# CONSULTATION UPDATE NO. 3 PART 1 – PUBLIC CONSULTATION (MAY 1, 2014 TO DECEMBER 31, 2014)

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# **ABBREVIATIONS AND ACRONYMS**

This is a list of the abbreviations and acronyms used in this Update.

ACEC	
	Association of Consulting Engineering Companies
AGM	Annual General Meeting
APEGBC	Association of Professional Engineers and Geoscientists of British Columbia
BBOT	Burnaby Board of Trade
BCBC	Business Council of British Columbia
BC COC	BC Chamber of Commerce
BCIT	British Columbia Institute of Technology
ВСТА	BC Trucking Association
CAER	Community Awareness and Emergency Response
CASL	Canadian Anti-Spam Legislation
CCME	Canadian Council of Ministers of the Environment
CCO	Control Centre Operations
CEDC	Chilliwack Economic Development Corporation
CEPA	Canadian Energy Pipeline Association
CILT	Chartered Institute of Logistics and Transport
DEOPS	Disaster and Emergency Operations Planning Section
DFO	Department of Fisheries and Oceans
EMBC	Emergency Management British Columbia
EMSW	Emergency Management Stakeholder Workshops
EOC	Emergency Operations Centre
EMP	Emergency Management Program
ENGO	Environmental Non-Governmental Organization
EPP	Environmental Protection Plan
ERP	Emergency Response Plan
ESD	Emergency shut down
ESRD	Environment and Sustainable Resources Development
ESS	Emergency Support Services
FVRD	Fraser Valley Regional District
GCC	Grasslands Conservation Council of British Columbia
GRP	Geographical Response Plans
ICBA	Independent Contractors and Business
ICBC	Insurance Corporation of British Columbia
ICP	Incident Command Post
ICS	Incident Command System
ILI	In-line Inspection
IMP	Integrity Management Programs
JIC	Joint Information Centre
KMC	Kinder Morgan Canada Inc.
LGMA	Local Government Management Association
LMLGA	Lower Mainland Local Government Association
MCABC	Mechanical Contractors Association of BC
MDP	Municipal Development Plan
MFLNRO	Ministry of Forests, Lands and Natural Resource Operations
MLA	Member of Legislative Assembly
MOTI	Ministry of Transportation and Infrastructure
MOU	Memorandums of Understanding
MP	Member of Parliament
MRPP	Mount Robson Provincial Park Parks

Term	Meaning
NEB	National Energy Board
NSERC	Natural Science and Engineering Research Council
OCP	Official Community Plan
OSCAR	Operational Stress Control and Readiness
PCC	Primary Control Centre
PHC	Petroleum Hydrocarbons
PIPEUP	Pro-Information Pro-Environment United People
PMV	Port Metro Vancouver
PPE	Personal Protective Equipment
RCMP	Royal Canadian Mounted Police
RDFFG	Regional District of Fraser Fort George
RMLBV	Remote Mainline Block Valve
ROW	right-of-way
RSA	Regional Study Area
SBOT	Surrey Board of Trade
SCADA	Supervisory Control And Data Acquisition
SCECWG	Stoney Creek Environment Committee Working Group
SCEMA	Strathcona County Emergency Management Agency
SEM	Search Engine Marketing
SFPR	South Fraser Perimeter Road
SFU	Simon Fraser University
SILGA	Southern Interior Local Government Association
TERMPOL	Technical Review Process of Marine Terminal Systems and Transshipment Sites
TLRU	Traditional Land and Resource Use
TMEP	Trans Mountain Expansion Project
TMPL	Trans Mountain Pipeline (existing system)
TNRD	Thompson Nicola Regional District
TPP	Trans-Pacific Partnership
TRAC	Terwillegar Riverbend Advisory Council
TRU	Thompson Rivers University
TUC	Transportation Utility Corridor
UBC	University of British Columbia
UBCM	Union of British Columbia Municipalities
UDI	Urban Development Institute
URL	Uniform Resource Locator
USB	Universal Serial Bus
VBOT	Vancouver Board of Trade
WCB	Workers Compensation Board
WCMRC	Western Canada Marine Response Corporation
WCSS	Western Canada Spill Services
WMT	Westridge Marine Terminal

#### 1.0 PUBLIC CONSULTATION

#### 1.1 Introduction

Volume 3 (Filing ID A3S0R2) of the Trans Mountain Pipeline ULC (Trans Mountain) Facility Application (the Application), filed with the NEB on December 16, 2013, reported on its engagement activities for the period of May 2012 through to July 31, 2013; Aboriginal engagement activities for the period of May 2012 through to September 30, 2013; and Landowner Relations for the period of April 2012 through to July 31, 2013. On March 20, 2014, Trans Mountain filed Consultation Update No. 1 and Errata (Filing ID A3Z8E6) with the NEB, which reported our ongoing engagement activities with Aboriginal groups, landowners and stakeholders conducted during August 1 to December 31, 2013. On August 1, 2014, Trans Mountain filed Consultation Update No. 2 (Filing ID A62087 and A62088), which reported on our ongoing engagement activities with Aboriginal groups, landowners and stakeholders conducted during January 1 to April 30, 2014.

Consultation Update No. 3 (the Update) provides information on the Trans Mountain's ongoing stakeholder engagement program. This Update describes how stakeholder feedback was gathered and addressed pursuant to Section 52 of the *National Energy Board* (NEB) *Act*.

Updates to engagement initiatives that continue to occur throughout the regulatory process will be provided to the NEB as requested by the NEB.

#### 1.2 Phase 5 Engagement Overview – May 1 to December 31, 2014

From the earliest stages of the Project, Trans Mountain implemented an open, extensive and thorough public consultation process, commonly known as stakeholder engagement that touched all aspects of the proposed pipeline corridor between Strathcona County, Alberta (AB) and Burnaby, British Columbia (BC). Unless otherwise stated, the feedback reported in this Update includes activities conducted during May 1 to December 31, 2014.

Our engagement activities conducted during Phase 5 are reported in Section 1.5, Stakeholder Engagement Activities – May 1 to December 31, 2014. The following provide a highlight of activities completed during the reporting period.

During Phase 5, Trans Mountain continued to provide accurate and timely information, as well as gathering stakeholder feedback through a series of engagement activities. Feedback received through Trans Mountain's engagement activities for this reporting period is provided in the Summary of Outcomes, Section 2.0.

New this reporting period, Trans Mountain delivered its first issue of Trans Mountain Today, a direct source of news and information about the proposed Trans Mountain Expansion Project. Trans Mountain Today is delivered electronically on a weekly basis to subscribers and the first issue was published on May 1, 2014. Details of Trans Mountain Today are contained in Section 1.4.5.

In September 2014, Trans Mountain started a SoundCloud account at soundcloud.com/transmountain to coincide with a number of Telephone Town Halls being held in communities along the pipeline route. SoundCloud is used to host and share the audio files from events like the Telephone Town Halls, as well as other Project relevant events and interviews. Details of Trans Mountain's SoundCloud account are contained in Section 1.4.8.

Also in September 2014, Trans Mountain launched a blog at blog.transmountain.com to coincide with a communications initiative. The communications initiative invited viewers to the Trans Mountain Blog (Blog) where additional information could be found about the employees of Trans Mountain, various interesting facts and details about the operations of the existing

pipeline and the proposed Trans Mountain Expansion Project. The Blog continues to have new stories added every week. Details of Trans Mountain's Blog are contained in Section 1.4.9.

Between September 29, 2014 and January 25, 2015, Trans Mountain ran a communications initiative, the People Behind the Pipeline, throughout the Lower Mainland, Fraser Valley, Interior BC and Victoria. The objective of the People Behind the Pipeline initiative was to engage and communicate with as many people as possible. This new communication effort allows Trans Mountain to speak with thousands of British Columbians and invited them to identify ways in which Trans Mountain could engage further with them. Featuring real Trans Mountain employees and landowners, the communications imitative consisted of television, radio, online, social media, direct mail and newspaper advertising. Details of the People Behind the Pipeline communications initiative are contained in Section 1.4.11.

Between December 1, 2014 and December 7, 2014, Trans Mountain ran its Burnaby Mountain communications imitative throughout the Lower Mainland, Fraser Valley, Interior BC and Victoria. The Burnaby Mountain communications imitative focused on the facts surrounding the events happening on Burnaby Mountain and brought awareness to Trans Mountain's preference to continue the dialogue about the Project. Details of the Burnaby Mountain communications imitative are contained in Section 1.4.12.

Trans Mountain initiated Community Benefit discussions with those along its pipeline corridor to provide direct benefits to communities should the proposed expansion Project be approved and constructed. Details of the Community Benefit discussions are contained in Section 1.6.

Trans Mountain continued to host Emergency Management Stakeholder Workshops (EMSW) during Phase 5. The purpose of the Part 2 Workshops was to meet stakeholder interest in reviewing scenarios that explored a local sequence of events and local resources requirements in the event of an incident in a community. Communities were the same communities engaged in Part 1, however, in Part 2 meetings were mostly held with individual municipalities, regional districts (BC) and counties (AB) rather than the regional area meetings that were held in Part 1. Details of the Part 2 EMSW are contained in Section 1.7.

New this reporting period, Trans Mountain hosted a series of Telephone Town Halls to provide the residents in BC communities with an opportunity to ask questions regarding the Project of the President of Kinder Morgan Canada, Mr. Ian Anderson. Details of the Telephone Town Halls are contained in Section 1.8.

Also new this reporting period, Trans Mountain hosted Twitter Town Halls via our Twitter channel, @transmtn, providing stakeholders with an additional venue to ask questions of Trans Mountain. Details of the Twitter Town Halls are contained in Section 1.9.

Engagement on the reactivation of segments of existing pipeline that form part of the Trans Mountain Expansion Project continued in Phase 5. Details related to these engagement activities are contained in Section 1.10.1

Trans Mountain collaborated with BC Parks to develop a process that met engagement requirements for the BC Parks Stage 2 Boundary Adjustment Application. In addition to the BC Parks engagement activities reported in Consultation Update No. 2 (Filing ID A62087 and A62088), Trans Mountain provided a 45 day open public comment period from August 25 to October 12, 2014 for stakeholders to review the BC Parks Stage 2 Boundary Adjustment Application. Comments were gathered from three sources; an online comment form on transmountain.com, email and phone submissions to Trans Mountain Info@, and online comment form on BC Parks website linked from transmountain.com. Details of the public comment period are contained in Section 1.11.

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Trans Mountain responded to Informal Information Requests, outside of the NEB process, during Phase 5. Our responses to those Informal Information Requests are contained in Section 1.15.

Trans Mountain contacted schools within 300 m of the proposed pipeline corridor and offered to meet to discuss the proposed Project and to answer any questions they may have. Details of Trans Mountain's engagement activities with schools are contained in Section 1.17.

Trans Mountain held a series of jobs and training-related Open Houses in Thompson-Nicola Regional District, Valemount, Blue River, Clearwater, Barriere and Merritt, focused on building community and resident readiness for potential employment opportunities related to the proposed Project, increasing TMEP visibility and building public support. Trans Mountain partnered with Post-Secondary Education Institutions to deliver these events. Further details of these Open House are found in Section 1.18.

Trans Mountain continues to expand its engagement and communications activities as needs require. Always responsive to the concerns and issues of stakeholders, the Stakeholder Engagement and Communications team continues to utilize traditional and new engagement and communications tactics to ensure stakeholders have an opportunity to provide their feedback in a means that is most conducive to the stakeholder.

#### 1.3 Phase 5 Engagement - Ongoing

Trans Mountain's engagement is ongoing. Trans Mountain is committed to open, respectful, transparent and collaborative interactions with landowners, residents and stakeholders. Trans Mountain's corporate responsibility and regulatory obligation is to first minimize any potential impacts or damages to landowners, local businesses and the community including recreational areas to the extent practical by using and adapting responsive construction and operations practices; and second, provide mitigation to reverse or treat any remaining impacts.

Engagement and communications activities will continue as the Project proceeds through the NEB regulatory process and, if successful, the construction and in-service phases of the Project. Trans Mountain will continue to share with stakeholders the results of any new studies or work being completed, communicate any changes or updates to Project plans, share information with stakeholders on, including but not limited to, the regulatory process, employment and procurement opportunities, community readiness, community benefits and engage on, including but not limited to, construction effects, mitigation measures, offsets and potential community benefits.

Engagement and communications activities will continue to be undertaken through a number of initiatives, including but not limited to open houses, workshops, one-on-one meetings, presentations, website, online feedback forms, printed materials, and digital media including social media. Engagement activities currently planned for spring 2015 include:

**Community Benefits Discussions (Q1 to Q2 2015)** – Continuation of meetings with local governments and other local stakeholder groups to identify and examine a list of potential benefits to local communities that could result from the Project.

**Ongoing Route Optimization (ongoing through 2015)** – Follow-up meetings will continue with municipalities and stakeholder groups as needed regarding routing refinements such as pipe location in the proposed corridor, utility crossings, water course crossings, etc.

**Engagement on Emergency Management (Q2 2015)** – Part 2 Emergency Management Stakeholder Workshops will be completed with remaining communities not covered in 2014,

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along with follow-up meetings with municipalities and regional districts regarding emergency management as needed throughout 2015.

**Reclamation and Environmental Remediation Workshops (Q3 2015)** – A series of workshops will be conducted with subject matter experts, regulators, local stewardship and interest groups to seek input into reclamation and environmental mitigation plans for municipal and regional parks, fisheries and areas of local or regional environmental interest.

**Public Information Sessions (Q3 2015)** – Public information sessions will be conducted in pipeline route communities to share information and seek input on construction planning, reclamation and remediation, workforce hosting, job and procurement opportunities and economic opportunities from workforce hosting.

**Employment and Procurement Information Sessions (Q3 2015)** – As outlined in the Socio-Economic Management Plan (SEMP) contained in Appendix C, Volume 6B of the Application (Filing ID A3S2S3) Information Sessions will be provided for targeted audiences on employment, procurement and economic opportunities associated with the Project.

**Municipal and Regional Government Engagement (Ongoing)** – Continue to meet with municipal and regional governments to provide updated Project information and to seek input into Project design and plans. These sessions will include briefings for newly elected municipal government officials in BC as requested.

**Marine Engagement (Ongoing)** – Continue to engage with marine interests including commercial fishers and shipping interests to help inform them of potential effects of increased marine traffic associated with the Project as well as the impact of potential Technical Review Process of Marine Terminal Systems and Transshipment Sites (TERMPOL) Review Committee recommendations.

#### 1.4 Communication Activities – May 1 to December 31, 2014

In support of Phase 5 engagement activities, the following communications initiatives ensured information was communicated to stakeholder groups thoroughly, in plain language, in a manner that maintained stakeholder relationships and built public acceptance for the Project.

#### 1.4.1 Website Content

A living communications tool, the Trans Mountain website continued to evolve and be updated with current Project information. In general the number of site visits has increased by more than 15 per cent from the last reporting period, increasing from approximately 7,400 average visits per month to over 8,800 average visits per month. Site visits continue to follow a cyclical pattern with visits taking place during Monday to Friday and dropping off over the weekend. In September 2014, traffic increased following a quiet summer period and stayed high throughout Q4 2014. In November and December 2014, site visit increases were the result of a high volume of news interest in the Project. Figure 1.4.1-1 reports the monthly volume of visitors between May 1 and December 31, 2014. Figure 1.4.1-2 reports Trans Mountain website pageviews between May 1 and December 31, 2014.

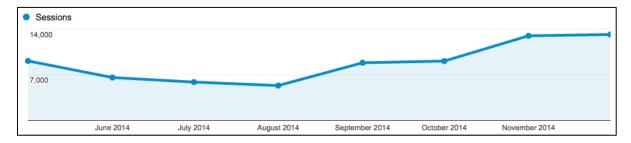


Figure 1.4.1-1 Trans Mountain Website Monthly Visitors, May 1 and December 31, 2014

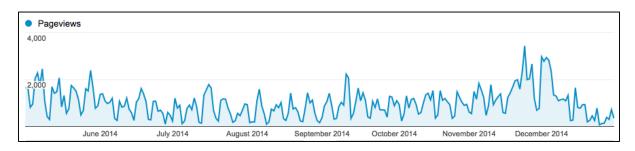


Figure 1.4.1-2 Trans Mountain Website pageviews, May 1 and December 31, 2014

During the reporting period the Project website received 70,813 visits and 243,236 pageviews. Of those 66.6 per cent were returning visitors and 33.4 per cent were new. On average, visitors spent three minutes and 25 seconds on the website and looked at 3.43 pages. Popular content on the website during this reporting period included the Application, the Proposed Expansion, the Project Overview, the Current Route map and the Jobs pages. Table 1.4.1-1 provides information on popular web pages during the reporting period, including pageviews and average time spent on each page.

