulations, standards and guidelines set by provincial and federal government authorities for watercourse crossings.

### Plant Gathering

Many Aboriginal individuals harvest medicinal, ceremonial and food source plants. Plants are gathered in a variety of environments, which include old forests along watercourses and in rugged or mountainous areas. Detailed information regarding medicinal plants is passed down from the Elders and is considered proprietary by the communities.

To avoid the disruption of plant gathering activities, mitigation measures include:

- limiting or restricting the use of chemical applications to control invasive vegetation;
- replacement of plant species during reclamation; and/or
- avoidance of the site.

### Trails and Travelways

Travel corridors are essential for conducting traditional activities and accessing cultural landscape features. Trails include well-defined all-terrain vehicle and snowmobile corridors, navigable waterways, river portages, and historical foot, dog sled and pack horse pathways.

Successful and proven mitigation measures available to trails that are crossed by the pipeline construction footprint include the following:

- detailed recording and mapping of the trails within 100 m on both sides of the pipeline construction footprint; in partnership with community representatives, a decision is then made about the relative importance of the trail and, if warranted, how best to maintain and control access; and/or
- installing signage or scheduling construction during periods of least effect, where feasible.

### Habitation Sites

Habitation sites include traditional campsites, cabins and settlements. Campsites typically have defined hearths (fire rings), de-limbed trees, tent frames and/or miscellaneous cached or discarded camping supplies and equipment. Cabin structures represent a more permanent occupation of the land and include central log or timber-framed structures, traditional activity areas such as drying racks and smoking tents, and ancillary equipment storage areas. A group of cabins or campsites may signify a long-term or intermittent occupation. A settlement may have been used seasonally or throughout the year, depending on location or necessity. The relative size and nature of habitation sites continuously evolve based on how families and communities grow and often expand from campsites to cabins and possibly to settlements.

Successful and proven mitigation measures for habitation sites include:

- avoidance of the site;
- detailed mapping and a photographic recording of the location; and/or
- implementation of detailed recording and controlled excavations.

### Gathering Places

Aboriginal people often gather to share in ceremonial activities, exchange items of trade, arrange and celebrate marriages, and for other activities. Additionally, indigenous grave sites are sometimes recorded in the general area of large gathering places. Such gathering places have historical, ceremonial, cultural and economic significance to Aboriginal groups.

Potential effects on gathering places may be mitigated through:

- avoidance of the site; and
- detailed recording and mapping.

However, the visual effect will be assessed in the field and site-specific mitigation measures will be refined and optimized, as warranted.

### Sacred Areas

Sacred areas include burials, vision quest locations, rock art panels, birth locations and ceremonial places, among others. A particular element is often only a small component of a larger spiritual complex, which can encompass topographic features and may, by its very nature in the context of Aboriginal spirituality, be inestimable and irreplaceable.

Mitigation measures for sacred areas may include:

- avoidance of the site; and
- detailed recording and mapping.

However, additional site-specific mitigation measures will be refined and optimized in the field and through community discussions, as warranted.

## **11.2 Traditional Land Use Sites Discovered During Construction**

In the event that TLU sites are identified during construction of the pipeline, the following measures will be implemented, as warranted.

- Flag or fence off the previously unidentified TLU site. Work at that location may not resume until the measures below are conducted.
- Notify an Environmental Inspector, who will notify the Construction Manager or designate, the Aboriginal Monitor and the Heritage Resource Specialist.
- The Heritage Resource Specialist and the Aboriginal Monitor will assess the site and develop an appropriate mitigation plan using the information listed above.
- The potentially affected Aboriginal group(s) will be informed of the discovery and the mitigation measures to be implemented.

## 12.0 WET/THAWED SOILS CONTINGENCY PLAN

Trans Mountain will assign Environmental Inspectors with sufficient training and soils-related experience to identify soils that are too wet for a particular activity and when the soils are sufficiently dry to allow the activity to resume. The decision to continue or suspend particular construction activities on lands with excessively wet/thawed soils will be made by the Construction Manager in consultation with an Environmental Inspector. A record of the location, timing and reason for implementation of the Wet/Thawed Soils Contingency Plan will be maintained by the Environmental Inspectors. In the event that activities are suspended, the Environmental Inspectors will notify the Senior Compliance Advisor as soon as practical, who will notify the NEB, if warranted.

The Environmental Inspectors will be responsible for monitoring ground conditions and ensuring that all suitable protection measures are implemented. Trans Mountain believes that it is critical to maintain effective communication between the Contractor, the Environmental Inspectors, and the regulators (*i.e.*, the NEB, via the Senior Compliance Advisor). A meeting will be held in the field to ensure that all parties involved mutually understand the concerns associated with working in wet/thawed conditions.

Soils will be considered to be excessively wet when the planned activity could cause damage to soils either due to rutting through the surface material into the subsoil; soil structure damage during soil handling; or compaction and associated deformation of surface material due to heavy traffic.

Contingency measures will be implemented, as warranted, if one of the following indicators occurs:

- rutting of topsoil/root zone material to the extent that admixing may occur;
- soil becomes deformed;
- excessive wheelslip;
- excessive build-up of mud on tires and cleats;
- formation of large puddles; and/or
- excessive tracking of mud as vehicles leave the pipeline construction footprint.

Where construction activities have the potential to, or are causing the aforementioned issues, the Construction Manager, in consultation with an Environmental Inspector and the Contractor, will suspend that phase of the construction activity until soil conditions dry out/freeze, or effective mitigation procedures have been implemented.

In order to avoid terrain disturbance and soil structure damage through rutting, deformation, or compaction due to wet/thawed soil conditions, construction alternatives will be employed, when warranted, in the event of thawed soils during frozen conditions and/or an excessively wet surface during non-frozen conditions. The contingency measures listed below will be implemented individually or in combination, as necessary, based on site-specific conditions.

### Wet Soil Contingency Measures

- Temporarily modify or shut-down construction activities at the location with wet soil conditions until the conditions improve; the decision to modify or shut-down construction will be made following a discussion involving the Contractor, the Construction Manager and an Environmental Inspector.
- Restrict construction traffic, where feasible, to equipment with balloon tires or wide pad tracks.
- Prevent rubber-tired traffic from driving along the construction footprint.
- Postpone work in highly sensitive areas and restrict work efforts to low sensitivity or non-problem areas (*e.g.*, well drained soils) until conditions improve.

- Install matting in problem areas.
- Implement drainage controls (shallow ditching and/or pumping) to prevent puddling and expedite drying, where practical.

Recommencement of suspended work at any given location must be authorized by the Construction Manager, in consultation with an Environmental Inspector once conditions are acceptable.

#### Thawed Soil Contingency Measures

- Restrict construction traffic, where feasible, to equipment with low-ground-pressure tires or wide pad tracks.
- Prevent rubber-tired traffic from driving on or along the construction footprint where there is unsalvaged topsoil.
- Restrict work to non-problem areas, such as frozen or well-drained soils, until conditions improve.
- Limit construction activities and traffic, if thawed ground conditions are encountered, to the evening or early morning when the ground is frozen.
- Install matting in problem areas.
- Employ frost inducement measures such as snow packing or plowing to increase the load-bearing capacity of thawed ground as a temporary measure.
- Suspend construction activities and traffic in areas with thawed soils until the soils dry out or refreeze.

If the indicators of excessively wet/thawed soil conditions previously noted above are not evident, soils will be considered dry enough to resume activity.

#### Partial Suspension of Construction Activities and Traffic

The primary concern during wet/thawed soil conditions is the potential for rutting, compaction and loss of soil structure (deformation) of the topsoil/root zone material. Some construction activities may be conducted and traffic allowed during wet/thawed soil conditions while others are suspended.

## **13.0 WILDLIFE SPECIES OF CONCERN ENCOUNTER AND DISCOVERY CONTINGENCY PLAN**

### **13.1.1 *Terrestrial or Marine Wildlife Species at Risk or Sensitive Species***

The following procedures provide contingency measures for the discovery of wildlife species at risk or sensitive species (*i.e.*, with conservation status) prior to and during construction. Wildlife species with conservation status refer to those species listed as Special Concern, Threatened or Endangered federally on Schedule 1 of the SARA and/or by the Committee on the Status of Endangered Wildlife in Canada, and provincially designated as Endangered, Threatened or Special Concern in Alberta or Red or Blue-listed in BC or listed as Threatened or Endangered under the BC *Wildlife Act*.

#### **Terrestrial or Marine Wildlife Species at Risk or Sensitive Species Discovery Prior to Construction**

In the event that wildlife species at risk or sensitive species or their site-specific habitat are discovered during wildlife or other studies along the construction footprint or other associated components (*e.g.*, storage sites), the discovery will be assessed and appropriate mitigation measures will be determined by an Environmental Inspector in consultation with Trans Mountain Environment and a Wildlife Resource Specialist/Marine Wildlife Resource Specialist as necessary. The review of the wildlife species observation or habitat feature will consider the following:

- The wildlife species, its conservation status and specific habitat needs relative to the area of development.
- The location of the wildlife habitat feature (*e.g.*, stick nest) relative to the area of development and in consideration of the recommended setback distances as provided by regulatory guidelines, where applicable.
- The presence of topographic features, vegetation, or terrestrial/marine riparian vegetation to effectively screen the wildlife habitat feature from construction activities.
- The timing of construction versus the timing windows/sensitive periods for the wildlife species as provided by regulatory guidelines, where applicable.
- The potential for an alteration of construction activities to reduce or avoid direct and/or sensory disturbance.

The mitigation measures to be implemented will be determined by a qualified Wildlife Resource Specialist/Marine Wildlife Resource Specialist and may include the following.

- Abide by seasonal timing windows and the recommended setback distances (as provided by regulatory guidelines, where feasible).
- Abide by daily timing restrictions on construction activities, where feasible.
- Reduce the area of disturbance and protect the site using fencing or clearly mark the site using flagging when located in the non-marine environment.
- Inform all users of access restrictions in the vicinity of flagged or fenced sites.
- Realign the route (*i.e.*, micro-routing) or shift the development (*i.e.*, access road, ancillary site, etc.) within the staked boundaries to avoid the site. Refer to the MOC process provided in the CMP (Volume 10 of the Environmental Plans).

- Ensure the appropriate provincial permit is obtained for the salvage and relocation of wildlife species or the removal of a nest protected by the BC *Wildlife Act*. Note, habitat enhancement measures or a replacement nest may be needed dependent on the conditions of the permit; Ensure a SARA Section 73 Permit is obtained on Federal lands (e.g., Indian Reserves), if the Project will affect species listed as extirpated, endangered or threatened on Schedule 1 of SARA and will contravene SARA's general or critical habitat prohibitions (i.e., no person shall kill, harm, harass, capture or take a wildlife species; damage or destroy the residence of one or more individuals of a wildlife species; or destroy any part of the critical habitat of any endangered, threatened or extirpated species).

The locations of important wildlife and wildlife habitat encountered along the construction footprint or associated components and appropriate mitigation to be implemented are identified in the Resource-Specific Mitigation Tables (Appendix D).

### Wildlife Species at Risk or Sensitive Species Discovery during Construction

Wildlife species at risk or sensitive species and their habitat that have the potential to occur along the construction footprint or associated components, as well as the locations of provincially identified wildlife areas (e.g., Key Wildlife and Biodiversity Zones, and Ungulate Winter Ranges) will be identified through the Environmental Compliance and Education Program. The Environmental Inspectors will be provided with detailed information on identifying wildlife species at risk or sensitive species and their site-specific habitat.

In the event of an observation of a wildlife species at risk or sensitive species, the mitigation will vary depending on the species. For example, observations of songbirds and/or large mammals, where no associated habitat feature (e.g., active nest or mammal den) is present, may not warrant mitigation given their ability to move away from the construction area. For other species such as amphibians that may be restricted to a discrete area, mitigation measures (e.g., salvage of individuals in compliance with appropriate permit) will be reviewed and implemented as required.

In the event that wildlife species at risk or sensitive species or their site-specific habitat is discovered during construction, the discovery will be assessed and appropriate mitigation measures will be determined. Upon discovery of a wildlife species at risk or sensitive species or habitat feature during construction, the following should occur.

- Suspend work immediately in the vicinity of any newly discovered wildlife species at risk or sensitive species. Do not resume work at that location until the measures below are implemented.
- Notify an Environmental Inspector who will notify the Construction Manager.
- The Environmental Inspector will assess the discovery and either allow construction to resume or, in the event of a confirmed or potential discovery, proceed by notifying:
  - Trans Mountain's Regulatory and Compliance Team; and
  - a Wildlife Resource Specialist.

A qualified Wildlife Resource Specialist will assess the discovery and determine the appropriate mitigation measures to be implemented in consultation with an Environmental Inspector, the Construction Manager and the appropriate regulatory authority. The Wildlife Resource Specialist will visit the site, if warranted.

### **13.1.2 Wildlife Encounter Contingency Plan**

In the event of an encounter with wildlife during construction either at the construction site or on the commute to and from the construction site, follow the measures provided below.

- Report any incidents (e.g., aggressive behaviour, nuisance behaviour, obtained food or garbage) with wildlife to an Environmental Inspector who will immediately notify the appropriate regulatory authority and, if warranted, the local Fish and Wildlife detachment (see Appendix A of this EPP).
- Report any trapped, injured or dead animals on-site to an Environmental Inspector who, if warranted, will notify Trans Mountain's Regulatory and Compliance Team so the Appropriate Government Authority can be contacted to consult on appropriate action.
- Report the location and details of collisions with wildlife to an Environmental Inspector, who will notify the Appropriate Government Authority and the local conservation officer, if applicable (see Appendix A of this EPP).
- Once the preceding contacts have been made, the Environmental Inspector will communicate the information to the Construction Manager.
- The Environmental Inspectors will document all wildlife encounters during construction in a detailed record. This record will include, at a minimum: date; weather conditions; location; wildlife species encountered; the type of encounter (e.g., passive, aggressive, etc.); and, if applicable, any actions taken by Project staff to address the situation. Wildlife encounter records will be kept on file by Trans Mountain and provided to the Appropriate Government Authority and Aboriginal groups upon request.

### Wildlife Sighting Information

Name of Observer: \_\_\_\_\_ Date of Observation: \_\_\_\_\_

Location of Observation (KP): \_\_\_\_\_ Location Name (if applicable): \_\_\_\_\_

UTM Zone: \_\_\_\_\_ Easting: \_\_\_\_\_ Northing: \_\_\_\_\_

#### Wildlife Observation:

<b>Species</b>	
<b>Observation Type (<i>i.e.</i>, visual, heard animal, observed sign such as tracks, scat, etc.)</b>	
<b>Age (adult, young, unknown)</b>	
<b>Sex (male, female, unknown)</b>	
<b>Number observed (include numbers of males/females if known)</b>	
<b>Habitat Description (<i>e.g.</i>, forested, grasslands, agriculture)</b>	
<b>Behaviour of Animal (describe what the animal was doing)</b>	
<b>Aggressive Behaviour (Yes or No; if yes describe)</b>	
<b>Additional Comments</b>	

Name of Environmental Inspector Card Submitted To: \_\_\_\_\_

Date of Submission: \_\_\_\_\_



## ATTACHMENT B1

### SPILL SCENE CHECKLIST

Note: The following activities will be taken by the first person on the scene of a hazardous waste spill or release or a spill of other potentially deleterious material into a watercourse or wetland or environmentally sensitive area, if feasible.

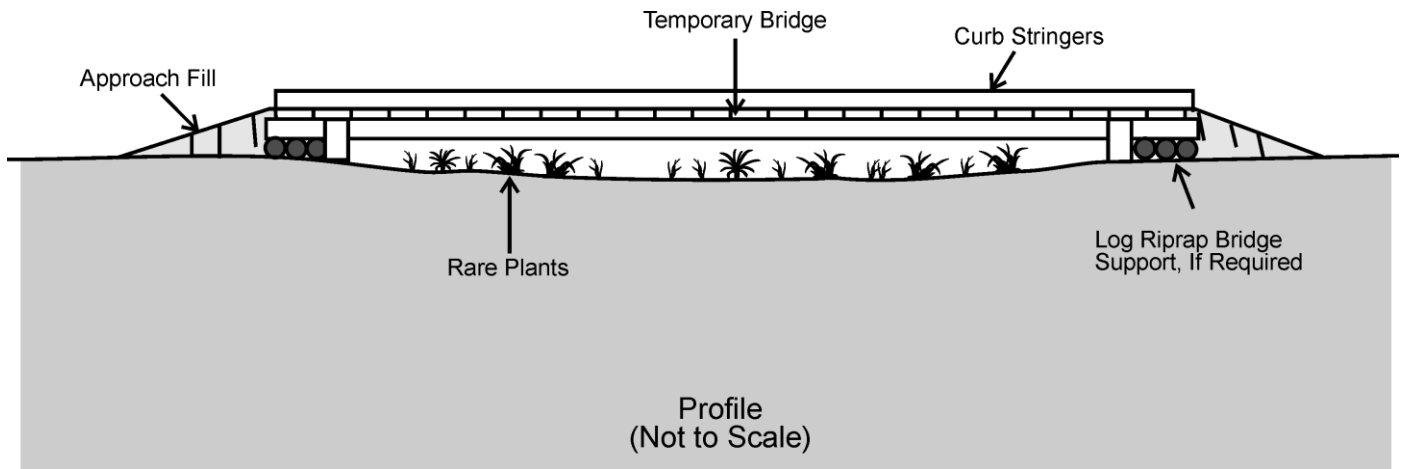
- (a) Ensure personal safety and safety of others on-site and don appropriate personal protective equipment. \_\_\_\_\_
- (b) If possible without further assistance, assess the safety hazards of the situation, ensure the safety of workers and the public, and identify the composition (see Spill Report Form - next page) of the spilled material via the SDS sheets that are available for each controlled substance. \_\_\_\_\_
- (c) If feasible and safe to do so, remove any sources of ignition, cut off the source of the spill and initiate a release response plan (*i.e.*, control, contain and clean up). While efforts have been initiated to contain the spill, immediately notify the Construction Manager, or designate an Environmental Inspector. If the Senior Compliance Advisor, or designate, cannot be immediately contacted, notify Trans Mountain's 24-hour Emergency Line. These people will, as required, contact the appropriate authority as well as applicable federal and provincial agencies and the NEB. \_\_\_\_\_
- (d) Once the source has been cut off, attempt to contain the spilled material. Seek qualified assistance if necessary. \_\_\_\_\_
- (e) Take note of details such as time, location, material, volume, corrective actions, etc., for reporting criteria. \_\_\_\_\_
- (f) In Alberta, Trans Mountain will submit a written report directly to the Monitoring Division of the AER within 7 days of verbally reporting an unrefined or refined product release, if the release has caused, is causing, or may cause adverse effect on the environment. If the release is fully contained on-site, or there are no adverse effects, then a written report is not required. In Alberta, a spill of 200 L or greater must be reported for all Class 3 (Flammable Liquids) spills. \_\_\_\_\_
- (g) In BC, Trans Mountain will provide an immediate verbal report to the BC MOE 1-800-663-3456 (24-hour emergency line). Where requested to do so by an environment officer, a written report shall also be filed with the department. In BC, a spill of 100 L or greater must be reported for all Class 3 (Flammable Liquids) spills. \_\_\_\_\_

## **APPENDIX C**

### **DRAWINGS**

## LIST OF DRAWINGS

Drawing 1	Rare Plant Protection - Temporary Bridge
Drawing 2	Equipment Cleaning – Compressed Air and High Pressure
Drawing 3	Sediment Fence
Drawing 4	Narrow Down Fencing
Drawing 5	Topsoil Salvage – Site Development Area
Drawing 6	Vehicle Crossing – Typical Clear Span
Drawing 7	Vehicle Crossing – Typical Ford
Drawing 8	Vehicle Crossing – Ramp and Culvert
Drawing 9	Shrub Staking and Live Shrub Transplanting



*Representation Only*

**Notes:**

1. Install a temporary bridge (e.g., pre-fabricated single-span) to allow vehicles to cross over rare plants, if located on construction site. Bridge length is generally limited to areas less than 25 m (80 feet).
2. Utilize approach fills rather than cuts to minimize ground disturbance.
3. Install curb stringers of logs to ensure that fill material does not spill onto surrounding area. Use a geotextile liner to prevent fine material being deposited onto the rare plants.
4. Notify an Environmental Inspector prior to removal of bridge. Remove bridge at completion of final clean-up. Remove support structures and approach fills. Fence and flag the rare plant population for monitoring during the PCEM program.

These drawings have been developed as a visual guide to assist with the implementation of mitigation measures introduced in the EPP. These drawings are illustrative only and not to scale. Any distances included on the drawings are only included to assist with providing a visual indication of general distances involved unless otherwise specified in the notes.

**TRANS MOUNTAIN EXPANSION PROJECT**



**RARE PLANT PROTECTION - TEMPORARY BRIDGE**

687945

December 2017

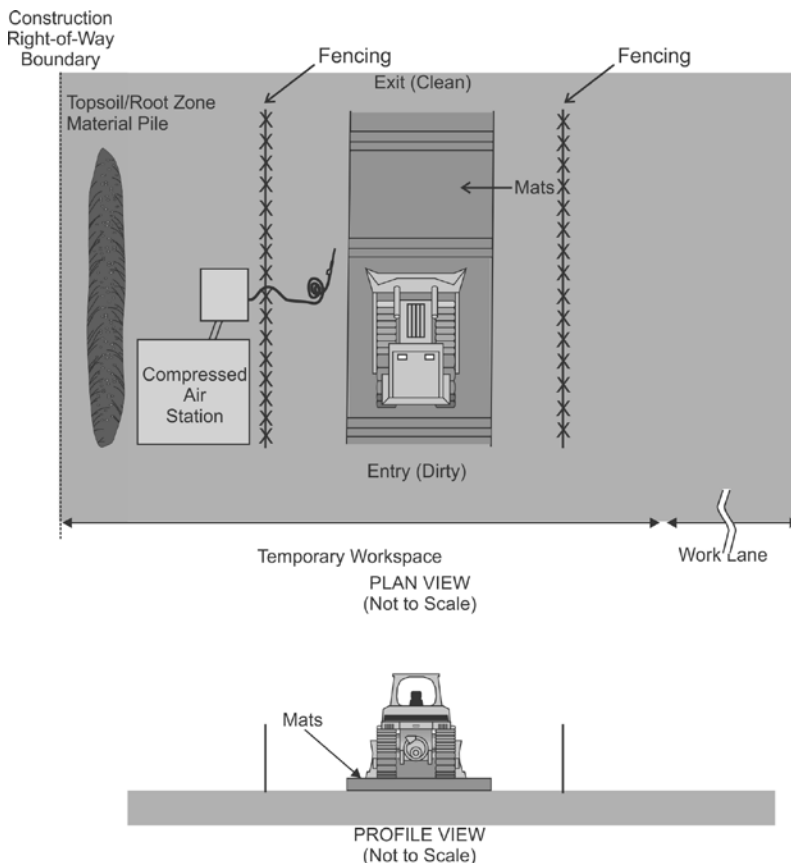
Drawing 1

## LEVEL 1 CLEANING STATIONS – COMPRESSED AIR AND MECHANICAL

Cleaning stations using mechanical methods (i.e., compressed air or mechanical cleaning with shovels) will be set up at designated locations during construction (in non-frozen or frozen soil conditions) as a weed control measure. This type of cleaning station will be used for all equipment involved with clearing and topsoil/root zone material handling.

The diagram below is an example of how this type of cleaning station may look. Final design will be approved by an Environmental Inspector, once locations have been determined.

The use of compressed air at cleaning stations may not be appropriate during periods of high wind. Alternative options (e.g., continued mechanical cleaning with shovel and broom, secondary containment with tarps) should be discussed with an Environmental Inspector, as warranted.



*Representation Only*

### Notes:

1. Construct this dry type of cleaning station (compressed air and mechanical cleaning) at an approved location by salvaging topsoil/root zone material throughout the station and stockpiling it as shown on the plan.
2. Use ropes or fencing material to designate the area where the cleaning is to occur.
3. Ensure that the size of the station is adequate to accommodate the maximum size of equipment.
4. Ensure material removed off equipment is left on the parcel of land where it was acquired.
5. Replace topsoil/root zone material and reclaim the area.

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### TRANS MOUNTAIN EXPANSION PROJECT



### LEVEL 1 CLEANING – COMPRESSED AIR AND MECHANICAL CLEANING

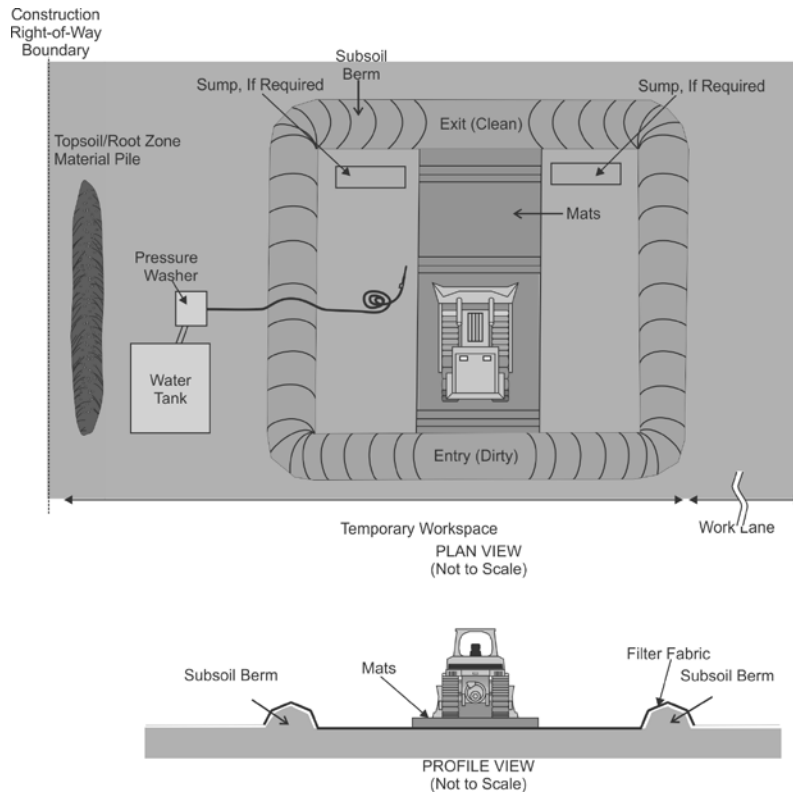
687945

December 2017

Drawing 2a

## HIGH PRESSURE WASH STATIONS

Cleaning stations using high-pressure water for cleaning soil from construction equipment, may be set-up during construction where compressed air and manual cleaning are determined to be insufficient. Wash cleaning station locations will be approved by the Environmental Inspectors prior to the commencement of construction in the area. Cleaning requirements apply to all construction equipment involved in clearing, grubbing, or topsoil/root zone material handling. Final wash station design should be approved by an Environmental Inspector, once locations have been determined.



*Representation Only*

### Notes:

1. During non-frozen soil conditions, construct the high-pressure water cleaning station at an approved location by salvaging topsoil/root zone material and constructing containment berms using subsoil.
2. Do not allow water used for cleaning to enter any waterbody or ditch.
3. Ensure that the size of the station is adequate to accommodate the maximum size of equipment.
4. Equipment is to consistently enter at one end and exit at another.
5. Clean the mats between each piece of equipment entering the station.
6. Stockpile material that is removed off of equipment in the 'contaminated material stockpile'.
7. Remove soils in the contaminated material stockpile and wash water from sumps in accordance with applicable requirements.
8. Backfill the depression with bermed material.
9. Replace topsoil/root zone material and reclaim the area.

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## TRANS MOUNTAIN EXPANSION PROJECT

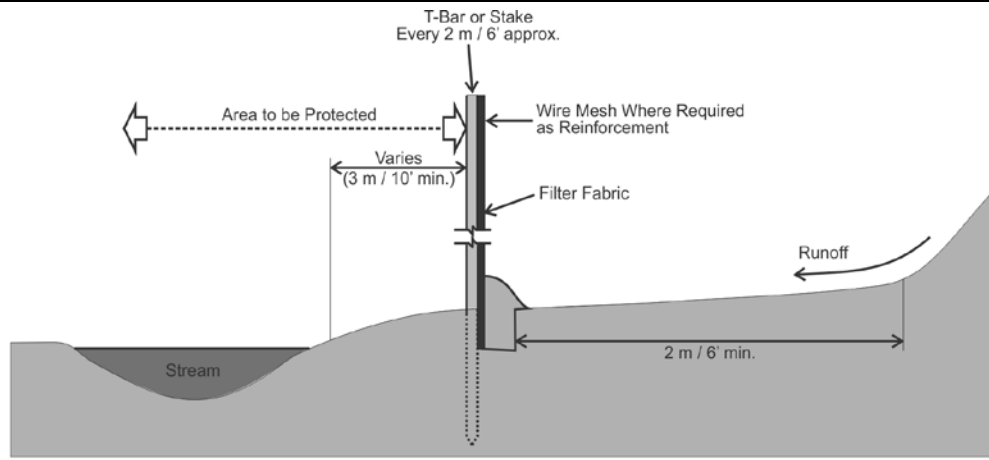


### LEVEL 2 CLEANING STATION – HIGH PRESSURE WASH

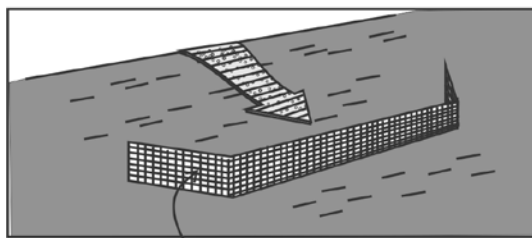
687945

December 2017

Drawing 2b

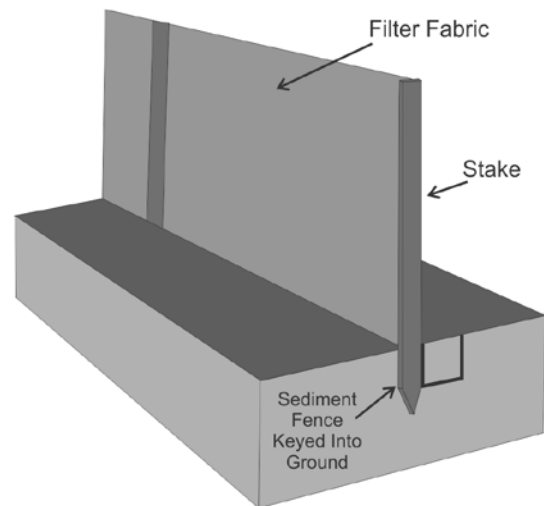


Profile View  
(Not to Scale)



Filter Fabric  
with Wire Mesh

Oblique View  
(Not to Scale)



Oblique View  
(Not to Scale)

**Representation Only**

#### **Notes:**

1. Watercourses that have moderate to high sensitivity of fish habitat and/or have steep approach slopes may need temporary sediment fences during construction, as approved by an Environmental Inspector.
2. Install sediment fences at the base of approach slopes to watercourses and/or wetlands prior to clearing and grading using the method and materials above or other designs approved by an Environmental Inspector.
3. Install sediment fences, where warranted, to minimize the transfer of sediment from spoil windrows and stripped areas to watercourses.
4. Ensure sediment fence is keyed into the ground by excavating a narrow trench, placing the base of the sediment fence in the trench and backfilling the trench, which secures the sediment fence in place.
5. Place sediment fences a minimum 2 m, if feasible, from the toe of the slope in order to increase temporary ponding volume and further reduce sediment transport.
6. Maintain sediment fences throughout construction.
7. In areas with frequent traffic, install two or more sediment fences in a staggered and overlapped configuration to allow vehicle passage without removal of the sediment fence.
8. Ensure that sediment fences, if removed or damaged, are reinstalled or repaired prior to the end of the work day.
9. Remove temporary sediment fences after the disturbed area is reclaimed and construct permanent sediment controls in their place if warranted.

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#### **TRANS MOUNTAIN EXPANSION PROJECT**

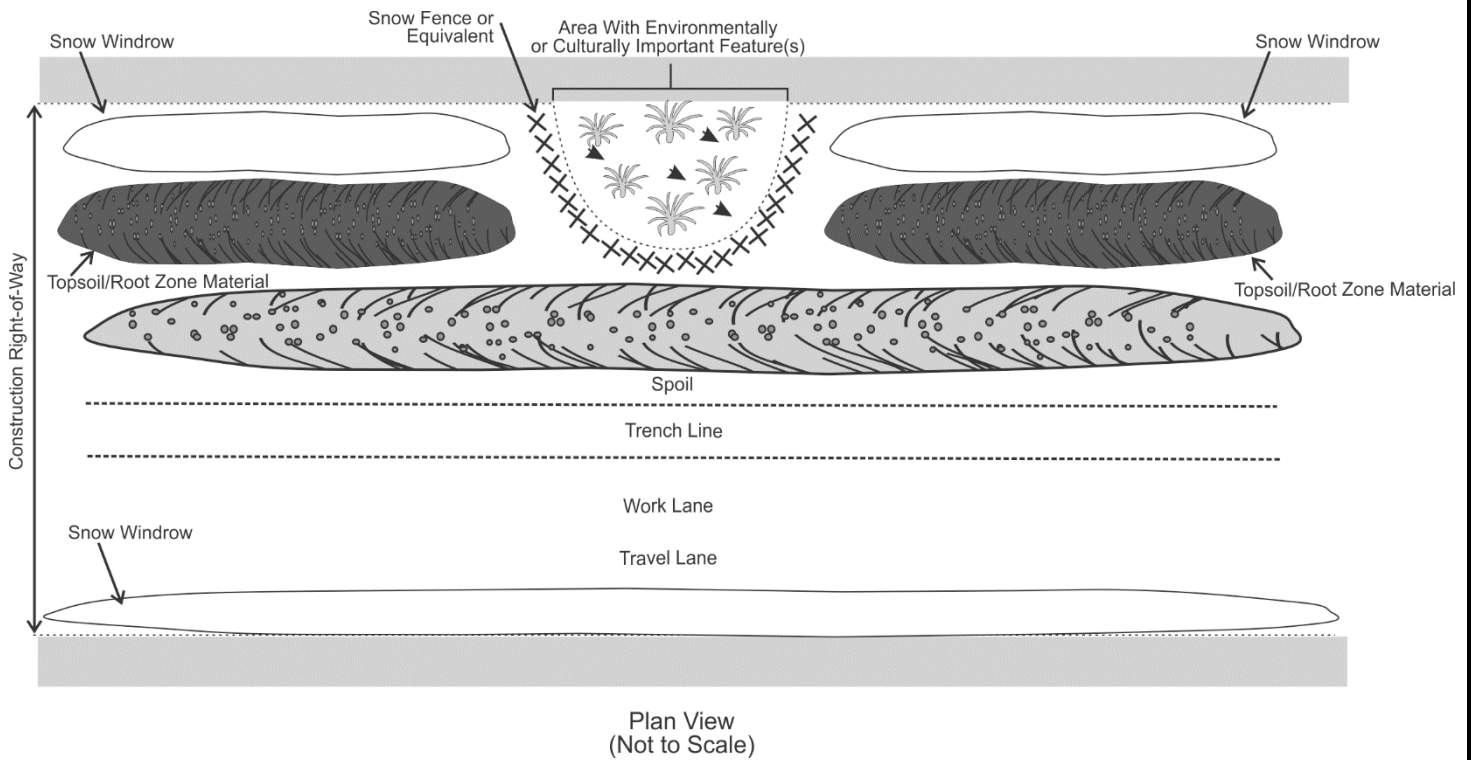


#### **SEDIMENT FENCE**

687945

December 2017

Drawing 3



*Representation Only*

#### **Criteria for Implementation:**

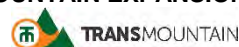
The width of the construction site may be narrowed to avoid site-specific features such as archaeological sites, rare plants, sensitive ecological communities or site-specific wildlife habitat, where there is sufficient width to safely do so. Where narrowing occurs, the feature(s) will be fenced or otherwise 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 site.
2. Clearly post signs prohibiting workers or equipment from entering the identified area.
3. Where narrowing on the work side or spoil side is sufficient to protect the feature, minimize the workspace to as narrow as practicable to allow for a buffer around the feature.
4. Maintain fencing and barriers until all construction and reclamation activities are completed.

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#### **TRANS MOUNTAIN EXPANSION PROJECT**



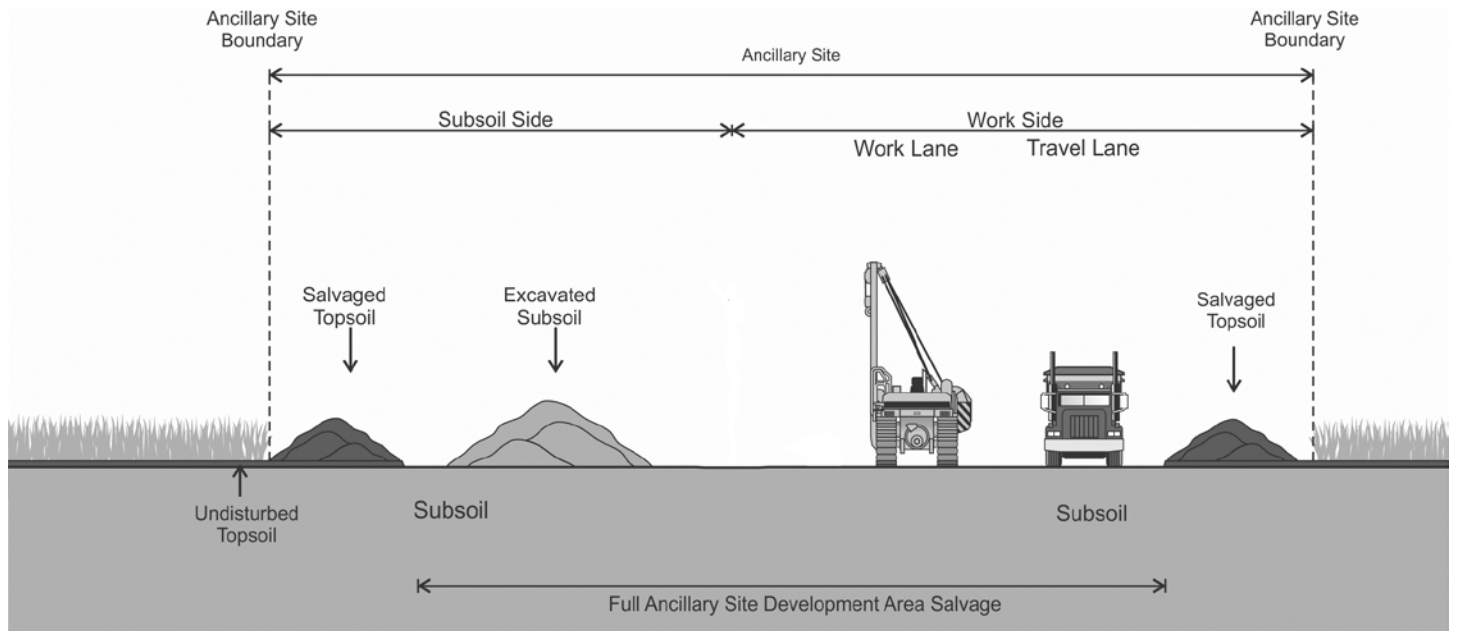
#### **NARROW DOWN FENCING**

687945

December 2017

Drawing 4





Profile  
(Not to Scale)

**Activity:**

**Notes:**

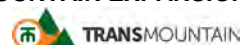
**Representation Only**

- |   |  |
|---|--|
| <ol style="list-style-type: none"> <li>1. Salvage and Stockpile Topsoil</li> <li>2. Excavate and Stockpile</li> </ol> | <ul style="list-style-type: none"> <li>- Salvage topsoil from over the ancillary site development area, subsoil storage and work areas during non-frozen conditions. Topsoil storage on both sides of the ancillary site boundary adjacent to the salvaged area, as shown is preferred, however, storage of all salvaged topsoil on one side of the construction right-of-way is also acceptable.</li> <li>- Salvage topsoil to colour change, plow layer, as described in the Temporary Construction Lands And Infrastructure EPP or as recommended by an Environmental Inspector.</li> <li>- Apply tackifier if erosion of topsoil piles becomes evident.</li> <li>- Leave breaks in the topsoil windrow at obvious drainages.</li> <li>- Maintain a separation between topsoil and subsoil windrows.</li> </ul> |
|---|--|

Note: Topsoil and subsoil pile storage locations may vary depending on the site-specific conditions.

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**TRANS MOUNTAIN EXPANSION PROJECT**

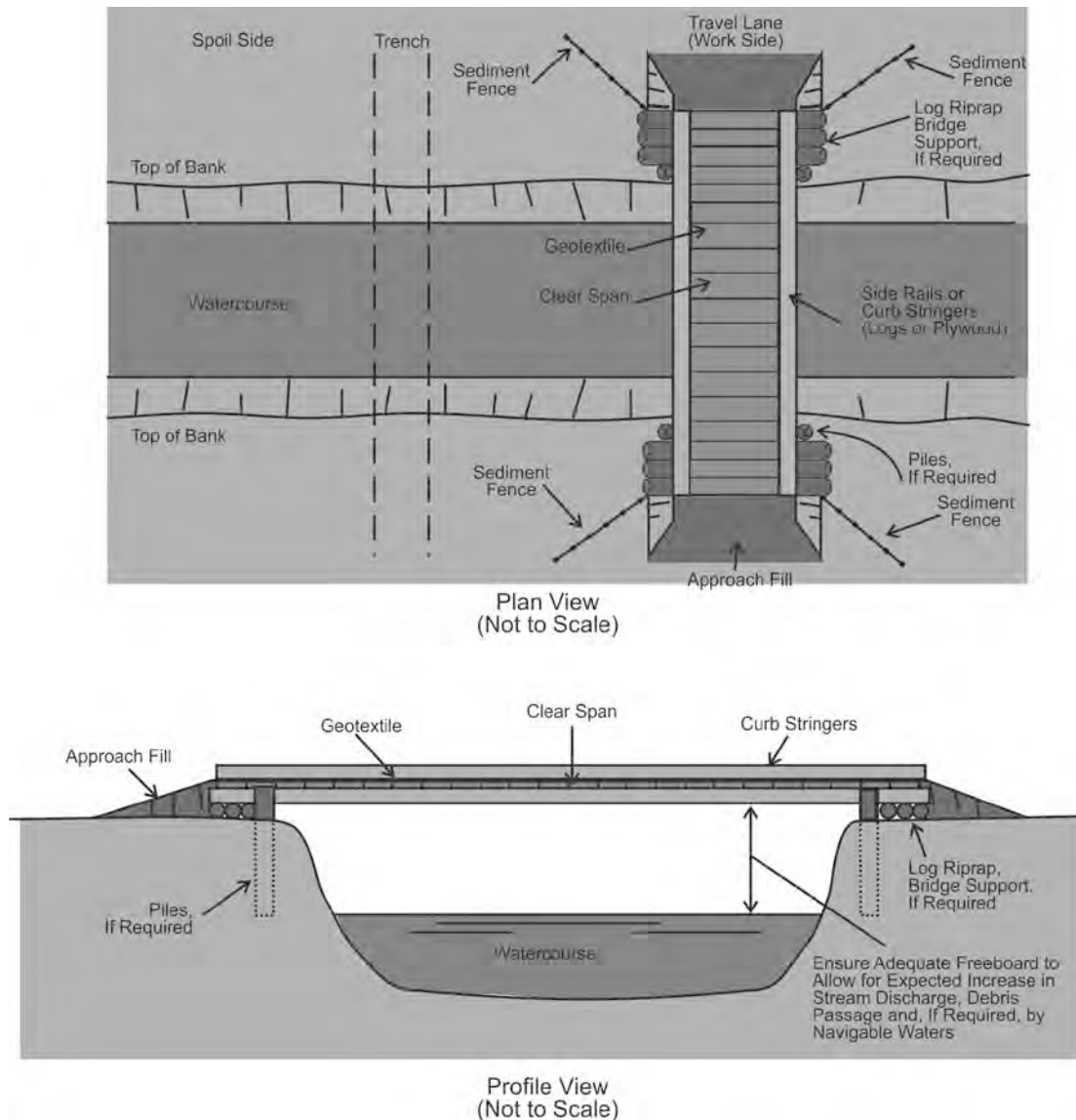


**TOPSOIL OR ROOT ZONE MATERIAL SALVAGE**

687945

December 2017

Drawing 5



**Representation Only**

**Notes:**

1. Install a clear span (e.g., a temporary bridge or other suitable pre-fabricated spanning structure such as dimensional timbers or other ramp) to allow vehicles to cross watercourses that are sensitive or that have unstable bed and banks. Clear-spans are also used where watercourses are too deep, too wide or too fast to permit an alternative crossing structure. This method reduces sedimentation of the watercourse and bank and bed reclamation work. It is generally limited to watercourses less than 25 m (80 feet) in width.
2. Utilize approach fills rather than cuts in banks to reduce erosion potential. Do not constrict flow with approach fill or support structures. Ensure an adequate freeboard to handle anticipated streamflow. Use a synthetic geotextile liner on approach fills and on clear span decks, and install wings constructed of 3/4 inch plywood or 2 x 12 boards covered with geotextile fabric on all four corners of the span to prevent fine material from entering the watercourse.
3. Install curb stringers to ensure that fill material does not spill into the watercourse, where required.
4. Remove the clear span immediately after use. If the span is to remain in place through spring breakup to access final clean-up, it must be designed for spring floods and ice jams. Remove support structures and approach fills. Reclaim and stabilize banks, if previously graded.

Adapted from CAPP *et al.* (2012)

Note: Detailed span design specifications completed by a qualified engineer supersede typical temporary clear span specifications.

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**TRANS MOUNTAIN EXPANSION PROJECT**



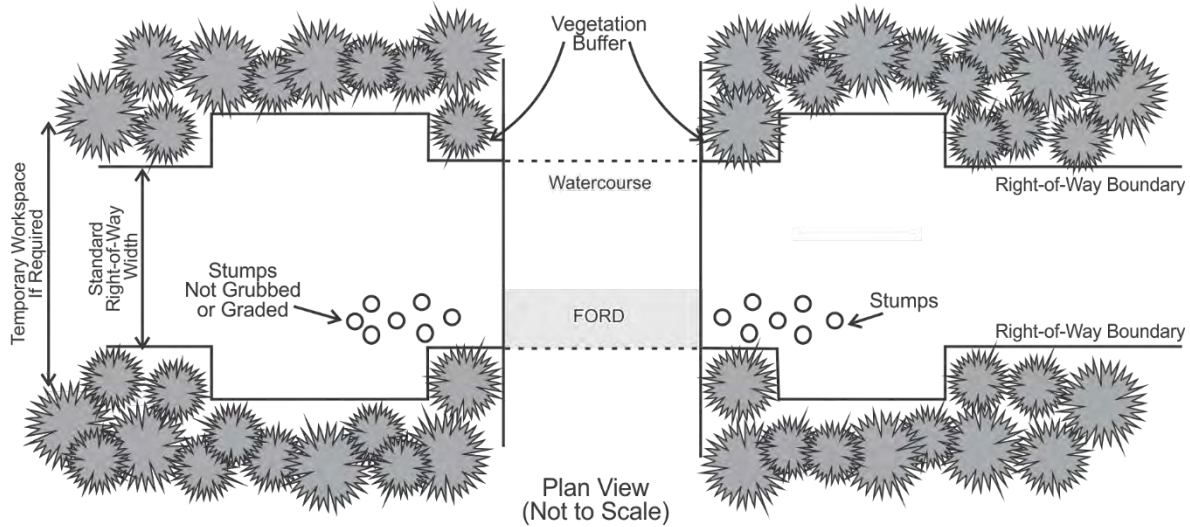
**VEHICLE CROSSING - TYPICAL CLEAR SPAN**

687945

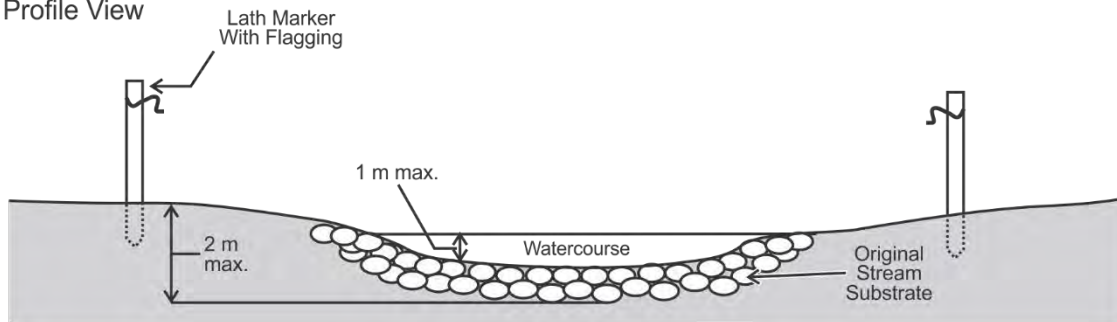
December 2017

Drawing 6

## A. Plan View



## B. Profile View



Profile  
(Not to Scale)

*Representation Only*

### Notes:

1. Where approved for use, as indicated in the Watercourse Crossing Inventory (Section 8.7 of Volume 6 of the Environmental Plans), fords provide access across relatively shallow and narrow nonfish-bearing watercourses with granular beds and shallow approach banks where no grading is necessary for the passage of equipment and vehicles. Watercourses are typically subject to seasonal flows, and dry at the time of crossing. Where water depth, streambed composition or banks slopes could pose mobility problems for rubber tired vehicles, limit ford traffic to tracked equipment.
2. On fish-bearing watercourses, ensure a one-time only crossing of a ford, if required and approved by an Environmental Inspector to facilitate a vehicle crossing installation and/or removal.
3. Do not use ford during fish spawning, incubation or migration periods.
4. Reduce grading in proximity to watercourses. Grade and grub only along the trench line or an area immediately adjacent to the trench line. Pull soil and debris away from the watercourse, if banks are to be graded.
5. Use ford only when necessary for construction.
6. Stabilize banks and approaches with a granular blanket underlain by a geotextile, if warranted.
7. Mark the boundaries of the ford on both sides of the crossing to confine all vehicle traffic to the hardened ford.
8. Reclaim and stabilize bed and banks to a stable contour when the ford is no longer needed. Granular blanket need not be removed if it is not a barrier to fish during low flow conditions.

Adapted from CAPP *et al.* (2012)

## TRANS MOUNTAIN EXPANSION PROJECT



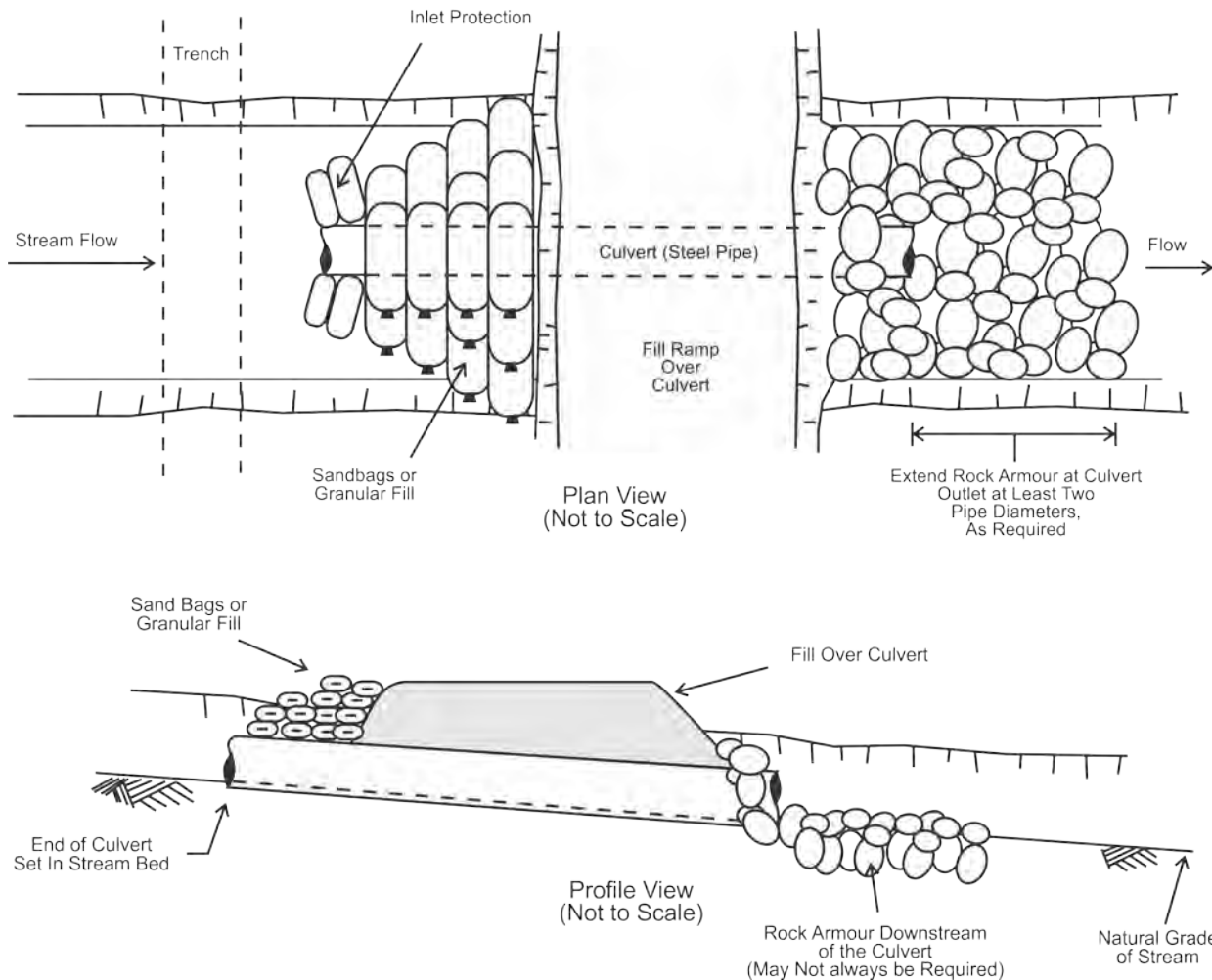
## VEHICLE CROSSING - TYPICAL FORD

687945

December 2017

Drawing 7

These drawings have been developed as a visual guide to assist with the implementation of mitigation measures introduced in the EPP. These drawings are illustrative only and not to scale. Any distances included on the drawings are only included to assist with providing a visual indication of general distances involved unless otherwise specified in the notes.



**Representation Only**

**Notes:**

1. Construct ramp and culvert crossings to allow vehicles and equipment to cross relatively narrow nonfish-bearing watercourses, unless otherwise approved.
2. Isolate the crossing area within the watercourse prior to constructing the culvert and ramp crossing.
3. Do not use organic materials (e.g., topsoil/root zone material) to construct the ramp. Grade spoil or other fill material can be used to construct ramps as approved by the Environmental Inspector. Where fill material is used to construct ramps, ensure geotextile fabric and sediment control structures are installed as directed by the Environmental Inspector.
4. Size the culverts to handle 150% of maximum anticipated flows and according to permit conditions where fish passage is necessary, if approved for use within a fish-bearing watercourse.
5. Place ends of culverts an angle that does not exceed normal watercourse gradient. This should typically be completed without the need for excavation. Depth of placement is dependent upon bed type, culvert size and expected flow conditions.
6. Remove temporary culverts and ramp materials when no longer required.
7. Re-establish bed and banks.

Adapted from CAPP *et al.* (2012)

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**TRANS MOUNTAIN EXPANSION PROJECT**



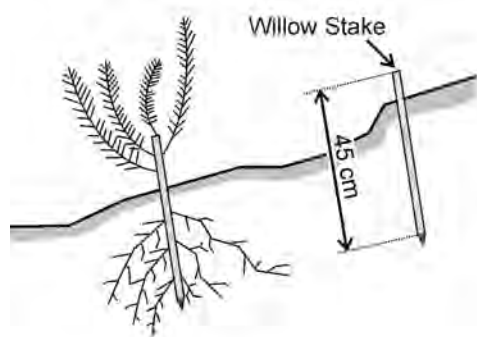
**VEHICLE CROSSING – RAMP AND CULVERT**

687945

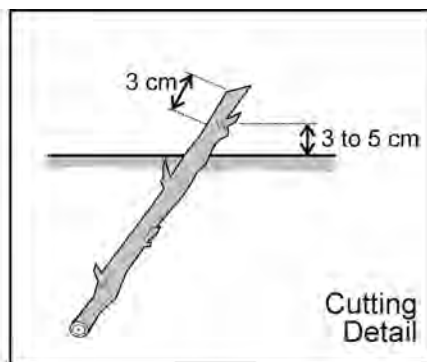
December 2017

Drawing 8



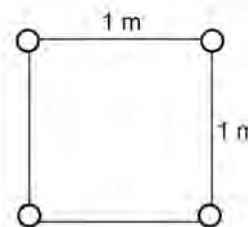


Profile  
(Not to Scale)



Profile  
(Not to Scale)

Staking Pattern Detail

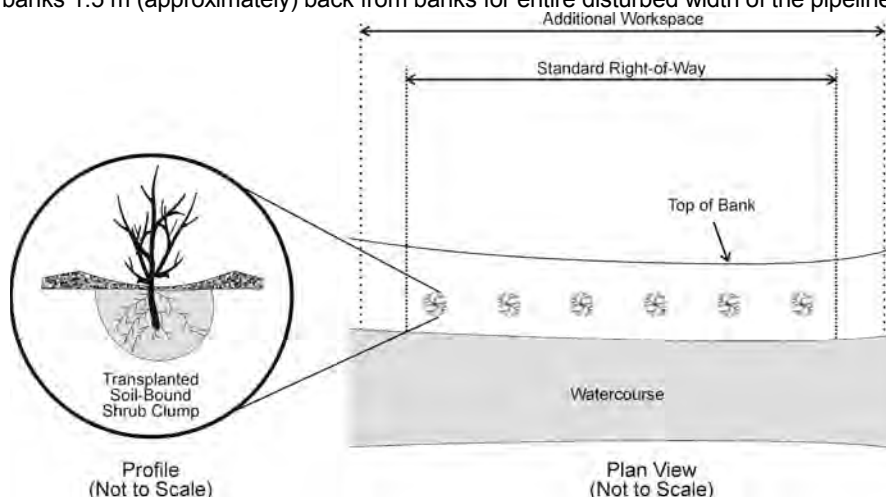


Plan View  
(Not to Scale)

*Representation Only*

#### Notes:

1. Install dormant stakes of suitable species (e.g., willow, alder, dogwood) on watercourse banks.
2. Make clean cuts with unsplit ends using pruning shears, a hand saw or chain saw.
3. Select stock from the bottom of branches, not tips.
4. Mark basal ends to ensure correct installation.
5. Ensure at least one lateral bud is above surface and three are below. Plant cuttings at an angle.
6. Protect material from drying out. Install as soon as practical after salvage.
7. Trim side shoots close to main stock.
8. Use frost pin to make pilot hole. Minimize damage to stake when driving in by using a neoprene lined post hole pounder or rubber mallet.
9. Install live stakes on banks 1.5 m (approximately) back from banks for entire disturbed width of the pipeline construction footprint.



Profile  
(Not to Scale)

Plan View  
(Not to Scale)

*Representation Only*

#### Notes:

1. Salvage and replace dormant shrubs on all watercourse banks where shrubs are present on the pipeline construction footprint.
2. Salvage whole bushes from the pipeline construction footprint during grading of banks. Ensure bulk of root mass is surrounded by soil.
3. Store salvaged shrubs on edge of pipeline construction footprint, cover with geofabric or additional soil. Water as required to prevent from drying out.
4. Transplant as soon as practical when reconstructing watercourse banks.
5. Backfill around rootball with dry sand to minimize the risk of freezing the following winter.
6. Soak the ground around the transplant with water.

Adapted from CAPP *et al.* (2012)

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#### TRANS MOUNTAIN EXPANSION PROJECT



#### SHRUB STAKING AND LIVE SHRUB TRANSPLANTING

687945

December 2017

Drawing 9

## **APPENDIX D**

### **RESOURCE SPECIFIC MITIGATION TABLES**

TABLE D-1

RESOURCE-SPECIFIC MITIGATION MEASURES FOR ENVIRONMENTAL FEATURES ENCOUNTERED WITHIN CAMPS AND STOCKPILE SITES AND ASSOCIATED ACCESS ROADS

Camp/Stockpile Site Location	General Description	Wildlife and Wildlife Habitat	Vegetation Rare Plants/Weeds	Wetlands	Watercourses	Soils	Archaeology
Acheson							
North Gate Stockpile Site [ENO047] Nearest KP 51.23 Distance to Right-of-way: 4.56 km Size: 12.75 ha	The site is located on a level, disturbed site. No vegetation or topsoil appears to be present. Access to the site is along Township Road 531A through an industrial area. No new temporary access is required.	The site is within a previously cleared area and is surrounded by industrial land uses. No wildlife concerns identified.	No rare plant concerns identified. Ensure that equipment arrives at temporary construction lands and infrastructure construction sites clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of this EPP in the event that weeds are encountered during construction.	No wetlands present.	No watercourses present.	No topsoil salvage or root zone material salvage is required in areas of disturbed land.	Clearance under the <i>Historical Resources Act</i> has been issued by Alberta Culture and Tourism (ACT).
Acheson Office/Yard [ENO002] Nearest KP 52.14 Distance to Right-of-way: 2.00 km Size: 3.63 ha	The site is located on flat, partially disturbed industrial land. Some vegetation is present. Access to the site is along Acheson Road through an industrial area. No new temporary access is required.	The site is within a previously cleared area and is surrounded by industrial land uses. No wildlife concerns identified.	No rare plant concerns identified. Ensure that equipment arrives at temporary construction lands and infrastructure construction sites clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of this EPP in the event that weeds are encountered during construction.	A seasonal emergent marsh is located within 30 m of site boundary. Ensure applicable notifications, permits and approvals are obtained and adhere to the general wetland mitigation measures and (see Sections 5.0 and 7.0 of this EPP, respectively) if work within the wetland is required.	No watercourses present.	No topsoil salvage or root zone material salvage is required in areas of disturbed land. Salvage topsoil/root zone material (minimum 15 cm, maximum 40 cm) from undisturbed areas where construction activities will take place. Refer to mitigation measures for soils handling provided in Section 8.0 of this EPP and the Soil Handling Contingency Plan (Appendix B of this EPP).	Clearance under the <i>Historical Resources Act</i> has been issued by ACT.
Enoch [ENO055] Nearest KP 49.33 Distance to Right-of-Way 2.54 km Size 11.11 ha	This site is located on level agricultural land on the Stony Plain Indian Reserve. Access to the site is along Township Road 523. No new temporary access is required.	The site is located in Sensitive Raptor Range for bald eagle and in Sharp-tailed Grouse Range. The site is located on previously disturbed lands (cultivated field) and no known raptor nests or grouse leks occur on-site. No wildlife concerns identified.	Ensure that equipment arrives on-site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of the Temporary Construction Lands and Infrastructure EPP in the event that weeds are encountered during construction.	There are no wetlands located within 30 m of the site.	No watercourses present.	No topsoil salvage or root zone material salvage is required in areas of disturbed land.	Clearance under the <i>Historical Resources Act</i> has been issued by ACT.
Edson							
Edson Office and Yard (Range Road 180 & Highway 16 - Ledcor Yard) [EDS003.2] Nearest KP 237.20 Distance to Right-of-way: 1.78 km Size: 13.24 ha	The site is located on a previously disturbed, level agricultural land recently used as a construction yard by Ledcor. The site is accessed south from Highway 16 along Range Road 180. No new temporary access is required.	The site is within a previously cleared area and is surrounded by agricultural land uses. No wildlife concerns identified.	No rare plant concerns identified. Ensure that equipment arrives at the site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of this EPP in the event that weeds are encountered during construction.	No wetlands present.	No watercourses present.	No topsoil salvage or root zone material salvage is required in areas of disturbed land. Salvage topsoil/root zone material (minimum 15 cm, maximum 40 cm) from undisturbed areas where construction activities will take place. Refer to mitigation measures for soils handling provided in Section 8.0 of this EPP and the Soil Handling Contingency Plan (Appendix B of this EPP).	Clearance under the <i>Historical Resources Act</i> has been issued by ACT.