TABLE 1.4.1-1

#### **TOP 10 MOST POPULAR WEB PAGES**

Page	Pageviews	Average Time on Page
Proposed Expansion	8,465	1:04
(http://www.transmountain.com/proposed-expansion)		
Project Overview	6,664	2:26
(http://www.transmountain.com/project-overview)		
Current Route	5,703	2:24
(http://www.transmountain.com/current-route)		
Jobs	5,682	1:27
(http://www.transmountain.com/jobs)		
Current Pipeline Operations	5,235	0:40
(http://www.transmountain.com/current-pipeline-operations)		
Facilities Application	5,086	22:15
(http://application.transmountain.com/facilities-application)		
Interactive Map	4,795	3:13
(http://application.transmountain.com/interactive-map)		
Proposed Pipeline Corridor	4,713	3:04
(http://www.transmountain.com/proposed-pipeline-corridor)		
BC Parks Application	3,569	6:34
(http://www.transmountain.com/bc-parks-application)		
Contact Us	3,307	2:04
(http://www.transmountain.com/contact-us)		

In June 2014 Trans Mountain added web content in additional languages to provide a Project overview for those who preferred to review Project information in other languages. Materials were translated into Simplified Chinese (Mandarin) and Traditional Chinese (Cantonese), Punjabi, Tagalog, Korean and French.

#### 1.4.2 Eblasts

Trans Mountain continued to provide eblasts to stakeholders who indicated an interest in receiving Project updates either via the Trans Mountain website, at public events or at meetings. In accordance with both British Columbia's and Alberta's *Personal Information Protection Act,* participants have the freedom to unsubscribe from Trans Mountain's email eblasts at any time. Trans Mountain also adheres to the *Canadian Anti-Spam Legislation (CASL)* that came into effect on July 1, 2014 and requires individuals to provide consent to receive any email publication or commercial electronic message. All previously contacted stakeholders were sent an email on June 26, 2014 asking them to re-opt in to Trans Mountain eblasts in order to comply with CASL. Table 1.4.2-1 provides a list of the eblasts sent by Trans Mountain during the reporting period. Figure 1.4.2-1 provides a screen shot of an eblast.

# **TABLE 1.4.2-1**

# TRANS MOUNTAIN EBLASTS

Date	Eblast Subject	No. of Eblasts sent
May 5, 2014	Message from Ian Anderson "Spills are bad for everyone and are not part of our Project justification"	1,527
June 26, 2014	Action Required: Stay Connected With Us	9,831
September 3, 2014	BC Parks Stage 2 Boundary Adjustment Application	109
September 4, 2014	Supplemental Application to Participate - Burnaby Mountain	819
September 5, 2014	UBCM 2014 Trans Mountain Expansion Project	284
November 14, 2014	Jobs and Training Info Session – Trans Mountain	150
December 1, 2014	Register for Dec 3, 2014 Telephone Town Hall - Trans Mountain	2,661

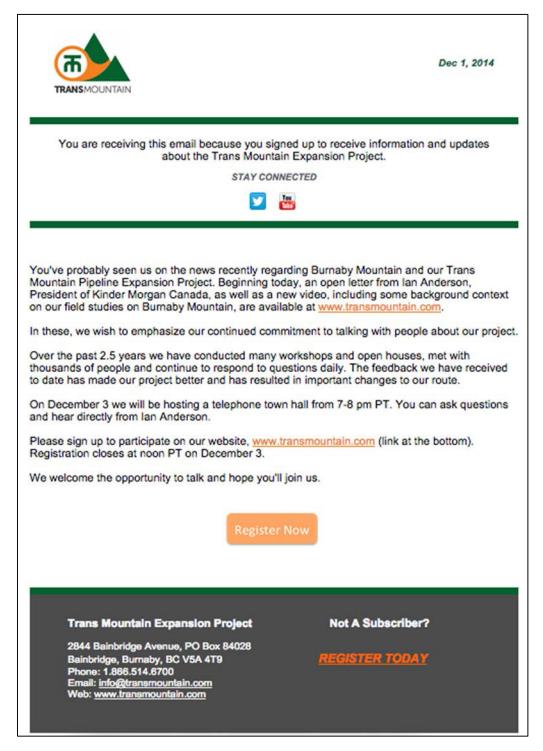


Figure 1.4.2-1 Screen Shot of a Trans Mountain eblast

#### 1.4.3 Trans Mountain Updates

Trans Mountain continues to share news about the Project via its website and through Trans Mountain Updates. When applicable, this information was distributed via the Project's Twitter account and to the media through the media relations program. Table 1.4.3-1 provides a list of the Trans Mountain Updates provided during the reporting period.

# **TABLE 1.4.3-1** TRANS MOUNTAIN UPDATES

Title	Date	Page Views
Spills are bad for everyone and are not part of our Project justification	May 5, 2014	253
Preparedness is the Best Policy	May 6, 2014	72
Fisheries Research Vital to Successful Project	May 12, 2014	103
Salmon Stories: Burnaby Streamkeeper Events Draw Local Families	May 14, 2014	84
Field Studies	May 21, 2014	154
Routing Optimization – Updates	May 26, 2014	166
Trans Mountain Works to Answer 10,000 Information Requests	May 28, 2014	398
Environment Week	June 5, 2014	50
Trans Mountain documents more than 150 instances of engagement with City of Burnaby, including discussion of Burnaby Mountain tunnel option as early as July 2013	June 11, 2014	170
Trans Mountain Files Remaining Answers to 10,000 Intervenor Questions	June 18, 2014	64
Canada Celebrates National Aboriginal Day	June 18, 2014	34
Solid Support: BC Chamber of Commerce Supports Trans Mountain	June 19, 2014	71
Port Moody Residents Talk Trans Mountain	June 26, 2014	70
Alberta Chamber of Commerce Shows Their Support	July 3, 2014	98
The story behind funding the pipeline expansion proposal	July 8, 2014	359
IN THE FIELD: Geotechnical Work to Begin in Burrard Inlet	July 10, 2014	163
City of Burnaby Wrong About Department of Justice Submission	July 11, 2014	92
Trans Mountain Responds to NEB Announcement	July 15, 2014	174
Trans Mountain Responds to Requests for Further Information	July 16, 2014	169
Kinder Morgan's Westridge Terminal Certified Member of Green Marine	July 22, 2014	195
Forest Fires and the Pipeline	July 31, 2014	124
Economic Development Opportunities for Aboriginal Communities	July 31, 2014	65
Trans Mountain Files Notice for Access	July 31, 2014	177
Technical Talk - Trans Mountain Files Technical Update No. 1	August 6, 2014	154
Reed Point Marina Supports Trans Mountain Expansion Project	August 7, 2014	178
Drilling Down to the Route	August 12, 2014	250
Ready, Set, Respond: Meet John Clarke, Part of Trans Mountain's Emergency Management Team	August 12, 2014	165
PREVENTION, PLANNING and PROCEDURE: Keeping our Communities Safe	August 18, 2014	183
ADDING INSIGHT: Aboriginal Oral Hearings Set To Begin	August 21, 2014	139
Burnaby Environmental and Geotechnical Investigations Begin	August 27, 2014	88
Trans Mountain Perseveres With Fieldwork in Spite of City of Burnaby's Attempts to Block Work on Burnaby Mountain	September 2, 2014	67
Supplemental Application To Participate Notification	September 3, 2014	121
UPDATE: Trans Mountain Completes Portion of Preparatory Work for Geotechnical Investigation in Burnaby Mountain Conservation Area	September 3, 2014	105
Talking Traditions: Aboriginal Oral Hearing Session One Wrap-up	September 4, 2014	155
Burnaby Mountain Geotechnical Studies	September 4, 2014	517
Colony Farm Alternative	September 11, 2014	127
Technical Talk: Trans Mountain Files Technical Updates No. 2 and No. 3	September 11, 2014	72
Fraser Valley Region To See \$626 Million In Project Spending	September 11, 2014	212
Business to Businesses - Gathering Input on Construction	September 18, 2014	78
A Visit With Sea Lions: Trans Mountain Learns More About Ongoing Research in Burrard Inlet	September 19, 2014	137
Taking Your Calls: On The Line for Telephone Town Halls with Ian Anderson	September 22, 2014	256
BC Supreme Court Dismisses Burnaby's Request for Injunction	October 2, 2014	203

Title	Date	Page Views
Supporting the Education and Growth of the Aboriginal Workforce	October 3, 2014	27
Commitment to the Environment and Pipeline Safety: Thunder River Tree Planting	October 6, 2014	107
SHAKE-OUT: Emergency Preparedness Round-up	October 9, 2014	112
First Hand Experience: Alexander Band Tours Trans Mountain System	October 20, 2014	138
Paul First Nation and Kinder Morgan Canada Sign Mutual Benefits Agreement	October 23, 2014	312
District of Hope and Trans Mountain Sign Community Benefit Agreement	October 27, 2014	157
Preventing Accidental Strikes: Pipeline Patrol Teams and Call Before You Dig	November 5, 2014	120
District of Barriere and Trans Mountain Sign Community Benefit Agreement: Project to Contribute \$290,000 To Barriere	November 6, 2014	161
Trans Mountain Committed to Burnaby Mountain Work	November 14, 2014	136
Enforcement Order Issued to Protesters on Burnaby Mountain	November 17, 2014	76
Update to Work Planned for Burnaby Mountain	November 18, 2014	82
Trans Mountain and Thompson Rivers University (TRU) Partner to Host Jobs and Training Information Sessions	November 19, 2014	95
UPDATE FOR WORK ON BURNABY MOUNTAIN: Trans Mountain Workers Arrive on Burnaby Mountain	November 20, 2014	84
UPDATE: Trans Mountain Crews Continue Work on Burnaby Mountain	November 21, 2014	46
UPDATE: Trans Mountain Crews on Burnaby Mountain	November 21, 2014	109
UPDATE: Trans Mountain Crews on Burnaby Mountain	November 22, 2014	267
KMC project improves fish passage in Moonbeam Creek	November 24, 2014	158
Trans Mountain Statement About BC Supreme Court Decision	November 27, 2014	114
Work Completed at One of Two Locations on Burnaby Mountain	November 27, 2014	225
Trans Mountain Crews and Equipment Gone from Burnaby Mountain	November 29, 2014	196
Trans Mountain Files Burnaby Mountain Routing Studies with National Energy Board	December 1, 2014	300
Talking Opportunities - Aboriginal Procurement Workshop Draws Interest from Interior Bands	December 16, 2014	59
PLANNING TOGETHER: Building Relationships with Alberta's First Responders	December 17, 2014	43
Trans Mountain Commits \$30,000 toward Lower Mainland Flood Management Strategy	December 18, 2014	52

#### 1.4.4 Talk Trans Mountain Online Engagement

In October 2014, Trans Mountain created a new website section for online engagement – Talk Trans Mountain. This section provides stakeholders with an online format to ask questions and take online surveys, the same online tools Trans Mountain has used in past engagements that have shown to achieve the greatest stakeholder interaction.

Since launching Talk Trans Mountain through to the end of the reporting period, we received 107 submissions via the Q&A format and hosted two surveys – one about the BC Parks Stage 2 Boundary Adjustment Application, which received 361 responses and one about 2015 engagement opportunities, which received 134 responses. Visitors are also encouraged to sign up to be notified about future engagement opportunities, online and otherwise. Figure 1.4.4-1 shows a partial screen capture of Talk Trans Mountain on the website.

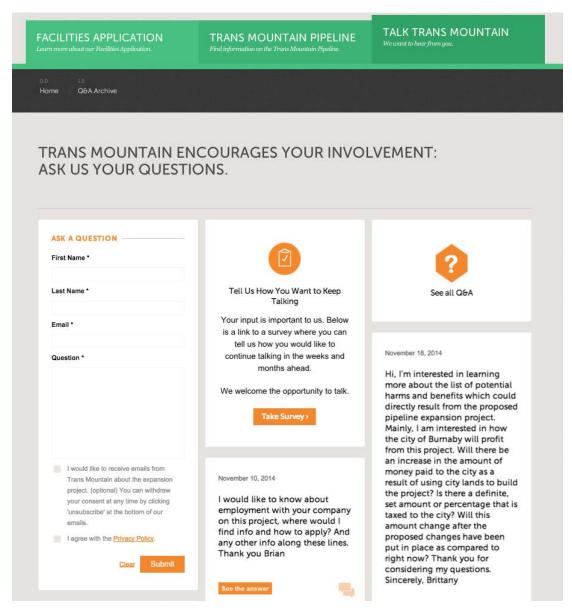


Figure 1.4.4-1 Screen capture of part of the Talk Trans Mountain website section

#### 1.4.5 Trans Mountain Today

New this reporting period, Trans Mountain delivered the first issue of its eNewsletter, Trans Mountain Today, a direct source of news and information about the proposed Trans Mountain Expansion Project. Trans Mountain Today is delivered electronically on a weekly basis to subscribers and the first issue was published on May 1, 2014. Figure 1.4.5-1, 1.4.5-2 and 1.4.5-3 shows screen captures, of Trans Mountain Today stories. Table 1.4.5-1 provides a listing of the stories published in Trans Mountain Today during the reporting period, its weekly distribution numbers, opens per issue and click-through rates for each story.

#### **TECHNICAL TALK:**

Technical Update #2 Filed with the NEB

The National Energy Board (NEB) has received Technical Update #2 from Trans Mountain. This update contains information that further refines the engineering and technical details surrounding the Expansion Project.

Read part one of the update

Read part two of the update



Figure 1.4.5-1 Screen capture of Technical Talk story in Trans Mountain Today

## **NEB DECISION:**

Board Rules in Favour of Trans Mountain

Today the National Energy Board (NEB) has ruled that Trans Mountain can continue their federally mandated work on Burnaby Mountain. The NEB has issued the City of Burnaby an Order that prohibits the City from interfering in this work. We are currently assessing the next steps.



Read the Ruling

Read the Order

Figure 1.4.5-2 Screen capture of NEB Decision story in Trans Mountain Today

#### PIPELINE SAFETY ACT:

Strengthening Canada's Safety Regime

Earlier this week, Greg Rickford, the Minister of Natural Resources introduced the Pipeline Safety Act to the House of Commons. We're pleased to see that the new act furthers Canada's world-class pipeline safety regime and focuses on strengthening measures around prevention, preparedness and response. The act also proposes Absolute Liability, which means that pipeline companies will be liable irrespective of fault.



Read more on the Huffington Post

Figure 1.4.5-3 Screen capture of *Pipeline Safety Act* story in Trans Mountain Today

**TABLE 1.4.5-1 WEEKLY "TRANS MOUNTAIN TODAY" E-NEWSLETTERS** 

Issue	Stories	Distribution	Opens	Click- Through
May 1, 2014	PRIORITY, SAFETY: No Spill is Acceptable	1,556	741	33
	FOCUS ON JOBS: Find out How Trans Mountain is Making it Work			61
	SPOTLIGHT ON CONSTRUCTION: What's in a Pipeline Spread?			51
	SIGN UP: Get on the List to Learn More About Jobs			33
	IN THE NEWS: Find out What's Making Headlines this Week			12
May 8, 2014	SPOTLIGHT ON SAFETY: Preparedness is the Best Policy	1,554	603	19
	GET THE FACTS ON QUAKES: Pipeline and Seismic Safety Measures			16
	PLAN, PREPARE, PRACTICE: Testing our Emergency Response Plans			18
	FOCUS ON INTEGRITY: What's a pipeline cutout?			51
May 22, 2014	FOCUS ON FISH: Meet the Team Wading into our Waterways	1,565	581	46
	PROTECT AND PRESERVE: A Lesson in Restoration and Pipeline Construction			36
	FROM THE FIELD: Find Out About Upcoming Environmental Studies			19
	IN THE NEWS: Chair of Resource Works talks BC Resource Sector			8
May 29, 2014	REGULATORY RUNDOWN: Our Request for an Extension to Answer 10,000 Questions	1,579	607	45
	GETTING TO THE ROUTE: Learn More About			62
	Recent Routing Updates			14
	PREVENT and PREPARE: Learn More about Fire Prevention and Emergency Response Plans			16
	PIPELINE SAFETY: Hear from Residents of Burnaby In a New Video			20
June 5, 2014	REGULATORY UPDATE: Trans Mountain Working Diligently to Answer 10,000 Questions	1,604	570	24
	IN THE NEWS: Trans Mountain Applauded as a Good Corporate Citizen in Langley			14
	EMPHASIS ON THE ENVIRONMENT: June 1-7 is Environment Week			2
	RESTORATION AND RECLAMATION: Watch How Crews Replant Native Vegetation			26
	DID YOU KNOW?			8
June 12, 2014	SAFETY SUMMITT: Trans Mountain Participates in Musqueam-Hosted Event	1,599	597	18
	FOCUS ON EDMONTON: Your Routing Feedback is Needed			11
	ROUTING RESPONSE: Read About Our Efforts to Get to the Route in Burnaby			37
	WATCH AND LEARN: See This Video About the NEB			15

Issue	Stories	Distribution	Opens	Click- Through
June 12, 2014 (cont'd)	IN THE NEWS: Local Individuals Work to Correct Misinformation About Pipelines	See above	See above	35
June 19, 2014	SOLID SUPPORT: BC Chamber Supports Trans Mountain	1,594	532	19
	REGULATORY ROUND UP: Trans Mountain Completes Round 1 Information Requests			16
	PROVINCIAL PROGRESS: BC's 5 Conditions			19
	STRENGTHENING PARTNERSHIPS: Celebrating Aboriginal Culture			7
	IN THE NEWS: Mayor Ignores Pipeline Benefits			41
	IN THE NEWS: Pipeline Fatigue Threatens Our Prosperity			18
June 26, 2014	ENGAGING ECONOMICS: Conference Board of Canada Confirms Trans Mountain's Benefits	1,590	552	16
	IN THE COMMUNITY: Port Moody Residents Talk Trans Mountain			24
	ACTION REQUIRED: Stay Connected With Us			57
	PLAN, PREPARE and PRACTICE: KMC Drill			0
	Completed in Half the Required Time			2
hulu 2, 2044	IN THE NEWS: It's a travesty that we can't get a pipeline built	2 244	4 205	31
July 3, 2014	CONTINUING CONFIDENCE: Alberta Chamber Endorses Trans Mountain	2,244	1,205	37
	STRENGTHENING SPILL RESPONSE: BC's			73
	Ministry of Environment Wants Your Feedback			21
	PRODUCTIVE PARTNERSHIPS: The Power of Canada			14
	REGULATORY REVIEW: NEB Round 2 Information Requests			66
	Did You Know? Tanker Trucks Vs. Pipelines			21
				7
July 10, 2014	FOR THE RECORD: How the Pipeline Proposal is Funded	2,349	1,273	150
	IN THE FIELD: Geotechnical Work to Begin in Burrard Inlet			77
	PREVENTION, PLANNING AND PROCEDURE: Our Emergency Response Plan			39
	IN THE NEWS: Anti-Pipeline Hypocrisy			221
July 17, 2014	NEWS RELEASE: Trans Mountain Accepts NEB's Revised Timeline	2,336	1,184	137
	INTERIOR INSIDER: Engaging Communities in Kamloops			46
	REGULATORY REVIEW: Responding to NEB Motions			41
	FAST FACTS: There's an App for That			20
	IN THE NEWS: Expansion Project Won't Result in Higher Pump Prices			35
July 24, 2014	ENVIRONMENTAL ENHANCEMENT: Westridge Certified Green Marine	2,357	1,102	65
	BEYOND THE GAS TANK: Everyday Petroleum Products			50

Issue	Stories	Distribution	Opens	Click- Through
July 24, 2014 (cont'd)	DISPELLING MYTHS: The Economics Behind Fuel Prices	See above	See above	72
	DID YOU KNOW? Pipeline Safety			43
July 31, 2014	ROUTING REFINEMENT: Trans Mountain Files Notice for Access	2,370	1,089	100
	OFFERING OPPORTUNITIES: Engaging Aboriginal Communities			24
	IN THE INLET: KMC President Tours the Harbour			26
	IN THE NEWS: How Clean is our "Dirty Oil"			62
	Q&A: How Do Pipelines Handle Forest Fires?			48
August 7, 2014	TECHNICAL TALK: Trans Mountain Files Updates	2,380	1,091	56
	LOCAL SUPPORT: BC's Largest Marina Supports Trans Mountain			76
	WATCH THE VIDEO: Canada's Regulatory Roadmap			40
	IN THE NEWS: Shipping Oil, Uniting Canadians			24
	IN THE NEWS: Pipelines a Must			36
August 14, 2014	DRILLING DOWN TO THE ROUTE: Trans Mountain to Study Burnaby Mountain	2,398	1,057	92
	READY, SET, RESPOND: Meet John Clarke			52
	IN THE FIELD: Trans Mountain Successfully Completes Investigation in Burrard Inlet			30
	RESPONSE READINESS: WCMRC Conducts Spill Response Field Work			23
	PROTECTING CANADIAN WATERS: Canada's Ship Source Pollution Fund			20
August 21, 2014	GETTING TO THE ROUTE IN BURNABY: Trans Mountain to Conduct Necessary Studies	2,403	1,036	60
	ADDING INSIGHT: Aboriginal Oral Hearings Set to Begin			28
	THROWBACK THURSDAY: Trans Mountain's Award-Winning Project Through Park			26
	PROVEN PRACTICES: Horizontal Directional Drilling			61
	IN THE NEWS: Trans Mountain Pipeline Study Allowed on Burnaby Mountain			29
August 28, 2014	FEATURING FIELD WORK: Burnaby Environmental and Geotechnical Investigations Begin	2,417	1,029	57
	YOUR INPUT ON PARKS: Public Comment Period from August 28 to October 12			77
	TECHNICAL TALK: Technical Update #2 Filed with the NEB (link to read Update part 1)			30
	TECHNICAL TALK: Technical Update #2 Filed with the NEB (link to read Update part 2)			12
	IN THE NEWS: Burnaby Fieldwork Featured This Week			39
September 4, 2014	CONTINUING WORK: Planned, Necessary and Authorized Geotechnical Studies Underway	2,437	1,077	105
	TECHNICAL TALK: Supplemental Application			33

Issue	Stories	Distribution	Opens	Click- Through
	to Participate		•	
September 4, 2014 (cont'd)	TALKING TRADITION: Aboriginal Oral Hearings Provide Insights	See above	See above	48
	BACK TO SCHOOL: Test Your Canadian Energy IQ 101			31
	IN THE NEWS: Burnaby is the "Lightning Rod" of Trans Mountain Pipeline Debate			94
September 11, 2014	ECONOMIC ADDRESS: Fraser Valley Regional District to see \$626 million in project spending	2,451	1,042	76
	ACTIVELY LISTENING: Your feedback helps shape proposed routing in Coquitlam			50
	TECH TALKS: Trans Mountain Files Technical Update #3			33
	IN THE NEWS: On-Air with Ian Anderson			61
	FAST FACTS: Enhancing Marine Safety			35
September 18, 2014	PROJECT UPDATE: Get caught up with our latest newsletter	2,460	1,023	58
	TAKING YOUR CALLS: On The Line for Telephone Town Halls with Ian Anderson			34
	BUSINESS TO BUSINESS: Gathering input on construction			27
	JOIN THE PROCESS: Supplemental Application to Participate			14
	IN THE NEWS: "Burnaby loses injunction to stop Kinder Morgan survey work"			85
September 25, 2014	LOCAL TALK: Trans Mountain connects with communities at UBCM	2,472	1,051	66
	A VISIT WITH SEA LIONS: Learning more about ongoing research in Burrard Inlet			44
	ENERGY FORUM 2014: Keeping Pace with Global Change			21
	IN THE NEWS: "How activist mayors are harming B.C.'s economy"			177
October 2, 2014	Pipeline Stories: Introducing the People Behind the Pipeline	2,491	1,006	34
	BC COURT RULES AGAINST CITY OF BURNABY: Supreme Court Denies Application for Injunction			102
	REGULATORY REALITY: A Candid Q&A with Trans Mountain's Regulatory Lead			51
	#AskTransMtn: Save the Date – Join our Twitter Town Hall on Marine Safety: Follow us on Twitter @TransMtn			5
	#AskTransMtn: Save the Date – Join our Twitter Town Hall on Marine Safety: Read more about our marine plans			6
	LISTEN UP: Your Questions and Our Answers from our Telephone Town Halls: Abbotsford and Chilliwack link			17
	LISTEN UP: Your Questions and Our Answers from our Telephone Town Halls: Vancouver link			21

Issue	Stories	Distribution	Opens	Click- Through
October 9, 2014	GETTING TO YES: Ian Anderson Talks	2,497	986	49
	Candidly at Board of Trade Energy Forum			
	#AskTransMtn: Join our Twitter Town Hall on Marine Safety			17
	SHAKE-OUT: Trans Mountain is prepared for Earthquakes – find out how: Learn about our Geohazard Management Program link			24
	SHAKE-OUT: Trans Mountain is prepared for Earthquakes – find out how: Register to participate link			2
	ENVIRONMENT SPOTLIGHT: Tree Planting Initiative Focuses on Native Vegetation			21
	YOUR INPUT ON PARKS: Public Comment Period Closing October 12			22
	IN THE NEWS: "For pipeline route, Kamloops council prefers grasslands over Westsyde"			27
	IN THE NEWS: "Reality Check – Vancouver Oil Tanker Traffic a Non-Issue"			47
October 16, 2014	FOCUS ON ECONOMICS: Learn about local and national benefits	2,530	992	41
	TALKING TRADITION: Aboriginal Oral Hearings Provide Insights			36
	TWITTER TOWN HALL: #AskTransMtn trending topic in Canada			39
	SHAKE-OUT: Stop, drop and cover!			14
	IN THE NEWS: "Canadian Resources Important in Maintaining our Lifestyle"			40
October 23, 2014	MUTUAL BENEFITS: Paul First Nation and Kinder Morgan Canada Sign Mutual Benefits Agreement	2,544	982	64
	NEB DECISION: Board Rules in Favour of Trans Mountain (link to read the Ruling)			60
	NEB DECISION: Board Rules in Favour of Trans Mountain (link to read the Order)			25
	FIRST HAND EXPERIENCE: Alexander First Nation Tours Trans Mountain System			13
	SOLID SUPPORT: District of Barriere Backs Expansion			15
	TWITTER TOWN HALL ON PIPELINE SAFETY: Your chance to #AskTransMtn again			10
	UPCOMING EVENT: Building BC for the 21st Century: Innovation in Infrastructure			12
	IN THE NEWS: "Kinder Morgan Canada president Ian Anderson welcomes opposing views within company"			21
October 30, 2014	SUSTAINABILITY SPOTLIGHT: Touring Environmental Improvement Projects in Provincial Parks	2,568	1,020	29
	BILATERAL BENEFITS: District of Hope and Trans Mountain Sign Community Benefits Agreement			38
	RECAP: Twitter Town Hall on Pipeline Safety			42
	UPCOMING EVENT: National Skilled Trades and Technology Week: Visit Skills Canada link			12

Issue	Stories	Distribution	Opens	Click- Through
October 30, 2014	UPCOMING EVENT: National Skilled Trades	See above	See	19
(cont'd)	and Technology Week: Employment opportunities on the Expansion Project link		above	
	IN THE NEWS: "Opinion: Kinder Morgan strengthens relations with Aboriginal groups"			30
November 6, 2014	REGULATORY REVIEW: A Fair, Efficient Process (link to read letter to the NEB)	2,597	1,023	52
	REGULATORY REVIEW: A Fair, Efficient Process (link to Blog Q&A with Regulatory Lead)			35
	BILATERAL BENEFITS: District of Barriere and Trans Mountain Sign Community Benefit Agreement			26
	PIPELINE PATROLLERS: Preventing Damage from Digging			43
	TALK TRANS MOUNTAIN: Ask Us Your Questions			11
	MEET TYRONE MCNEIL: Manager, Stqó:ya Construction			26
	IN THE NEWS: "Donald McInnes: Gregor Robertson's policies impede our prosperity"			59
November 13, 2014	INFOGRAPHIC: Significant Economic Benefits for Canada	2,616	1,017	64
	BUSINESS SUMMIT: "Building BC for the 21st Century – Innovation in Infrastructure"			15
	MEET REGAN: Manager, Aboriginal Relations			89
	LOCAL COMMUNITY BENEFITS: "Barriere and Kinder Morgan Reach Trans Mountain Deal"			9
	IN THE NEWS: "Federal environmental issues come to the fore in election races"			67
November 20, 2014	Update on Burnaby Mountain (link to engineering and environment studies)	2,636	1,153	5
	Update on Burnaby Mountain (link to geotechnical investigation web story)			2
	Update on Burnaby Mountain (link to dismissed injunction web story)			0
	Update on Burnaby Mountain (link to commitment to Burnaby Mountain web story)			4
November 27, 2014	BURNABY MOUNTAIN: Work Completed at One of Two Locations; Road Re-opened	2,667	1,097	75
	BURNABY MOUNTAIN NEWS: First time core samples taken at depth			82
	ECOLOGICAL ENHANCEMENTS: Improved Fish Passage in Moon Beam Creek			42
	MEET MARGARET: Environmental Assessment Lead			63
	IN THE NEWS: "Survey work reveals promise of pipeline"			54
December 4, 2014	LET'S KEEP TALKING: We Want to Hear From You	2,674	1,031	69
	BURNABY MOUNTAIN UPDATE: Final pieces of equipment removed			42
	REGULATORY UPDATE: December 1 filing			40

February 2015

#### **TABLE 1.4.5-1 Cont'd**

Issue	Stories	Distribution	Opens	Click- Through
December 4, 2014 (cont'd)	MEET GARY BABICH: Routing Lead for the Expansion Project	See above	See above	45
	IN THE NEWS: Ian Anderson on Unfiltered: Watch part 1 link			39
	IN THE NEWS: Ian Anderson on Unfiltered: Watch part 2 link			14
December 11, 2014	PIPELINE SAFETY ACT: Strengthening Canada's Safety Regime (link to Pipeline Safety Act)	2,694	992	25
	PIPELINE SAFETY ACT: Strengthening Canada's Safety Regime (link to related Huffington Post article)			46
	TRADE TALK: Demand for skilled and semi- skilled workers			39
	MEET CAM SMITH: Millwright			31
	IN THE NEWS: Burnaby Mountain Cleanup to Begin in Spring			67
December 18, 2014	FLOOD MANAGEMENT STRATEGY: Trans Mountain Commits \$30,000	2,713	980	21
	TALKING OPPORTUNITIES: Aboriginal Procurement Workshop			31
	MEET MARGERY: Lead, Employment and Training: video link			30
	MEET MARGERY: Lead, Employment and Training: Read her interview link			14
	PLANNING TOGETHER: Working with Alberta's First Responders			17
	TELEPHONE TOWN HALL: December 3rd Recap			55
December 24, 2014	Warm wishes for the holidays and a happy new year!	2,717	989	N/A

## 1.4.6 Project Newsletters

In September 2014, Trans Mountain published a newsletter that provided an update on the Project and a summary of recent activities. The newsletter had a print run of 7,500 and was distributed to stakeholders and was available at meetings and public events. The newsletter was also available electronically on the Project's website and a link to the website was provided in the relevant eblasts.

Figure 1.4.6-1 provides the cover page of the four-page Trans Mountain Project Update newsletter issued in September, 2014. A full copy of the newsletter is contained in Appendix A.



Figure 1.4.6-1 Cover Page of Trans Mountain Project Update Newsletter, September 2014

#### 1.4.7 Phone Line and Email

Both the toll-free phone line (1-866-514-6700) and the email address (<u>info@transmountain.com</u>) continued to be managed during regular business hours. Trans Mountain continues to provide

responses to stakeholder inquiries in a timely manner. During the reporting period, approximately 463 phone inquiries and 1,024 emails were received. This represents an increase in the number of calls and emails over the last reporting period, and is reflective of Trans Mountain's continued outreach efforts including the Telephone Town Halls and the People Behind the Pipeline communications initiative. News media coverage related to Burnaby Mountain and other issues of public interest further contributed to the increase.

#### 1.4.8 Social Media

Trans Mountain continued to disseminate information through social media outlets to engage audiences that may prefer to engage through channels other than traditional engagement and communications activities.

Trans Mountain's Twitter account (@TransMtn) continues to be used to:

- disseminate accurate and timely information about the Project;
- drive traffic to the website and the blog;
- announce new material as it was posted to the website and the blog;
- distribute media coverage about the Project;
- retweet relevant materials (essentially forward other people's tweets);
- provide quick responses to direct questions;
- correct misinformation; and
- promote online engagement tools.

During the reporting period, 1,142 tweets were sent by @TransMtn. As of December 31, 2014, the @TransMtn Twitter account had 2,039 followers. Figure 1.4.8-1 provides the current geographic distribution of followers of the Trans Mountain Twitter account.



Figure 1.4.8-1 Geographic Distributions of Trans Mountain Followers

During the reporting period, Trans Mountain added 21 new videos to its Project-specific YouTube channel located at http://www.youtube.com/user/TransMtn. During this reporting period,

the 49 videos on the Project YouTube channel generated a total of 9,968 views and 12,039 estimated minutes watched.

The following two events resulted in a noticeable increase in YouTube channel views and are reflected in Figure 1.4.8-2 that provides information on the number of YouTube channel views during the reporting period:

- October 9, 2014 Launch of the People Behind the Pipeline communications initiative; and
- December 2, 2014 Launch of Burnaby Mountain communications initiative.