TABLE D-1 Cont'd

Camp/Stockpile Site Location	General Description	Wildlife and Wildlife Habitat	Vegetation Rare Plants/Weeds	Wetlands	Watercourses	Soils	Archaeology
Valemount and Blue River							
Valemount Camp, Stockpile and Office/Yard [VAL026.1] Nearest KP 520.20 Distance to Right-of-way: 0.38 km Size: 20.63 ha	The site is located on mixed abandoned/overgrown golf course and recently cleared forested lands within the Village of Valemount. Isolated wetlands/ponds on site (associated with former golf course). Access to the site adjacent to Highway 5. No new temporary access is required.	Schedule construction activities outside of the migratory bird nesting period (April 14 to August 19), where feasible. Refer to mitigation measures for migratory birds provided in Section 7.0 of this EPP. Located within the Robson Grizzly Bear Population Unit. Refer to the Grizzly Bear Mitigation and Monitoring Plan: Robson, Wells Grey and Columbia Shuswap Grizzly Bear Populations.	No rare plant concerns previously identified, however this site is located in an area of native vegetation and should be surveyed prior to construction. Ensure that equipment arrives at the site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of this EPP in the event that weeds are encountered during construction.	There is a shrubby swamp with open water component on site, associated with abandoned/overgrown golf course No permanent wetland loss will be associated with the site. Provincial permitting under the BC Water and Sustainability Act will be completed for temporary disturbance to sites within wetlands as warranted. Adhere to the general wetland mitigation measures and (see Sections 5.0 and 7.0 of this EPP, respectively) if work within the wetland is required.	There is a mapped, poorly defined nonfish-bearing NCD running through the site. Install drainage control measures, as approved by an Environmental Inspector. Implement structures and materials (e.g., cross ditches and berms), as outlined in the Soil Erosion and Sediment Control Contingency Plan (see Appendix B of the EPP) to ensure that sediment in surface water draining from the construction site does not adversely affect the surrounding terrain or any watercourses or wetlands (see Sediment Fence Dwg. 4 provided in Appendix C of this EPP). Ensure that a 100 m separation distance is maintained between watercourses and wetlands and fuel or hazardous material storage sites, and oil change and refuelling areas, unless otherwise approved. Implement additional mitigation measures in Sections 5.0 and 7.0 of the EPP to avoid disturbance to watercourses and wetlands from Project activities.	Salvage topsoil/root zone material (minimum 15 cm, maximum 40 cm) from undisturbed areas where construction activities will take place. Refer to mitigation measures for soils handling provided in Section 8.0 of this EPP and the Soil Handling Contingency Plan (Appendix B of this EPP).	An Archaeological Overview Assessment was completed and will be submitted to the British Columbia (BC) Archaeology Branch
Valemount Stockpile Site [VAL025] Nearest KP 522.3 Distance to Right-of-way: 1.06 km Size: 8.00 ha	The site is located on a previously disturbed, bare, graded and compacted gravel area with no vegetation. The site is accessed via an existing gravel road south of Cedarside Road. No new temporary access is required.	The site is located within the Robson Grizzly Bear Population Unit. Refer to the Grizzly Bear Mitigation and Monitoring Plan: Robson, Wells Grey and Columbia Shuswap Grizzly Bear Populations Units (prepared for BC EAO Condition 19).	No rare plant concerns identified. Ensure that equipment arrives at the site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of this EPP in the event that weeds are encountered during construction.	No wetlands present.	No watercourses present.	No topsoil salvage or root zone material salvage is required in areas of disturbed land.	The site has low archaeological potential. No further work is recommended.
Blue River Camp [BLU007] Nearest KP 610.11 Distance to Right-of-way: 0.34 km Size: 16.99 ha	The site is located on level, forested land with native vegetation. Access to the site is from Murtle Lake Road to an existing approach. No new temporary access is required.	Schedule clearing and construction activities outside of the migratory bird nesting period (April 4 to August 18), where feasible. Refer to mitigation measures for migratory birds provided in Section 7.0 of this EPP. Located within the Wells Grey Grizzly Bear Population Unit. Refer to the Grizzly Bear Mitigation and Monitoring Plan: Robson, Wells Grey and Columbia Shuswap Grizzly Bear Populations Units (prepared for BC EAO Condition 19).	No rare plant concerns previously identified, however this site is located in an area of native vegetation and should be surveyed prior to construction. Ensure that equipment arrives at the site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of this EPP in the event that weeds are encountered during construction.	No wetlands present.	The west edge of the camp site is located approximately 15 m from a watercourse. Restrict the disturbance to within the proposed limits. Install drainage control measures, as approved by an Environmental Inspector. Implement structures and materials (e.g., cross ditches and berms), as outlined in the Soil Erosion and Sediment Control Contingency Plan (see Appendix B of the EPP) to ensure that sediment in surface water draining from the construction site does not adversely affect the surrounding terrain or any watercourses (see Sediment Fence Dwg. 4 provided in Appendix C of the EPP). Ensure that a 100 m separation distance is maintained between watercourses and fuel or hazardous material storage sites, and oil change and refuelling areas, unless otherwise approved. Implement additional mitigation measures in Sections 5.0 and 7.0 of the EPP to avoid disturbance to watercourses from Project activities.	Salvage topsoil/root zone material (minimum 15 cm, maximum 40 cm) from undisturbed areas where construction activities will take place. Refer to mitigation measures for soils handling provided in Section 8.0 of this EPP and the Soil Handling Contingency Plan (Appendix B of this EPP).	An Archaeological Overview Assessment was completed and will be submitted to the British Columbia (BC) Archaeology Branch
Blue River Office/Yard [BLU008] Nearest KP 611.69 Distance to Right-of-way: 0.02 km Size: 5.35 ha	The site is located adjacent to the pipeline construction footprint on level, forested land with native vegetation. Access to the site is from 1 <sup>st</sup> avenue. A new temporary approach road is required to access the site from 1 <sup>st</sup> avenue. No new temporary access is required.	Schedule clearing and construction activities outside of the migratory bird nesting period (April 4 to August 18), where feasible. Refer to mitigation measures for migratory birds provided in Section 7.0 of this EPP. Located within the Wells Grey Grizzly Bear Population Unit. Refer to the Grizzly Bear Mitigation and Monitoring Plan: Robson, Wells Grey and Columbia Shuswap Grizzly Bear Populations Units (prepared for BC EAO Condition 19).	No rare plant concerns previously identified, however this site is located in an area of native vegetation and should be surveyed prior to construction. Ensure that equipment arrives at the site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of this EPP in the event that weeds are encountered during construction.	No wetlands present.	No watercourses present.	Salvage topsoil/root zone material (minimum 15 cm, maximum 40 cm) from undisturbed areas where construction activities will take place. Refer to mitigation measures for soils handling provided in Section 8.0 of this EPP and the Soil Handling Contingency Plan (Appendix B of this EPP).	The site has low archaeological potential. No further work is recommended.



TABLE D-1 Cont'd

Camp/Stockpile Site Location	General Description	Wildlife and Wildlife Habitat	Vegetation Rare Plants/Weeds	Wetlands	Watercourses	Soils	Archaeology
Vavenby							
Vavenby Stockpile Site [VAV009] Nearest KP 696.54 Distance to Right-of-way: 0.61 km Size: 28.39 Ha.	The site is located on a disturbed, level and compacted former industrial site. There are a few patches and isolated occurrences of regrowth vegetation ( <i>e.g.</i> , saplings, shrubs). Access to the site is located directly adjacent to McCorrie Road. No new temporary access is required.	Schedule clearing and construction activities outside of the migratory bird nesting period (April 4 to August 18), where feasible. Refer to mitigation measures for migratory birds provided in Section 7.0 of this EPP. Located within the Wells Grey Grizzly Bear Population Unit. Refer to the Grizzly Bear Mitigation and Monitoring Plan: Robson, Wells Grey and Columbia Shuswap Grizzly Bear Populations Units (prepared for BC EAO Condition 19). The site is located within early draft critical habitat for western screech-owl ( <i>mafarlaenei</i> ssp.). Refer to the Western Screech-Owl Mitigation and Habitat Restoration Plan (Section 6.0 of Volume 6 of the Environmental Plans).	No rare plant concerns identified. Ensure that equipment arrives at the site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of this EPP in the event that weeds are encountered during construction.	No wetlands present.	No watercourses present.	No topsoil salvage or root zone material salvage is required in areas of disturbed land. Salvage topsoil/root zone material (minimum 15 cm, maximum 40 cm) from undisturbed areas where construction activities will take place. Refer to mitigation measures for soils handling provided in Section 8.0 of this EPP and the Soil Handling Contingency Plan (Appendix B of this EPP).	An Archaeological Overview Assessment was completed and submitted to the British Columbia (BC) Archaeology Branch
Clearwater McMahon Camp and Office/Yard [CLE010] Nearest KP 715.7 Distance to Right-of-way: 0.31 km Size: 18.52 ha	The site is located on agricultural land. Access to the site is existing from Candle Creek Road via Highway 5. The site is located immediately north of Highway 5.	Schedule clearing and construction activities outside of the migratory bird nesting period (April 4 to August 18), where feasible. Refer to mitigation measures for migratory birds provided in Section 7.0 of this EPP. The site is located in early draft critical habitat for American badger, <i>jeffersoni</i> ssp. and western screech-owl, <i>maclarlanei</i> ssp. Refer to the American Badger Mitigation Habitat Restoration Plan and Western Screech-Owl Mitigation and Habitat Restoration Plan (Section 6.0 and Section 6.0 of Volume 6 of the Environmental Plans).	The site has moderate potential to support rare plant species. Vegetation surveys are recommended prior to construction. Ensure that equipment arrives at the site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of this EPP in the event that weeds are encountered during construction.	A shrubby swamp is located in the small treed area in the southeast corner of the site. No permanent wetland loss will be associated with the site. Provincial permitting under the BC <i>Water and Sustainability Act</i> will be completed for temporary disturbance to sites within wetlands as warranted. Adhere to the general wetland mitigation measures and (see Sections 5.0 and 7.0 of this EPP, respectively) if work within the wetland is required.	No watercourses present.	Salvage topsoil/root zone material (minimum 15 cm, maximum 40 cm) from undisturbed areas where construction activities will take place. Refer to mitigation measures for soils handling provided in Section 8.0 of this EPP and the Soil Handling Contingency Plan (Appendix B of this EPP).	An Archaeological Overview Assessment will be completed and submitted to the British Columbia (BC) Archaeology Branch
Clearwater Camp 2 Road [CLE011] Nearest KP 720.44 Distance to Right-of-way: 1.30 km Size: 11.51 Ha	The site is located on level, vegetated land. A new temporary access is required through disturbed land for approximately 130 m.	Schedule clearing and construction activities outside of the migratory bird nesting period (April 4 to August 18), where feasible. Refer to mitigation measures for migratory birds provided in Section 7.0 of this EPP. Located within the Wells Grey Grizzly Bear Population Unit. Refer to the Grizzly Bear Mitigation and Monitoring Plan: Robson, Wells Grey and Columbia Shuswap Grizzly Bear Populations Units (prepared for BC EAO Condition 19).	No rare plant concerns identified. Ensure that equipment arrives at the site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of this EPP in the event that weeds are encountered during construction.	No wetlands present.	No watercourses present.	Salvage topsoil/root zone material (minimum 15 cm, maximum 40 cm) from undisturbed areas where construction activities will take place. Refer to mitigation measures for soils handling provided in Section 8.0 of this EPP and the Soil Handling Contingency Plan (Appendix B of this EPP).	The site has low archaeological potential. No further work is recommended.

TABLE D-1 Cont'd

Camp/Stockpile Site Location	General Description	Wildlife and Wildlife Habitat	Vegetation Rare Plants/Weeds	Wetlands	Watercourses	Soils	Archaeology
Kamloops							
Kamloops Domtar Old Mill Stockpile Site [KAM013] Nearest KP 844.66 Distance to Right-of-way: 2.02 km Size: 23.92 ha.	The site is located within the City of Kamloops on disturbed industrial land adjacent to the Thompson River. No vegetation is present at the site. Trees are present along the banks of the Thompson River outside the proposed site boundaries. Access is existing along Mission Flats Road. No new temporary access is required.	The Site is located within proposed critical habitat for Lewis's woodpecker. Refer to the Williamson's Sapsucker and Lewis's Woodpecker Mitigation and Habitat Restoration Plan (Section 6.0 of Volume 6 of the Environmental Plans). The Site is located within the South Thompson River IBA.	No rare plant concerns identified. The Site is located within a grasslands range, however no impact to native grasslands will occur. Ensure that equipment arrives at the site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of this EPP in the event that weeds are encountered during construction.	No wetlands present.	The site is located along the banks of the Thompson River. The land use is industrial and has been cleared previously. Ensure that a 100 m separation distance is maintained between watercourses and wetlands and fuel or hazardous material storage sites, and oil change and refuelling areas, unless otherwise approved. Implement additional mitigation measures in Sections 5.0 and 7.0 of the EPP to avoid disturbance to watercourses and wetlands from Project activities. Ensure that equipment arrives on site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of the Temporary Construction Lands and Infrastructure EPP in the event that weeds are encountered during construction.	No topsoil salvage or root zone material salvage is required in areas of disturbed land.	An Archaeological Overview Assessment will be completed and submitted to the British Columbia (BC) Archaeology Branch
Kamloops Office and Yard [KAM014] Nearest KP 846.62 Distance to Right-of-way: 0.16 km Size: 7.94 ha	The site is located on previously disturbed industrial land. Some vegetation is present on site. Access is existing along Frontage Road. No new temporary access is required.	Schedule clearing and construction activities outside of the migratory bird nesting period (April 4 to August 18), where feasible. Refer to mitigation measures for migratory birds provided in Section 7.0 of this EPP. Located within early draft critical habitat for American Badger and Western Screech-owl <i>macfarlanei</i> ssp. Refer to the American Badger Mitigation and Habitat Restoration Plan and Western Screech-Owl Mitigation and Habitat Restoration Plan (Section 6.0 and Section 6.0 of Volume 6 of the Environmental Plans). The site is located within the Douglas Lake Plateau IBA.	The site is within an area with a BC CDC rare plant occurrence for an endangered species, however the land use at the site is disturbed and potential to support the species is low. The site is located within a grasslands range, however no impact to native grasslands will occur. Ensure that equipment arrives at the site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of this EPP in the event that weeds are encountered during construction.	No wetlands present.	No watercourses present.	No topsoil salvage or root zone material salvage is required in areas of disturbed land.	The site has low archaeological potential. No further work is recommended.
Alternative Kamloops KIB3 Office and Yard [KAM012] Nearest KP 835.20 Distance to Right-of-way: 1.68 km Size: 8.64 ha	The site is located on Kamloops Indian Reserve No. 1 on partially disturbed, level, native grassland pasture adjacent to the CN Kamloops Yard and Highway 5. Access is via existing trail extending from Highway. Road upgrades will be required.	No specific wildlife concerns identified. Schedule construction activities outside of the migratory bird nesting period (April 4 to August 18), where feasible. Refer to mitigation measures for migratory birds provided in Section 7.0 of this EPP.	The site has the potential to be located with on native grasslands range Refer to the Grasslands Survey and Mitigation Plan in Section 5.4 of Volume 6 of the Environmental Plans. Ensure that equipment arrives at the site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of this EPP in the event that weeds are encountered during construction.	The site is located within two potential wet meadow wetlands. No permanent wetland loss will be associated with the site. Provincial permitting under the BC Water and Sustainability Act will be completed for temporary disturbance to sites within wetlands as warranted. Field studies will be conducted as warranted to confirm wetland status and boundaries and appropriate mitigation measures will be implemented to ensure no net loss of wetland function. Adhere to the general wetland mitigation measures and (see Sections 5.0 and 7.0 of this EPP, respectively) if work within the wetland is required.	No watercourses present.	Salvage topsoil/root zone material (minimum 15 cm, maximum 40 cm) from undisturbed areas where construction activities will take place. Refer to mitigation measures for soils handling provided in Section 8.0 of this EPP and the Soil Handling Contingency Plan (Appendix B of this EPP).	An Archaeological Overview Assessment will be completed and submitted to the British Columbia (BC) Archaeology Branch

TABLE D-1 Cont'd

Camp/Stockpile Site Location	General Description	Wildlife and Wildlife Habitat	Vegetation Rare Plants/Weeds	Wetlands	Watercourses	Soils	Archaeology
Merritt							
Merritt Camp, Office and Yard – Chutter Ranch [MER015] Nearest KP 925.35 Distance to Right-of-way: 1.71 km Size: 26.98 ha	The site is located on grassland pasture with sparse trees and existing borrow/gravel pit. Accessed via Highway 5A northeast along Berglund Road. Access upgrades may be required.	No specific wildlife concerns identified. Schedule clearing and construction activities outside of the migratory bird nesting period (April 4 to August 18), where feasible. Refer to mitigation measures for migratory birds provided in Section 7.0 of this EPP.	The site is within an area with a BC CDC rare plant occurrence for an endangered species in an area of native vegetation. Vegetation surveys are recommended prior to construction. The Site is located within a grasslands range, however no impact to native grasslands will occur. Ensure that equipment arrives at the site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of this EPP in the event that weeds are encountered during construction.	The site is located within a potential shrubby swamp and wet meadow. No permanent wetland loss will be associated with the site. Provincial permitting under the BC Water and Sustainability Act will be completed for temporary disturbance to sites within wetlands as warranted. Adhere to the general wetland mitigation measures and (see Sections 5.0 and 7.0 of this EPP, respectively) if work within the wetland is required.	There are three mapped, nonfish-bearing drainages crossing the site. One is named (Hamilton Creek), with two other unnamed features (likely NCDs) shown as tributaries to Hamilton Creek. At this location, Hamilton Creek is likely an NCD. Ensure that a 100 m separation distance is maintained between watercourses and wetlands and fuel or hazardous material storage sites, and oil change and refuelling areas, unless otherwise approved. Implement additional mitigation measures in Sections 5.0 and 7.0 of the EPP to avoid disturbance to watercourses and wetlands from Project activities. Ensure that equipment arrives on site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of the Temporary Construction Lands and Infrastructure EPP in the event that weeds are encountered during construction.	No topsoil salvage or root zone material salvage is required in areas of disturbed land. Salvage topsoil/root zone material (minimum 15 cm, maximum 40 cm) from undisturbed areas where construction activities will take place. Refer to mitigation measures for soils handling provided in Section 8.0 of this EPP and the Soil Handling Contingency Plan (Appendix B of this EPP).	An Archaeological Overview Assessment was completed and will be submitted to the British Columbia (BC) Archaeology Branch
Hope							
Coquihalla Development Stockpile and Office/Yard [HOP052] Nearest KP 1058.7 to 1059.3 Distance to Right-of-way: 0 km Size: 21.92 ha	Located on cleared forested land with small areas of vegetation remaining. Access to the site is from the south from Laidlaw Road.	No wildlife concerns identified.	Some vegetation is present; however, there is low potential for rare plant habitat. Ensure that equipment arrives at the site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of the EPP in the event that weeds are encountered during construction.	No wetlands present.	The property is adjacent to the Wahleach Creek; however, the creek will not be directly disturbed. The site must be designed to avoid encroachment into the 70 m riparian buffer of Wahleach Creek. Ensure that a 100 m separation distance is maintained between watercourses and fuel or hazardous material storage sites, and oil change and refuelling areas, unless otherwise approved. Implement additional mitigation measures in Sections 5.0 and 7.0 of the EPP to avoid disturbance to watercourses from Project activities.	Topsoil/root zone material are likely to be present. Salvage topsoil/root zone material (minimum 15 cm, maximum 40 cm) from undisturbed areas where construction activities will take place. Refer to mitigation measures for soils handling provided in Section 8.0 of the EPP and the Soil Handling Contingency Plan (Appendix B of the EPP).	An Archaeological Overview Assessment will be completed and submitted to the British Columbia (BC) Archaeology Branch
Cheam Apple Road [CHE053] Nearest KP 1075.04 Distance to Right-of-way: 2.75 km Size: 3.9 Ha	Located on level agricultural land. Access to the site is along Appel Road on the Tseatah 2 Indian Reserve. No new temporary access is required.	No specific wildlife concerns identified.	No rare plant concerns identified. Ensure that equipment arrives at the site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of this EPP in the event that weeds are encountered during construction.	No permanent wetland loss will be associated with the site. Provincial permitting under the BC <i>Water Sustainability Act</i> will be completed for temporary disturbance to sites within wetlands as warranted. Field studies will be conducted as warranted to confirm wetland status and boundaries and appropriate mitigation measures will be implemented to ensure no net loss of wetland function.	Ensure that a 100 m separation distance is maintained between watercourses and wetlands and fuel or hazardous material storage sites, and oil change and refuelling areas, unless otherwise approved. Implement additional mitigation measures in Sections 5.0 and 7.0 of the EPP to avoid disturbance to watercourses and wetlands from Project activities.	Install drainage control measures, as approved by an Environmental Inspector. Implement structures and materials ( <i>e.g.</i> , cross ditches and berms), as outlined in the Soil Erosion and Sediment Control Contingency Plan (see Appendix B of the EPP) to ensure that sediment in surface water draining from the construction site does not adversely affect the surrounding terrain or any watercourses or wetlands (see Sediment Fence Dwg. 4 provided in Appendix C of the EPP).	An Archaeological Overview Assessment was completed will be submitted to the British Columbia (BC) Archaeology Branch

TABLE D-1 Cont'd

Camp/Stockpile Site Location	General Description	Wildlife and Wildlife Habitat	Vegetation Rare Plants/Weeds	Wetlands	Watercourses	Soils	Archaeology
Abbotsford							
Abbotsford Brandy Farms Office and Yard [ABB024] Nearest KP: 1108.5 Distance to Right-of-way: 0 m Size: 4.63 ha	The site is located on level agricultural land (cultivated). Access to the site is existing from Interprovincial Highway which is adjacent to the eastern boundary of the site. No new temporary access is required.	No specific wildlife concerns identified.	No rare plant concerns identified. Ensure that equipment arrives at the site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of this EPP in the event that weeds are encountered during construction.	No wetlands present.	No watercourses present.	Salvage topsoil/root zone material (minimum 15 cm, maximum 40 cm) from undisturbed areas where construction activities will take place. Refer to mitigation measures for soils handling provided in Section 8.0 of this EPP and the Soil Handling Contingency Plan (Appendix B of this EPP).	The site has low archaeological potential. No further work is recommended.
Chilliwack							
Cheam Gravel Pit [CHE054] Nearest KP 1078.92 Distance to Right-of-way: 1.93 km Size: 5.0 ha	The site is located on previously disturbed industrial land on the Cheam 1 Indian Reserve. Access to the site is along Rosedale Ferry Road. No new temporary access is required.	No specific wildlife concerns identified.	Avoid clearing of vegetation in the riparian area of the identified shrubby swamp and two open water ponds to avoid impacts to Oregon spotted frog.	Wetland field studies will be conducted as warranted to confirm wetland status and boundaries.  No permanent wetland loss will be associated with the site. Provincial permitting under the BC <i>Water Sustainability Act</i> will be completed for temporary disturbance to sites within wetlands as warranted. Field studies will be conducted as warranted to confirm wetland status and boundaries and appropriate mitigation measures will be implemented to ensure no net loss of wetland function.	Ensure that a 100 m separation distance is maintained between watercourses and wetlands and fuel or hazardous material storage sites, and oil change and refuelling areas, unless otherwise approved. Implement additional mitigation measures in Sections 5.0 and 7.0 of the EPP to avoid disturbance to watercourses and wetlands from Project activities.	Install drainage control measures, as approved by an Environmental Inspector. Implement structures and materials ( <i>e.g.</i> , cross ditches and berms), as outlined in the Soil Erosion and Sediment Control Contingency Plan (see Appendix B of the EPP) to ensure that sediment in surface water draining from the construction site does not adversely affect the surrounding terrain or any watercourses or wetlands (see Sediment Fence Dwg. 4 provided in Appendix C of the EPP).	An Archaeological Overview Assessment was completed and will be submitted to the British Columbia (BC) Archaeology Branch
Surrey, New Westminster, Vancouver and Burnaby							
Surrey 19287 98A Ave Office and Yard – Imasco [SUR021] Nearest KP 1156.20 Distance to Right-of-way: 0.00 km Size: 0.83 ha	The site is located on industrial land. Existing access via 98A Ave.	No specific wildlife concerns identified.	No rare plant concerns identified. Ensure that equipment arrives at the site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of this EPP in the event that weeds are encountered during construction.	No wetlands present.	No watercourses present.	No topsoil salvage or root zone material salvage is required in areas of disturbed land.	The site has low archaeological potential. No further work is recommended.
Surrey 19395 98A Ave Employee Parking [SUR022] Nearest KP 1156.10 Distance to Right-of-way: 0.00 km Size: 1.43 ha	The site is located on bare industrial land. Existing access via 98A Ave.	No specific wildlife concerns identified.	No rare plant concerns identified. Ensure that equipment arrives at the site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of this EPP in the event that weeds are encountered during construction.	No wetlands present.	No watercourses present.	No topsoil salvage or root zone material salvage is required in areas of disturbed land.	The site has low archaeological potential. No further work is recommended.
430 Canfor Ave Office and Yard - Part 1 Nearest KP 1173.20 Distance to Right-of-way: 0.40 km Size: 7.00 ha	Located on mixed industrial lands with sparse trees adjacent to Brunette River. Existing access via United Boulevard.	No specific wildlife concerns identified.	No rare plant concerns identified. Ensure that equipment arrives at the site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of this EPP in the event that weeds are encountered during construction.	No wetlands present.	No watercourses present.	No topsoil salvage or root zone material salvage is required in areas of disturbed land.	The site has low archaeological potential. No further work is recommended.
430 Canfor Ave Office and Yard Part 2 Nearest KP 1173.20 Distance to Right-of-way: 0.78 km Size: 1.92 ha	The site is located on industrial / parking area with sparse trees adjacent to railway and Fraser River. Existing access via United Boulevard and Canfor Ave.	No specific wildlife concerns identified.	No rare plant concerns identified. Ensure that equipment arrives at the site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of this EPP in the event that weeds are encountered during construction.	No wetlands present.	No watercourses present.	No topsoil salvage or root zone material salvage is required in areas of disturbed land.	The site has low archaeological potential. No further work is recommended.

TABLE D-1 Cont'd

Camp/Stockpile Site Location	General Description	Wildlife and Wildlife Habitat	Vegetation Rare Plants/Weeds	Wetlands	Watercourses	Soils	Archaeology
7585 Barnet Highway Stockpile Site [BUR049] Nearest KP: 2.75 (Westridge) Distance to Right-of-way: 0.02 km Size: 2.63 ha	The site is located on industrial site (Kask Bros. concrete facility). Barnet Highway is located along the south boundary of the site. Burrard Inlet is located approximately 90 m north of the site, separated from the site by CN railway and treed land. No new temporary access is required.	The site is located within the English Bay and Burrard Inlet Important Bird Area.	No rare plant concerns identified. Ensure that equipment arrives at the site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of this EPP in the event that weeds are encountered during construction.	No wetlands present.	No watercourses present.	No topsoil salvage or root zone material salvage is required in areas of disturbed land.	The site has low archaeological potential. No further work is recommended.
2115 Commissioner Street (VersaCold Site) [VAN048] Nearest KP 0003.40 Distance to Right-of-way: 7.6 km Size: 2.4 ha	The site is located on a previously disturbed, level industrial site. The ground at the site is currently bare gravel. The site is accessed via Commissioner Street and no new temporary access is required.	<p>Area searches to identify active nests will be conducted prior to initiating activities in areas where pre-clearing or clearing activities are scheduled to occur during the migratory bird nesting period, between March 26 to August 17. If an active nest is identified, it will be subject to site-specific mitigation measures (<i>e.g.</i>, protective buffer or nonintrusive monitoring).</p> <p>Marine mammal monitor will be onsite to monitor marine mammal exclusion areas during impact pile driving: 150 m radius for harbour seals; 1,000 m initial radius for cetaceans and marine mammal species at risk, adjusted to meet 160 dB (marine mammal behavioural disturbance threshold) based on underwater noise monitoring conducted during impact pile driving.</p> <p>During periods of bird migration and/or during extreme weather events, bird strike warnings will be issued to marine construction vessels with a request to reduce deck lighting.</p>	Reasonable effort made such that equipment arrives on-site clean and free of soil or vegetative debris. Clean equipment involved in topsoil/root zone material handling at weed infested sites prior to leaving the location, unless topsoil/root zone material has been salvaged from the entire construction site. Refer to Section 7.0 of the Temporary Construction Lands and Infrastructure EPP in the event that weeds are encountered during construction.	No wetlands present.	<p>Piles for the temporary trestle and access platform will be installed during the DFO least-risk work window for Burrard Inlet (August 16 – February 28).</p> <p>Following removal of temporary in-water infrastructure, marine riparian vegetation will be replanted within the area previously cleared. Maintain a 100 m separation distance between watercourses or waterbodies and fuel or hazardous material storage sites, and oil change and refuelling areas, unless otherwise approved. Implement additional mitigation measures in Section 5.0 and 7.0 of the EPP to reduce disturbance to watercourses from Project activities.</p>	Appropriate sediment and erosion control measures will be implemented to prevent sediment runoff into the marine environment.	The site has low archaeological potential. No further work is recommended.


**APPENDIX E**

**ENVIRONMENTAL SITE DRAWINGS FOR  
TEMPORARY CONSTRUCTION LANDS AND INFRASTRUCTURE**



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### TEMPORARY CONSTRUCTION LANDS AND INFRASTRUCTURE AND ASSOCIATED ACCESS ROADS

SHEET 1 OF 23


#### TRANS MOUNTAIN EXPANSION PROJECT

- KP Marker
- TMEP Pipeline
- Deactivated / Overgrown Access Road
- New Temporary Access Road
- Other Access Road
- Camp / Stockpile / Construction Yard
- Easement
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- Log Deck
- Temporary Workspace
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- Land Parcel
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- Sensitive Raptor Range
- Sharp-tailed Grouse Range
- Trumpeter Swan Water / Watercourse (with 800m Buffer)
- Waterbody / Watercourse
- Wetland

Projection: NAD 1983 UTM Zone 12N.  
Pipeline SSEID005.1, KPs & Footprint provided by UPI April 3, 2017; Access Roads provided by UPI Feb 6, 2017 (AB) and Apr 3, 2017 (BC); Camps and Stockpiles: KMC August 11, 2017; Transportation: AltaLIS 2016, BC MFLNRO 2012 & NRCAN 2015; Hydrology: BC MFLNRO 2018 & NRCAN 2007-2011; Geopolitical Boundaries: AltaLIS 2017, BC MCSCD 2016 & NRCAN 2003; First Nation Lands: AltaLIS 2010, Government of Canada 2017; Old Growth Management Areas: BC MFLNRO 2017; Alberta Wildlife Sensitivity: AEP, GOA 2015; Land parcels provided by Opus Stewart-Weir, August 15, 2017; Wetlands: CH2M 2017; ATS, DLS, NTS & PNG Grids: TERA Environmental Consultants, 2008 & 2009; Service Layer Credits: © 2017 DigitalGlobe Image courtesy of USGS © 2017 GeoEye Earthstar Geographics SIO © 2017 Microsoft Corporation.

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# TEMPORARY CONSTRUCTION LANDS AND INFRASTRUCTURE AND ASSOCIATED ACCESS ROADS

SHEET 2 OF 23

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### TEMPORARY CONSTRUCTION LANDS AND INFRASTRUCTURE AND ASSOCIATED ACCESS ROADS

SHEET 3 OF 23


#### TRANS MOUNTAIN EXPANSION PROJECT

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ALL LOCATIONS APPROXIMATE





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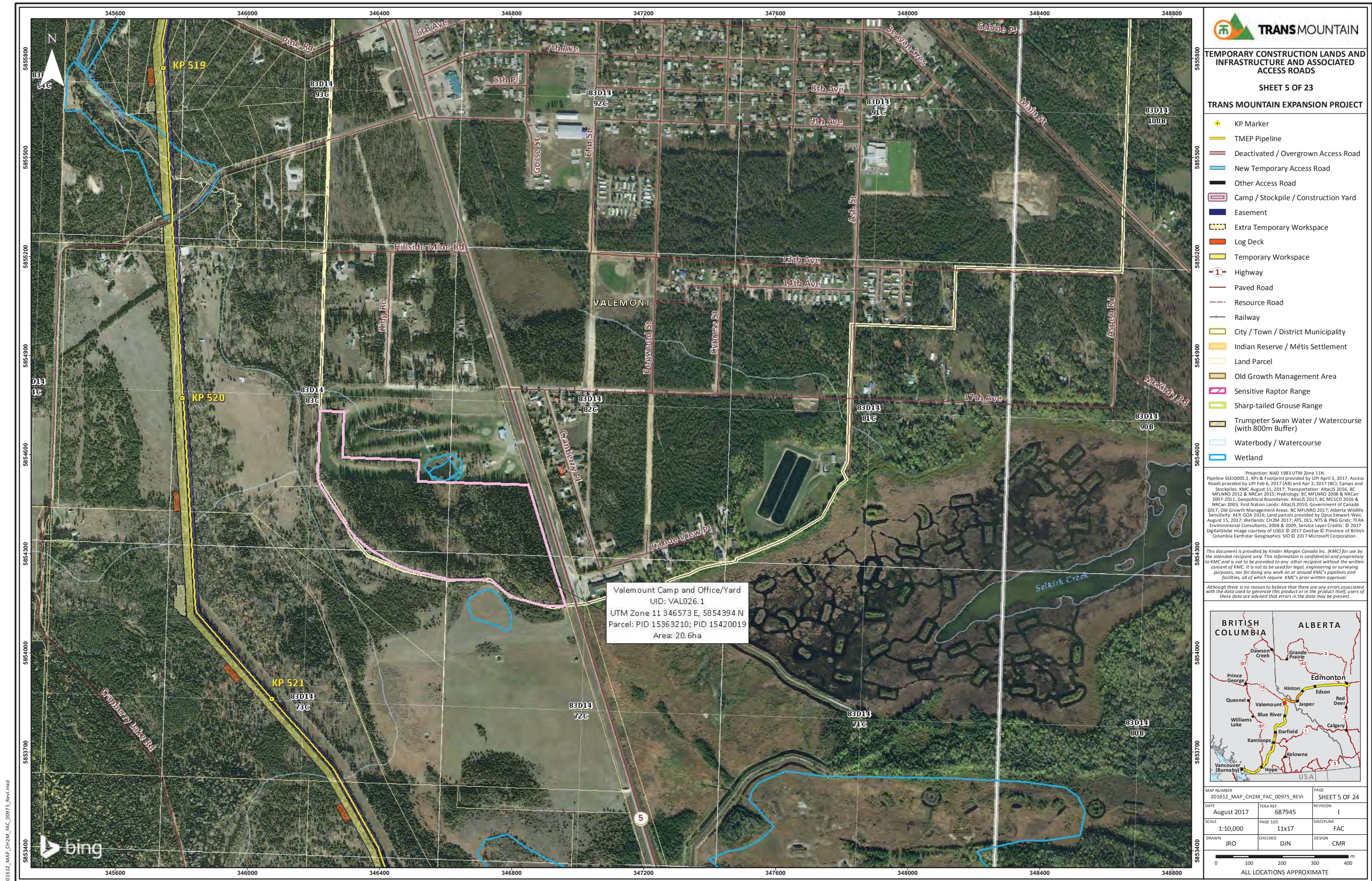


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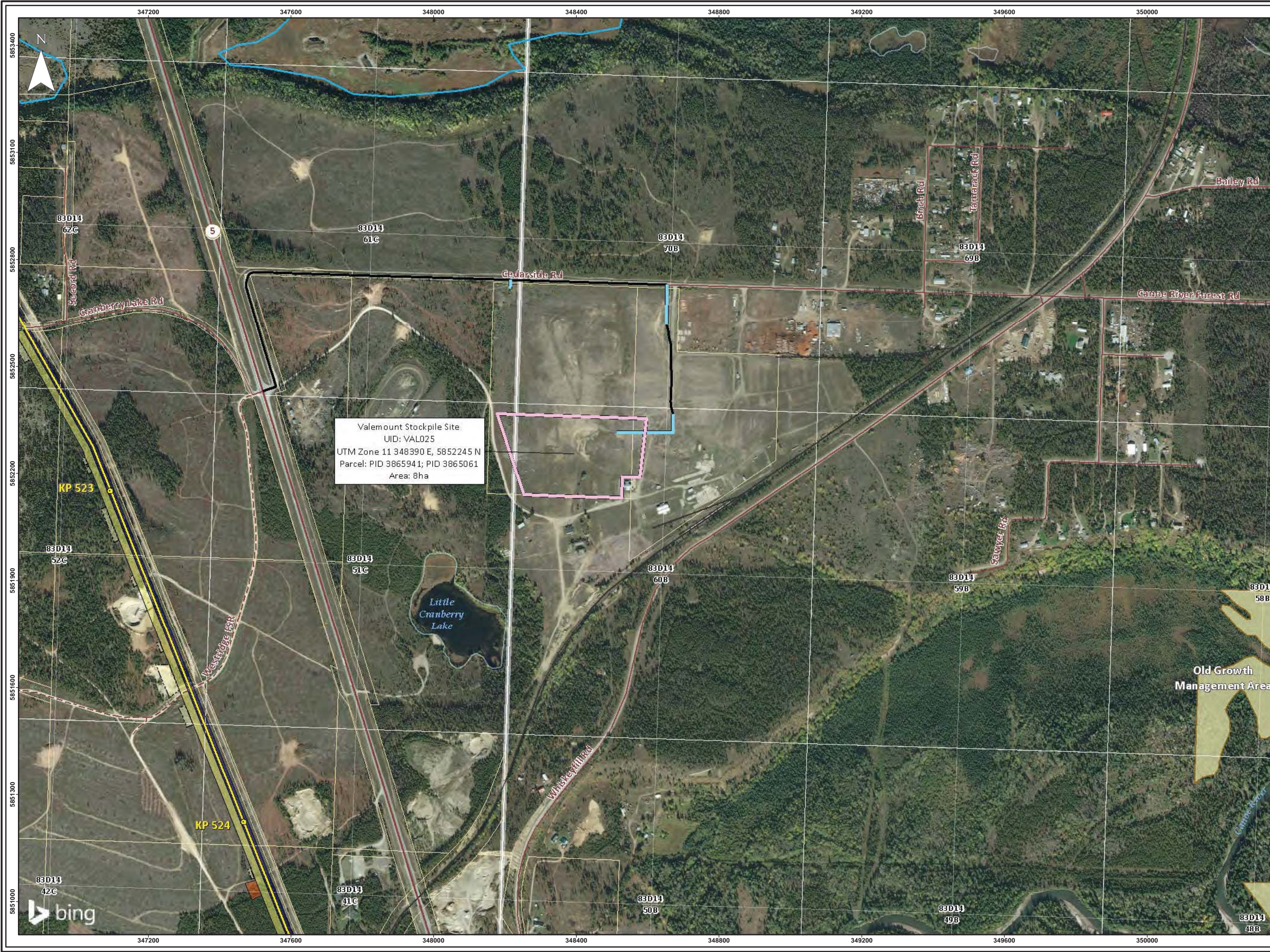
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






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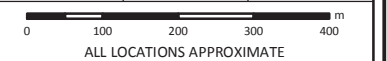
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















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### TRANS MOUNTAIN

TEMPORARY CONSTRUCTION LANDS AND  
INFRASTRUCTURE AND ASSOCIATED  
ACCESS ROADS

SHEET 8 OF 23

TRANS MOUNTAIN EXPANSION PROJECT

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**BRITISH COLUMBIA**

**ALBERTA**



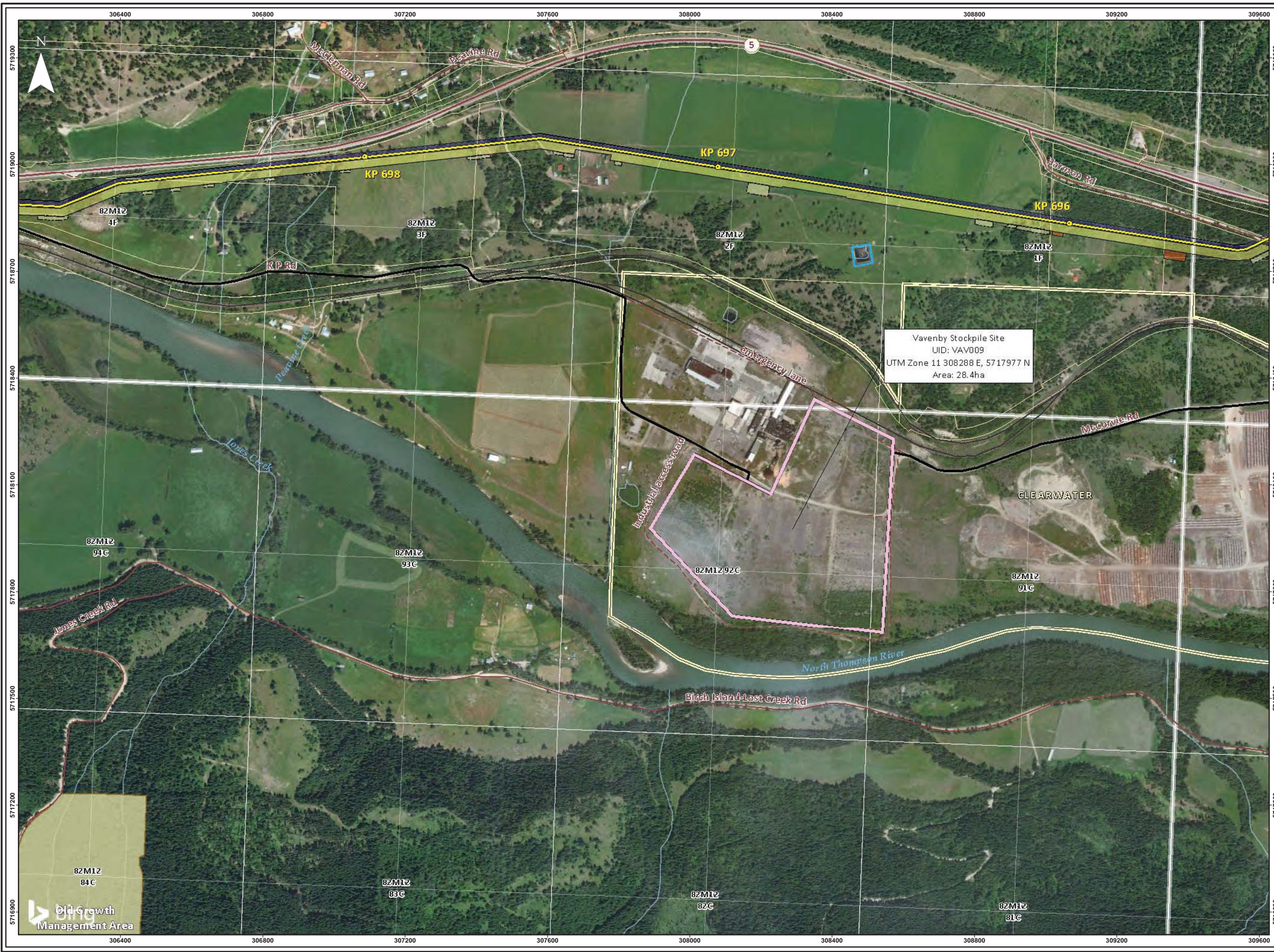
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DRAWN JRO	DESIGN CMR









### TRANS MOUNTAIN

#### TEMPORARY CONSTRUCTION LANDS AND INFRASTRUCTURE AND ASSOCIATED ACCESS ROADS

SHEET 10 OF 23

#### TRANS MOUNTAIN EXPANSION PROJECT

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- Sensitive Raptor Range
- Sharp-tailed Grouse Range
- Trumpeter Swan Water / Watercourse (with 800m Buffer)
- Waterbody / Watercourse
- Wetland

Projection: NAD 1983 UTM Zone 11N.  
Pipeline SSEID005.1, KPs & Footprint provided by UPI April 3, 2017 (BC); Access Roads provided by UPI Feb 6, 2017 (AB) and Apr 3, 2017 (BC); Camps and Stockpiles: KMC August 11, 2017; Transportation: AltaLIS 2016, BC MFLNRO 2012 & NRCAN 2015; Hydrology: BC MFLNRO 2018 & NRCAN 2007-2011; Geopolitical Boundaries: AltaLIS 2017, BC MCSCD 2016 & NRCAN 2003; First Nation Lands: AltaLIS 2010, Government of Canada 2017; Old Growth Management Areas: BC MFLNRO 2017; Alberta Wildlife Sensitivity: AEP, GOA 2016; Land parcels provided by Opus Stewart-Weir, August 15, 2017; Wetlands: CH2M 2017; ATS, DLS, NTS & PNG Grids: TERA Environmental Consultants, 2008 & 2009; Service Layer Credits: © 2017 DigitalGlobe Image courtesy of USGS © 2017 GeoEye © Province of British Columbia Earthstar Geographics SIO © 2017 Microsoft Corporation.

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#### BRITISH COLUMBIA

Dawson Creek  
Prince George  
Quesnel  
Williams Lake  
Vancouver (Burnaby)  
Kamloops  
Hope

#### ALBERTA

Grande Prairie  
Edmonton  
Hinton  
Edson  
Jasper  
Red Deer  
Calgary  
Kelowna  
Darfield

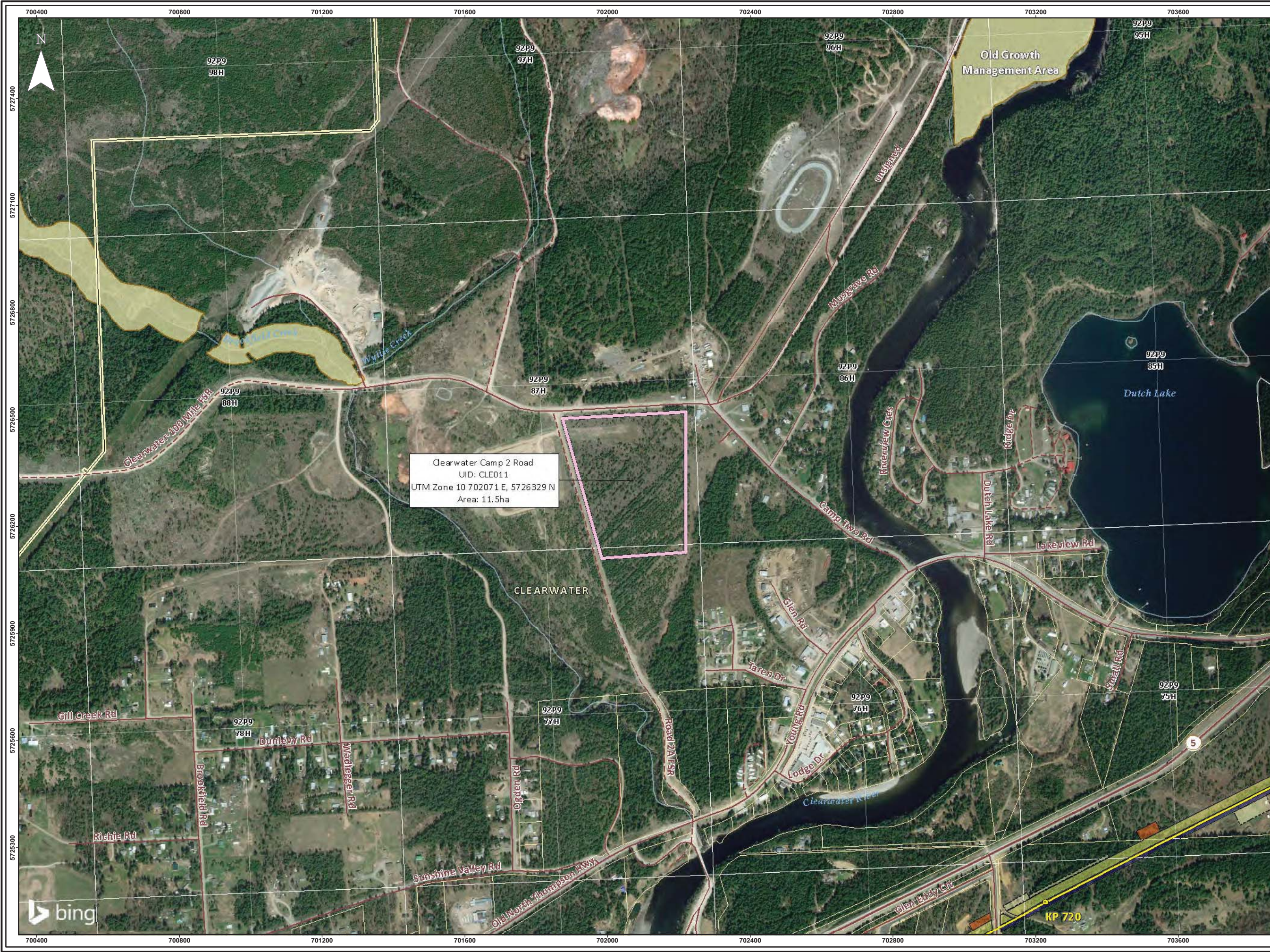
USA
























MAP NUMBER	201612_MAP_CH2M_FAC_00975_REV1	PAGE	SHEET 10 OF 24
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SCALE	1:10,000	PAGE SIZE	11x17
DRAWN	JRO	CHECKED	DJN
DISCIPLINE	FAC	DESIGN	CMR

0 100 200 300 400 m

ALL LOCATIONS APPROXIMATE





-  KP Marker
-  TMEP Pipeline
-  Deactivated / Overgrown Access Road
-  New Temporary Access Road
-  Other Access Road
-  Camp / Stockpile / Construction Yard
-  Easement
-  Extra Temporary Workspace
-  Log Deck
-  Temporary Workspace
-  Highway
-  Paved Road
-  Resource Road
-  Railway
-  City / Town / District Municipality
-  Indian Reserve / Métis Settlement
-  Land Parcel
-  Old Growth Management Area
-  Sensitive Raptor Range
-  Sharp-tailed Grouse Range
-  Trumpeter Swan Water / Watercourse (with 800m Buffer)
-  Waterbody / Watercourse
-  Wetland

Projection: NAD 1983 UTM Zone 10N.  
Pipeline SSEID005.1, KPs & Footprint provided by UPI April 3, 2017; Access Roads provided by UPI Feb 6, 2017 (AB) and April 3, 2017 (BC); Camps and Stockpiles: KMC August 11, 2017; Transportation: AltaLIS 2016, BC MFLNRO 2012 & NRCan 2015; Hydrology: BC MFLNRO 2018 & NRCan 2007-2011; Geopolitical Boundaries: AltaLIS 2017, BC MCSCD 2016 & NRCan 2003; First Nation Lands: AltaLIS 2010, Government of Canada 2017; Old Growth Management Areas: BC MFLNRO 2017; Alberta Wildlife Sensitivity: AEP, GOA 2016; Land parcels provided by Opus Stewart-Weir, August 15, 2017; Wetlands: CH2M 2017; ATS, DLS, NTS & PNG Grids: TERA Environmental Consultants, 2008 & 2009; Service Layer Credits: © 2017 DigitalGlobe Image courtesy of USGS © 2017 GeoEye © Province of British Columbia Earthstar Geographics SIO © 2017 Microsoft Corporation.

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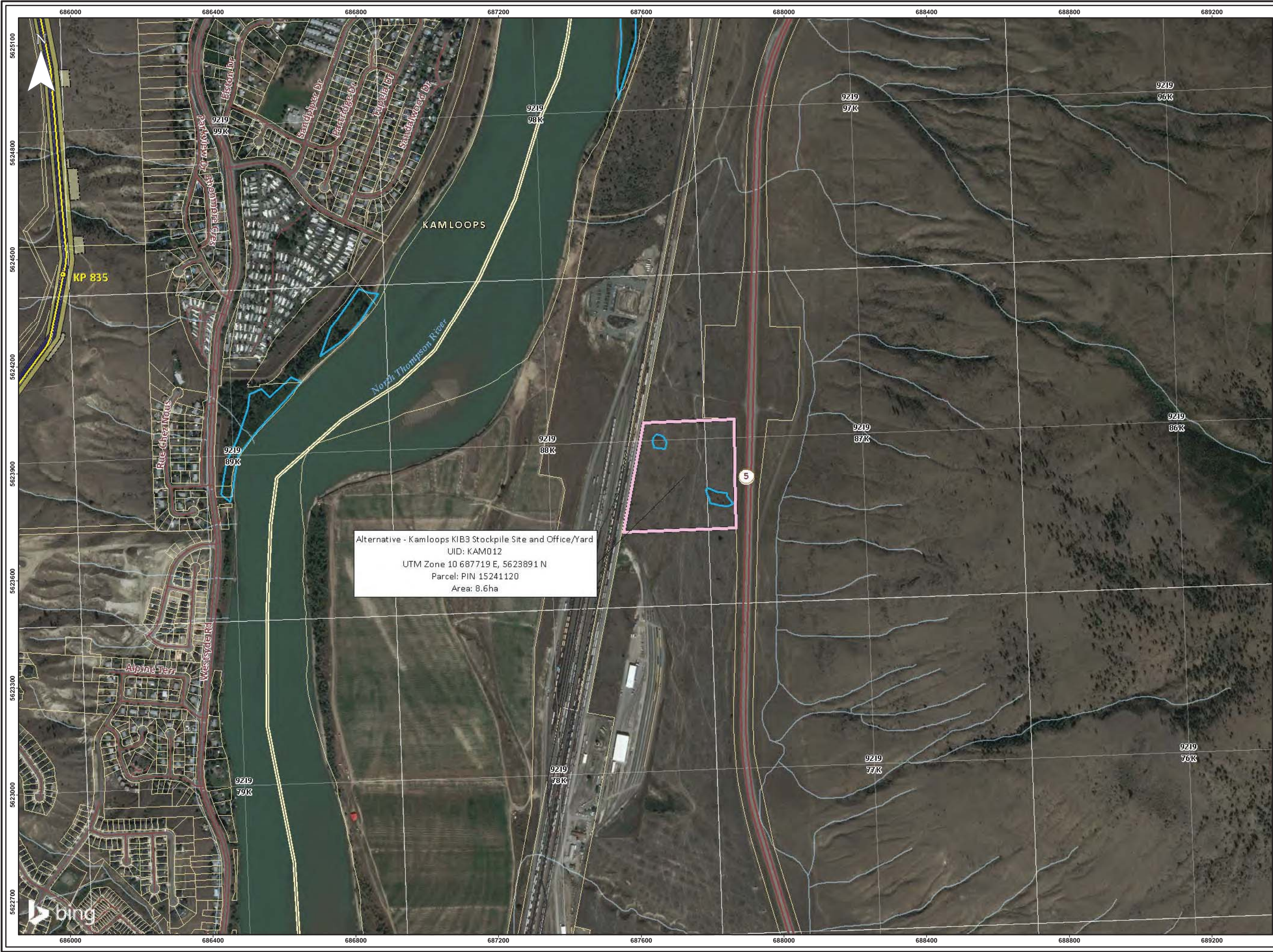


MAP NUMBER	201612_MAP_CH2M_FAC_00975_REV1	PAGE	SHEET 11 OF 24
DATE	August 2017	TERA REF.	687945
SCALE	1:10,000	PAGE SIZE	11x17
DRAWN	JRO	CHECKED	DJN
DISCIPLINE	FAC	DESIGN	CMR





201612\_MAP\_CH2M\_FAC\_00975\_Rev1.mxd



# TEMPORARY CONSTRUCTION LANDS AND INFRASTRUCTURE AND ASSOCIATED ACCESS ROADS

SHEET 12 OF 23

## TRANS MOUNTAIN EXPANSION PROJECT

- KP Marker
- TMEP Pipeline
- Deactivated / Overgrown Access Road
- New Temporary Access Road
- Other Access Road
- Camp / Stockpile / Construction Yard
- Easement
- Extra Temporary Workspace
- Log Deck
- Temporary Workspace
- Highway
- Paved Road
- Resource Road
- Railway
- City / Town / District Municipality
- Indian Reserve / Métis Settlement
- Land Parcel
- Old Growth Management Area
- Sensitive Raptor Range
- Sharp-tailed Grouse Range
- Trumpeter Swan Water / Watercourse (with 800m Buffer)
- Waterbody / Watercourse
- Wetland

Projection: NAD 1983 UTM Zone 10N.  
Pipeline SSEID005.1, KPs & Footprint provided by UPI April 3, 2017; Access Roads provided by UPI Feb 6, 2017 (AB) and Apr 3, 2017 (BC); Camps and Stockpiles: KMC August 11, 2017; Transportation: AltaLIS 2016, BC MFLNRO 2012 & NRCAN 2015; Hydrology: BC MFLNRO 2018 & NRCAN 2007-2011; Geopolitical Boundaries: AltaLIS 2017, BC MCSCD 2016 & NRCAN 2003; First Nation Lands: AltaLIS 2010, Government of Canada 2017; Old Growth Management Areas: BC MFLNRO 2017; Alberta Wildlife Sensitivity: AEP, GOA 2016; Land parcels provided by Opus Stewart-Weir, August 15, 2017; Wetlands: CH2M 2017; ATS, DLS, NTS & PNG Grids: TERA Environmental Consultants, 2008 & 2009; Service Layer Credits: © 2017 DigitalGlobe Image courtesy of USGS © 2017 GeoEye © Province of British Columbia Earthstar Geographics SIO © 2017 Microsoft Corporation.