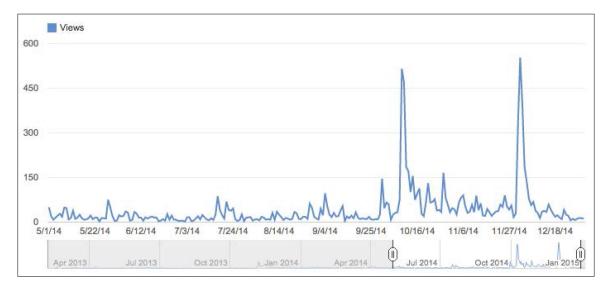


Figure 1.4.8-2 Trans Mountain YouTube Channel Views

TABLE 1.4.8-1

TRANS MOUNTAIN YOUTUBE VIDEOS – MAY 1, 2014 – DECEMBER 31, 2014

Video	Views	Estimated minutes watched	Video length (seconds)	Average view duration (seconds)
Marine Safety – The People Behind the Pipeline	1,775	880	33	30
Ian Anderson – Let's Keep Talking	1,712	1,322	61	46
Trans Mountain Expansion Project – Project Description	708	1,764	213	149
Getting to the Route – Trans Mountain Expansion Project	589	1,018	180	104
Economic Benefits for Trans Mountain Expansion Project	533	1,095	183	123
Pipeline Safety: Performing Preventative Cutouts	521	822	142	95
Working Together – The People Behind the Pipeline	382	199	32	31
Safety is our Top Priority	339	372	89	66
Community – The People Behind the Pipeline	330	166	33	30

Video	Views	Estimated minutes watched	Video length (seconds)	Average view duration (seconds)
Pipeline Safety – The People Behind the Pipeline	279	133	32	29
Aerial view of temporary work area on Burnaby Mountain	267	103	27	23
Burnaby Environmental and Geotechnical Investigations Begin	195	119	48	37
Anchor Loop Expansion: Intro (Part 1)	181	380	240	126
Trans Mountain Pipeline Operating Responsibly in your Community	178	262	174	88
PIPELINE SAFETY: Burnaby Board of Trade	125	147	96	71
Anchor Loop Expansion: Mount Robson Provincial Park Construction (Part 4)	124	244	195	118
lan Anderson at the Vancouver Board of Trade Energy Forum (1)	116	111	94	58
lan Anderson at the Vancouver Board of Trade Energy Forum (7)	102	147	149	86
Anchor Loop Expansion: Local Benefits (Part 5)	102	187	171	110
Anchor Loop Expansion: Environmental Protection and Restoration Planning (Part 2)	101	362	437	215
lan Anderson at the Vancouver Board of Trade Energy Forum (2)	90	144	134	96
Anchor Loop Expansion: Jasper National Park Construction (Part 3)	87	198	230	137
NEB Review Process - Trans Mountain Expansion Project	79	152	185	116
Trans Mountain Expansion Project – Stakeholder Engagement Program – September 2012 – January 2013	78	155	170	119
Anchor Loop Expansion: Restoration and Reclamation (Part 6)	71	174	242	148
lan Anderson at the Vancouver Board of Trade Energy Forum (6)	67	53	67	47
Ian Anderson at the Vancouver Board of Trade Energy Forum (5)	63	73	91	69
lan Anderson at the Vancouver Board of Trade Energy Forum (3)	59	31	40	32
lan Anderson at the Vancouver Board of Trade Energy Forum (4)	57	70	94	74
Vancouver Board of Trade Energy Forum – lan Anderson Keynote Presentation - Oct 8, 2014	52	389	2138	448
Proposed Study Corridor: Pembina River Crossing, AB	44	27	62	37
Anchor Loop Expansion: Thank You! (Part 7)	42	63	140	89
Proposed Study Corridor: Hinton, AB	42	37	106	53
Proposed Study Corridor Options: Langley to Burnaby, BC	40	78	237	118
Proposed Study Corridor: Burnaby to Westridge	39	33	66	50
Proposed Study Corridor: Abbotsford, BC	36	34	75	57
Proposed Study Corridor: Kamloops, BC	35	50	157	85

Video	Views	Estimated minutes watched	Video length (seconds)	Average view duration (seconds)
Jobs and Training Information Sessions	34	61	134	107
Proposed Study Corridor: Edmonton	34	58	231	103
LOCAL BENEFITS: Vancouver Board of Trade	34	23	65	40
lan Anderson talks leadership with Business in Vancouver	32	43	128	80
Proposed Study Corridor: Hope, BC	32	51	177	95
Proposed Study Corridor: Chilliwack, BC	28	27	68	58
Trans Mountain Seeks Feedback: Have Your Say	24	29	99	74
Proposed Study Corridor: Cheam Wetlands and Bridal Veil Falls area	19	11	53	35
Proposed Study Corridor: Wabamun, AB	19	16	77	50
Vancouver Board of Trade Energy Forum – lan Anderson Keynote Presentation - Jan 31, 2013	17	66	679	234
VBOT Energy Forum – Panel Discussion – January 31, 2013 (Part 1)	5	35	800	425
VBOT Energy Forum – Panel Discussion – January 31, 2013 (Part 2)	7	31	429	263

Figures 1.4.8-3, 1.4.8-4 and 1.4.8-5 provide screen shots of the top three most viewed videos on Trans Mountain's YouTube channel for the reporting period, in no particular order. Table 1.4.8-1 provides information on the length of videos, the number of views, and estimated number of minutes watched and the average duration of the YouTube views.

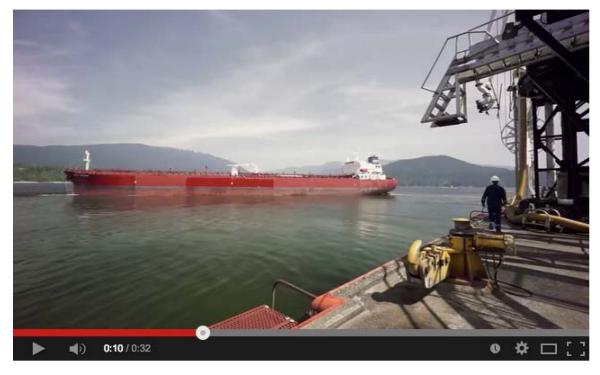


Figure 1.4.8-3 Screen Shot of Marine Safety – The People Behind the Pipeline



Figure 1.4.8-4 Screen Shot of Ian Anderson – Let's Keep Talking



Figure 1.4.8-5 Screen Shot of Trans Mountain Expansion Project – Project Description

In September 2014, Trans Mountain started a SoundCloud account at soundcloud.com/transmountain to coincide with a number of Telephone Town Halls being held

in communities along the pipeline route. SoundCloud is used to host and share the audio files from events like the Telephone Town Halls, as well as other Project-relevant events and interviews. Between the channel's launch and December 31, 2014, 32 tracks were uploaded to the channel and were played a total of 527 times. Table 1.4.8-2 provides the details of Trans Mountain's SoundCloud account.

TABLE 1.4.8-2

TRANS MOUNTAIN SOUNDCLOUD SEPTEMBER – DECEMBER 31, 2014

SoundCloud File	Plays
Pipeline Safety – The People Behind The Pipeline	36
Question 1, Telephone Town Hall, December 3, 2014	28
Abbotsford and Chilliwack Telephone Town Hall, September 18, 2014	27
Burnaby Telephone Town Hall, Sept 16, 2014 – Question 1	22
Question 8, Telephone Town Hall, December 3, 2014	20
Vancouver Telephone Town Hall, September 18, 2014	20
Vancouver Telephone Town Hall, September 18, 2014 – Question 3	18
Question 10, Telephone Town Hall, December 3, 2014	18
Question 3, Telephone Town Hall, December 3, 2014	18
Marine Safety – The People Behind The Pipeline	18
Community – The People Behind the Pipeline	17
Surrey, Langley, Coquitlam Telephone Townhall, September 16, 2014 – Question 13	16
Question 12, Telephone Town Hall, December 3, 2014	15
Question 15, Telephone Town Hall, December 3, 2014	14
Abbotsford and Chilliwack Telephone Town Hall, September 18, 2014 – Question 2	13
Abbotsford and Chilliwack Telephone Townhall, September 18, 2014 – Question 9	12
Working Together – The People Behind The Pipeline	11
Abbotsford and Chilliwack Telephone Town Hall, September 18, 2014 – Question 4	11
Surrey, Langley, Coquitlam Telephone Townhall, September 16, 2014 – Question 4	11
Abbotsford and Chilliwack Telephone Town Hall, September 18, 2014 – Question 8	10
Telephone Town Hall, December 3, 2014 – full audio	9
Burnaby Telephone Town Hall, September 16, 2014 - Question 5	8
Surrey, Langley, Coquitlam Telephone Town Hall, September 16, 2014	8
Burnaby Telephone Town Hall, September 16, 2014 – Question 8	8
Vancouver Telephone Town Hall, September 18, 2014 – Question 5	7
Vancouver Telephone Town Hall, September 18, 2014 – Question 12	6
Burnaby Telephone Town Hall, September 16, 2014	5
Vancouver Telephone Town Hall, September 18, 2014 – Question 6	5
Burnaby Telephone Town Hall, September 16, 2014 – Question 7	5
Surrey, Langley, Coquitlam Telephone Townhall, September 16, 2014 – Question 10	4
Surrey, Langley, Coquitlam Telephone Townhall, September 16, 2014 – Question 7	4
Burnaby Telephone Town Hall, September 16, 2014 – Question 10	2

#### 1.4.9 Blog

In September 2014, Trans Mountain launched a blog at blog.transmountain.com to coincide with a communications initiative. The communications initiative invited viewers to the Trans Mountain Blog (Blog) where additional information could be found about the employees of Trans Mountain, various interesting facts and details about the operations of the existing pipeline, and the proposed Trans Mountain Expansion Project. The Blog continues to have new stories added every week. Between the launch and December 31, 2014 the Blog received 77,620 unique

visitors. The average pageviews for each visitor was 1.27 and the average time spent on site was 24 seconds. Figure 1.4.9-1 depicts the unique visitors over time.

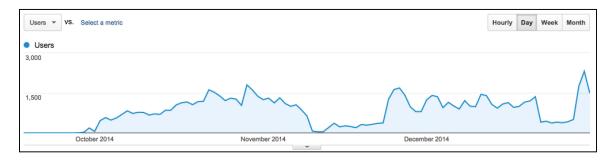


Figure 1.4.9-1 Screenshot of Unique Visitors to blog.transmountain.com

The three most popular stories posted to the Blog were the People Behind the Pipeline interviews about Mike Davies, Lizette Parsons Bell and Kelvin Stelter. Figure 1.4.9-2 below shows a screen capture from the People Behind the Pipeline interview about Mike Davies. Table 1.4.9-1 shows all of the stories published between September 18, 2014 and December 31, 2014 and the associated pageviews.

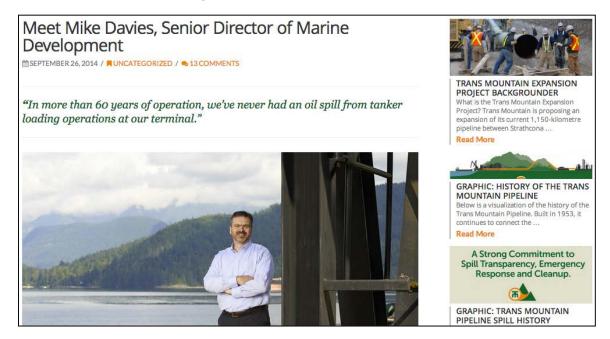


Figure 1.4.9-2 Screen shot of Mike Davies' People Behind the Pipeline blog post

TABLE 1.4.9-1

BLOG STORIES PUBLISHED BETWEEN SEPTEMBER 18, 2014 AND DECEMBER 31, 2014

Blog Story	Pageviews	Avg. Time on Page
Meet Mike Davies, Senior Director of Marine Development, Kinder Morgan Canada (KMC)	55,085	0:01:23
Meet Lizette Parsons Bell, Lead, Stakeholder Engagement and Communications, Trans Mountain Expansion Project (TMEP)	19,568	0:01:38
Meet Kelvin Stelter, Pipeline Integrity Supervisor, KMC	11,381	0:01:59
Meet Raj Lalli, Senior Operations Engineer, KMC	11,297	0:02:05
Trans Mountain Expansion Project Backgrounder	821	0:02:10
Graphic: History of the Trans Mountain Pipeline	488	0:01:46
Twitter Town Hall – Marine Safety	481	0:01:56
Meet Melissa Williams, Millwright, KMC	469	0:01:32
Meet Lesley Matthews, Lead, Regulatory, TMEP	429	0:01:25
Meet Regan Schlecker, Manager, Aboriginal Relations, KMC	370	0:01:43
Recap: Twitter Town Hall on Pipeline Safety	317	0:02:02
Meet Bikram Kanjilal, Master Mariner, Lead, Marine Development, TMEP	296	0:01:50
Meet Tyrone McNeil, Manager, Stqó:ya Construction	266	0:02:01
Twitter Town Hall – Pipeline Safety	228	0:01:17
Recap: December 3, 2014 Telephone Town Hall	202	0:02:57
Meet Margaret Mears, Lead, Environment, TMEP	196	0:01:39
Meet Gary Babich, Lead, Routing, TMEP	158	0:02:29
Responding to the Dogwood Initiative's #AskTransMtn questions	146	0:02:28
Community Guidelines	137	0:00:52
Meet Margery Knorr, Lead, Employment and Training, TMEP	117	0:01:06
Recap: Burnaby Telephone Town Hall	111	0:01:32
Recap: Telephone Town Hall with Abbotsford and Chilliwack	109	0:02:50
Recap: Twitter Town Hall on Marine Safety	101	0:01:35
Meet Cam Smith, Millwright, KMC	79	0:03:07
Recap: Telephone Town Hall with Vancouver Residents	72	0:03:19
Graphic: Trans Mountain Pipeline Spill History	69	0:02:37
Trans Mountain Route Planning Principles	69	0:02:47
A closer look at employment impact	67	0:01:18
Video: Partnering with Thompson Rivers University for jobs workshops	63	0:01:32
Recap: Telephone Town Hall with Surrey, Langley and Coquitlam	57	0:00:49
Ian Anderson – Let's Talk	38	0:00:46

### 1.4.10 Media Relations

Trans Mountain continues to reach out proactively to local news organizations in communities along the proposed pipeline and marine corridor. Trans Mountain offered media interviews with Project spokespeople to raise awareness about the various opportunities to engage with the Project and to provide accurate Project information. Media contacts included newspapers, magazines, radio stations and TV stations.

Trans Mountain also continues to respond to incoming media inquiries through its media-specific phone numbers (604) 908-9734 and (855) 908-9734, and a media-specific email address (<a href="mailto:media@transmountain.com">media@transmountain.com</a>). Trans Mountain responded to 696 media inquiries and provided 353 interviews during the reporting period. Table 1.4.10-1 provides information on the TMEP media inquiries.

### **TABLE 1.4.10-1**

### TRANS MOUNTAIN MEDIA INQUIRIES

Month	Number of Media Inquiries	Topics	Number of Media Interviews
May 2014	71	<ul> <li>Oils spills and economy</li> <li>IR process</li> <li>Routing – Burnaby Terminal to Westridge</li> <li>Burnaby Terminal fire safety</li> </ul>	17
June 2014	38	<ul> <li>Burnaby Mountain routing</li> <li>Northern Gateway approval</li> <li>Tsilhqot'in First Nation granted BC title claim in Supreme Court ruling</li> </ul>	13
July 2014	35	<ul> <li>Insufficient and incomplete IRs</li> <li>NEB revised timeline</li> <li>Burnaby Mountain land access</li> <li>Routing – 2 km – Burnaby Terminal to Westridge</li> </ul>	4
August 2014	24	<ul> <li>Emergency Management Plans</li> <li>NEB ruling on Burnaby Mountain survey work</li> <li>Field Studies</li> </ul>	27
September 2014	69	<ul> <li>KMC Burnaby Terminal security concerns</li> <li>BC Supreme Court ruling</li> <li>Telephone Town Hall</li> <li>NEB dismissing motion</li> <li>Ruling Order 32 and response to notice of constitutional question</li> </ul>	20
October 2014	30	<ul> <li>NEB rulings</li> <li>NEB's dismissal to keep Emergency Management Plan confidential</li> <li>Aboriginal Oral Hearings</li> <li>Burnaby Mountain Work</li> </ul>	13
November 2014	401	<ul> <li>BC Supreme Court Injunction</li> <li>Marc Eliesen withdrawal</li> <li>#KMface – viral digital opposition</li> <li>SFU Goodman Economic Report</li> <li>Burnaby Mountain geotechnical studies and work</li> <li>Enforcement Order delivered to protestors</li> <li>Burnaby Mountain protests</li> <li>BC Court of Appeal ruling</li> <li>Work on Burnaby Mountain</li> <li>Geotechnical samples and results</li> <li>Robyn Allan motion filed regarding KM restructuring</li> </ul>	251
December 2014	28	<ul> <li>Ongoing Burnaby Mountain protests</li> <li>Injunction Extension denial</li> <li>Burnaby Mountain work complete</li> <li>Let's Talk</li> <li>Legal challenges: Burnaby Mountain civil charges and damage costs</li> <li>RCMP costs for Burnaby Mountain and responsibility</li> <li>Burnaby Mountain remediation plans</li> </ul>	8

Trans Mountain provided media tours at both the Burnaby Storage Terminal and the Westridge Marine Terminal. Information on these tours is provided in Table 1.4.10-2.