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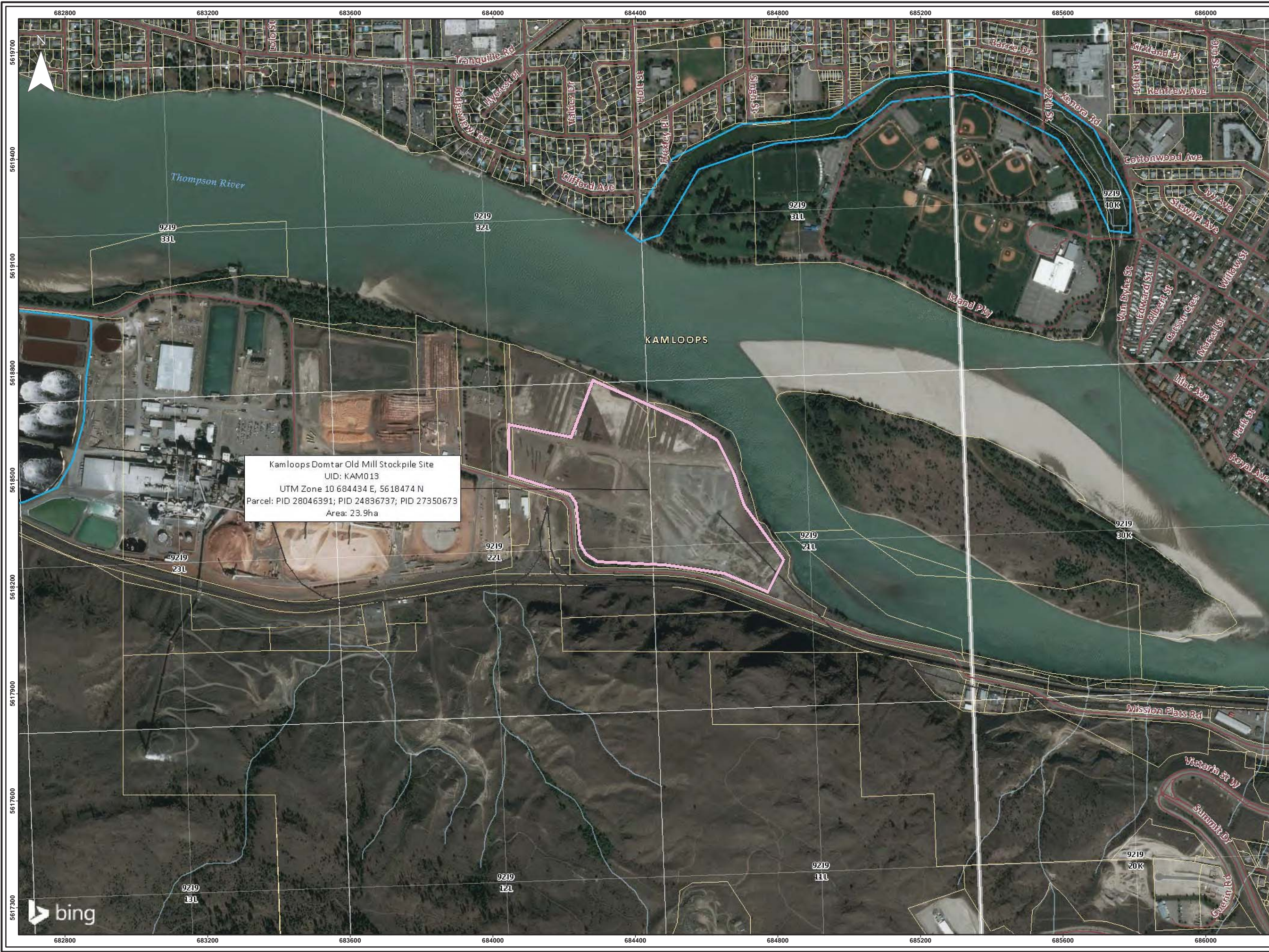

























MAP NUMBER	201612_MAP_CH2M_FAC_00975_REV1	PAGE	SHEET 12 OF 24
DATE	August 2017	TERA REF.	687945
SCALE	1:10,000	PAGE SIZE	11x17
DRAWN	JRO	CHECKED	DJN
DISCIPLINE	FAC	DESIGN	CMR

0 100 200 300 400 m  
ALL LOCATIONS APPROXIMATE



201612\_MAP\_CH2M\_FAC\_00975\_Rev1.mxd



-  KP Marker
-  TMEP Pipeline
-  Deactivated / Overgrown Access Road
-  New Temporary Access Road
-  Other Access Road
-  Camp / Stockpile / Construction Yard
-  Easement
-  Extra Temporary Workspace
-  Log Deck
-  Temporary Workspace
-  Highway
-  Paved Road
-  Resource Road
-  Railway
-  City / Town / District Municipality
-  Indian Reserve / Métis Settlement
-  Land Parcel
-  Old Growth Management Area
-  Sensitive Raptor Range
-  Sharp-tailed Grouse Range
-  Trumpeter Swan Water / Watercourse (with 800m Buffer)
-  Waterbody / Watercourse
-  Wetland

Projection: NAD 1983 UTM Zone 10N.  
Pipeline SSEID005.1, KPs & Footprint provided by UPI April 3, 2017; Access Roads provided by UPI Feb 6, 2017 (AB) and Apr 3, 2017 (BC); Camps and Stockpiles: KMC August 11, 2017; Transportation: AltaLIS 2016, BC MFLNRO 2012 & NRCAN 2015; Hydrology: BC MFLNRO 2018 & NRCAN 2007-2011; Geopolitical Boundaries: AltaLIS 2017, BC MCSCD 2016 & NRCAN 2003; First Nation Lands: AltaLIS 2010, Government of Canada 2017; Old Growth Management Areas: BC MFLNRO 2017; Alberta Wildlife Sensitivity: AEP, GOA 2016; Land parcels provided by Opus Stewart-Weir, August 15, 2017; Wetlands: CH2M 2017; ATS, DLS, NTS & PNG Grids: TERA Environmental Consultants, 2008 & 2009; Service Layer Credits: © 2017 DigitalGlobe Image courtesy of USGS © 2017 GeoEye © Province of British Columbia Earthstar Geographics SIO © 2017 Microsoft Corporation.

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DATE	August 2017	TERA REF.	687945
SCALE	1:10,000	PAGE SIZE	11x17
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DISCIPLINE	FAC	DESIGN	CMR

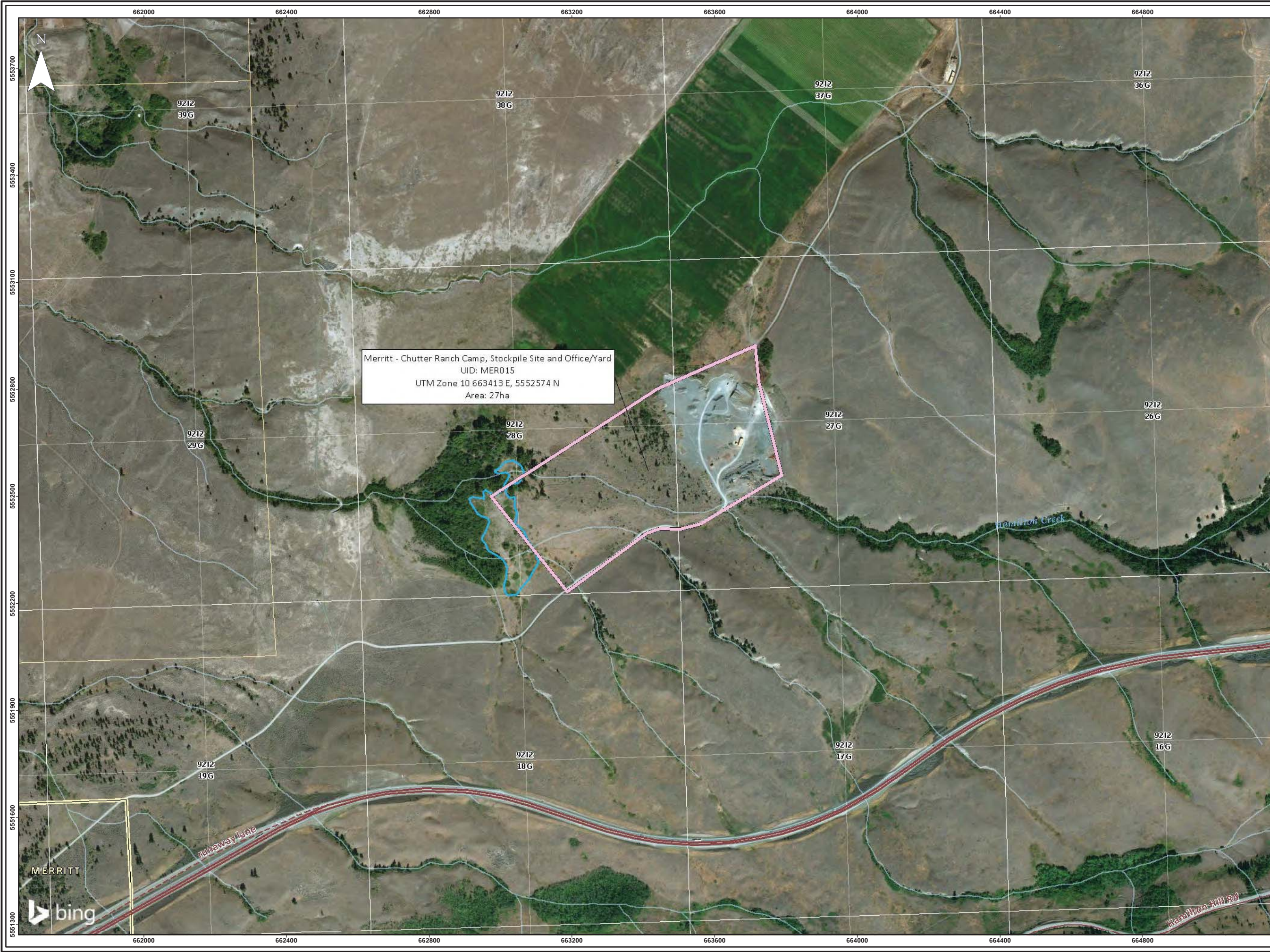
0 100 200 300 400 m  
ALL LOCATIONS APPROXIMATE







201612\_MAP\_CH2M\_FAC\_00975\_Rev1.mxd



TEMPORARY CONSTRUCTION LANDS AND  
INFRASTRUCTURE AND ASSOCIATED  
ACCESS ROADS

SHEET 15 OF 23

TRANS MOUNTAIN EXPANSION PROJECT

- KP Marker
- TMEP Pipeline
- Deactivated / Overgrown Access Road
- New Temporary Access Road
- Other Access Road
- Camp / Stockpile / Construction Yard
- Easement
- Extra Temporary Workspace
- Log Deck
- Temporary Workspace
- Highway
- Paved Road
- Resource Road
- Railway
- City / Town / District Municipality
- Indian Reserve / Métis Settlement
- Land Parcel
- Old Growth Management Area
- Sensitive Raptor Range
- Sharp-tailed Grouse Range
- Trumpeter Swan Water / Watercourse (with 800m Buffer)
- Waterbody / Watercourse
- Wetland

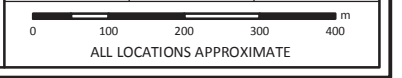
Projection: NAD 1983 UTM Zone 10N.  
Pipeline SSEID005.1, KPs & Footprint provided by UPI April 3, 2017; Access Roads provided by UPI Feb 6, 2017 (AB) and Apr 3, 2017 (BC); Camps and Stockpiles: KMC August 11, 2017; Transportation: AltaLIS 2016, BC MFLNRO 2012 & NRCAN 2015; Hydrology: BC MFLNRO 2018 & NRCAN 2007-2011; Geopolitical Boundaries: AltaLIS 2017, BC MCSCD 2016 & NRCAN 2003; First Nation Lands: AltaLIS 2010, Government of Canada 2017; Old Growth Management Areas: BC MFLNRO 2017; Alberta Wildlife Sensitivity: AEP, GOA 2016; Land parcels provided by Opus Stewart-Weir, August 15, 2017; Wetlands: CH2M 2017; ATS, DLS, NTS & PNG Grids: TERA Environmental Consultants, 2008 & 2009; Service Layer Credits: © 2017 DigitalGlobe Image courtesy of USGS © 2017 GeoEye © Province of British Columbia Earthstar Geographics SIO © 2017 Microsoft Corporation.

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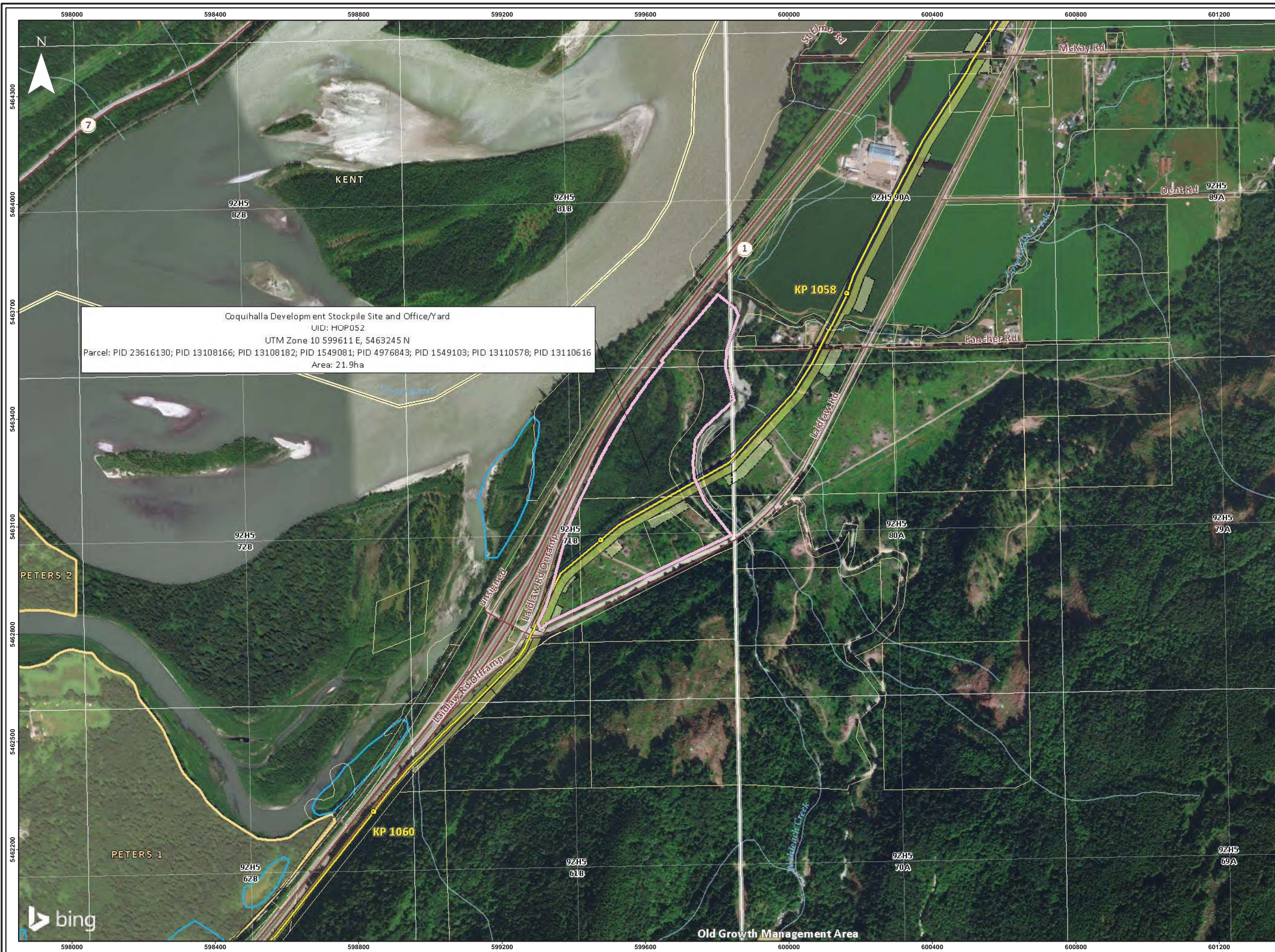



MAP NUMBER	201612_MAP_CH2M_FAC_00975_REV1	PAGE	SHEET 15 OF 24
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SCALE	1:10,000	PAGE SIZE	11x17
DRAWN	JRO	CHECKED	DJN
DISCIPLINE	FAC	DESIGN	CMR





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### TRANS MOUNTAIN

**TEMPORARY CONSTRUCTION LANDS AND INFRASTRUCTURE AND ASSOCIATED ACCESS ROADS**

**SHEET 16 OF 23**


**TRANS MOUNTAIN EXPANSION PROJECT**

- KP Marker
- TMEP Pipeline
- Deactivated / Overgrown Access Road
- New Temporary Access Road
- Other Access Road
- Camp / Stockpile / Construction Yard
- Easement
- Extra Temporary Workspace
- Log Deck
- Temporary Workspace
- Highway
- Paved Road
- Resource Road
- Railway
- City / Town / District Municipality
- Indian Reserve / Métis Settlement
- Land Parcel
- Old Growth Management Area
- Sensitive Raptor Range
- Sharp-tailed Grouse Range
- Trumpeter Swan Water / Watercourse (with 800m Buffer)
- Waterbody / Watercourse
- Wetland

Projection: NAD 1983 UTM Zone 10N.  
Pipeline SSEID005.1, KPs & Footprint provided by UPI April 3, 2017; Access Roads provided by UPI Feb 6, 2017 (AB) and Apr 3, 2017 (BC); Camps and Stockpiles: KMC August 11, 2017; Transportation: AltaLIS 2016, BC MFLNRO 2012 & NRCAN 2015; Hydrology: BC MFLNRO 2018 & NRCAN 2007-2011; Geopolitical Boundaries: AltaLIS 2017, BC MSCSD 2016 & NRCAN 2003; First Nation Lands: AltaLIS 2010, Government of Canada 2017; Old Growth Management Areas: BC MFLNRO 2017; Alberta Wildlife Sensitivity: AEP, GOA 2016; Land parcels provided by Opus Stewart-Weir, August 15, 2017; Wetlands: CH2M 2017; ATS, DLS, NTS & PNG Grids: TERA Environmental Consultants, 2008 & 2009; Service Layer Credits: © 2017 DigitalGlobe Image courtesy of USGS © 2017 GeoEye © Province of British Columbia Earthstar Geographics SIO © 2017 Microsoft Corporation.

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**BRITISH COLUMBIA** **ALBERTA**

Dawson Creek Grande Prairie Hinton Edson Red Deer  
Prince George Quesnel Valemount Jasper Red Deer  
Blue River Williams Lake Darfield Calgary  
Kamloops Kelowna Hope Vancouver (Burnaby)

USA























MAP NUMBER	201612_MAP_CH2M_FAC_00975_REV1	PAGE	SHEET 16 OF 24
DATE	August 2017	TERA REF.	687945
SCALE	1:10,000	PAGE SIZE	11x17
DRAWN	JRO	CHECKED	DJN
DISCIPLINE	FAC	DESIGN	CMR

0 100 200 300 400 m

ALL LOCATIONS APPROXIMATE





-  KP Marker
-  TMEP Pipeline
-  Deactivated / Overgrown Access Road
-  New Temporary Access Road
-  Other Access Road
-  Camp / Stockpile / Construction Yard
-  Easement
-  Extra Temporary Workspace
-  Log Deck
-  Temporary Workspace
-  Highway
-  Paved Road
-  Resource Road
-  Railway
-  City / Town / District Municipality
-  Indian Reserve / Métis Settlement
-  Land Parcel
-  Old Growth Management Area
-  Sensitive Raptor Range
-  Sharp-tailed Grouse Range
-  Trumpeter Swan Water / Watercourse (with 800m Buffer)
-  Waterbody / Watercourse
-  Wetland

Projection: NAD 1983 UTM Zone 10N.  
Pipeline SSEID005.1, KPs & Footprint provided by UPI April 3, 2017; Access Roads provided by UPI Feb 6, 2017 (AB) and Apr 3, 2017 (BC); Camps and Stockpiles: KMC August 11, 2017; Transportation: AltaLIS 2016, BC MFLNRO 2012 & NRCAN 2015; Hydrology: BC MFLNRO 2018 & NRCAN 2007-2011; Geopolitical Boundaries: AltaLIS 2017, BC MCSCD 2016 & NRCAN 2003; First Nation Lands: AltaLIS 2010, Government of Canada 2017; Old Growth Management Areas: BC MFLNRO 2017; Alberta Wildlife Sensitivity: AEP, GOA 2016; Land parcels provided by Opus Stewart-Weir, August 15, 2017; Wetlands: CH2M 2017; ATS, DLS, NTS & PNG Grids: TERA Environmental Consultants, 2008 & 2009; Service Layer Credits: © 2017 DigitalGlobe Image courtesy of USGS © 2017 GeoEye © Province of British Columbia Earthstar Geographics SIO © 2017 Microsoft Corporation.

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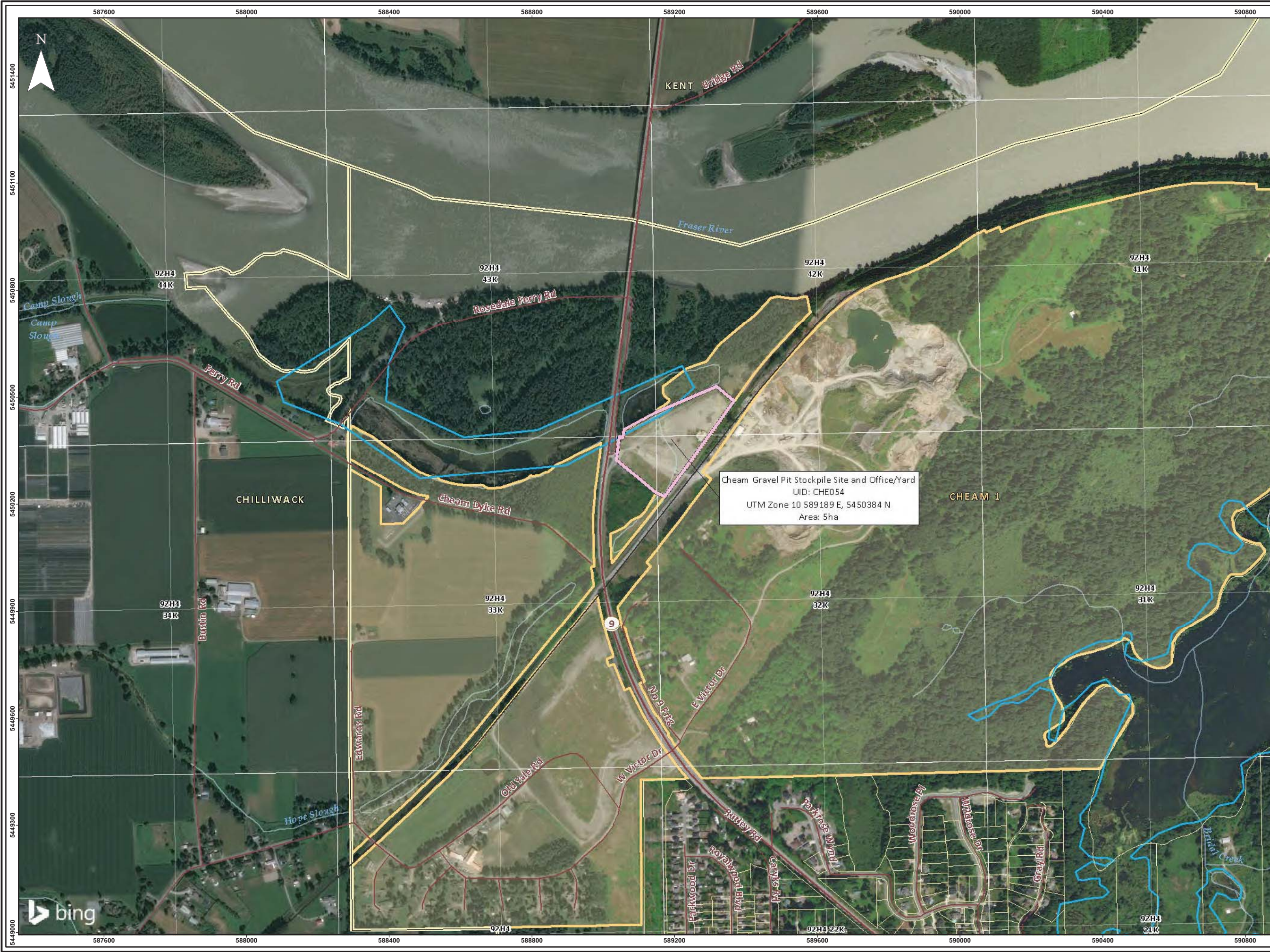


MAP NUMBER	201612_MAP_CH2M_FAC_00975_REV1	PAGE	SHEET 17 OF 24
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SCALE	1:10,000	PAGE SIZE	11x17
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DISCIPLINE	FAC	DESIGN	CMR





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# TEMPORARY CONSTRUCTION LANDS AND INFRASTRUCTURE AND ASSOCIATED ACCESS ROADS

SHEET 18 OF 23  
TRANS MOUNTAIN EXPANSION PROJECT

- KP Marker
- TMEP Pipeline
- Deactivated / Overgrown Access Road
- New Temporary Access Road
- Other Access Road
- Camp / Stockpile / Construction Yard
- Easement
- Extra Temporary Workspace
- Log Deck
- Temporary Workspace
- Highway
- Paved Road
- Resource Road
- Railway
- City / Town / District Municipality
- Indian Reserve / Métis Settlement
- Land Parcel
- Old Growth Management Area
- Sensitive Raptor Range
- Sharp-tailed Grouse Range
- Trumpeter Swan Water / Watercourse (with 800m Buffer)
- Waterbody / Watercourse
- Wetland

Projection: NAD 1983 UTM Zone 10N.  
Pipeline SSEID005.1, KPs & Footprint provided by UPI April 3, 2017; Access Roads provided by UPI Feb 6, 2017 (AB) and Apr 3, 2017 (BC); Camps and Stockpiles: KMC August 11, 2017; Transportation: AltaLIS 2016, BC MFLNRO 2012 & NRCAN 2015; Hydrology: BC MFLNRO 2018 & NRCAN 2007-2011; Geopolitical Boundaries: AltaLIS 2017, BC MCSCD 2016 & NRCAN 2003; First Nation Lands: AltaLIS 2010, Government of Canada 2017; Old Growth Management Areas: BC MFLNRO 2017; Alberta Wildlife Sensitivity: AEP, GOA 2016; Land parcels provided by Opus Stewart-Weir, August 15, 2017; Wetlands: CH2M 2017; ATS, DLS, NTS & PNG Grids: TERA Environmental Consultants, 2008 & 2009; Service Layer Credits: © 2017 DigitalGlobe Image courtesy of USGS © 2017 GeoEye © Province of British Columbia Earthstar Geographics SIO © 2017 Microsoft Corporation.

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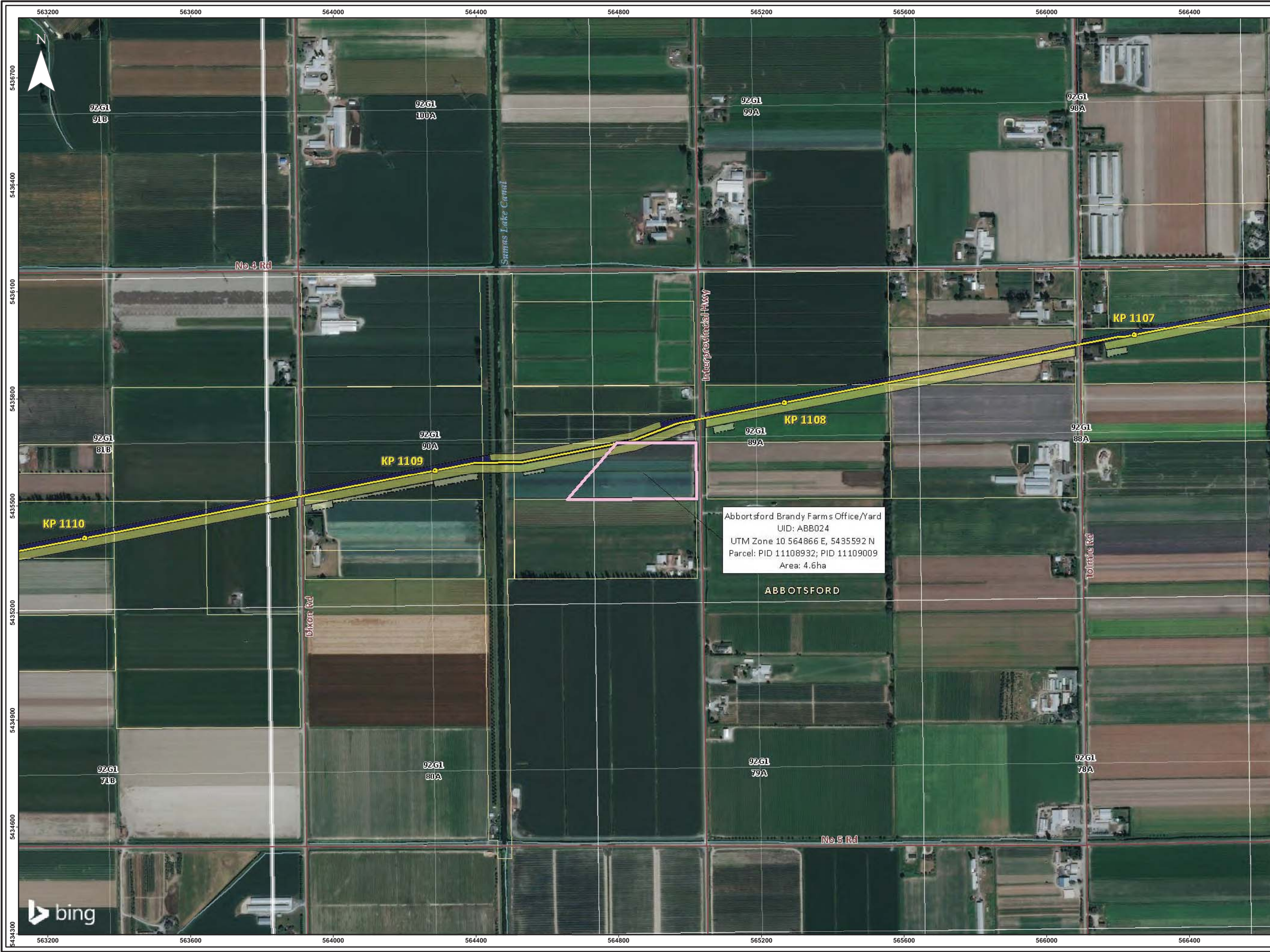


MAP NUMBER	201612_MAP_CH2M_FAC_00975_REV1	PAGE	SHEET 18 OF 24
DATE	August 2017	TERA REF.	687945
SCALE	1:10,000	PAGE SIZE	11x17
DRAWN	JRO	CHECKED	DJN
DESIGN	CMR		

ALL LOCATIONS APPROXIMATE



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TEMPORARY CONSTRUCTION LANDS AND  
INFRASTRUCTURE AND ASSOCIATED  
ACCESS ROADS

SHEET 19 OF 23  
TRANS MOUNTAIN EXPANSION PROJECT

- KP Marker
- TMEP Pipeline
- Deactivated / Overgrown Access Road
- New Temporary Access Road
- Other Access Road
- Camp / Stockpile / Construction Yard
- Easement
- Extra Temporary Workspace
- Log Deck
- Temporary Workspace
- Highway
- Paved Road
- Resource Road
- Railway
- City / Town / District Municipality
- Indian Reserve / Métis Settlement
- Land Parcel
- Old Growth Management Area
- Sensitive Raptor Range
- Sharp-tailed Grouse Range
- Trumpeter Swan Water / Watercourse (with 800m Buffer)
- Waterbody / Watercourse
- Wetland

Projection: NAD 1983 UTM Zone 10N.  
Pipeline: SSEID0005.1, KPs & Footprint provided by UPI April 3, 2017; Access Roads provided by UPI Feb 6, 2017 (AB) and Apr 3, 2017 (BC); Camps and Stockpiles: KMC August 11, 2017; Transportation: AltaLIS 2016, BC MFLNRO 2012 & NRCAN 2015; Hydrology: BC MFLNRO 2018 & NRCAN 2007-2011; Geopolitical Boundaries: AltaLIS 2017, BC MCSCD 2016 & NRCAN 2003; First Nation Lands: AltaLIS 2010, Government of Canada 2017; Old Growth Management Areas: BC MFLNRO 2017; Alberta Wildlife Sensitivity: AEP, GOA 2016; Land parcels provided by Opus Stewart-Weir, August 15, 2017; Wetlands: CH2M 2017; ATS, DLS, NTS & PNG Grids: TERA Environmental Consultants, 2008 & 2009; Service Layer Credits: © 2017 DigitalGlobe Image courtesy of USGS © 2017 GeoEye © Province of British Columbia Earthstar Geographics SIO © 2017 Microsoft Corporation.

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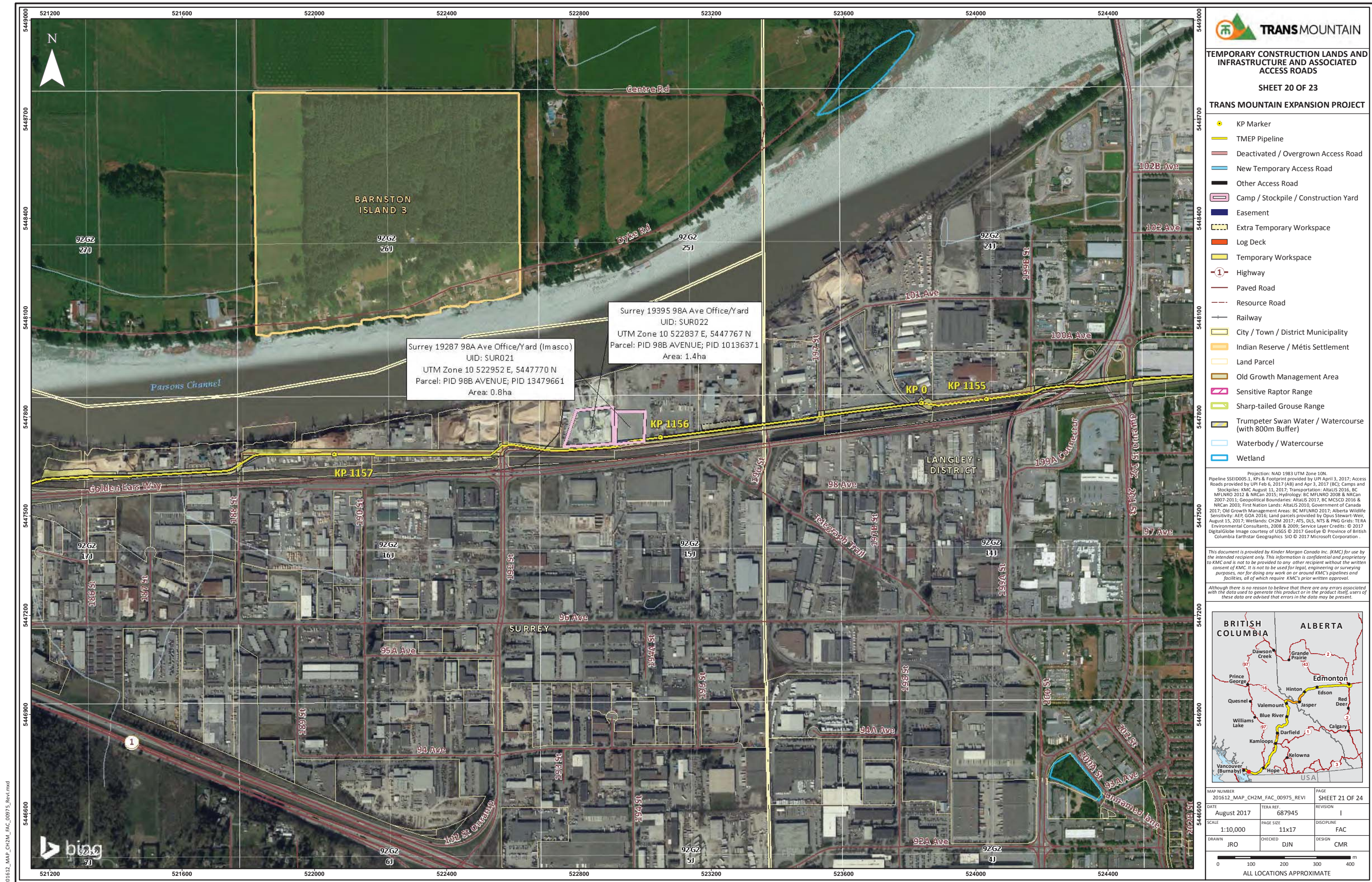
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MAP NUMBER	201612_MAP_CH2M_FAC_00975_REV1	PAGE	SHEET 20 OF 24
DATE	August 2017	TERA REF.	687945
SCALE	1:10,000	PAGE SIZE	11x17
DRAWN	JRO	CHECKED	DJN
DISCIPLINE	FAC	DESIGN	CMR











-  KP Marker
-  TMEP Pipeline
-  Deactivated / Overgrown Access Road
-  New Temporary Access Road
-  Other Access Road
-  Camp / Stockpile / Construction Yard
-  Easement
-  Extra Temporary Workspace
-  Log Deck
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Projection: NAD 1983 UTM Zone 10N.  
Pipeline SSEID005.1, KPs & Footprint provided by UPI April 3, 2017; Access Roads provided by UPI Feb 6, 2017 (AB) and Apr 3, 2017 (BC); Camps and Stockpiles: KMC August 11, 2017; Transportation: AltaLIS 2016, BC MFLNRO 2012 & NRCAN 2015; Hydrology: BC MFLNRO 2018 & NRCAN 2007-2011; Geopolitical Boundaries: AltaLIS 2017, BC MCSCD 2016 & NRCAN 2003; First Nation Lands: AltaLIS 2010, Government of Canada 2017; Old Growth Management Areas: BC MFLNRO 2017; Alberta Wildlife Sensitivity: AEP, GOA 2016; Land parcels provided by Opus Stewart-Weir, August 15, 2017; Wetlands: CH2M 2017; ATS, DLS, NTS & PNG Grids: TERA Environmental Consultants, 2008 & 2009; Service Layer Credits: © 2017 DigitalGlobe Image courtesy of USGS © 2017 GeoEye © Province of British Columbia Earthstar Geographics SIO © 2017 Microsoft Corporation.

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MAP NUMBER 201612_MAP_CH2M_FAC_00975_REV1	PAGE SHEET 22 OF 24
DATE August 2017	TERA REF. 687945
SCALE 1:10,000	DISCIPLINE FAC
DRAWN JRO	DESIGN CMR







-  KP Marker
-  TMEP Pipeline
-  Deactivated / Overgrown Access Road
-  New Temporary Access Road
-  Other Access Road
-  Camp / Stockpile / Construction Yard
-  Easement
-  Extra Temporary Workspace
-  Log Deck
-  Temporary Workspace
-  Highway
-  Paved Road
-  Resource Road
-  Railway
-  City / Town / District Municipality
-  Indian Reserve / Métis Settlement
-  Land Parcel
-  Old Growth Management Area
-  Sensitive Raptor Range
-  Sharp-tailed Grouse Range
-  Trumpeter Swan Water / Watercourse (with 800m Buffer)
-  Waterbody / Watercourse
-  Wetland

Projection: NAD 1983 UTM Zone 10N.  
Pipeline SSEID005.1, KPs & Footprint provided by UPI April 3, 2017; Access Roads provided by UPI Feb 6, 2017 (AB) and Apr 3, 2017 (BC); Camps and Stockpiles: KMC August 11, 2017; Transportation: AltaLIS 2016, BC MFLNRO 2012 & NRCAN 2015; Hydrology: BC MFLNRO 2018 & NRCAN 2007-2011; Geopolitical Boundaries: AltaLIS 2017, BC MCSCD 2016 & NRCAN 2003; First Nation Lands: AltaLIS 2010, Government of Canada 2017; Old Growth Management Areas: BC MFLNRO 2017; Alberta Wildlife Sensitivity: AEP, GCM 2016; Land parcels provided by Opus Stewart-Weir, August 15, 2017; Wetlands: CH2M 2017; ATS, DLS, NTS & PNG Grids: TERA Environmental Consultants, 2008 & 2009; Service Layer Credits: © 2017 DigitalGlobe Image courtesy of USGS © 2017 GeoEye © Province of British Columbia Earthstar Geographics SIO © 2017 Microsoft Corporation.

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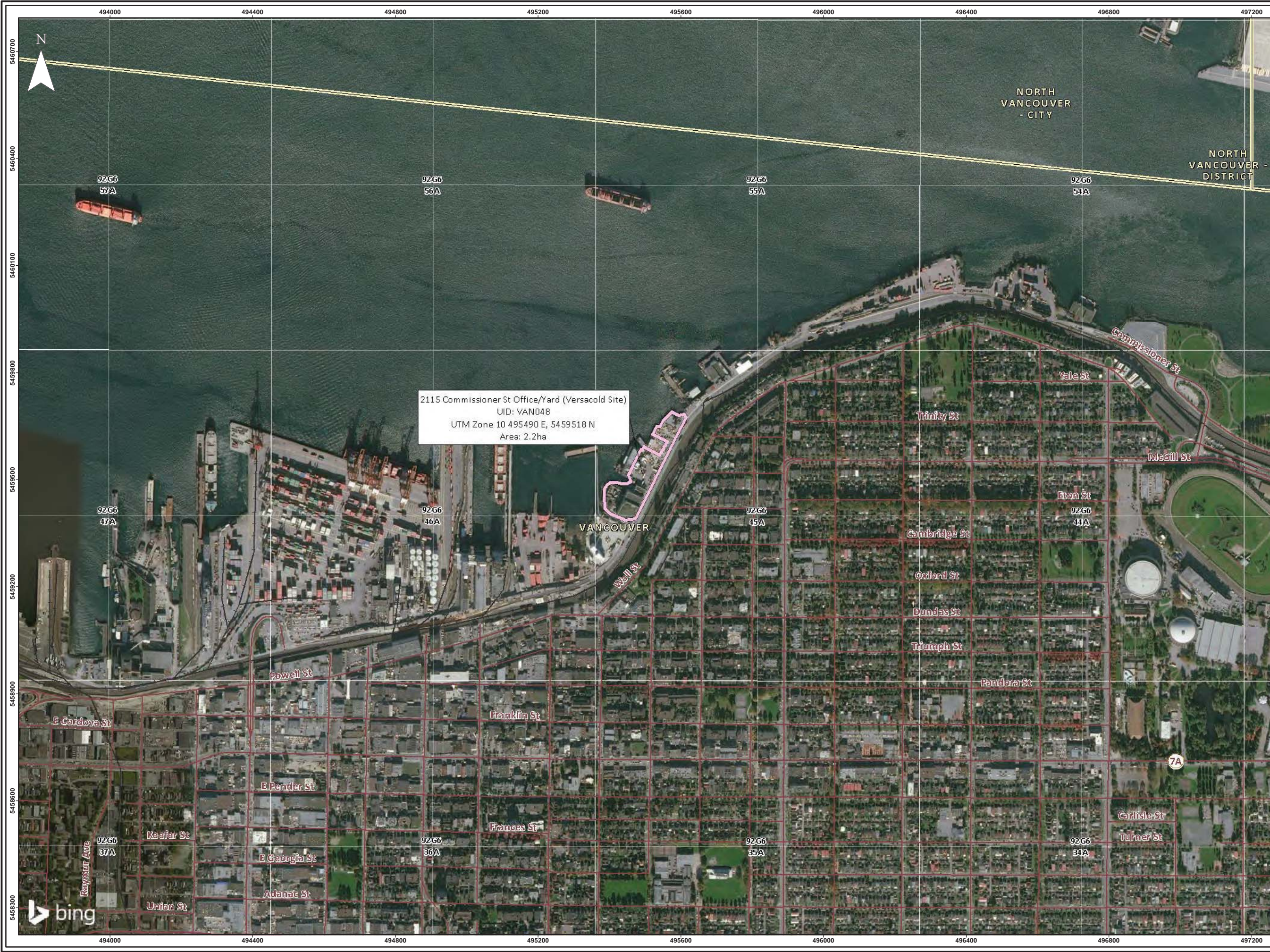
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MAP NUMBER 201612_MAP_CH2M_FAC_00975_REV1		PAGE SHEET 23 OF 24
DATE August 2017	TERA REF. 687945	REVISION I
SCALE 1:10,000	PAGE SIZE 11x17	DISCIPLINE FAC
DRAWN JRO	CHECKED DJN	DESIGN CMR
<div><div></div><div>0100200300400</div><div>m</div></div> <div>ALL LOCATIONS APPROXIMATE</div>		



201612\_MAP\_CH2M\_FAC\_00975\_Rev1.mxd



TEMPORARY CONSTRUCTION LANDS AND  
INFRASTRUCTURE AND ASSOCIATED  
ACCESS ROADS

SHEET 23 OF 23

TRANS MOUNTAIN EXPANSION PROJECT

- KP Marker
- TMEP Pipeline
- Deactivated / Overgrown Access Road
- New Temporary Access Road
- Other Access Road
- Camp / Stockpile / Construction Yard
- Easement
- Extra Temporary Workspace
- Log Deck
- Temporary Workspace
- Highway
- Paved Road
- Resource Road
- Railway
- City / Town / District Municipality
- Indian Reserve / Métis Settlement
- Land Parcel
- Old Growth Management Area
- Sensitive Raptor Range
- Sharp-tailed Grouse Range
- Trumpeter Swan Water / Watercourse (with 800m Buffer)
- Waterbody / Watercourse
- Wetland

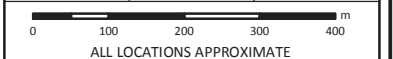
Projection: NAD 1983 UTM Zone 10N.  
Pipeline SSEID005.1, KPs & Footprint provided by UPI April 3, 2017; Access Roads provided by UPI Feb 6, 2017 (AB) and April 3, 2017 (BC); Camps and Stockpiles: KMC August 11, 2017; Transportation: AltaLIS 2016, BC MELNRO 2012 & NRCAN 2015; Hydrology: BC MELNRO 2018 & NRCAN 2007-2011; Geopolitical Boundaries: AltaLIS 2017, BC MSCSD 2016 & NRCAN 2003; First Nation Lands: AltaLIS 2010, Government of Canada 2017; Old Growth Management Areas: BC MELNRO 2017; Alberta Wildlife Sensitivity: AEP, GOA 2016; Land parcels provided by Opus Stewart-Weir, August 15, 2017; Wetlands: CH2M 2017; ATS, DLS, NTS & PNG Grids: TERA Environmental Consultants, 2008 & 2009; Service Layer Credits: © 2017 DigitalGlobe Image courtesy of USGS © 2017 GeoEye © Province of British Columbia Earthstar Geographics SIO © 2017 Microsoft Corporation.

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MAP NUMBER 201612_MAP_CH2M_FAC_00975_REV1	PAGE SHEET 24 OF 24
DATE August 2017	REVISION I
SCALE 1:10,000	DISCIPLINE FAC
DRAWN JRO	DESIGN CMR





## **APPENDIX F**

### **ON-SITE CHECKLIST**



**ON-SITE CHECKLIST FOR VEHICLE  
WATERCOURSE CROSSINGS**

Project Name: \_\_\_\_\_  
Project Owner: \_\_\_\_\_  
Pipeline Contractor: \_\_\_\_\_  
Chief Inspector: \_\_\_\_\_

Watercourse Name: \_\_\_\_\_  
Legal Location: \_\_\_\_\_  
On-Site Checklist Completed By: \_\_\_\_\_

Vehicle Crossing Method: \_\_\_\_\_  
Date Instream Construction Started: \_\_\_\_\_  
Date Instream Construction Ended: \_\_\_\_\_  
Duration of Time Each Day that Work Occurred in the Watercourse: \_\_\_\_\_

Date (yy/mm/dd)	Time

**PHOTOGRAPHS<sup>1</sup> OF THE CROSSING PRIOR TO RIGHT-OF-WAY CLEARING AND VEHICLE CROSSING INSTALLATION**

Photo No.	Comments - Required Photos
	View immediately upstream from the crossing.
	View immediately downstream from the crossing.
	View of left bank (      approach to crossing) taken from right bank*.
	View of right bank (      approach to crossing) taken from left bank*.
Photo No.	Comments - Additional Photos

\* The left bank is on your left hand side when facing downstream. Use a compass to determine the directions of the left and right banks. For watercourses with no discernible flow; indicate direction of photo and GPS photo location so photos can be taken from the same vantage during and following vehicle crossing installation.

**PHOTOGRAPHS<sup>1</sup> OF THE CROSSING DURING AND AFTER VEHICLE CROSSING INSTALLATION**

Photo No.	Comments - Required Photos
	View immediately upstream from the crossing.
	View immediately downstream from the crossing.
	View of left bank (      approach to crossing) taken from right bank*.
	View of right bank (      approach to crossing) taken from left bank*.
Photo No.	Comments - Additional Photos

\* The left bank is on your left hand side when facing downstream. Use a compass to determine the directions of the left and right banks. For watercourses with no discernible flow; indicate direction of photo and use GPS locations of the pre-construction photos so photos are taken from the same vantage as the pre-construction photos.

1 Retain photos and on-site checklist for one-year-after the abandonment of the vehicle crossing.

## COMMENTS

## PHOTOS

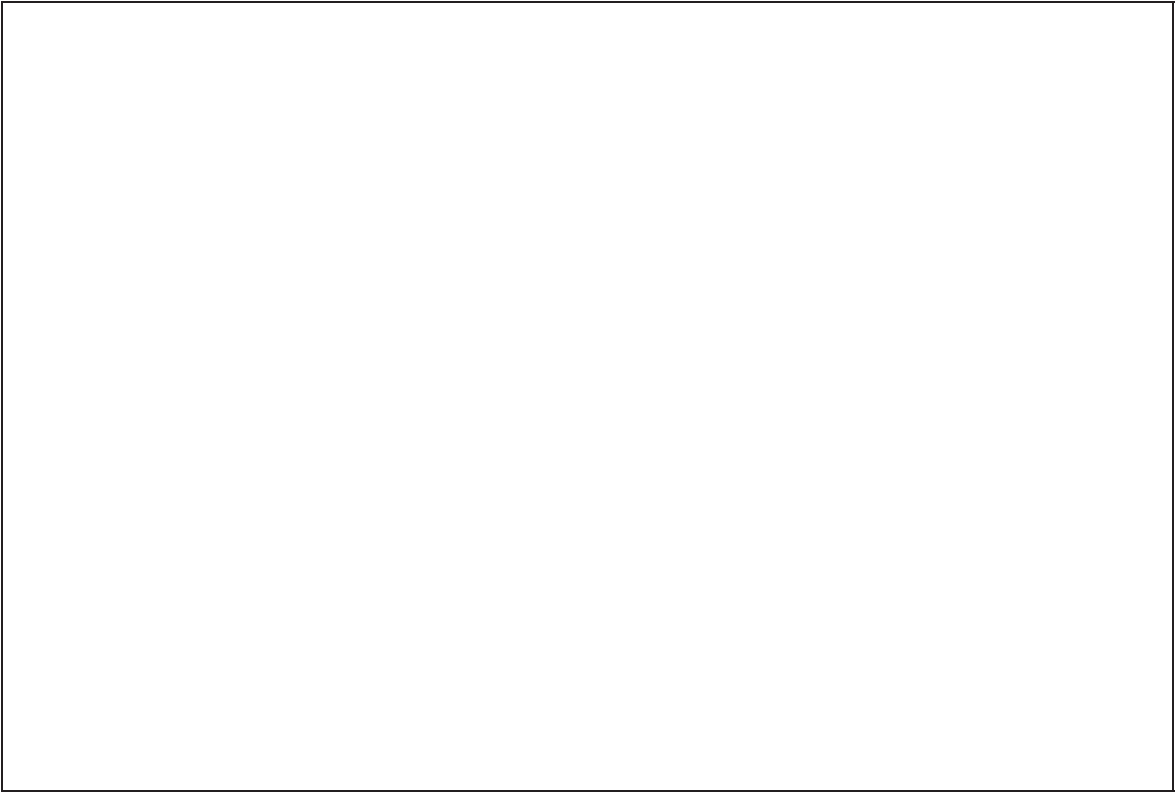


Plate 1 \_\_\_\_\_



Plate 2 \_\_\_\_\_





Plate 3 \_\_\_\_\_

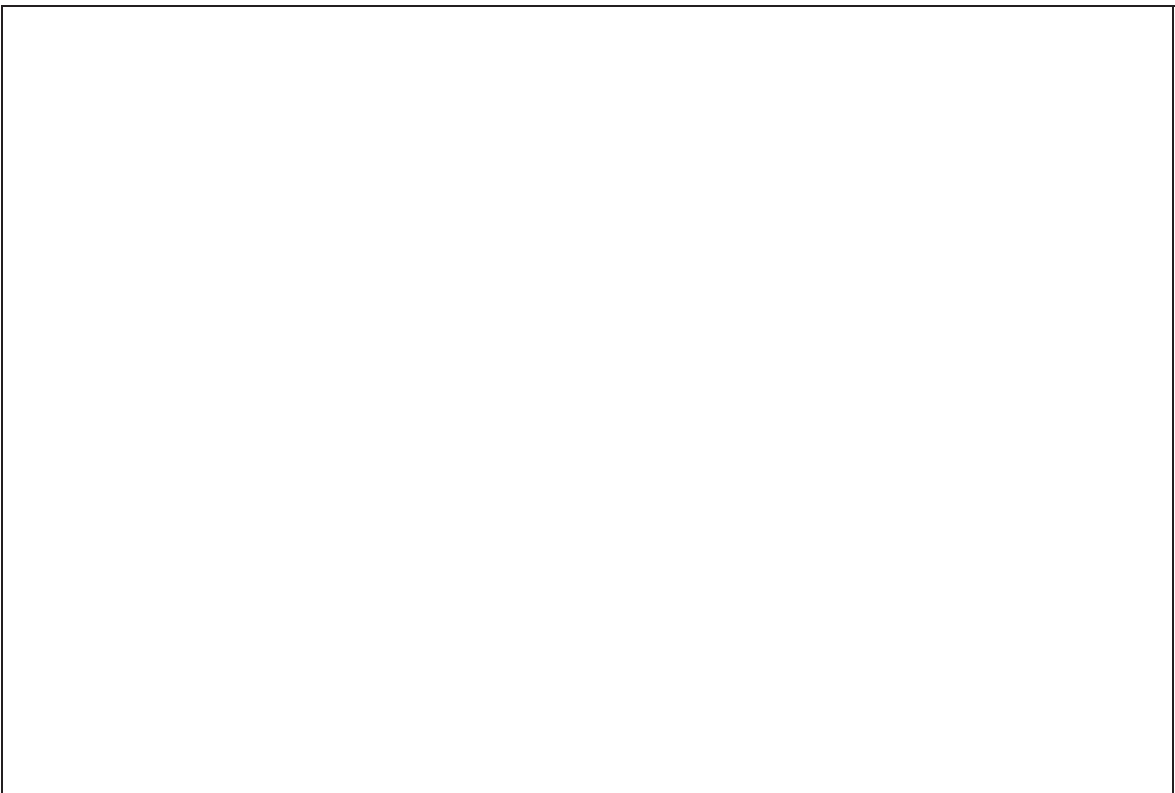


Plate 4 \_\_\_\_\_



Plate 5 \_\_\_\_\_

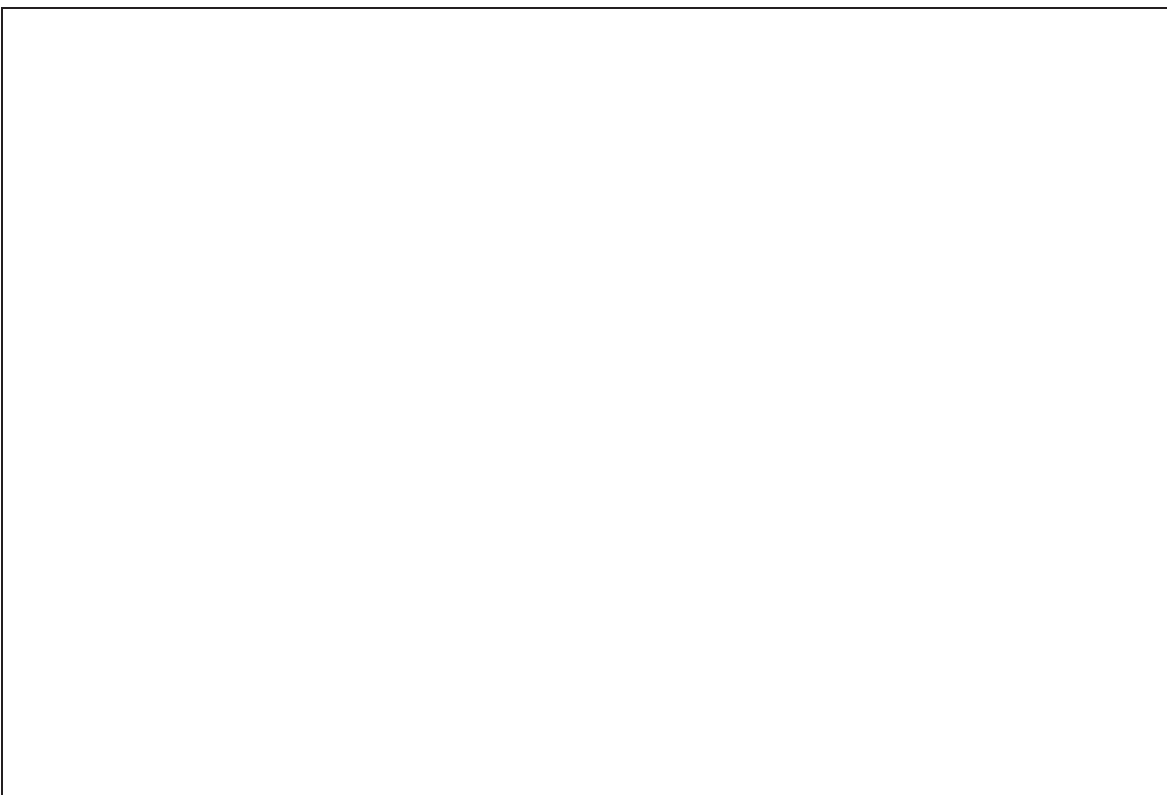


Plate 6 \_\_\_\_\_



Plate 7 \_\_\_\_\_

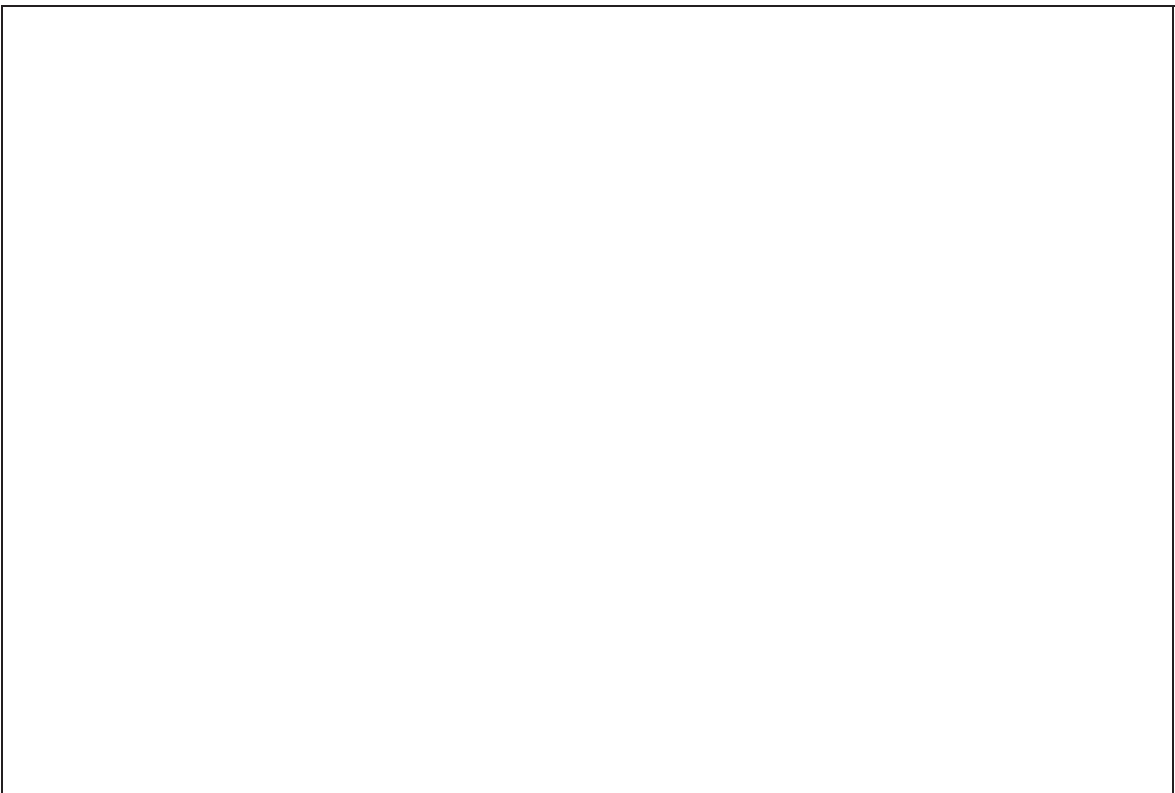


Plate 8 \_\_\_\_\_



## APPENDIX G

### CONSULTATION AND ENGAGEMENT

Consultation and engagement activities related to EPP mitigation measures were conducted with Appropriate Government Authorities, potentially affected Aboriginal groups and affected landowners/tenants. Opportunities to discuss EPP mitigation measures and identify issues or concerns were also provided to public stakeholders during meetings, workshops and ongoing engagement activities.

Consultation and engagement opportunities began in May 2012, with the Project announcement, and are ongoing.

#### 1.0 CONSULTATION AND ENGAGEMENT OVERVIEW: DRAFT PLAN DEVELOPMENT

Reports on activities completed between May 2012 and June 30, 2015 were filed with the NEB and are available in the Application (Volume 3A: Stakeholder and Volume 3B: Aboriginal; Filing ID [A55987](#)) as well as in Consultation Update No. 1 and Errata, Technical Update No. 1 (Filing ID [A59343](#)) / Consultation Update 2 (Filing IDs [A62087](#) and [A62088](#)), Consultation Update 3 (Filing IDs [A4H1W2](#) through [A4H1W8](#)) and Consultation Update 4 (Filing ID [A72224](#)). These reports the results of consultation conducted to June 30, 2015, identification of issues and concerns as well as Trans Mountain's response are included below. Where appropriate, Trans Mountain's response has been updated to reflect information developed since the original response was provided during the NEB proceeding for the Project.

Consultation and engagement activities were completed between July 1, 2015 and August 2017. Any new issues, concerns regarding mitigation measures identified during this period, as well as Trans Mountain's response, are also described below.

#### 2.0 CONSULTATION AND ENGAGEMENT OVERVIEW: DRAFT PLAN

The Draft Temporary Construction Lands and Infrastructure EPP was released for review on February 8, 2017. An Addendum to the Temporary Construction Lands and Infrastructure was issued on March 15, 2017. The review and feedback period closed on April 14, 2017. Email or mail notification regarding the Plan was sent to 72 public stakeholders, (16 regulatory authorities, 107 Aboriginal groups and all affected landowners. The notification included a summary description of the Plan, a request for review, the timing of the comment period and contact information. Aboriginal groups were offered the opportunity for an in-person meeting to review the Plan. See Appendix F-1 for a complete list of notified stakeholders.

In addition to direct notification, the online posting of each Plan was promoted through Trans Mountain's weekly e-newsletter, Trans Mountain Today, which provides Project updates, regulatory information, stories and interviews to more than 6,000 subscribers. Each week Trans Mountain Today included a focus on a specific plan, or group of plans, as well as a reminder of all plans available for review.

2016:

- September 22 - Wildlife Mitigation and Habitat Restoration Plans;
- September 29 - Pipeline Environmental Protection Plans;
- October 6 - Air Quality Management Plans;
- October 13 - Watercourse and Water Ecosystems Plans;
- October 20 - Vegetation Management Plans;
- October 27 - Air Quality Plans;

- November 3 - Socio-Economic Effects Monitoring Plan;
- November 10 - Access Management Plan;
- December 22 - General promotion all plans; and
- December 29 - General promotion all plans.

2017:

- January 5 - General promotion all plans; and
- January 12 - General promotion all plans.

Trans Mountain is committed to ongoing engagement throughout the life of the Project. The start and end date for the review and comment period for each environmental management plan is defined. These timelines are required to allow time for preparation of the final Plan in order to meet regulatory requirements and NEB submission dates.