**TABLE 1.4.10-2** 

### TRANS MOUNTAIN MEDIA TOURS

Facility Number of Media Attendees		Outlets	
Burnaby Storage Terminal	2	Burnaby Now and Wall Street Journal	
Westridge Marine Terminal	1	Wall Street Journal	

Trans Mountain held formal media briefings to provide an opportunity for reporters to have access to subject-area experts in a Q&A format. Table 1.4.10-3 provides information on the formal media briefings.

**TABLE 1.4.10-3** 

### TRANS MOUNTAIN MEDIA BRIEFINGS

Date	Topic	Number of Media (outlets)
July 18, 2014	NEB Revised timeline	26
August 27, 2014	Field Studies	13
November 12, 2014	Burnaby Mountain Survey Work	30
November 27, 2014	Geotechnical Survey Results	6

Trans Mountain also submitted Letters to the Editor and Opinion Editorials to various publications, provided updated image and b-roll packages on a regular basis and used Twitter to engage in discussion with journalists. During the reporting period, Trans Mountain submitted the following Letters to the Editor to provide accurate Project information in response to previously printed materials. Copies of the Letters to the Editor submitted during the reporting period are included in Appendix A. Table 1.4.10-4 provides information on Trans Mountain Letters to the Editor during the reporting period.

**TABLE 1.4.10-4** 

### TRANS MOUNTAIN LETTERS TO THE EDITOR

Date	Publication	Topic	Author
May 6, 2014	Maclean's	Oil Spills are Good for the Economy	Scott Stoness
July 11, 2014	SeaSide Magazine	Response: Kinder Morgan: Putting the Salish Sea at Risk	Mike Davies
July 13, 2014	Burnaby Now	Pump Prices and the Trans Mountain Expansion Project	Scott Stoness
September 10, 2014	Burnaby NewsLeader	Yet Again; Facts Don't Back Claims	Scott Stoness
October 2, 2014	Hope Standard	Kinder Morgan Assures Pipeline Safety	Greg Toth

Trans Mountain also submitted the following opinion editorials to provide accurate information through the media. Copies of the opinion editorials submitted during the reporting period are included in Appendix A. Table 1.4.10-5 provides a list of publications and the opinion editorials submitted during the reporting period.

### **TABLE 1.4.10-5**

### TRANS MOUNTAIN OPINION EDITORIALS

Date	Publication	Title	Author
July 3, 2014	Globe and Mail	Energy Company Kinder Morgan used service fee for pipeline fund	Ian Anderson
November 10, 2014	Globe and Mail	Intervenor withdraws from NEB flawed process	Scott Stoness

In addition, commencing on September 24, 2014 the Trans Mountain Expansion Project provided content for a column of 500 words in the Valemount Valley Sentinel. Copies of the content submitted during the reporting period are included in Appendix A. Table 1.4.10-6 provides dates and titles submitted during the reporting period.

### **TABLE 1.4.10-6**

### TRANS MOUNTAIN WEEKLY COLUMN

Date	Title
September 24, 2014	Trans Mountain Expansion Project's application for BC Parks boundary adjustment
October 23, 2014	Change of scenery brings new challenges, opportunities for pipeline worker
October 30, 2014	Paul First Nation and Kinder Morgan Canada Sign Mutual Benefits Agreement
November 13, 2014	Trans Mountain and TRU Partner to Host Jobs and Training Information Session
November 13, 2014	District of Barriere and Trans Mountain Sign Community Benefit Agreement: Project to contribute \$290,000 to Barriere
November 20, 2014	Trans Mountain helps Valemount maintain access to popular backcountry
December 22, 2014	Project refinement submitted for portion of pipeline

### 1.4.11 People Behind the Pipeline Communications Initiative

Between September 29, 2014 and December 31, 2014, Trans Mountain ran a communications initiative, the People Behind the Pipeline, throughout the Lower Mainland, Fraser Valley, Interior BC and Victoria. The objective of the People Behind the Pipeline initiative was to communicate with as many people as possible. This new communication effort allows Trans Mountain to speak with thousands of British Columbians and invited them to identify ways in which Trans Mountain could engage further with them. Featuring real Trans Mountain employees and landowners, the communications initiative consisted of television, radio, online, social media, direct mail and newspaper advertising.

Four 30-second television ads were developed as part of the People Behind the Pipeline communications initiative and ran on channels across BC's Lower Mainland, Fraser Valley, Interior and in Victoria. The ads focused on the topics of marine safety, pipeline safety, community engagement and community involvement. Figure 1.4.11-1 to 1.4.11-4 provide screen grabs of the ads.



Figure 1.4.11-1 Screen capture of Pipeline Safety television ad



Figure 1.4.11-2 Screen capture of Marine Safety television ad



Figure 1.4.11-3 Screen capture of Community Engagement television ad



Figure 1.4.11-4 Screen capture of Community Involvement television ad

Table 1.4.11-1 identifies the stations where the advertisements ran during the entire period of the People Behind the Pipeline communications initiative. Between September 29, 2014 and December 31, 2014 they received at estimated 20.6 million impressions.

### **TABLE 1.4.11-1**

### TELEVISION STATION LIST - THE PEOPLE BEHIND THE PIPELINE

Area	Station
Vancouver / Lower Mainland / Fraser Valley / Victoria	Global TV
	• CTV
	CTV2
	• CBC
	City TV
	<ul> <li>OMNI TV</li> </ul>
	<ul> <li>Sportsnet Pacific</li> </ul>
Kamloops	Global TV
	• CTV
	• INTV
	<ul> <li>CBC Sportsnet</li> </ul>

Four 30-second radio ads were also developed as part of the People Behind the Pipeline communications initiative and ran on stations across BC's Lower Mainland, Fraser Valley, Interior and in Victoria. The ads focused on the topics of marine safety, pipeline safety, landowner relationships and community involvement. The scripts for the four ads can be found below.

Marine Safety:

[Announcer]

The People Behind the Pipeline

[Bikram Kanjilal]

Hi, I'm Bikramjit Kanjilal, and I'm a consultant on the Trans Mountain Expansion Project. I'm often asked what measures are taken to ensure safe marine transportation.

Firstly, locally trained pilots are on board every tanker.

As well, local tug operators provide protection.

We have many people at Port Metro Vancouver, Transport Canada and the Canadian Coast Guard who work together to develop and enforce strict transit regulations.

Thanks for listening.

[Announcer]

For more information go to blog.transmountain.com.

Pipeline Safety:

[Announcer]

The People Behind the Pipeline

[Bob Graham]

I'm Bob Graham. I work for Kinder Morgan. I'm in the Pipeline Integrity department in the field. Coming up 35 years I've been with this company.

The one thing that's common with most of the guys I work with is, you know is, it's just a 24-hour thing. It's safety. It's there all the time.

The standards we have – they're second to none. The culture of safety Kinder Morgan's created, it's unique. It truly is.

[Announcer]

For more information go to blog.transmountain.com.

### Landowner Relationships:

[Announcer]

The People Behind the Pipeline

[Juschka Clarke]

We bought this property knowing there was a pipeline. We haven't had any concerns with the pipeline on the property. None at all. This is a pipeline. It lives here. So we want everything to be safe.

Our community is very important to us. And the environment is important to us. We've been treated very fairly by Kinder Morgan. Absolutely. And everyone's kind and respectful when they come onto the... onto our farm.

[Meghan Clarke]

I'm Meghan Clarke...

[Juschka Clarke]

and I'm Juschka Clarke, and the Trans Mountain Pipeline runs through our property.

[Announcer]

For more information go to blog.transmountain.com.

### Community Involvement:

[Announcer]

The People Behind the Pipeline

[Raj Lalli]

Hi, I'm Raj Lalli, Senior Operations Engineer on the Trans Mountain Pipeline.

As a child my dad used to bring me here. We used to fish here at Nicola Lake. And now I have become a father. So I want my daughter to enjoy the outdoors like I did.

The Trans Mountain Pipeline has been operating safely due to the people at Kinder Morgan. Everybody in our office, they enjoy spending time with their families outside.

I don't just work in the community, I live here too.

[Announcer]

For more information go to blog.transmountain.com.

Table 1.4.11-2 provides the stations where the advertisements were played during the People Behind the Pipeline communications initiative. Between September 29, 2014 and December 31, 2014 the ads received at estimated 12.7 million impressions.

TABLE 1.4.11-2

RADIO STATION LIST – THE PEOPLE BEHIND THE PIPELINE

Area	Station
Vancouver	CFBT – The Beat
	<ul> <li>CFMI – Rock 101</li> </ul>
	<ul> <li>CHQM – QM FM</li> </ul>
	CJJR – JR FM
	<ul> <li>CKLG – Jack FM</li> </ul>
	CKNW
	CKZZ – Virgin
Fraser Valley	<ul> <li>CKSR – Star 98.3</li> </ul>
	<ul> <li>CKQC – Country 107.1</li> </ul>
Victoria	• CHBE – 107.3 FM
	<ul> <li>CKKQ – 100.3 FM</li> </ul>
Kamloops	• CIFM – 98.3 FM
	<ul> <li>CKRV – 97.5 FM</li> </ul>

Four online banner ads were developed as part of the People Behind the Pipeline communications initiative and ran on websites geo-targeted to BC's Lower Mainland, Fraser Valley, Interior and in Victoria. The ads focused on the topics of marine safety, pipeline safety, community engagement and community involvement. Figures 1.4.11-5 to 1.4.11-8 show screen captures of the advertisements.



Figure 1.4.11-5 Screen capture of Pipeline Safety online banner ad



Figure 1.4.11-6 Screen capture of Marine Safety online banner ad



Figure 1.4.11-7 Screen capture of Community Engagement online banner ad



Figure 1.4.11-8 Screen capture of Community Involvement online banner ad

Between September 29, 2014 and December 31, 2014, the online banner ads received 17.9 million impressions and a click-through rate of 0.14 percent, which is above the industry average.

Four 15-second pre-roll video ads were developed as part of the People Behind the Pipeline communications initiative and ran on websites geo-targeted to BC's Lower Mainland, Fraser Valley, Interior and in Victoria. The ads were cut-down versions of the television ads focused on the topics of marine safety, pipeline safety, community engagement and community involvement.

Between September 29, 2014 and December 31, 2014, the online video ads received 7.9 million impressions and a completion rate (percentage of people who watched the video in its entirety) of 78 percent.

A variety of ads ran on Facebook and Twitter inviting viewers to click through to Trans Mountain's blog. These ads were frequently updated to provide fresh content. In total, 11 ads were run on Twitter and five on Facebook between September 29, 2014 and December 31, 2014. Topics ranged from marine safety, to pipeline safety, community involvement, community engagement and beyond. Figure 1.4.11-9 provides samples of promoted tweets and Figure 1.4.11-10 provides a sample of a Facebook display ad.

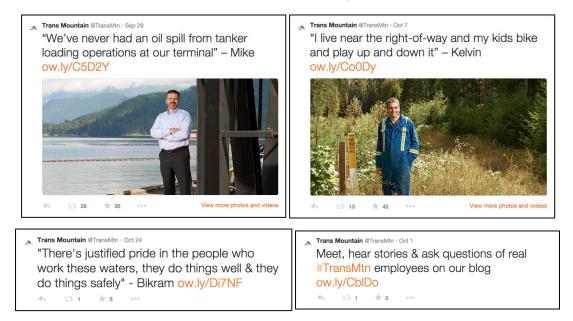


Figure 1.4.11-9 Samples of promoted tweets during the People Behind the Pipeline communications initiative

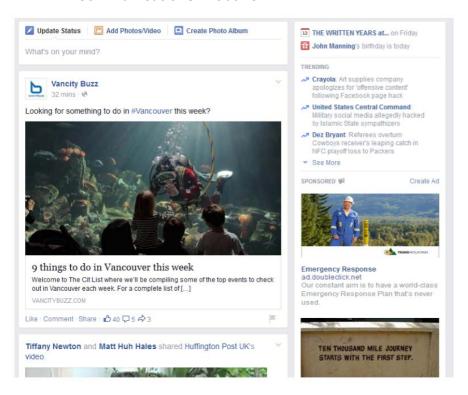


Figure 1.4.11-10 Sample of Facebook display ad that ran during the People Behind the Pipeline communications initiative

Total impressions received on Twitter via promoted tweets during the People Behind the Pipeline between September 29, 2014 and December 31, 2014 was 935,968, excluding those promoted for the Burnaby Mountain communications initiative noted in Section 1.4.11. The communications initiative promoted tweets received over 21,000 engagements for an engagement rate of 2.68 per cent.

Total impressions received on Facebook between September 29, 2014 and December 31, 2014 was eight million. These received a click-through rate of 0.043 percent, which is lower than industry average.

Search Engine Marketing (SEM) was also a part of the communications initiative, targeting keywords expected to be used by those interested in the Trans Mountain Expansion Project. The search ads helped users find our website and our blog between September 29, 2014 and December 31, 2014. The ads received a total of 1.2 million impressions during the communications initiative period and an above-average click-through rate of 0.38 percent.

Three direct mail postcards were distributed through Canada Post as part of the People Behind the Pipeline communications initiative. The postcards focused on the topics of emergency response, marine and pipeline safety, and economic benefits. The postcards were sent to approximately 750,000 residences in the Lower Mainland, Fraser Valley and Vancouver Island communities, as listed below in Table 1.4.11-3. Figures 1.4.11-11 to 1.4.11-15 show the direct mail pieces.



Figure 1.4.11-11 Front of the Emergency Response direct mail postcard

24 hours a day, 365 days a year, Kinder Morgan's primary goal is to ensure the safety of the public, our workers and the environment. Our Emergency Management Program is a well-trained, resourced and practiced program – one that, if we never need to put into action, means we're doing our jobs well.

- Our Emergency Response Plans are designed to protect all of our terminals.
- There is a dedicated Emergency Response Plan for the pipeline itself along the entire length.
- Real time monitoring is ongoing 24/7 for the entire network.
- We have an incident response management system that is recognized and used around the world.
- Company employees at every level are trained in Emergency Response, while training is also given to community first responders.
- We are trained and prepared to respond to any incident that may affect our system.
- We aim for an immediate and cohesive response regardless of the size and nature of the incident.
- Our robust Emergency Management Programs are developed with input from local communities,
   First Nations and regulatory agencies.



Join us on October 14, 2014 between 8pm-9pm for a Twitter Townhall.

Ask us your questions using #asktransmtn. For more information, go to blog.transmountain.com



### Figure 1.4.11-12 Back of the Emergency Response direct mail postcard



We have been operating at Westridge Terminal for six decades without a single spill from tanker operations, thanks in part to the stringent precautions we put in place. Close collaboration between Pilotage Authorities, Transport Canada, the Canadian Coast Guard and Port Metro Vancouver ensures vessels navigate our waters safely, guided by highly qualified local pilots.

Irans Mountain employees are dedicated to continual improvement of pipeline and facility integrity to ensure the safest possible operation now and into the future. Key components of our Pipeline Integrity Program include hazard identification, hazard prevention, ongoing monitoring of hazards, as well as pipeline control and monitoring.

- Our ongoing goal is to protect the public, the environment and employees.
   We are constantly monitoring performance measurements.
- We are constantly monitoring performance measurements and risk assessments.
- We have implemented a state-of-the-art proactive program to identify begands that could affect pineline cafety.
- hazards that could affect pipeline safety.

  Our rapid response plans enable us to shutdown and isolate any damaged section slong the pipeline.
- section along the pipeline.

   A sophisticated monitoring and leak detection system is in operation
- 24 hours a day, every day of the year.

  Assessments of geotechnical hazards such as earthquakes, mudsildes and avalanches are carried out by highly qualified professionals.
- We use in-line inspection tools regularly to identify possible issues that require repair, preventing possible spills.
- require repair, preventing possible spills.
   The Trans Mountain Pipeline Protection Program includes frequent aerial
- The pipeline must always meet stringent construction, engineering and maintenance regulations.
- maintenance regulations.

Join us on October 27, 2014 from 8pm-9pm for a Twitter Townhall. Ask us your questions using #asktransmtn. For more information, go to blog.transmountain.com

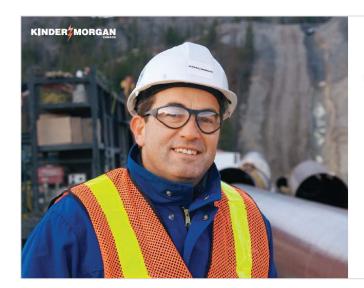


- Tankers calling at our Westridge Terminal are held to strict, internationally accepted construction and operating standards.
- Any vessel proposing to visit Westridge Terminal must go through rigid pre-screening and physical inspection.
- Only double hulled tankers of modern design are accepted.
- The Canadian Coast Guard monitors every vessel's passage.
- All vessels have a boom enclosure in place throughout loading operations.
   Two highly trained local pilots must be on board loaded tankers during
- Two highly trained local pilots must be on board loaded tankers during every tanker movement.
- Tug escorts are required to accompany all laden tankers.
- A local dedicated, marine-based spill response organization, WCMRC, ensures quick action in the event of a spill.
- Marine spill response will be enhanced.