The NEB Condition 78 EPP was filed on June 1, 2017. Since the filing, sites have been added and removed. Relevant updates to consultation that occurred during summer 2017 are included below. As the temporary construction lands and infrastructure sites continue to be refined, consultation with Appropriate Government Authorities, potentially affected Aboriginal groups and affected landowners/tenants will be ongoing.

### **3.0 CONSULTATION AND ENGAGEMENT: ACTIVITIES AND FEEDBACK**

Consultation and engagement activities completed with identified stakeholder groups are described below, including: public stakeholders (Section 3.1) and Appropriate Government Authorities (Section 3.2); Aboriginal groups (Section 3.3) and affected landowners/tenants (Section 3.4).

#### **3.1 Public Consultation**

##### **3.1.1 *Public Consultation Summary – May 2012 to June 2015***

Feedback regarding mitigation measures in the Temporary Construction Lands and Infrastructure EPP received during public consultation and engagement activities between May 2012 and June 30, 2015 is included in the Project Application.

##### **3.1.2 *New Interests, Issues, Concerns and Response – July 2015 to August 2017***

Table G-1 includes new interests, issues and concerns, as well as Trans Mountain's response with respect to mitigation measures in the Temporary Construction Lands and Infrastructure EPP identified through public consultation and engagement activities between July 2015 and August 2017.

**TABLE G-1**

**NEW INTERESTS, ISSUES, CONCERNS AND COMMON TRANS MOUNTAIN RESPONSES**

Invited Stakeholder Group/Agency Name	Method of Contact	Date of Consultation Activity	Comments	Where Addressed
<ul style="list-style-type: none"> <li>• Glorious Organic Co-Op *</li> <li>• Langley Environmental Partners Society *</li> <li>• Metro Vancouver Regional District *</li> <li>• BC Chicken Marketing Board *</li> <li>• City of Abbotsford *</li> <li>• Fraser Valley Regional District *</li> <li>• Agricultural Lands Commission *</li> <li>• Van Belle Nursery *</li> <li>• Invasive Species Council of BC *</li> <li>• BC Hot House</li> <li>• Fraser Valley Invasive Plant Council</li> <li>• BC Chicken Growers Association</li> <li>• University of the Fraser Valley</li> <li>• City of Chilliwack</li> <li>• BC Young Farmers Association</li> <li>• Whatcom Farm Friends</li> <li>• Whatcom Conservation District</li> <li>• Fraser Valley Indo Canadian Business Association</li> <li>• Abbotsford Agricultural Advisory Committee</li> <li>• Abbotsford Chamber of Commerce</li> <li>• Rosegate Dairy Farms</li> <li>• BC Greenhouse Growers Association</li> <li>• BC Landscape Nursery Association</li> <li>• BC Dairy Association</li> <li>• Certified Organic Association of BC</li> <li>• Ministry of Agriculture</li> <li>• Yarrow Eco Village</li> <li>• Clearbrook Waterworks District</li> <li>• BC Broiler Hatching Egg Producers Association</li> <li>• Langley Environmental Partners Society</li> <li>• BC Nursery Association</li> <li>• Fraser Valley Conservancy</li> <li>• Metro Vancouver Regional District</li> <li>• Township of Langley</li> <li>• BC MOE</li> <li>• BC Milk Marketing Board</li> <li>• Abbotsford Soil Conservation Association</li> <li>• Kato's Nursery</li> <li>• Delta Farmland and Wildlife Trust</li> <li>• Chilliwack Chamber of Commerce</li> <li>• BC Cranberry Growers Association</li> <li>• Clearview Horticulture</li> </ul>	Abbotsford EPP Workshop	September 10, 2015	Request for TMEP to have independent (third-party) inspectors for environmental mitigation or reimbursement for local governments to hire third party inspectors.	Trans Mountain's approach to environmental compliance, including environmental inspection and monitoring, is the CMP (Volume 10 of the Environmental Plans).



**TABLE G-1 Cont'd**

Invited Stakeholder Group/Agency Name	Method of Contact	Date of Consultation Activity	Comments	Where Addressed
<ul style="list-style-type: none"> <li>Nicola Stock Breeder's Association*</li> <li>Thompson Rivers University *</li> <li>Southern Interior Weed Management Committee *</li> <li>BC MFLNRO *</li> <li>Kamloops MOE *</li> <li>Land Resource Management *</li> <li>Fraser Basin Council *</li> <li>Kamloops Naturalist Club *</li> <li>City of Kamloops *</li> <li>Tranquille Livestock Association</li> <li>Kamloops Stockmen's Association</li> <li>BC Wildlife Park</li> <li>BC Conservation Federation</li> <li>BC Parks</li> <li>Department of Fisheries and Oceans</li> <li>Ducks Unlimited</li> <li>Nicola Naturalist Society</li> <li>Freshwater Fisheries Society of BC</li> <li>Thompson Okanagan – Trout Unlimited</li> <li>Habitat Conservation Trust Foundation</li> <li>Wells Grey World Heritage</li> </ul>	Kamloops EPP Workshop	September 15, 2015	Request to involve independent experts in the identification of criteria for reclamation success. Concern includes addressing landowner disputes regarding full reclamation.	Trans Mountain's approach to reclamation and monitoring are discussed in the Reclamation Management Plan (Section 9.0 of Volume 6 of the Environmental Plans).
Stakeholder	Email	August 7, 2017	The stakeholder expressed concern about Condition 44 report regarding the Pacific Water Shrew and asked if NEB regulatory requirements applied to temporary sites and infrastructure.	Trans Mountain confirmed the need to address Condition 44 regulatory requirements for temporary work sites and infrastructure. Trans Mountain also confirmed the project will not impact critical habitat for the Pacific Water Shrew.

Note: \* Attended EPP Workshop

### 3.2 Appropriate Government Authority Consultation

Consultation with Appropriate Government Authorities regarding temporary sites and infrastructure is ongoing. Consultation activities with Appropriate Government Authorities relevant to temporary construction lands and infrastructure are described in Table G-2. In addition to the consultation activities discussed below, the NEB has provided Information Requests on many of the condition plans and EPPs referenced in this report, which have resulted in updates to each of those documents over time. Revisions made as a result of Information Requests are also reflected in this EPP Condition 78 Update as well as in the update to the Condition 60 Temporary Construction Lands and Infrastructure ESA.

**TABLE G-2**

**SUMMARY OF GOVERNMENT AUTHORITY CONSULTATION  
REGARDING THE TEMPORARY CONSTRUCTION LANDS AND INFRASTRUCTURE EPP**

Stakeholder Group/ Agency Name	Method of Contact	Date of Consultation Activity	Comments	Response/Where Addressed
<b>FISH AND FISH HABITAT</b>				
DFO	Phone Call	June 22, 2017	The VersaCold site was included in the June 2017 NEB Condition 60 ESA Addendum, which involves construction in the marine environment. Trans Mountain contacted DFO to discuss components of VersaCold site to determine how to proceed with the DFO Proponent Self-Assessment under the <i>Fisheries Act</i> .	If required, an authorization under paragraph 35 [2b] of the Fisheries Act will be obtained for activities likely to cause residual serious harm to fish prior to the start of marine construction.
AESRD	Edmonton ESA Workshop	March 4, 2013	Additional species of management concern were proposed. All fish species proposed were incorporated into species of management concern.	Recommended pipeline and vehicle crossing methods as well as instream biological least-risk windows developed in consideration of species of management concern presence are provided in Tables 7.1-1 and 7.1-2 in the Resource Specific Mitigation Tables (Volume 7 of the Environmental Plans) and are depicted on the Environmental Alignment Sheets (Volume 8 of the Environmental Plans).
<b>WETLANDS</b>				
City of Edmonton	Email Phone	July 29, 2013 August 7, 2013	Typically, the City would like to see Class III and up wetlands avoided if at all possible. If not, then provincial regulations apply for wetland disturbance.	Trans Mountain considered avoidance of environmental features (including wetlands) during the routing design phase of the project. Avoidance of environmental features was achieved, where feasible. Mitigation measures for wetland crossings that comply with provincial regulations are provided in Section 8.3 of the Temporary Construction Lands and Infrastructure EPP (Volume 1 of the Environmental Plans).
	Meeting	June 19, 2013	Ms. Reudink expressed concerns about how mitigation will be separated out to reflect the different wetland types.	Mitigation measures for wetland crossings that comply with provincial regulations are provided in Section 8.3 of the Temporary Construction Lands and Infrastructure EPP (Volume 1 of the Environmental Plans).
<b>GROUNDWATER QUANTITY AND QUALITY</b>				
BC MFLNRO	Email	November 11, 2012	The Vedder River Fan Aquifer was identified as highly vulnerable.	Locations of vulnerable aquifers and associated mitigation measures are provided in Table 7.2-1 of Volume 7 of the Environmental Plans. Additional information is provided in the Groundwater Management Plan (see Section 4.0 of Volume 6 of the Environmental Plans).
<b>SOCIAL AND CULTURAL WELL-BEING, HUMAN OCCUPANCY AND RESOURCE USE, INFRASTRUCTURE AND SERVICES, NAVIGATION AND NAVIGATION SAFETY, AND EMPLOYMENT AND ECONOMY ELEMENTS</b>				
AEP (formerly AESRD): Foothills Area	Meeting	October 18, 2012	Project will need to have stringent reclamation plans that are on par with end land use goals for each specific area.	General clean-up and reclamation measures to be implemented following the completion of construction are provided in Section 13.0 of the Pipeline EPP (Volume 2 of the Environmental Plans). Site-specific reclamation measures and seed mixes are detailed in the Reclamation Management Plan provided in Section 9.0 of Volume 6 of the Environmental Plans.

**TABLE G-2 Cont'd**

Stakeholder Group/ Agency Name	Method of Contact	Date of Consultation Activity	Comments	Response/Where Addressed
BC MFLNRO: Thompson Okanagan Region	Meeting	October 31, 2012	Messaging regarding off-highway vehicle use on utility corridors. Cumulative effects regarding caribou migration and fish.	Mitigation measures for controlling unauthorized use along the Project right-of-way are detailed in the Access Management Plan provided in Section 2.0 of Volume 6 of the Environmental Plans. Mitigation measures to reduce Project impacts to fish and fish habitat and caribou are provided in the Resource Specific Mitigation Tables (Volume 7 of the Environmental Plans).
<b>SOILS</b>				
BC MFLNRO	Meeting	July 12, 2016	Recommendation to use short-lived agronomic species during reclamation to restrict the introduction and spread of non-native invasive species. Discussed Ms. Salm following up with BC Parks about the restriction to only use native species based on this recommendation. Identified areas to investigate for collection of native seed and offered recommendations for seed collection methods including: do not collect all seed in an area; avoid harvesting in areas with poor range condition; harvest from areas cattle do not typically graze (e.g., slopes); obtain permission to collect seed from grazing leaseholders and notify grazing license holders.	Specific seed mixes to be used in reclamation are shown on the Environmental Alignment Sheets (Volume 8 of the Environmental Plans) and detailed in the Project reclamation plans provided in Section 9.0 of Volume 6 of the Environmental Plans.
<b>VEGETATION</b>				
BC Government	Email	May 27, 2016	Team member e-mailed R. Newman and provided a response to a review of the draft proposed methods for the TMEP Grassland Survey and Mitigation Plan by Reg Newman.	The updated Grasslands Survey and Mitigation Plan is provided in Section 5.0 of Volume 6 of the Environmental Plans.
<b>WILDLIFE</b>				
BC MFLNRO: Thompson/ Okanagan Region, Kamloops	Email/ Telephone/ Meeting	April 14, 2015 June 16, 2015 September 17, 2015 March 22, 2016 May 3, 2016	Discuss mitigation for various wildlife species of conservation status specifically Williamson's sapsucker, Lewis's woodpecker, American badger, Western screech-owl, western rattlesnake, Great basin gophersnake and Great basin spadefoot. Discuss other specific mitigation (e.g., timing window, setbacks).	Mitigation measures for wildlife species of conservation status are provided in Table 4.4-1 of Volume 7 of the Environmental Plans as well as the Mitigation and Habitat Restoration Plans provided in Section 6.0 of Volume 6 of the Environmental Plans.
BC MFLNRO: South Coast Region, Surrey	Email/ Telephone/ Meeting	November 25, 2014 March 19, 2015 April 10, 2015 May 27, 2016	Discuss mitigation for various wildlife species of conservation status specifically Pacific water shrew, Oregon forestsnail, Oregon spotted frog, barn owl, coastal giant salamander, western screech-owl and Townsend's mole. Discuss other specific mitigation (e.g., timing window, setbacks).	Mitigation measures for wildlife species of conservation status are provided in Table 4.4-1 of Volume 7 of the Environmental Plans as well as the Mitigation and Habitat Restoration Plans provided in Section 6.0 of Volume 6 of the Environmental Plans.
<b>WASTE STORAGE AND DISPOSAL</b>				
Todd Thomson, BC MOE	Email	April 7, 2017	The <i>Waste Discharge Regulation</i> defines what industries, activities and operations require authorizations to discharge or release waste to the air, water, and land under the <i>Environmental Management Act</i> . Project activities that will introduce waste to the environment must be assessed to determine if an approval, permit, regulation or code of practice applies. The subsequent list of waste discharges and the required authorizations should be included in this table.	Potential Waste Discharge Permits have been added to Table 4 of this EPP for the anticipated wastes that will be produced by the temporary construction lands and infrastructure.
Todd Thomson, BC MOE	Email	April 7, 2017	Temporary fuel storage tank installations will need to meet the requirements of the <i>Petroleum Storage and Distribution Facilities Stormwater Regulation</i> .	Added "Temporary fuel storage tanks will be installed to meet the requirements of the <i>Petroleum Storage and Distribution Facilities Stormwater Regulation</i> in BC" to Section 7.0 of this EPP.



**TABLE G-2 Cont'd**

Stakeholder Group/ Agency Name	Method of Contact	Date of Consultation Activity	Comments	Response/Where Addressed
Todd Thomson, BC MOE	Email	April 7, 2017	Temporary fuel storage tank installations will need to meet the requirements of the <i>Petroleum Storage and Distribution Facilities Stormwater Regulation</i> .	Added "Temporary fuel storage tanks will be installed to meet the requirements of the <i>Petroleum Storage and Distribution Facilities Stormwater Regulation</i> in BC" to Section 7.0 of this EPP.
Todd Thomson, BC MOE	Email	April 7, 2017	For any sewage treatment system, a waste discharge authorization in the form of registration under either the <i>Sewerage System Regulation (SSR)</i> (Ministry of Health), or the <i>MWR</i> (BC MOE) is required. Generally, camps with sewage design flows of 22.7 m <sup>3</sup> /d or more (typically 100 beds or more) are registered under the <i>MWR</i> ; camps with less than 22.7 m <sup>3</sup> /d are registered under the <i>SSR</i> . The <i>Sewage Disposal Regulation</i> as referenced in this section was repealed in 2005 and has been replaced by the <i>SSR</i> . Incineration of solid waste at camps with more than 100 persons will require an authorization in the form of an air emissions permit. For more information on waste discharges at camps, please refer to the Industrial Camps -Fact Sheet located here: <a href="http://www2.gov.bc.ca/gov/content/environment/waste-management/sewage/municipal-wastewater-regulation">http://www2.gov.bc.ca/gov/content/environment/waste-management/sewage/municipal-wastewater-regulation</a>	Added "Ensure the applicable provincial permits and/or authorizations are in place prior to incinerating waste" to the Construction Camp and Waste Disposal measures in Section 10 of this EPP. Updated the <i>Sewage Disposal Regulation</i> with the <i>Sewerage System Regulation</i> and the <i>Municipal Waste Water Regulation</i> in Section 10 of this EPP.
Patrick Williston, BC MOE	Email	April 5, 2017	In BC discharges to waterbodies should be compared to BC Water Quality Guidelines. What actions will be conducted in the event that the relevant guidelines are exceeded? Please refer to the BC MOE memo "Trans Mountain Expansion Project Environmental Protection Plans Review" for further information.	Added reference to BC Water Quality Guidelines to water discharge measures in Section 11.0 of this EPP. Trans Mountain will test water prior to discharge as outlined in the water Withdrawal and Discharge Management Plan (Section 8.0 of Volume 6 of the Environmental Plans).
<b>SPILLS</b>				
Todd Thomson, BC MOE	Email	April 7, 2017	Spill reporting must be conducted in accordance with the <i>Spill Reporting Regulation</i> under the <i>Environmental Management Act</i> .	Added Spill reporting must be conducted in accordance with the <i>Spill Reporting Regulation</i> under the <i>Environmental Management Act</i> in Section 9.0 of Appendix B of this EPP.

### 3.3 Aboriginal Engagement

Since April 2012, Trans Mountain has engaged with Aboriginal groups who might have an interest in the Project or that have Aboriginal interests potentially affected by the Project, based on the proximity of their community and their assertion of traditional and cultural use of the land along the pipeline corridor to maintain a traditional lifestyle. The objectives of Aboriginal engagement are to:

- have an open, transparent and inclusive process that seeks to exchange information in a respectful manner;
- address concerns shared by those who might have an interest in the Project or have Aboriginal interests potentially affected by the Project;
- incorporate feedback into Project planning and execution; and
- provide opportunities to maximize Project benefits to Aboriginal groups.

A comprehensive Aboriginal engagement process is led by experienced engagement advisors in Alberta and BC, specialized in the areas of Aboriginal relations, law, economic development, education, training, employment and procurement. Trans Mountain's engagement process for the Project is flexible, allowing each community and group to engage in meaningful dialogue in the manner they choose and in a way to meet their objectives and values.

Each community had the opportunity to engage with Trans Mountain, depending upon Project interests and potential effects. The following opportunities to engage have been provided:

- Project announcement;
- initial contact with the Aboriginal group;
- meetings with Chief and Council and meetings with staff;
- host community information session(s);
- conduct TLU studies and socio-economic interviews;
- identify interests and concerns; and
- identify mitigation options.

Issues and concerns related to the Temporary Construction Lands and Infrastructure EPP raised during Aboriginal engagement from between early 2012 to August 2017 are summarized in Table G-3.

**TABLE G-3**

**SUMMARY OF ABORIGINAL CONCERNS REGARDING THE  
TEMPORARY CONSTRUCTION LANDS AND INFRASTRUCTURE EPP**

Issue or Concern		Summary Trans Mountain Response	Where Addressed
Summary	Aboriginal Group		
Concerns with the generic nature of Trans Mountains mitigation measures.	Coldwater Indian Band Squamish First Nation	Mitigation measures have been further refined by creating a separate Temporary Construction Lands and Infrastructure EPP (Volume 1 of the Environmental Plans) to address construction specific concerns. Detailed site-specific mitigation measures are provided in the Resource Specific Mitigation Tables (Volume 7 of the Environmental Plans) and on the Environmental Alignment Sheets (Volume 8 of the Environmental Plans).	Temporary Construction Lands and Infrastructure EPP (Volume 1 of the Environmental Plans) Resource Specific Mitigation Tables (Volume 7 of the Environmental Plans) Environmental Alignment Sheets (Volume 8 of the Environmental Plans)
Potential loss of beaver habitat, beaver lodges and request to trap and release live beaver	Lheidli T'enneh First Nation Simpw First Nation Tk'emlups te Secwépemc (Kamloops Indian Band) Chawathil First Nation	Trans Mountain will minimize potential adverse effects to beaver habitat/wetlands by expediting construction in and around wetlands, by restoring wetlands to their original configurations and contours, by segregating topsoil during excavation, by permanently stabilizing upland areas near wetlands as soon as possible after backfilling, by inspecting the right-of-way periodically during and after construction, and by repairing any erosion control or restoration features until permanent revegetation is successful.  Mitigation measures to be implemented in the event that beaver dam removals are required are presented in Section 7.0 of the Temporary Construction Lands and Infrastructure EPP (Volume 1 of the Environmental Plans).	Section 7.0 and Section 8.3 of this EPP (Volume 1 of the Environmental Plans)

**TABLE G-3 Cont'd**

Issue or Concern		Summary Trans Mountain Response	Where Addressed
Summary	Aboriginal Group		
Displacement of wildlife	Alexander First Nation Alexis Nakota Sioux Nation Aseniwuche Winewak Nation Enoch Cree Nation Ermineskin Cree Nation Gunn Métis Local 55 Michel First Nation Montana First Nation Nakcowinewak Nation of Canada Paul First Nation O'Chiese First Nation Samson Cree Nation Shackan Indian Band Sucker Creek First Nation Sunchild First Nation	The three main components of habitat fragmentation are habitat loss, reduced habitat patch size and increased isolation of patches. Effects of habitat fragmentation will be reduced by alignment of the route parallel to and contiguous with existing linear features, and minimizing the Project footprint to the maximum extent feasible. A suite of mitigation measures will be implemented to reduce the potential effects of the Project on wildlife habitat, movement and mortality risk. Mitigation measures to reduce effects on habitat, limit barriers to movement, avoid attraction of wildlife to the work site, minimize sensory disturbance and protect site-specific habitat features of importance are discussed in Section 7.2.10 of Volume 5A of the Trans Mountain Application and the Pipeline EPP (Volume 2 of the Environmental Plans).	Section 7.0 of this EPP and Section 13.0 of the Pipeline EPP (Volumes 1 and 2 of the Environmental Plans, respectively) as well as the Access Management Plan (Section 2.0 of Volume 6 of the Environmental Plans) and the Wildlife Management Plans in Section 6.0 of Volume 6 of the Environmental Plans
Impacts to wildlife on reserve land	Peters Band	During and following construction, Trans Mountain will manage access (human and predator) at slope changes, crossings ( <i>i.e.</i> , watercourse, road, pipeline right-of-way, railway) and bends in accordance with the Access Management Plan (Section 2.0 of Volume 6 of the Environmental Plans) as well as the Wildlife Management Plans provided in Section 6 of Volume 6 of the Environmental Plans.	
Increased access for hunters during construction Increased lines-of-sight affecting predator-prey dynamics due to clearing activities Creation of animal corridors	Alexander First Nation Lheidli T'enneh First Nation Simpco First Nation Lhtako Dene Nation Alexis Nakota Sioux Nation Aseniwuche Winewak Nation Enoch Cree Nation Ermineskin Cree Nation Gunn Métis Local 55 Michel First Nation Montana First Nation Nakcowinewak Nation of Canada Paul First Nation O'Chiese First Nation Samson Cree Nation Sucker Creek First Nation Sunchild First Nation Whispering Pines/Clinton Band Lower Nicola Indian Band Nicola Tribal Association Yale First Nation Chawathil First Nation Shxw'ôwhâmel First Nation Cheam First Nation The Stó:lô Collective Seabird Island Band Popkum First Nation Scowitz First Nation Leq'á:mel First Nation Kwantlen First Nation Kwikwetlem First Nation Shackan Indian Band Lhtako Dene Nation Coldwater Indian Band Upper Nicola Band	Trans Mountain will work with Aboriginal groups to develop strategies to most effectively communicate the construction schedule and work areas to its members.	
Potential effects to wildlife and wildlife habitat			
Potential for construction activities to limit use of game trails, restricting wildlife movement			



**TABLE G-3 Cont'd**

Issue or Concern		Summary Trans Mountain Response	Where Addressed
Summary	Aboriginal Group		
Sensory disturbance to wildlife during construction activities	Simpco First Nation	Mitigation measures for the reduction of sensory disturbance to wildlife are provided in Section 7.0 of the Temporary Construction Lands and Infrastructure EPP (Volume 1 of the Environmental Plans).	Section 7.0 of this EPP (Volume 1 of the Environmental Plans)
Disturbance of wildlife dens during construction	Lheidli T'enneh First Nation Simpco First Nation Chawathil First Nation Scowit First Nation Leq'á:mel First Nation	Mitigation measures to reduce impacts on wildlife dens potentially encountered by the pipeline construction footprint are provided in Section 4.0 of the Resource Specific Mitigation Tables (Volume 7 of the Environmental Plans).	Section 4.0 of the Resource Specific Mitigation Tables (Volume 7 of the Environmental Plans)
Loss of bat habitat during construction	Semiahmoo First Nation	Mitigation measures to reduce impacts on bats and bat habitat potentially encountered by the pipeline construction footprint are provided in Section 4.0 of the Resource Specific Mitigation Tables (Volume 7 of the Environmental Plans).	Section 4.0 of the Resource Specific Mitigation Tables (Volume 7 of the Environmental Plans)
Effects on sharp-tailed grouse	Stk'emlúps te Secwépemc Nation	Mitigation measures to reduce impacts on sharp-tailed grouse leks potentially encountered by the pipeline construction footprint are provided in Section 4.0 of the Resource Specific Mitigation Tables (Volume 7 of the Environmental Plans).	Section 4.0 of the Resource Specific Mitigation Tables (Volume 7 of the Environmental Plans)
Sensory disturbance to birds and disturbance of bird habitat during construction	Lheidli T'enneh First Nation Simpco First Nation Ts'q'escen' (Canim Lake Band) Whispering Pines/Clinton Band Lower Nicola Indian Band Yale First Nation Chawathil First Nation Shxw'ow'hámel First Nation Cheam First Nation The Stó:lō Collective Seabird Island Band Popkum First Nation Scowit First Nation Leq'á:mel First Nation Nicola Tribal Association	Mitigation measures to reduce sensory disturbance to birds and disturbance to bird habitat during construction are provided in Section 7.0 of the Temporary Construction Lands and Infrastructure EPP (Volume 1 of the Environmental Plans).	Section 7.0 and Appendix B of this EPP (Volume 1 of the Environmental Plans)
Potential loss of wetland habitat, function and water quality also affecting wildlife and vegetation during construction of the Project	Alexis Nakota Sioux Nation Aseniwuche Winewak Nation Enoch Cree Nation Ermineskin Cree Nation Gunn Métis Local 55 Michel First Nation Montana First Nation Nakcowinewak Nation of Canada Paul First Nation O'Chiese First Nation Samson Cree Nation Sucker Creek First Nation Sunchild First Nation Lheidli T'enneh First Nation Ts'q'escen' (Canim Lake Band) Yale First Nation Chawathil First Nation Shxw'ow'hámel First Nation Popkum First Nation Leq'á:mel First Nation The Stó:lō Collective Kwikwetlem First Nation Shackan Indian Band Lhtako Dene Nation Upper Nicola Band	Trans Mountain will minimize potential adverse effects to wetlands by expediting construction in and around wetlands, by restoring wetlands to their original configurations and contours, by segregating topsoil during excavation, by permanently stabilizing upland areas near wetlands as soon as possible after backfilling, by inspecting the right-of-way periodically during and after construction, and by repairing any erosion control or restoration features until permanent revegetation is successful.  Special precautions, such as completing construction through some wetlands and watercourses during the winter months when the ground is frozen, will be implemented, where feasible on the river and stream crossings along the pipeline corridor.  Mitigation measures for wetland crossings are outlined in Sections 7.0, 13.0 and 14.0 of the Pipeline EPP (Volume 2 of the Environmental Plans).	Sections 7.0, and 9.0 of this EPP (Volume 1 of the Environmental Plans)

**TABLE G-3 Cont'd**

Issue or Concern		Summary Trans Mountain Response	Where Addressed
Summary	Aboriginal Group		
Potential effects to air quality  Emissions and climate change	Chawathil First Nation Kwikwetlem First Nation Shxw'owhámel First Nation Kwantlen First Nation Lower Nicola Indian Band Neskonlith Indian Band Tsleil-Waututh Nation	Trans Mountain will ensure equipment is well-maintained during construction to minimize air emissions and unnecessary noise. Additionally, Trans Mountain will restrict the duration that vehicles and equipment are allowed to sit and idle to less than 1 hour unless air temperatures are less than 0°C.  Trans Mountain will prepare a GHG Emissions Offset Plan pursuant to NEB Condition 142 that will provide a plan for offsetting all direct GHG emissions generated from Project construction.	Section 7.0 of this EPP (Volume 1 of the Environmental Plans) as well as the GHG Emissions Offset Plan to be prepared pursuant to NEB Condition 142
Concerns about suitable erosion control mitigation measures on steep slopes	Upper Nicola Band	In fulfilment of NEB Condition 51 Trans Mountain must file with the NEB for approval a field changes manual for geohazard mitigation. This manual must include: decision criteria for implementing mitigation for any geohazards identified during construction; specific criteria for implementing changes to the designs, grading, special materials, protective structures, increased burial depth, installation procedures, erosion mitigation measures, and monitoring; and details regarding the required qualifications of the field staff that will implement the manual.  Mitigation measures for control of erosion on steep slopes are provided in Sections 7.0 and 13.0 of the Temporary Construction Lands and Infrastructure EPP (Volume 1 of the Environmental Plans).	Sections 7.0 of this EPP and Section 13.0 of the Pipeline EPP (Volumes 1 and 2 of the Environmental Plans, respectively) as well as NEB Condition 51 field changes manual for geohazard mitigation
Potential effects to fish and habitat	Alexis Nakota Sioux Nation Aseniwuche Winewak Nation Enoch Cree Nation Ermineskin Cree Nation Gunn Métis Local 55 Michel First Nation Montana First Nation Nakcowinewak Nation of Canada Paul First Nation O'Chiese First Nation Samson Cree Nation Sucker Creek First Nation Sunchild First Nation Lheidli T'enneh First Nation Simpco First Nation Lhtako Dene Nation Tsq'escen' (Canim Lake Band) Whispering Pines/Clinton Band Tk'emlups te Secwépemc (Kamloops Indian Band) Lower Nicola Indian Band Nicola Tribal Association Yale First Nation Chawathil First Nation Shxw'owhámel First Nation Cheam First Nation Peters Band Seabird Island Band Popkum First Nation Scowlitz First Nation Leq'á:mel First Nation Semiahmoo First Nation Kwantlen First Nation	Trans Mountain agrees that measures to protect sensitive environmental areas such as water bodies and riparian areas are critical.  Vehicle and equipment crossings specific to each watercourse will be determined in consultation with engineering and environmental specialists, as well as Applicable Government Authorities.	Section 8.3 and Section 9.0 of this EPP (Volume 1 of the Environmental Plans)

**TABLE G-3 Cont'd**

Issue or Concern		Summary Trans Mountain Response	Where Addressed
Summary	Aboriginal Group		
Potential effects to fish and habitat (cont'd)	Squamish First Nation Musqueam Indian Band Pacheedaht First Nation The Stó:lō Collective T'Sou-ke First Nation Simpco First Nation Tsleil-Waututh Nation Kwikwetlem First Nation Shackan Indian Band Stk'émúps te Secwépemc Nation Neskonlith Indian Band Upper Nicola Band Katzie First Nation Matsqui First Nation Coldwater Indian Band Stz'uminus First Nation (Chemainus)	See above	See above
Effects to riparian areas	Kwantlen First Nation		
Declining fish populations	Katzie First Nation		
Quantities of sturgeon and salmon	Shxw'ówhámél First Nation Lheidli T'enneh First Nation		
Concern that mitigation measures do not address concerns regarding spawning grounds.	Squamish First Nation		
Requests Trans Mountain increase riparian buffers.	Nicomen Indian Band Nooaitch Indian Band	Trans Mountain will implement the Reclamation Management Plan (Section 9.0 of Volume 6 of the Environmental Plans) that includes construction reclamation measures to be implemented prior to, during and following construction in order stabilize and revegetate affected lands that in time achieve land productivity at temporary construction lands and infrastructure sites equivalent to the adjacent land use and ensuring the ability of the land to support various land uses.  Further discussion is provided under vegetation in Section 7.2.9 of Volume 5B of the Trans Mountain Application. Mitigation measures for reclamation are outlined in the Pipeline EPP (Volume 2 of the Environmental Plans) as well as in the Reclamation Management Plan (Section 9.0 of Volume 6 of the Environmental Plans).	Section 13.0 of the Pipeline EPP (Volume 2 of the Environmental Plans) as well as the Reclamation Management Plan (Section 9.0 of Volume 6 of the Environmental Plans)
Adverse effects to and destruction of vegetation	Alexis Nakota Sioux Nation Aseniwuche Winewak Nation Enoch Cree Nation Ermineskin Cree Nation Gunn Métis Local 55 Michel First Nation Montana First Nation Nakcowinewak Nation of Canada Paul First Nation O'Chiese First Nation Samson Cree Nation Sucker Creek First Nation Sunchild First Nation Nicola Tribal Association Kwikwetlem First Nation Kwantlen First Nation Upper Nicola Band Coldwater Indian Band Shackan Indian Band Lheidli T'enneh First Nation Tsq'escen' (Canim Lake Band) Lhtako Dene Nation Whispering Pines (Clinton Indian Band) Lower Nicola Indian Band Nicola Tribal Association Nooaitch Indian Band Yale First Nation		



**TABLE G-3 Cont'd**

Issue or Concern		Summary Trans Mountain Response	Where Addressed
Summary	Aboriginal Group		
Adverse effects to and destruction of vegetation (cont'd)	Chawathil First Nation Shxw'ówhámél First Nation The Stó:lō Collective Seabird Island Band Popkum First Nation Scowlitz First Nation Leq'á:mel First Nation Tzeachten First Nation Semiahmoo First Nation	See above	See above
Decreased quantities of berries	Squamish First Nation Musqueam Indian Band		
Effects on grasslands plants and wildlife	Simpco First Nation Stk'emlúps te Secwépemc Nation		
Spread of invasive species and use of chemical vegetation management			
Soil reclamation/topsoil salvage	Leq'á:mel First Nation	Topsoil/root zone material will be salvaged to ensure that soil productivity is maintained. The width and depth of topsoil/root zone material salvage will depend on the land use, soil conditions, microtopography, regulatory agency requests and grading requirements. Any salvaged topsoil/root zone material will be segregated and stockpiled temporary construction lands and infrastructure site and replaced following construction.  Mitigation measures for soil and soil productivity are outlined in the Temporary Construction Lands and Infrastructure EPP (Volume 1 of the Environmental Plans).	Section 8.2 of this EPP and Section 13.0 of the Pipeline EPP (Volumes 1 and 2 of the Environmental Plans, respectively)
Reclaim Project lands to pre-construction state	Alexis Nakota Sioux Nation Aseriwuche Winewak Nation Enoch Cree Nation Ermineskin Cree Nation Gunn Métis Local 55 Michel First Nation Montana First Nation Nakcowinewak Nation of Canada Paul First Nation O'Chiese First Nation Samson Cree Nation Sucker Creek First Nation Sunchild First Nation Tsq'escen' (Canim Lake Band) Tk'emlúps te Secwépemc (Kamloops Indian Band) Chawathil First Nation Shxw'ówhámél First Nation The Stó:lō Collective Musqueam Indian Band Simpco First Nation Shxw'ówhámél First Nation Upper Nicola Band Lower Nicola Indian Band	Trans Mountain will implement the Reclamation Management Plan (Volume 6 of the Environmental Plans) that includes construction reclamation measures to be implemented prior to, during and following construction in order to stabilize and revegetate affected lands that in time achieve land productivity at the temporary construction lands and infrastructure site equivalent to the pre-construction state and ensuring the ability of the land to support various land uses.  Construction reclamation activities are measures conducted as part of the main construction program.  The primary goal of reclamation measures is to reduce adverse effects of construction and return the affected lands to a stable, non-erosive condition that will promote the re-establishment of land productivity. This process involves measures such as: topsoil and root zone material salvage; subsoil conditioning and grade and drainage re-establishment; topsoil and root zone material replacement; installation and maintenance of temporary and permanent erosion and sediment control measures; and revegetation.  Further discussion is provided under vegetation in Section 7.2.9 of Volume 5B of the Trans Mountain Application. Mitigation measures for vegetation are outlined in the Pipeline EPP (Volume 2 of the Environmental Plans).	Section 13.0 of the Pipeline EPP (Volume 2 of the Environmental Plans) as well as the Reclamation Management Plan (Section 9.0 of Volume 6 of the Environmental Plans)
Re-seeding be conducted by hand rather than by air or vehicle and by community members	Upper Nicola Band		
Potential effects from the introduction of foreign substances into the ecosystem	Seabird Island Band		

**TABLE G-3 Cont'd**

Issue or Concern		Summary Trans Mountain Response	Where Addressed
Summary	Aboriginal Group		
Concerns about reclamation of lands disturbed during Project construction	Aseniwuche Winewak Nation	See above	See above
Request for reintroduction of specific native and medicinal plants to re-establish the existing ecosystem post-construction	Alexis Nakota Sioux Nation Aseniwuche Winewak Nation Enoch Cree Nation Ermineskin Cree Nation Gunn Métis Local 55 Michel First Nation Montana First Nation Nakcowinewak Nation of Canada Paul First Nation O'Chiese First Nation Samson Cree Nation Sucker Creek First Nation Sunchild First Nation Foothills Ojibway Society		
Request that a reclamation plan should utilize native seed mixes and plants	Coldwater Indian Band		
Request that monitoring of wild plants and the effect of the Project on native plants be monitored over five years	Nicomén Indian Band		
Request for wildlife monitors during construction and post-construction site visits with Aboriginal groups  Involve Elders in Project reclamation work	Tk'emlups te Secwépemc (Kamloops Indian Band) Lower Nicola Indian Band Lhtako Dene Nation	Trans Mountain will continue to engage Aboriginal groups through all phases of the Project.  The EPPs provide mitigation plans developed in response to issues identified during Project planning, stakeholder consultation, Aboriginal engagement and regulatory discussions.  Aboriginal Monitors on-site through the construction to commissioning of the of the Project will work with environmental inspector to provide traditional knowledge to the construction program to ensure protection of the environment; to discuss upcoming traditional and western science elements with the environmental inspector to insure protection and monitoring; and to monitor mitigation success in protecting the environment.  Aboriginal engagement is discussed in Volume 3B and the use of Aboriginal Monitors is discussed in Volume 6A of the Application. Also refer to Temporary Construction Lands and Infrastructure EPP (Volume 1 of the Environmental Plans).	NEB Condition 98 Plan for Aboriginal group participation in construction monitoring.

Trans Mountain continues to liaise with Indigenous and Northern Affairs Canada, the Government of Canada's Major Projects Management Office, the BC Ministry of Aboriginal Relations and Reconciliation, and the Alberta Ministry of Aboriginal Affairs to provide updates regarding Trans Mountain's engagement activities with Aboriginal groups.

### **3.3.1 Identifying Aboriginal Groups for Consultation**

Trans Mountain used the First Nations Consultative Area Database Public Map Service to identify the Aboriginal groups potentially affected by Project construction. Appendix H lists the Aboriginal groups identified for further consultation. Throughout regular engagement with TMEP, any Aboriginal groups were added to the list if they identified Temporary Construction Lands and Infrastructure as a concern.

### **3.3.2 Consultation Activities**

A letter was sent to the Aboriginal groups listed in Appendix H with a copy of the draft Temporary Construction Lands and Infrastructure EPP. Where appropriate and upon request, a follow up meeting was arranged to discuss this Plan in more detail and address any concerns. No feedback specific to this EPP was received.

Trans Mountain provided email notification of an updated copy of NEB Condition 59 (as an Appendix of BC Environmental Assessment Office (EAO) Condition 23, which contained additional about Aboriginal groups in relation to camps) and NEB Condition 78, which contained the two remaining Clearwater sites, to potentially affected Aboriginal groups on August 14, 2017. Feedback was requested, and a comment period of 30 days was provided for Aboriginal groups to respond. No concerns have been raised by any of the Aboriginal groups thus far.

Trans Mountain will update the Board if any further consultation feedback is received and will report the engagement with the next filing of Condition 96 – Reports on Aboriginal Engagement – Construction in January 2018. Trans Mountain has summarized the feedback received through Trans Mountain's engagement on this EPP, and the summary includes how Trans Mountain responded to and addressed the concern or issue. It should be noted that although the engagement process also provided for opportunity for general discussion about Project construction and associated Aboriginal issues and opportunities, only feedback/issues directly related to Temporary Construction Lands and Infrastructure are provided in this Plan. Other issues and topics raised have been captured in the corresponding mitigation plan as appropriate.

This final Plan will be shared with the Aboriginal groups at the same time as the report is filed with the NEB in 2017.

### **3.4 Landowners/Tenants**

Trans Mountain has implemented a comprehensive landowner engagement process for the TMEP to:

- ensure landowners are informed of the Project and how it may affect them;
- enable landowners to gain an understanding of their rights under the *NEB Act*, and the regulatory process and their opportunities for comment within the NEB regulatory process; and
- have a number of opportunities to discuss the Project, identify my concerns or questions they may have with the project, and have those questions and concerns addressed by Trans Mountain.

In addition to these opportunities for engagement, Trans Mountain is required to provide formal notifications of landowners under Sections 87 and 34 of the *NEB Act*, and Trans Mountain has or will, at the appropriate time, provide such notices.

Individual landowners and tenants have different preferences with respect to communications, and Trans Mountain tailors its communications as requested. Land representatives working for Trans Mountain have been in discussions with landowners for over three years and issues or concerns raised with land agents have been documented in the Project landowner database, addressed within site-specific construction plans and documented within the land rights agreements. Trans Mountain has filed reports with the NEB providing details on the landowner engagement program and results to date. In accordance with NEB Condition 99, records of engagement and consultation with landowners and tenants will be filed with the



NEB at least two months prior to commencing construction and every six months thereafter until five years after commencing Project operations.

Trans Mountain's landowner/tenant consultation strategy includes the activities described below.

1. Prior to Project approval - obtain landowner permission for survey, provide information on the project and landowner rights, provide copies of land agreement documents to the landowners for their review and consideration, dialogue with each landowner to answer questions and address concerns raised by landowners, provide Project updates, and disseminate any other information necessary to satisfy landowner requests and regulatory requirements. After addressing outstanding questions and issues, obtain land agreements from landowners voluntarily. Land agreements have and will address specific landowner concerns regarding construction and reclamation activity.
2. After obtaining a CPCN from the NEB, Trans Mountain will provide Section 34 notices indicating the detailed route for the pipeline and the specific lands affected by the Project, and complete any additional regulatory procedures required prior to commencement of construction, including providing reasonable notice through land agents of commencement date and activities. Trans Mountain land representatives will continue to maintain contact with landowners through construction to answer questions and address any issues that may arise. Following construction, maintain communication with landowners to discuss reclamation activities and timing. Upon completion of reclamation, Trans Mountain will transition the Project land program to operations.

Respecting this report, Trans Mountain notified landowners by letter in September 2016 that NEB Condition plans were being released for consultation and feedback. The landowner notification letter requested that landowners review the reports available on the TMEP website, or alternatively contact their assigned land representative or Trans Mountain directly if they wished to receive hard copies of the reports to review. No responses or requests for copies of the reports were received by Trans Mountain and no concerns or questions about the reports were expressed by landowners.

## APPENDIX G-1

### RECORD OF STAKEHOLDER NOTIFICATIONS OF PLAN

Records of stakeholder notifications can be found in Table G1-1 below.

**TABLE G1-1**

#### RECORD OF NOTIFICATION

Regulator/Stakeholder Group	Contact Name (if applicable)	Date	Method of Contact
Landowners	N/A	September 11, 2016	Letter
Vancouver Fraser Port Authority	Patrick Coates	February 14, 2017	Email
Jasper National Park of Canada	Mayabe Dia	February 14, 2017	Email
Alberta Environment and Parks	Corinne Kristensen	February 14, 2017	Email
Alberta Environment and Parks	Margot Trembath	February 14, 2017	Email
Alberta Environment and Parks	Dave Hugelschaffer	February 14, 2017	Email
Alberta Environment and Parks	Muhammed Aziz	February 14, 2017	Email
BC Parks	Ken Morrison	February 14, 2017	Email
BC Oil and Gas Commission	Brian Murphy	February 14, 2017	Email
Ministry of Natural Gas Development	Linda Beltrano	February 14, 2017	Email
Forests, Lands and Natural Resource Operations	Susan Fitton	February 14, 2017	Email
Ministry of Transportation and Infrastructure	Lisa Gow	February 14, 2017	Email
Ministry of Transportation and Infrastructure	Kristen Johnson	February 14, 2017	Email
FVAQC	Roger Quan	February 14, 2017	Email
ECCC	Phil Wong	February 14, 2017	Email
ECCC	Rachel Mayberry	February 14, 2017	Email
ECCC	Coral Deshield	February 14, 2017	Email
Village of Valemount	N/A	February 15, 2017	Email
Regional District Fraser Fort George	N/A	February 15, 2017	Email
Northern Health- Prince George	N/A	February 15, 2017	Email
District of Clearwater	N/A	February 15, 2017	Email
RCMP-Clearwater	N/A	February 15, 2017	Email
City of Merritt	N/A	February 15, 2017	Email
RCMP-Merritt	N/A	February 15, 2017	Email
City of Kamloops	N/A	February 15, 2017	Email
RCMP Kamloops	N/A	February 15, 2017	Email
Kamloops Hotel Association	N/A	February 15, 2017	Email
Thompson Nicola Regional District	N/A	February 15, 2017	Email
Interior Health	N/A	February 15, 2017	Email
City of Surrey	N/A	February 15, 2017	Email
Township of Langley	N/A	February 15, 2017	Email
City of Coquitlam	N/A	February 15, 2017	Email
Surrey Board of Trade	N/A	February 15, 2017	Email
Greater Langley Chamber	N/A	February 15, 2017	Email
Stoney Creek Environment Committee	N/A	February 15, 2017	Email
Eagle Creek Streamkeepers	N/A	February 15, 2017	Email
Yorkson Streamkeepers	N/A	February 15, 2017	Email
Surrey Environmental Partners	N/A	February 15, 2017	Email
LEPS	N/A	February 15, 2017	Email
Burke Mountain Naturalists / BC Nature	N/A	February 15, 2017	Email
City of Burnaby	N/A	February 15, 2017	Email
Metro Vancouver Regional District	N/A	February 15, 2017	Email
City of New Westminster	N/A	February 15, 2017	Email
Sapperton Fish and Game Club	N/A	February 15, 2017	Email
Burnaby Board of Trade	N/A	February 15, 2017	Email
District of Hope	N/A	February 15, 2017	Email
City of Chilliwack	N/A	February 15, 2017	Email

**TABLE G1-1 Cont'd**

Regulator/Stakeholder Group	Contact Name (if applicable)	Date	Method of Contact
City of Abbotsford	N/A	February 15, 2017	Email
Fraser Valley Regional District	N/A	February 15, 2017	Email
City of Edmonton	N/A	February 15, 2017	Email
City of Spruce Grove	N/A	February 15, 2017	Email
Parkland County	N/A	February 15, 2017	Email
Strathcona County	N/A	February 15, 2017	Email
Town of Edson	N/A	February 15, 2017	Email
Town of Hinton	N/A	February 15, 2017	Email
Town of Stony Plain	N/A	February 15, 2017	Email
Village of Wabamun	N/A	February 15, 2017	Email
Yellowhead County	N/A	February 15, 2017	Email
ACGI Shipping	N/A	February 15, 2017	Email
BC Chamber of Shipping	N/A	February 15, 2017	Email
BC Coast Pilots (BCCP)	N/A	February 15, 2017	Email
Canadian Pacific (CP) Rail	N/A	February 15, 2017	Email
Canexus - Erco-Newalta-Univar Community Advisory Panel (CAP)	N/A	February 15, 2017	Email
Canexus Chemicals	N/A	February 15, 2017	Email
Chevron	N/A	February 15, 2017	Email
CN Rail	N/A	February 15, 2017	Email
Council of Marine Carriers	N/A	February 15, 2017	Email
District of North Vancouver	N/A	February 15, 2017	Email
Empire Shipping	N/A	February 15, 2017	Email
First Nation Emergency Services Society (FNESS)	N/A	February 15, 2017	Email
First Nation Health Authority	N/A	February 15, 2017	Email
Inchcape Shipping	N/A	February 15, 2017	Email
Island Tug and Barge	N/A	February 15, 2017	Email
Ledcor Resources & Transportation Limited Partnership	N/A	February 15, 2017	Email
Mason Agency (Shipping Service)	N/A	February 15, 2017	Email
MLA - North Vancouver Seymour	N/A	February 15, 2017	Email
MP - North Vancouver	N/A	February 15, 2017	Email
North Shore NOPE	N/A	February 15, 2017	Email
North Vancouver Chamber of Commerce	N/A	February 15, 2017	Email
Pacific Pilotage Authority	N/A	February 15, 2017	Email
Pacific Wildlife Foundation	N/A	February 15, 2017	Email
Seaspan	N/A	February 15, 2017	Email
SMIT Marine	N/A	February 15, 2017	Email
UBC Stellar Sea Lion (Marine Mammal) Research Centre	N/A	February 15, 2017	Email
Vancouver Aquarium	N/A	February 15, 2017	Email
Vancouver Board of Trade	N/A	February 15, 2017	Email
Vancouver Coastal Health Authority	N/A	February 15, 2017	Email
Vancouver Pile and Dredge	N/A	February 15, 2017	Email
Westward Shipping	N/A	February 15, 2017	Email
Wild Bird Trust	N/A	February 15, 2017	Email



## **APPENDIX H**

### **ABORIGINAL GROUPS ENGAGED ON THE TEMPORARY CONSTRUCTION LANDS AND INFRASTRUCTURE EPP**

- Adams Lake Indian Band
- Aitchelitz First Nation (Stó:lō)
- Alexander First Nation
- Alexis Nakota Sioux Nation
- Aseniwuche Winewak Nation
- Ashcroft Indian Band (N'laka'pamux Nation)
- Asini Wachi Nehiyawak
- Boothroyd Indian Band (Nlaka'pamux Nation)
- Boston Bar First Nation (Nlaka'pamux Nation)
- BC Métis Federation
- Canim Lake Band (Tsq'escenemc')
- Canoe Creek (Stswecem'c Xgat'tem) First Nation
- Chawathil First Nation (Stó:lō)
- Cheam First Nation (Stó:lō)
- Clinton Indian Band / Whispering Pines
- Coldwater Indian Band (Nlaka'pamux Nation)
- Cook's Ferry Indian Band (Nlaka'pamux Nation)
- Cowichan Tribes
- Enoch Cree Nation
- Ermineskin First Nation
- Foothills Ojibway Society
- Halalt First Nation (CNA)
- High Bar First Nation
- Horse Lake First Nation (Treaty 8)
- Hwiltsum First Nation (CNA)
- Kanaka Bar Indian Band
- Katzie First Nation
- Kelly Lake Cree Nation
- Kelly Lake First Nation
- Kelly Lake Métis Settlement Society
- Ktunaxa Nation
- Kwantlen First Nation (Stó:lō)
- Kwaw-kwaw-Apilt First Nation (Stó:lō)
- Kwikwetlem First Nation
- Lake Cowichan First Nation
- Leq'á:mel First Nation (Stó:lō)
- Lheidli-T'enneh First Nation
- Lhtako Dene Nation
- Little Shuswap Indian Band
- Louis Bull Tribe
- Lower Nicola Indian Band (Nlaka'pamux Nation)
- Lower Similkameen Indian Band
- Lyackson First Nation
- Lytton First Nation (Nlaka'pamux Nation)
- Matsqui First Nation (Stó:lō)
- Métis Nation of Alberta Gunn Métis Local 55
- Metis Nation of BC
- Métis Regional Council Zone IV of the Métis Nation of Alberta
- Michel First Nation
- Montana First Nation
- Musqueam Indian Band
- Nakcowinewak Nation of Canada
- Neskonlith Indian Band
- Nicomen Indian Band (NTA)
- Nooaitch Indian Band (Nlaka'pamux Nation)
- O'Chiese First Nation

- Okanagan Indian Band
- Oregon Jack Creek Band (Nlaka'pamux Nation)
- Paul First Nation
- Pauquachin First Nation
- Penelakut First Nation
- Penticton Indian Band
- Peters Band (Stó:lō)
- Popkum First Nation (Stó:lō)
- Qayqayt First Nation (New Westminster)
- Saddle Lake Cree Nation
- Samson Cree Nation
- Scowlitz First Nation (Stó:lō)
- Seabird Island Band (Stó:lō)
- Sechelt (shishath Nation)
- Semiahmoo First Nation
- Sencoten Alliance
- Shackan Indian Band (Nlaka'pamux Nation)
- Shuswap Indian Band
- Shuswap Nation Tribal Council
- Shxw'ōwhámel First Nation (Stó:lō)
- Shxwha:y Village (Stó:lō)
- Simpcw First Nation
- Siska Indian Band (Nlaka'pamux Nation)
- Skawahlook First Nation (Stó:lō)
- Skeetchestn Indian Band
- Skowkale First Nation (Stó:lō)
- Skuppah Indian Band (Nlaka'pamux Nation)
- Skwah First Nation (Stó:lō)
- Soowahlie Indian Band (Stó:lō)
- Splatsin First Nation
- Spuzzum First Nation (Nlaka'pamux Nation)
- Squamish Nation
- Squiala First Nation (Stó:lō)
- St'at'imc Chiefs Council
- Stoney Nakoda First Nation
- Sts'ailes (Chehalis Indian Band) (Stó:lō)
- St'uxwtews (Bonaparte Indian Band)
- Stz'uminus First Nation (Chemainus)
- Sucker Creek First Nation
- Sumas First Nation (Stó:lō)
- Sunchild First Nation
- Tk'emlups te Secwepemc (Kamloops)
- Toosey Indian Band
- Treaty 8 Nations of Alberta
- Tsartlip First Nation
- Tsawout First Nation
- Tsawwassen First Nation
- Tseycum First Nation
- Tsilhqot'in National Government
- Ts'kw'aylaxw (Pavilion Indian Band)
- Tseil-Waututh Nation
- Tsuut'ina First Nation
- Tzeachten First Nation (Stó:lō)
- Union Bar Indian Band (Stó:lō)
- Upper Nicola Band (Nlaka'pamux Nation)
- Upper Similkameen Indian Band
- Whitefish (Goodfish) Lake First Nation #128
- Williams Lake (T'exelc) Indian Band



- Xatšūll First Nation (Soda Creek Indian Band)
- Yakweakwioose First Nation (Stó:lō)
- Yale First Nation (Stó:lō)

## APPENDIX I

### TEMPORARY CONSTRUCTION LANDS AND INFRASTRUCTURE

TABLE I-1

#### LIST AND DIMENSIONS OF TEMPORARY CONSTRUCTION LANDS AND INFRASTRUCTURE

Site Name [ID] and Status	Site Type	Location	UTM (Zone)	Area (ha)	Site Description
North Gate Stockpile Site [ENO047] Included in the June 1, 2017 filing	Stockpile site and staging area	Enoch, AB	E315630; N5938714 (12)	12.75	Located on a previously disturbed, level site. No vegetation or topsoil appears to be present. Access to the site is along Township Road 531A through an industrial area. No new temporary access is required.
Acheson Office and Yard [ENO002] Included in the June 1, 2017 filing	Construction yard	Enoch, AB	E314306; N5936313 (12)	3.63	Located on flat, partially disturbed industrial land. Some vegetation is present. Access to the site is along Acheson Road through an industrial area. No new temporary access is required to access this site.
Enoch [ENO055] New as of August, 2017	Construction yard	Enoch, AB	E316206; N5930737 (10)	11.12	Located on the Stony Plain Indian Reserve. Located on level agricultural land. Access to the site is along Township Road 523. No new temporary access is required.
Edson (Range Road 180 and Hwy 16 (Ledcor Yard)) [EDS003.2] Revised in the June 30, 2017 filing	Stockpile site and staging area, construction yard	Edson, AB	E532429; N5935477 (11)	13.24	Located on a previously disturbed industrial site; recently developed for use as a construction yard by Ledcor. The site is accessed south from Highway 16 along Range Road 180. No new temporary access is required.
Valemount Stockpile Site [VAL025] Included in the June 1, 2017 filing	Stockpile site and staging area	Valemount, BC	E348390; N5852245 (11)	8.00	Located on a previously disturbed, bare, graded and compacted gravel area with no vegetation. The site is accessed via an existing gravel road south of Cedarside Road. No new temporary access is required.
Valemount Camp, Stockpile, Office and Yard [VAL026.1] Included in the June 1, 2017 filing	Construction camp, stockpile site and staging area, construction yard	Valemount, BC	E346573; N5854394 (11)	20.63	Located on mixed abandoned/overgrown golf course and recently cleared forested lands within the Village of Valemount. There is a potential non-classified drainage (NCD) and shrubby swamp with open water component on-site (associated with former golf course). Access to the site is adjacent to Highway 5. No new temporary access is required.
Blue River Camp [BLU007] Included in the June 1, 2017 filing	Construction camp	Blue River, BC	E341870; N5776641 (11)	16.99	Located on level, forested land with native vegetation. Access to the site is from Murtle Lake Road to an existing approach. No new temporary access is required.
Blue River Office and Yard [BLU008] Included in the June 1, 2017 filing	Construction yard	Blue River, BC	E342099; N5774899 (11)	5.37	Located on level, forested land with native vegetation. Access to the site is from 1st Avenue (Ave). A new temporary approach road is required to access the site from 1 <sup>st</sup> Ave.
Vavenby Stockpile Site [VAV009] Included in the June 1, 2017 filing	Stockpile site and staging area	Vavenby, BC	E308288; N5717977 (11)	28.39	Located on a disturbed, level and compacted former industrial site. There are a few patches and isolated occurrences of regrowth vegetation (e.g., saplings, shrubs). Access to the site is located directly adjacent to McCorrie Road. No new temporary access is required.
Clearwater McMahon Office and Yard [CLE010] Included in the June 1, 2017 filing	Construction yard	Clearwater, BC	E707200; N5726800 (10)	18.52	Located on agricultural land. Minimal clearing of a small treed area may be required. Access to the site is existing from Candle Creek Road via Highway 5.
Clearwater Camp (Camp 2 Road) [CLE011] Included in the June 1, 2017 filing	Construction camp	Clearwater, BC	E702071; N5726329 (10)	11.60	Located on level, vegetated land. A new temporary access is required through disturbed land for approximately 130 m.

Site Name [ID] and Status	Site Type	Location	UTM (Zone)	Area (ha)	Site Description
Kamloops Office and Yard [KAM014] Included in the June 1, 2017 filing	Construction yard	Kamloops, BC	E682242; N5615664 (10)	7.94	Located on previously disturbed industrial land. Some vegetation is present on the site. Access to the site is existing from Frontage Road. No new temporary access is required.
Kamloops KIB3 Office and Yard Alternative [KAM012] Included in the June 1, 2017 filing	Construction yard	Kamloops, BC	E687719; N5623891 (10)	8.77	Located on Kamloops Indian Reserve No. 1 on partially disturbed, level, potential native grassland. The site is located between the CN Kamloops Yard and Highway 5. There are potential wet meadows on-site. The site was used for agriculture in the past. It is now part of the Kamloops Indian Band industrial development plan. Access is via existing trail extending from the highway. Road upgrades will be required.
Kamloops Domtar Old Mill Stockpile Site [KAM013] Included in the June 1, 2017 filing	Stockpile site and staging area	Kamloops, BC	E684434; N5618474 (10)	23.92	Located within the City of Kamloops on disturbed industrial land adjacent to the Thompson River. No vegetation is present at the site. Access to the site is existing from Mission Flats Road. No new temporary access is required.
Merritt Camp, Office and Yard – Chutter Ranch [MER015] Included in the June 1, 2017 filing	Construction camp, construction yard	Merritt, BC	E663413; N5552574 (10)	26.98	Located on pasture lands with sparse trees and existing borrow/gravel pit. The site is accessed via Highway 5A northeast along Berglund Road. There are potential drainages and wetlands on-site. Access upgrades may be required.
Abbotsford Brandy Farms Office and Yard [ABB024] Included in the June 1, 2017 filing	Construction yard	Abbotsford, BC	E564866; N5435592 (10)	4.63	Located on level agricultural land. Access to the site is existing along Interprovincial Highway. No new temporary access is required.
Surrey 19287 98A Ave Office and Yard (Imasco) [SUR021] Included in the June 1, 2017 filing	Construction yard	Surrey, BC	E522952; N5447770 (10)	0.83	Located on industrial land. Existing access via 98A Ave.
Surrey 19395 98A Ave Employee Parking [SUR022] Included in the June 1, 2017 filing	Parking area	Surrey, BC	E522837; N5447767 (10)	1.43	Located on bare industrial land. Existing access via 98A Ave.
430 Canfor Ave Office and Yard (Part 1 and Part 2) [NEW044.1] Included in the June 1, 2017 filing	Construction yard	New Westminster, BC	E508872; N5452733 (10)	8.88	Part 1 is located on mixed industrial lands with sparse trees adjacent to Brunette River. Existing access via United Boulevard. Part 2 is located on an industrial/parking area with sparse trees adjacent to a railway and the Fraser River. Existing access via United Boulevard and Canfor Ave.
7585 Barnet Highway Yard and Staging Area [BUR049] Included in the June 1, 2017 filing	Construction yard and staging area	Burnaby, BC	E 504052; N5459620 (10)	2.63	Located on industrial site, bounded to the south by the Barnet Highway. Burrard Inlet is located approximately 90 m north, separated from the site by CN railway and treed land. No new temporary access is required.
2115 Commissioner St (VersaCold Site) [VAN048] Included in the June 30, 2017 Addendum	Multi-use site	Vancouver, BC	E495490, N545951 (10)	2.24	Located on a previously disturbed, level industrial site (formerly called Waterlots 1 and 2). Includes a waterlot in the Inner Harbour of Burrard Inlet. Small amounts of marine riparian vegetation are present. The site is accessed via Commissioner Street. No new temporary access is required. The site is within the jurisdiction of Vancouver Fraser Port Authority (VFPA).
Coquihalla Development Stockpile and Office/Yard [HOP052] New as of August, 2017	Stockpile site, construction yard	Hope, BC	E599611; N5463245 (10)	21.92	Located on heavily cleared forested land with small areas of vegetation remaining. The property is adjacent to Wahleach Creek, which will not be directly disturbed. Access to the site is from the south from Laidlaw Road.
Cheam Apple Road [CHE053] New as of August, 2017	Construction camp	Fraser Valley	E590934 N5452437 (10)	3.93	Located on the Tseatah 2 Indian Reserve. Located on level agricultural land. Access to the site is along Apple Road. No new temporary access is required.



Site Name [ID] and Status	Site Type	Location	UTM (Zone)	Area (ha)	Site Description
Cheam Gravel Pit [CHE054] New as of August, 2017	Stockpile site, construction yard	Chilliwack, BC	E589188 N5450384 (10)	5.02	Located on the Cheam 1 Indian Reserve. Located on previously disturbed industrial land. Access to the site is along Rosedale Ferry Road. No new temporary access is required.