Join us on October 27, 2014 from 8pm–9pm for a Twitter Townhall. Ask us your questions using #asktransmtn. For more information, go to blog.transmountain.com



Figure 1.4.11-13 Pipeline and Marine Safety direct mail postcard



"Our goal is to ensure those living along the pipeline benefit from the employment generated."

- Greg Toth, Senior Project Director, Trans Mountain Expansion Project



Figure 1.4.11-14 Front of the Economic Benefits direct mail postcard

Trans Mountain's vision is to see the opportunities created by the project lead to long-term economic advantages for communities along the right-of-way. The construction and first 20 years of operation of the proposed expansion is expected to create a total of 108,000 person years of employment. We want to deliver lasting local benefits.

- We have a commitment to maximizing employment opportunities for both Aboriginal and local people.
- The \$5.4 billion Expansion Project is all private sector capital, \$3.2 billion of which will be spent in BC. No taxpayer dollars are at risk.
- At the peak of construction, 4,500 people will be working on the pipeline.
- The expansion will create approximately 3,000 direct, indirect and induced jobs per year for at least. 20 years of operation, the majority of which will be in BC.
- \$4.3 billion in tax revenues will be generated from construction and 20 years of operation.
- BC communities will accrue aggregate property tax increases of approximately \$23.2 million per year, rising from \$23 million to an estimated \$46.2 million.
- During construction, workers will spend \$382 million on accommodation, meals and personal items in BC communities.
- Every time a tanker docks at Westridge Marine Terminal, it brings \$310,000 worth of value to the Metro Vancouver economy.

  The project will unlock access to world markets for our oil, resulting in substantial tax revenues



For more information, go to blog.TransMountain.com



Figure 1.4.11-15 Back of the Economic Benefits direct mail postcard

**TABLE 1.4.11-3** 

### **COMMUNITIES - DIRECT MAIL POSTCARDS**

Community	First	Three D	igits of	Postal	Code
Vancouver	V5K	V5T	V6A	V6J	V6R
	V5L	V5V	V6B	V6K	V6S
	V5M	V5W	V6C	V6L	V6T
	V5N	V5X	V6E	V6M	V6Z
	V5P	V5Y	V6G	V6N	V7X
	V5R	V5Z	V6H	V6P	V7Y
	V5S				
Coquitlam	V3J				
	V3K				

**TABLE 1.4.11-3 Cont'd** 

Community	First 7	Three D	igits of Postal Code
New Westminster	V3L		
	V3M		
	V3N		
	V5E		
Port Moody	V3H		
Port Coquitlam	V3C		
Burnaby	V3J	V5E	
	V5A	V5G	
	V5B	V5H	
	V5C	V5J	
North Vancouver	V7G	V7M	
	V7H	V7N	
	V7J	V7P	
	V7K	V7R	
M( - 1 ) (	V7L		
West Vancouver	V7S V7T		
	V71 V7V		
	V7W		
Victoria		V8T	V8Z
Victoria	V8E V8N	V8V	V8Z V9A
	V8P	V8W	V9A V9B
	V8R	V8X	V9C
	V8S	V8Y	V9E
Sooke	V9Z		702
Surrey	V1M	V3V	
Currey	V3R	V3W	
	V3S	V3X	
	V3T	V4N	
Delta	V4C		
	V4E		
Langley	V1M	V3A	
	V2Y	V4W	
	V2Z		
Chilliwack	V2P		
	V2R		
	V4Z		
Abbotsford	V2E	V3G	
	V2S	V4X	
	V2T		
Mission	V2V		
Harrison Springs	VOM		
Норе	V0X		
Merritt	V1K		
Kamloops	V1S	V2C	
	V2B	V2H	

Four newspaper print ads were developed as part of the People Behind the Pipeline communications initiative and ran in local community newspapers in BC's Lower Mainland, Fraser Valley, Interior and Vancouver Island. The ads focused on the topics of marine safety, pipeline safety, community involvement and economic benefits. Table 1.4.11-4 provides the

publications, insertion dates, advertisement and circulation data for the advertisements. Figures 1.4.11-16 to 1.4.11-19 shows the advertisements.



Figure 1.4.11-16 Marine Safety print advertisement for People Behind the Pipeline communications initiative



## "The standards we have – they're second to none."

- Bob Graham, Field Integrity Technician, Kinder Morgan Canada

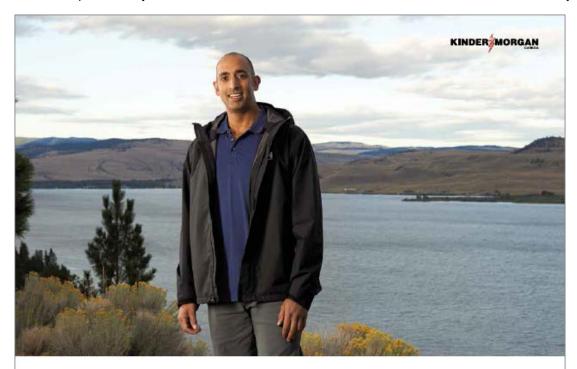
Trans Mountain employees are dedicated to continual improvement of pipeline and facility integrity to ensure the safest possible operation now and into the future. Key components of our Pipeline Integrity Program include hazard identification, hazard prevention, ongoing monitoring of hazards, as well as pipeline control and monitoring. Safety is our number one priority.

- Proactive program to identify all hazards that could affect pipeline safety.
- Rapid response to shutdown and isolate potentially damaged section of pipeline.
- Sophisticated 24/7 monitoring and leak detection system.
- Seismic assessments for earthquakes, avalanches and mudslides.
- Pipeline Protection Program includes frequent aerial surveillance.
- Pipeline must meet stringent construction, engineering and maintenance regulations.
- Our incident response management system is recognized and used around the world.
- In the unlikely event of a spill, an immediate and cooperative response is initiated regardless of the size and nature of the incident.
- Our robust emergency management programs are developed with input from local communities, First Nations and regulatory agencies.

For more information, go to blog.TransMountain.com



Figure 1.4.11-17 Pipeline Safety print advertisement for People Behind the Pipeline communications initiative



# "I don't just work in this community. I live here too."

- Raj Lalli, Sentor Operations Engineer, Kinder Morgan Canada

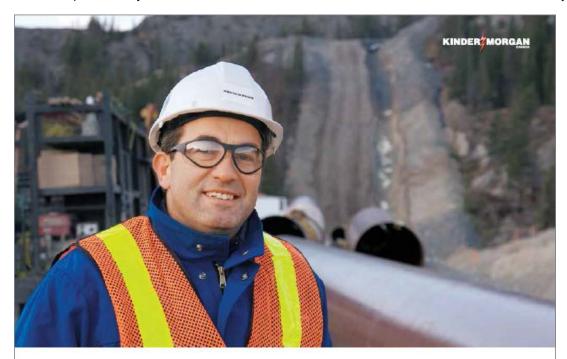
All along the Trans Mountain Pipeline, there are Kinder Morgan employees that care about the safety of the public, their fellow employees and the environment they live in. Some local families have even been involved with the pipeline for generations, since it was successfully constructed over sixty years ago. And today, the commitment to excellence continues.

- . Our ongoing goal is to protect the public, the environment and employees.
- · All employees are trained in operations, safety and emergency response procedures.
- Training at all company levels, as well as community first responders.
- A commitment to maximizing employment opportunities for Aboriginal and local people.
- Land use factors taken into consideration in expansion planning include residences, commercial, recreation and parks.
- Consideration for sensitive areas, water crossings, wetlands and wildlife in route planning.
- Project developed using feedback from stakeholders, engineering recommendations and environmental considerations.

For more information, go to blog.TransMountain.com



Figure 1.4.11-18 Community Involvement print advertisement for People Behind the Pipeline communications initiative



# "Our goal is to ensure those living along the pipeline benefit from the employment generated."

- Greg Toth, Senior Project Director, Trans Mountain Expansion Project

Trans Mountain's vision is to see the opportunities created by the project lead to long-term economic advantages for communities along the right-of-way. The construction and first 20 years of operation of the proposed expansion are expected to create a total of 108,000 person years of employment. We want to deliver lasting local benefits.

- We have a commitment to maximizing employment opportunities for both Aboriginal and local people.
- The \$5.4 billion Expansion Project is all private sector capital, \$3.2 billion of which will be spent in BC.
   No taxpayer dollars are at risk.
- . At the peak of construction, 4,500 people will be working on the pipeline.
- The expansion will create approximately 3,000 direct, indirect and induced jobs per year for at least 20 years of operation, the majority of which will be in BC.
- . \$4.3 billion in tax revenues will be generated from construction and 20 years of operation.
- BC communities will accrue aggregate property tax increases of approximately \$23.2 million per year, rising from \$23 million to \$46.2 million.
- During construction, workers will spend \$382 million on accommodation, meals and personal items in BC communities.
- Every time a tanker docks at Westridge Marine Terminal, it brings \$310,000 worth of value to the Metro Vancouver economy.
- The project will unlock access to world markets for our oil, resulting in substantial tax revenues for all Canadians.

For more information, go to blog.TransMountain.com



Figure 1.4.11-19 Economic Benefits print advertisement for People Behind the Pipeline communications initiative

**TABLE 1.4.11-4** 

### PRINT PUBLICATIONS - PEOPLE BEHIND THE PIPELINE COMMUNICATIONS INITIATIVE

Publication	Insertion Date	Ad	Circulation
Alberta Venture	December 2014 issue	Economic Benefits	28,000
BC Business	December 2014 issue	Economic Benefits	25,000
Victoria Chamber of Commerce: Business Matters	October 2014 issue	Marine Safety	2,000
Vancouver Courier	October 15, 2014 October 29, 2014 December 17, 2014 January 7, 2015 January 21, 2015	Marine Safety Marine Safety Community Pipeline Safety Economic Benefits	62,275
Vancouver Sun	October 17, 2014 October 31, 2014 December 12, 2014 December 19, 2014 January 9, 2015 January 23, 2015	Marine Safety Marine Safety Community Community Pipeline Safety Economic Benefits	184,000
Burnaby New West Leader	October 15, 2014 October 29, 2014 December 17, 2014 January 7, 2015 January 21, 2015	Marine Safety Marine Safety Community Pipeline Safety Economic Benefits	60,915
Burnaby Now	October 15, 2014 October 29, 2014 December 17, 2014 January 7, 2015 January 21, 2015	Marine Safety Marine Safety Community Pipeline Safety Economic Benefits	49,370
Coquitlam Now	October 15, 2014 October 29, 2014 December 17, 2014 January 7, 2015 January 21, 2015	Marine Safety Marine Safety Community Pipeline Safety Economic Benefits	54,658
Tri City News	October 16, 2014 October 30, 2014 December 18, 2014 January 8, 2015 January 22, 2015	Marine Safety Marine Safety Community Pipeline Safety Economic Benefits	53,933
Surrey Now	October 16, 2014 October 30, 2014 December 18, 2014 January 8, 2015 January 22, 2015	Marine Safety Marine Safety Community Pipeline Safety Economic Benefits	116,000
Surrey / N. Delta Leader	October 16, 2014 October 30, 2014 December 18, 2014 January 8, 2015 January 22, 2015	Marine Safety Marine Safety Community Pipeline Safety Economic Benefits	86,728
Langley Advance News	October 16, 2014 October 30, 2014 December 18, 2014 January 8, 2015 January 22, 2015	Marine Safety Marine Safety Community Pipeline Safety Economic Benefits	41,100

### **TABLE 1.4.11-4 Cont'd**

Publication	Insertion Date	Ad	Circulation
Langley Times	October 16, 2014	Marine Safety	39,333
	October 30, 2014	Marine Safety	
	December 18, 2014	Community	
	January 8, 2015	Pipeline Safety	
	January 22, 2015	Economic Benefits	
Abbotsford News	October 15, 2014	Marine Safety	45,722
	October 29, 2014	Marine Safety	
	December 17, 2014	Community	
	January 7, 2015	Pipeline Safety	
	January 21, 2015	Economic Benefits	
Chilliwack Times	October 16, 2014	Marine Safety	29,993
	October 30, 2014	Marine Safety	
	December 18, 2014	Community	
	January 8, 2015	Pipeline Safety	
01:11:	January 22, 2015	Economic Benefits	20.0:-
Chilliwack Progress	October 15, 2014	Marine Safety	29,647
	October 29, 2014	Marine Safety	
	December 17, 2014	Community	
	January 7, 2015	Pipeline Safety	
North Oboro Nove	January 21, 2015	Economic Benefits	00.000
North Shore News	October 17, 2014	Marine Safety	62,000
	October 31, 2014	Marine Safety	
	December 19, 2014	Community Pipeline Safety	
	January 9, 2015 January 23, 2015	Economic Benefits	
Victoria Times Colonist	-		74 270
Victoria Times Colonist	October 17, 2014 October 31, 2014	Marine Safety Marine Safety	74,370
	December 19, 2014	Community	
	January 9, 2015	Pipeline Safety	
	January 23, 2015	Economic Benefits	
Hope Standard	October 16, 2014	Marine Safety	2,040
Tropo otaridara	October 30, 2014	Marine Safety	2,010
	December 18, 2014	Community	
	January 8, 2015	Pipeline Safety	
	January 22, 2015	Economic Benefits	
Kamloops This Week	October 16, 2014	Marine Safety	29,059
•	October 30, 2014	Marine Safety	,
	December 18, 2014	Community	
	January 8, 2015	Pipeline Safety	
	January 22, 2015	Economic Benefits	
Indo Canadian Voice	October 18, 2014	Marine Safety	20,000
	November 1, 2014	Marine Safety	
	December 20, 2014	Community	
	January 10, 2015	Pipeline Safety	
	January 24, 2015	Economic Benefits	
Indo Canadian Awaaz	October 17, 2014	Marine Safety	15,000
(translated to Punjabi)	October 31, 2014	Marine Safety	
	December 19, 2014	Community	
	January 9, 2015	Pipeline Safety	
	January 23, 2015	Economic Benefits	

**TABLE 1.4.11-4 Cont'd** 

Publication	Insertion Date	Ad	Circulation
Sing Tao Daily (translated	October 16, 2014	Marine Safety	35,000
to Chinese)	October 30, 2014	Marine Safety	
	December 18, 2014	Community	
	January 8, 2015	Pipeline Safety	
	January 22, 2015	Economic Benefits	
Ming Pao (translated to	October 17, 2014	Marine Safety	35,000
Chinese)	October 31, 2014	Marine Safety	
	December 19, 2014	Community	
	January 9, 2015	Pipeline Safety	
	January 23, 2015	Economic Benefits	
Dawa Business (translated	October 18, 2014	Marine Safety	20,000
to Chinese)	November 1, 2014	Marine Safety	
	December 20, 2014	Community	
	January 10, 2015	Pipeline Safety	
	January 24, 2015	Economic Benefits	
Global Chinese Press	October 15, 2014	Marine Safety	20,000
(translated to Chinese)	October 29, 2014	Marine Safety	
	December 17, 2014	Community	
	January 7, 2015	Pipeline Safety	
	January 21, 2015	Economic Benefits	
World Journal (translated	December 19, 2014	Community	20,000
to Chinese)	January 9, 2015	Pipeline Safety	
	January 23, 2015	Economic Benefits	
Van Cho Sun (translated to	October 17, 2014	Marine Safety	7,000
Korean)	October 31, 2014	Marine Safety	·
	December 19, 2014	Community	
	January 9, 2015	Pipeline Safety	
	January 23, 2015	Economic Benefits	
Filipino Post (translated to	October 16, 2014	Marine Safety	25,000
Tagalog)	October 30, 2014	Marine Safety	
	December 18, 2014	Community	
	January 8, 2015	Pipeline Safety	
	January 22, 2015	Economic Benefits	

### 1.4.12 Burnaby Mountain Communication Initiative

Between December 1, 2014 and December 7, 2014, Trans Mountain ran its Burnaby Mountain communications initiative throughout the Lower Mainland, Fraser Valley, Interior BC and Victoria. The Burnaby Mountain communications initiative focused on the facts surrounding the events happening on Burnaby Mountain and brought awareness to Trans Mountain's preference to continue the dialogue about the Project.

Featuring the company's President, Mr. Ian Anderson, the Burnaby Mountain communications initiative consisted of television, print and online advertising, including promoted tweets, and an eblast. The eblast is noted in Section 1.4.12. The advertisements provided website information where people could register for a Telephone Town Hall scheduled for December 3, 2014. Stakeholders could also take an online survey that sought information on their preferences for engagement formats to continue to dialogue with Trans Mountain. The Telephone Town Hall registration received 143 registrants between December 1 to 3, 2014 and the survey received 134 responses from December 1 to 31, 2014.

Figure 1.4.12-1 and 1.4.12-2 provide screen captures of the homepage developed to correspond with the Burnaby Mountain communications initiative.

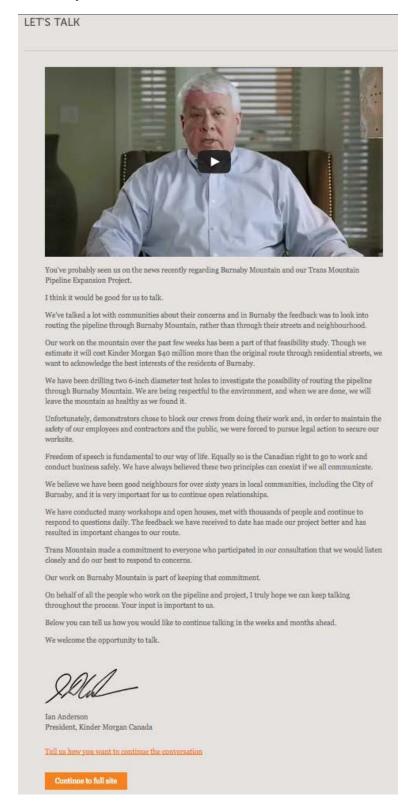


Figure 1.4.12-1 Burnaby Mountain Communications Initiative website homepage

One 60-second television ad was developed and ran on channels across BC's Lower Mainland, Fraser Valley, Interior BC and in Victoria. The ad was a direct address to the audience about the events on Burnaby Mountain and Mr. Anderson's desire to continue talking and listening to questions, concerns and feedback about the Project.



Figure 1.4.12-2 Screen capture of Burnaby Mountain Communications Initiative television advertisement

Table 1.4.12-1 provides a list of the stations where the advertisement was played during the communications period. During that week it received at estimated 3.8 million impressions. The full advertisement was uploaded to Trans Mountain's YouTube channel (youtube.com/user/transmtn) as a video. Between December 1, 2014 and December 31, 2014 the video received 1,712 views.

TABLE 1.4.12-1

TELEVISION STATION LIST - BURNABY MOUNTAIN COMMUNICATIONS INITIATIVE

Region	Station
Vancouver / Lower Mainland / Fraser Valley / Victoria	Global TV
	CTV
	CTV2
	• CBC
	City TV
	OMNI TV
	Sportsnet Pacific
Kamloops	Global TV
	CTV
	• INTV
	• CBC
	<ul> <li>Sportsnet</li> </ul>

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One newspaper print advertisement ran in local community newspapers in BC's Lower Mainland, Fraser Valley, Interior and Vancouver Island. The advertisement was also translated into Chinese, Punjabi, Korean and Tagalog and ran in multicultural newspapers. The advertisement was an open letter from Mr. Ian Anderson about the events on Burnaby Mountain and the company's desire to keep talking. Two versions were created – one for advertising that ran before December 3, 2014 asking people to sign up for the Telephone Town Hall and one for advertising than ran after December 3, 2014 inviting people to provide their feedback on how they wanted to keep talking.

Figure 1.4.12-3 shows the print advertisement for the Telephone Town Hall call to action. Table 1.4.12-2 provides a list of the newspapers and the insertion date of the Burnaby Mountain communications initiative advertisements and Table 1.4.12-3 provides a list of the ethnic newspapers and the insertion date.

## Let's talk.

You've probably seen us on the news recently regarding Burnaby Mountain and our Trans Mountain Pipeline Expansion Project.

I think it would be good for us to talk.

We've talked a lot with communities about their concerns and in Burnaby the feedback was to look into routing the pipeline through Burnaby Mountain, rather than through their streets and neighbourhood.

Our work on the mountain over the past few weeks has been a part of that feasibility study. Though we estimate it will cost Kinder Morgan \$40 million more than the original route through residential streets, we want to acknowledge the best interests of the residents of Burnaby.

We are drilling two 6-inch diameter test holes to investigate the possibility of routing the pipeline through Burnaby Mountain. We are being respectful of the environment, and when we are done, we will leave the mountain as healthy as we found it.

Unfortunately, demonstrators chose to block our crews from doing their work and, in order to maintain the safety of our employees, contractors and the public, we were forced to pursue legal action to secure our worksite.

Freedom of speech is fundamental to our way of life. Equally so is the Canadian right to go to work and conduct business safely. We have always believed these two principles can coexist if we all communicate.

We believe we have been good neighbours for over sixty years in local communities, including the City of Burnaby, and it is very important for us to continue open relationships.

We have conducted many workshops and open houses, met with thousands of people and continue to respond to questions daily. The feedback we have received to date has made our project better and has resulted in important changes to our route.

Trans Mountain made a commitment to everyone who participated in our consultation that we would listen closely and do our best to respond to concerns.

Our work on Burnaby Mountain is part of keeping that commitment.

On behalf of all the people who work on the pipeline and project, I truly hope we can keep talking throughout the process. Your input is important to us.

We'll be providing more opportunities for dialogue including our upcoming telephone town hall on December 3rd. Go to TransMountain.com to sign up. We welcome the opportunity to talk.

#### SOME FACTS

The Trans Mountain Pipeline has been operating between Edmonton, AB and Burnaby, BC since 1953

In April 2012, we proposed to expand the pipeline by building a second pipeline alongside the original.

Our goal for the entire route has been to build adjacent to the existing pipeline within our existing right-of-way. However, sometimes there are good reasons to look at other options, such as safety concerns, residential or industrial development that has expanded since the criginal pipeline was built, or environmental considerations.

We've been engaging with Aboriginal groups, Landowners, communities and stakeholders since April 2012. We've reached agreements with 18 Aboriginal groups, to date.

The current work on Burnaby Mountain is to study the proposed route through Burnaby Mountain.

Our application is before the National Energy Board, an independent federal agency, to determine if the project should be approved to proceed in Canada's best interest. Ultimately, the federal government will make the final decision.

The National Energy Board has a recognized process to voice concerns, ask questions and introduce evidence for consideration.

Over 1,800 people in BC and Alberta have registered to participate.

If approved to proceed, construction of the expansion would begin in mid-2016 and would be in operation by late 2018.

Many other project details and information about upcoming opportunities for dialogue can be found on our website www.TransMountain.com

Ian Anderson
President, Kinder Morgan Canada





Figure 1.4.12-3 Burnaby Mountain Communications Initiative full-page newspaper advertisement

**TABLE 1.4.12-2** 

### **NEWSPAPER PUBLICATIONS - BURNABY MOUNTAIN COMMUNICATIONS INITIATIVE**

Newspaper	Insertion Date	Circulation
Abbotsford News	December 3, 2014	45,722
Burnaby New West Leader	December 3, 2014	60,915
Burnaby Now	December 3, 2014	49,370
Chilliwack Progress	December 3, 2014	29,647
Chilliwack Times	December 4, 2014	29,993
Coquitlam Now	December 3, 2014	54,658
Hope Standard	December 4, 2014	2,040
Kamloops This Week	December 2, 2014	29,059
Langley Advance News	December 2, 2014	41,100
Langley Times	December 2, 2014	39,333
North Shore News	December 3, 2014	62,000
Surrey / N. Delta Leader	December 2, 2014	86,728
Surrey Now	December 2, 2014	116,000
Tri City News	December 3, 2014	53,933
Vancouver Courier	December 3, 2014	62,275
Vancouver Sun	December 2, 2014	184,000
Victoria Times Colonist	December 2, 2014	74,370

**TABLE 1.4.12-3** 

### ETHNIC NEWSPAPER PUBLICATIONS - BURNABY MOUNTAIN COMMUNICATIONS INITIATIVE

Ethnic Newspapers	Insertion Date	Circulation
Indo Canadian Voice	December 6, 2014	20,000
Indo Canadian Awaaz (translated to Punjabi)	December 5, 2014	15,000
Sing Tao Daily (translated to Traditional Chinese)	December 2, 2014	35,000
Ming Pao (translated to Traditional Chinese)	December 3, 2014	35,000
Dawa Business (translated to Simplified Chinese)	December 6, 2014	20,000
Global Chinese Press (translated to Simplified Chinese)	December 3, 2014	20,000
World Journal (translated to Simplified Chinese)	December 2, 2014	20,000
VanChoSun (translated to Korean)	December 3, 2014	7,000
Filipino Post (translated to Tagalog)	December 4, 2014	25,000

Four online banner ads ran on the following news websites geo-targeted to all of BC - Globeandmail.com, Burnabynow.com, Glacier Media news network, Vancouversun.com, Theprovince.com and Nationalpost.com. The online banner ads promoted registration for the Telephone Town Hall and communicated Trans Mountain's desire to continue talking and listening with all concerned stakeholders. All online banner ads clicked through to the website <a href="https://www.transmountain.com">www.transmountain.com</a>. A total of 5,578,818 impressions were delivered, resulting in 6,249 clicks through to the website. This is a 0.11 per cent click-through rate, which is on par with industry average. Figure 1.4.12-4 provides screen shots of some of the advertisements.

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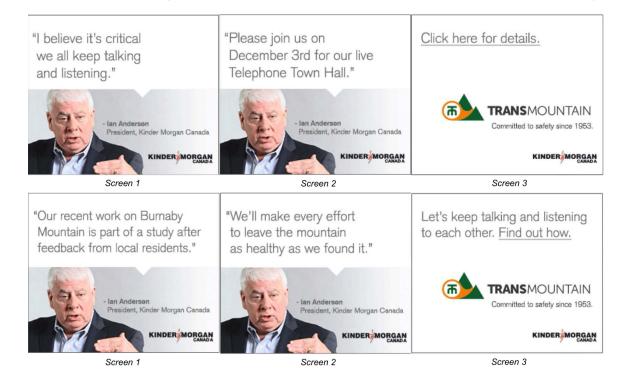


Figure 1.4.12-4 Two examples of online banner ads from Burnaby Mountain Communications Initiative

The Telephone Town Hall was also advertised on Twitter using promoted tweets. On December 1 to 2, 2014 Trans Mountain promoted the registration link encouraging people to sign up for the town hall. This received 251,505 impressions and a 1.33 per cent engagement rate, meaning 3,133 people either clicked on the link, retweeted or favourited the tweet. Figure 1.4.12-5 shows the tweet promoting the registration link. On December 3, 2014 Trans Mountain promoted the link for live streaming of the Telephone Town Hall online. This tweet received 289,843 impressions and 2,905 engagements for an engagement rate of 1.00 per cent. Figure 1.4.12-6 shows the promoted tweet with live streaming link. A promoted tweet was also run December 4 to 8, 2014 to encourage participation in the survey seeking input on engagement tactics and topics. This tweet received 82,424 impressions and 561 engagements for an engagement rate of 0.68 per cent. Figure 1.4.12-7 shows the promoted tweet with survey link.



Figure 1.4.12-5 Promoted Tweet with registration link for Telephone Town Hall



Figure 1.4.12-6 Promoted Tweet with live streaming link for Telephone Town Hall

February 2015

Trans Mountain @TransMtn 4 Dec 2014

Let us know how you'd like to carry on the #pipeline
conversation - Take the survey by Dec 7 ow.ly/FnOhc
youtu.be/r0Ty4GDh4iw

Figure 1.4.12-7 Promoted Tweet with survey link for Telephone Town Hall

### 1.4.13 Trans Mountain in the Community

Participation in and/or attendance at events provided Trans Mountain with a forum for direct contact with stakeholders, as well as accessibility for stakeholders to ask questions about the Project. Trans Mountain representatives took the opportunity to attend various events during the reporting period. Table 1.4.13-1 provides information on Trans Mountain attendance at events.

TABLE 1.4.13-1
TRANS MOUNTAIN ATTENDANCE AT EVENTS

Date	Location	Event
April 30 to May 2, 2014	Penticton	2014 Southern Interior Local Government Association (SILGA) AGM and Convention
May 6, 2014	Vancouver	Canada-China Business Council: China Update by Ambassador Guy Saint-Jacques, Canada's Ambassador to the People's Republic of China
May 7 to 9, 2014	Whistler	Lower Mainland Local Government Association( LMLGA) AGM and Conference
May 8, 2014	Surrey	Surrey Board of Trade (SBOT) International Business Awards
May 10, 2014	Burnaby	Great Salmon Send Off (Stoney Creek)
May 15, 2014	North Vancouver	North Vancouver Chamber of Commerce Fundraising Gala
May 20, 3014	Vancouver	Business Council of BC (BCBC) AGM
May 22 to 24, 2014	Richmond	BC Chamber of Commerce AGM
May 23, 2014	Vancouver	2014 Business Laureates of BC Gala Dinner and Induction Ceremonies
May 27, 2014	Vancouver	Vancouver Board of Trade (VBOT) - New Waves in Research: A Special Announcement by the Vancouver Aquarium
May 27, 2014	Coquitlam	FortisBC: Open House on Natural Gas system upgrades in Lower Mainland – Coquitlam
June 1, 2014	Edmonton	Terwillegar Riverbend Advisory Council (TRAC) 10km Rock and Run
June 3, 2014	Burnaby	FortisBC: Open House on Natural Gas system upgrades in Lower Mainland – Burnaby
June 3, 2014	Coquitlam	Tri-Cities Chamber of Commerce: 12@12 event (United Boulevard focus)
June 3, 2014	Vancouver	Port Metro Vancouver AGM
June 4, 2014	Victoria	University of Victoria: 2014 Distinguished Entrepreneur of the Year Gala
June 5, 2014	Vancouver	Business Council of British Columbia (BCBC) - Next Leaders Council and Discussion with Rick Hansen
June 7, 2014	Kelowna	BC Trucking Association Conference
June 9 to 10, 2014	Vancouver	First Nations Marine Traffic and Tanker Safety Summit
June 10 to 12, 2014	Vancouver	Local Government Management Association (LGMA) AGM and Convention
June 10, 2014	Vancouver	Port Metro Vancouver (PMV) - 15th Annual Port Fundraising Gala

### **TABLE 1.4.13-1 Cont'd**

Date	Location	Event
June 12, 2014	Edson	Yellowhead Synergy Group
June 14, 2014	Jasper	Jasper Fire Department Annual Community Safety Fair
June 17, 2014	Vancouver	Canadian Chamber of Commerce: Business Leaders Roundtable
June 18, 2014	Vancouver	Vancouver Board of Trade: Aboriginal Opportunities Forum 2014: Building Sustainable Aboriginal Relations
June 20, 2014	Vancouver	VBOT AGM
July 21, 2014	Chilliwack	Abbotsford Hospice Society Fund Raising Golf Tournament
June 25, 2014	Port Moody	City of Port Moody Panel Discussion
June 26, 2014	Vancouver	VBOT: BC's Place in the Global Economy
July 3, 2014	Vancouver	Business Council of BC: Top 100 event
July 16, 2014	Port Moody	Suncor Energy Burrard Terminal Open House
July 23, 2014	Vancouver	VBOT: Minister Shirley Bond: Skills for Jobs
July 24, 2014	Port Moody	Tri-Cities Mayor and Councils Harbour Tour
July 26, 2014	Burnaby	Korean War Veterans Day Ceremony
July 30, 2014	Vancouver	Maritime Museum - Evening at the Museum
August 14, 2014	Victoria	Ronald McDonald Golf Tournament sponsorship
August 19, 2014	Vancouver	British Columbia Forum on Tankers and Pipelines Review Session
September 3, 2014	Burnaby	Burnaby Board of Trade (BBOT) Annual Golf Tournament
September 3, 2014	Port Moody	Tri-Cities Mayors' Barbeque
September 9, 2014	Vancouver	Green Marine West Coast Advisory Committee Meeting
September 9, 2014	Abbotsford	Fraser Valley Economic Summit
September 11, 2014	Vancouver	VBOT: The Canadian Public: Perspectives on Mining, Nimbyism and Resources Extraction
September 11, 2014	Vancouver	Pacific Coast Terminals Industry Reception
September 16, 2014	Vancouver	BCBC Member Forum: Breakfast with Premier Christy Clark
September 16, 2014	Port Moody	Pacific Coast Terminals Open House on Potash Handling
September 17, 2014	Vancouver	Chartered Institute of Logistics and Transport (CILT) in North America: Annual Conference
September 22-26, 2014	Whistler	Union of British Columbia Municipalities (UBCM) AGM and Convention
September 24, 2014	Edmonton	Canadian Energy Pipeline Association (CEPA): Joint Industry Emergency Response Exercise
September 27, 2014	Edmonton	Greater Hardisty Community Neighbour Day
September 28, 2014	Vancouver	Bon Mot Book Club: Daniel Yergin: "The Quest: Energy, Security and the Remaking of the Modern World"
September 29 to October 5, 2014	Calgary	International Pipeline Conference and Exposition
September 30, 2014	Vancouver	BCBC Environmental Non-Governmental Organization (ENGO) Engagement Session
October 2, 2014	Vancouver	VBOT Premier Christy Clark Economic Address
October 07, 2014	Vancouver	Urban Development Institute (UDI) Vancouver breakfast - Meet the Candidates
October 07, 2014	Burnaby	BBOT: Business Excellence Awards Nomination Lunch
October 07, 2014	Vancouver	Nature Trust of BC Gala
October 08, 2014	Vancouver	VBOT 2014 Energy Forum
October 08, 2014	Langley	Urban Development Institute (UDI) Fraser Valley - Mayors' Panel 2014
October 14, 2014	Langley	Langley Chamber of Commerce Dinner Meeting with the Mayors
October 16, 2014	Surrey	SBOT: The Economic Importance of Fraser River Luncheon
October 16, 2014	Vancouver	Association of Professional Engineers and Geoscientists of British Columbia (APEGBC) Vancouver Branch Breakfast Seminar: "BC's LNG: Untold Riches or Mere Mirage
October 22, 2014	Burnaby	Eagle Creek Streamkeepers site visit of Burnaby Terminal

### **TABLE 1.4.13-1 Cont'd**

Date	Location	Event
October 22, 2014	Vancouver	Metro Vancouver: Enhancing Salmon Habitat
October 24, 2014	North Vancouver	District of North Vancouver: All Candidates meeting: Mayor and Council Candidates Only
October 27, 2014	Vancouver	BC Building Trades: Initiate regular dialogue
October 29, 2014	Vancouver	2014 Jack Webster Awards Dinner
October 31, 2014	Squamish	Resource Works: Community Breakfast Conversations on Natural Resources – Squamish
November 1, 2014	Kamloops	Kamloops Chamber of Commerce: Business Excellence Awards
November 3, 2014	Burnaby	Resource Works: Community Breakfast Conversations on Natural Resources – Burnaby
November 4, 2014	Vancouver	Green Marine Underwater Noise Working Group Meeting
November 6, 2014	North Vancouver	North Vancouver Chamber of Commerce: Business Excellence Awards Gala
November 6, 2014	Burnaby	BBOT Business Excellence Awards Gala
November 6, 2014	Kamloops	Thompson Rivers University (TRU): Trades Breakfast
November 7, 2014	Vancouver	BCBC: BC Business Summit 2014
November 10, 2014	North Vancouver	District of North Vancouver: All Candidates meeting: Mayor and Council Candidates Only
November 12, 2014	West Vancouver	West Vancouver Chamber of Commerce: All Candidates Meeting
November 13, 2014	North Vancouver	District of North Vancouver: All Candidates meeting: Mayor and Council Candidates Only
November 13, 2014	Vancouver	BC Chamber of Commerce: Minister of Aboriginal Relations and Reconciliation
November 17 and 18, 2014	Vancouver	Emergency Management and Business Continuity Conference
November 18, 2014	Coquitlam	Mechanical Contractors Association of BC (MCABC)
November 21, 2014	Kamloops	Kamloops Chamber of Commerce Lunch – Ms. Calista Cheung, Senior Representative, Bank of Canada
November 21, 2014	Nanaimo	Nanaimo-Ladysmith Conservative Riding Association
November 25, 2014	Burnaby	Independent Contractors and Business (ICBA) 2014 AGM Dinner
November 28, 2014	Vancouver	VBOT: Port Metro Vancouver
November 28, 2014	Calgary	Calgary Chamber of Commerce luncheon with Premier Jim Prentice
December 1, 2014	Vancouver	VBOT: Calgary Premier Jim Prentice
December 2, 2014	Vancouver	BC Association of Consulting Engineering Companies (ACEC) meeting
December 3, 2014	Richmond	BC Chapter: International Right-of-Way Association
December 3, 2014	Vancouver	BC Chamber of Commerce Premier and Cabinet luncheon
December 3, 2014	Vancouver	Green Marine : Under Water Noise Working Group Meeting
December 4, 2014	Vancouver	Macdonald-Laurier Institute (MLI): "Expanding Canadian Trade with Asia: New Prospects for the Trans-Pacific Partnership (TPP)
December 4, 2014	Vancouver	Green Marine West Coast Advisory Committee Meeting
December 9, 2014	Vancouver	Conversations for Responsible Economic Development (CRED): Marine Tourism and Oil Tankers on Canada's West Coast
December 15, 2014	Vancouver	Port Metro Vancouver (PMV): Harvest Project Community Breakfast

Trans Mountain representatives also participated in various speaking opportunities including, panel discussions and presentations to a wide variety of stakeholders. These events offered Trans Mountain an opportunity to outline Project details and answer questions. Table 1.4.13-2 provides information on Trans Mountain speaking opportunities.

**TABLE 1.4.13-2** 

### TRANS MOUNTAIN SPEAKING OPPORTUNITIES

Date	Location	Speaking Opportunity	TMEP Representative
May 3, 2014	Abbotsford, BC	Presentation to Calvin Presbyterian Church Men's Fellowship	Bruce Jamer
May 7, 2014	Whistler, BC	Opening Sponsor presentation at Lower Mainland Local Government Association (LMLGA) AGM and Conference	lan Anderson
May 8, 2014	Surrey, BC	Surrey Board of Trade International Trade Awards – sponsor and award presentation	Lizette Parsons Bell
June 7, 2014	Kelowna, BC	BC Trucking Association (BCTA) AGM and Management Conference – presentation and Q&A	lan Anderson
June 9, 2014	Vancouver, BC (Musqueam First Nation)	Marine Traffic and Tanker Safety Summit – Panel presentation and Q&A	lan Anderson
June 25, 2014	Duncan, BC	Presentation to the Duncan Cowichan Chamber of Commerce	Michael Davies
June 25, 2014	Vancouver	Hong Kong Canada Business Association	Norm Rinnie
September 9, 2014	Abbotsford, BC	Fraser Valley Economic Summit – Keynote Address	lan Anderson
September 17, 2014	Vancouver, BC	Chartered Institute of Logistics and Transport (CILT) Pacific Chapter Fall Conference – panel presentation	lan Anderson
October 8, 2014	Vancouver, BC	Vancouver Board of Trade Energy Forum – keynote address	lan Anderson
November 6, 2014	Burnaby, BC	Burnaby Board of Trade Business Excellence Awards – award presentation	Greg Toth
December 2, 2014	Burnaby, BC	Association of Consulting Engineering Companies British Columbia (ACEC-BC) Presentation	Greg Toth

Trans Mountain has taken the opportunity to contribute to various organizations including community events and fundraising programs. Table 1.4.13-3 provides a few examples of Trans Mountain communication contributions during the reporting period.

TABLE 1.4.13-3

### TRANS MOUNTAIN COMMUNITY CONTRIBUTION OPPORTUNITIES

Event Date	Organization	Purpose
April 30 – May 2, 2014	Southern Interior Local Government Association (SILGA)	Support of annual conference and AGM
May 7 – 9, 2014	Lower Mainland Government Association (LMLGA)	Support of AGM and conference
May 15 – 17, 2014	Trans Canada Yellowhead Highway Association	Support of AGM and conference
July 19 – 27, 2014	North Langley Little League	Support of 2014 Little League BC Provincial Championship
July 24, 2014	City of Port Moody	Support of Tri-Cities Mayor and Councils Harbour Tour
July 26, 2014	Korean War Commemorative Alliance	Support of annual Veteran's Day ceremony

### **TABLE 1.4.13-3 Cont'd**

Event Date	Organization	Purpose
August 26, 2014	Port Moody Library	Silent auction item for Links to Literacy golf tournament fundraiser
September 2014	Flickers and Friends Hockey Alumni	Support of retirees hockey club
September 6 – 7, 2014	Cliff Avenue United Soccer Club	Support of 2014 Kickoff Jamboree
September 9 – 13, 2014	BC Seniors Games	Support of BC Seniors Summer Games
September 11, 2014	Coquitlam Sunrise Rotary	Support of club's Fall Classic golf tournament
October 17, 2014	Douglas College Foundation	Support of the "A Class Act" fundraiser
November 7, 2014	Business Council of BC	Support of BC Annual Business Summit
November 13, 2014	Burnaby Board of Trade	Support of Business Excellence Awards
November 21, 2014	Kamloops Chamber of Commerce	Quarterly Luncheon sponsor
November 22, 2014	Crossroads Hospice Society	Support of annual fundraising gala
December 1 – 3, 2014	Quality Urban Energy Systems for Tomorrow (QUEST)	Support of 2014 conference

### 1.4.14 Engagement Opportunities Advertising/Notification

During the reporting period, Trans Mountain conducted advertising initiatives in support of engagement activities to notify stakeholders about and encourage attendance at public events. The communications initiatives included print advertising, direct mail postcard drop and various other techniques.

Trans Mountain continues to translate newspaper advertisements for stakeholders in communities along the proposed pipeline and marine corridor who are more comfortable receiving information in other languages. These languages include Korean, Chinese (simple and traditional), Punjabi, French and Tagalog.

As routing alternatives were finalized along the proposed pipeline corridor, Trans Mountain notified stakeholders about routing optimizations to ensure they had an opportunity to provide input on optimizations being considered. Trans Mountain placed advertisements in community newspapers where two or more routing alternatives were being proposed. Figure 1.4.14-1 provides a sample advertisement and Table 1.4.14-1 identifies the publications where ads were placed, insertion dates and circulation figures.

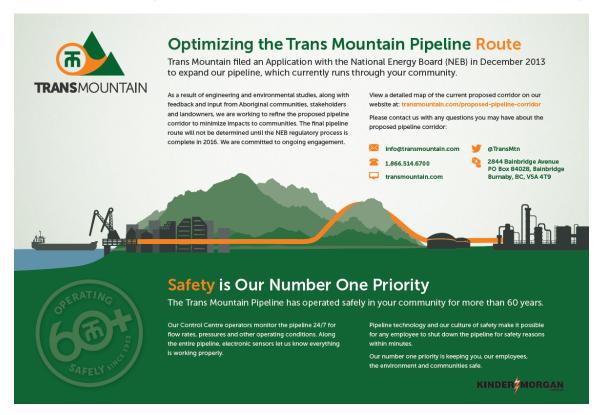


Figure 1.4.14-1 Routing Optimization Advertisement

TABLE 1.4.14-1

### ROUTING OPTIMIZATION ADVERTISING COMMUNICATION INITIATIVE

Publication	Insertion Dates	Circulation
Burnaby Now	August 13, 2014	49,370
	August 22, 2014	
Burnaby News Leader	August 13, 2014	60,915
	August 22, 2014	
Chilliwack Times	August 14, 2014	29,993
	August 21, 2014	
Chilliwack Progress	August 13, 2014	29,647
	August 22, 2014	
Tri-City Now	August 13, 2014	54,658
	August 22, 2014	
Tri-City News	August 13, 2014	53,933
	August 22, 2014	
Langley Advance News	August 14, 2014	41,100
	August 21, 2014	
Langley Times	August 14, 2014	39,333
	August 21, 2014	
Surrey Now	August 14, 2014	116,000
	August 21, 2014	
Surrey / N. Delta Leader	August 14, 2014	86,728
	August 21, 2014	
Agassiz-Harrison Observer	August 14, 2014	4,618
	August 21, 2014	

**TABLE 1.4.14-1 Cont'd** 

Publication	Insertion Dates	Circulation
Hope Standard	August 14, 2014	2,040
	August 21, 2014	
Sherwood Park / Strathcona County News	August 15, 2014	26,411
	August 22, 2014	
Edmonton Examiner	August 13, 2014	152,965
	August 20, 2014	
Wabamun Community Voice	August 12, 2014	6,000
	August 19, 2014	
Indo Canadian Voice	August 23, 2014	20,000
Indo Canadian Awaaz	August 22, 2014	15,000
Sing Tao Daily	August 14, 2014	35,000
	August 22, 2014	
Ming Pao	August 15, 2014	35,000
	August 21, 2014	
Van Cho Sun	August 22, 2014	7,000
Filipino Post	August 21, 2014	25,000

Trans Mountain notified Burnaby stakeholders about an NEB supplementary opportunity to participate in the Application review process. The notification, prepared by the NEB, ran at least twice in the required five newspapers, with the exception of La Source, which had only one edition during the required notification period. Additionally, the ad ran in six other newspapers that Trans Mountain opted to include in the Burnaby area, for a total of 11 publications. Ads were placed in English, French and Chinese. Table 1.4.14-2 provides the publications, insertion dates and circulation figures for the Supplemental Application to Participate advertisements. Figure 1.4.14-2 provides the Supplemental Application to Participate advertisement.

TABLE 1.4.14-2

SUPPLEMENTAL APPLICATION TO PARTICIPATE (NEB) NEWSPAPER ADVERTISEMENTS

Publication	Insertion Dates	Circulation
Burnaby Now	September 5, 2014	49,722
	September 12, 2014	
Burnaby News Leader	September 5, 2014	60,915
	September 12, 2014	
Tri-City Now	September 5, 2014	54,658
	September 12, 2014	
Tri City News	September 5, 2014	53,933
	September 12, 2014	
The Peak SFU	September 8, 2014	4,000
	September 15, 2014	
Vancouver Sun	September 5, 2014	184,000
	September 12, 2014	
La Source (French)	September 9, 2014	6,000
Sing Tao Daily (Chinese)	September 4, 2014	35,000
Ming Pao (Chinese)	September 4, 2014	35,000
Dawa Business (Chinese)	September 4, 2014	20,000
Global Chinese Press	September 3, 2014	20,000



National Energy Board Office national de l'énergie

> Supplemental Application to Participate in National Energy Board Public Hearing for Trans Mountain Pipeline ULC

The National Energy Board (NEB) began a public hearing into Trans Mountain Pipeline ULC's (Trans Mountain's) proposed Trans Mountain Expansion Project (Project) on 2 April 2014. Over 2,000 individuals and groups filed Applications to Participate in the hearing and the Board admitted 1,650 participants.

### Description of the Project

The Project would expand the existing Trans Mountain pipeline system located between Edmonton, Alberta (AB), and Bumaby, British Columbia (BC). It would include approximately 987 km of new pipeline, new and modified facilities, such as pump stations and tanks, and the reactivation of 193 km of existing pipeline. There would also be an expansion of the Westridge Marine Terminal.

New pipeline segments would be added between Edmonton and Hinton, AB, Hargreaves and Darfield, BC; and Black Pines and Burnaby, BC. Reactivation of existing pipeline segments would occur between Hinton, AB and Hargreaves, BC; and Darfield and Black Pines, BC.

The Project application and all related filings can be found on the NEB's website.

# Supplemental opportunity to participate in the NEB Hearing

Recently, Trans Mountain submitted a new preferred corridor for its delivery lines from Burnaby Terminal to the Westridge Marine Terminal, through Burnaby Mountain. The original Application to Participate Notification posted for the Project did not contemplate this new preferred corridor through Burnaby Mountain.



Should those who are directly affected by, or have relevant information and expertise related to, the new preferred corridor through Burnaby Mountain wish to participate in the hearing, they must apply to do so.

The Project is being assessed under both the National Energy Board Act (NEB Act) and the Canadian Environmental Assessment Act, 2012 (CEAA 2012). Under the NEB Act, those who are directly affected will be allowed to participate and those with relevant information or expertise may be allowed to participate. In addition, if the Board is of the opinion that an applicant has relevant information or expertise about the environmental assessment under the CEAA 2012, then they will be allowed to participate.

While the Application to Participate form allows applicants to indicate their preferred method of participation, the Board will decide how best to hear from each approved participant on a case-by-case basis. Applicants must clearly describe their interest in relation to the List of Issues for the hearing (included in the Application to Participate form) and how they are directly affected by, or have relevant information related to, the new preferred corridor through Burnaby Mountain.

Existing participants need not apply again. Commenters may comment on, and intervenors may ask questions/file evidence/present argument on, any component of the Project, including the Burnaby Mountain section.

The Application to Participate is on the NEB's website at:

www.neb-one.qc.ca under Major Applications and Projects, select Trans Mountain Expansion

This supplemental Application to Participate process will be open from 8 September 2014 to 24 September 2014. Individuals and groups applying to participate must provide enough information for the NEB to decide whether participant status should be granted. Applications will only be considered from individuals and groups who are directly affected by, or have relevant information and expertise related to, the new preferred corridor through Burnaby Mountain.

### Contacts

Information on NEB hearing processes and participant funding is available at <a href="www.neb-one.gc.ca/TransMountainExpansion">www.neb-one.gc.ca/TransMountainExpansion</a>. If you require additional information, the NEB has a dedicated Project-specific Process Advisor Team to provide assistance.

Process Advisor Team, NEB

E-mail: <u>TransMountainPipeline.Hearing@neb-one.qc.ca</u> Telephone (toll-free): 1-800-899-1265 Canada

# Figure 1.4.14-2 Supplemental Application to Participate Notification advertisement

In recognition of Diwali, Trans Mountain ran a Happy Diwali advertisement in the October issue of Indo-Okanagan Times. Figure 1.4.14-3 provides the advertisement.



Figure 1.4.14-3 Happy Diwali advertisement

During the fall 2014, Trans Mountain held a series of Jobs and Training Information Sessions in the BC Interior. Details about the Information Sessions can be found in Section 1.18.

To encourage attendance, a number of notification methods were used including:

- posters at local community gathering spots;
- an eblast sent to 150 Trans Mountain jobs email subscribers who identified themselves as living in Interior BC; of these 89 were opened;
- online ads on local community websites;
- community newspaper advertising; and

· postcard mailer.

Figure 1.4.14-4 to 1.4.14-9 provide samples of the notification materials used and Table 1.4.14-3 provides advertising insertion information.



Figure 1.4.14-4 Jobs and Training Information Session poster

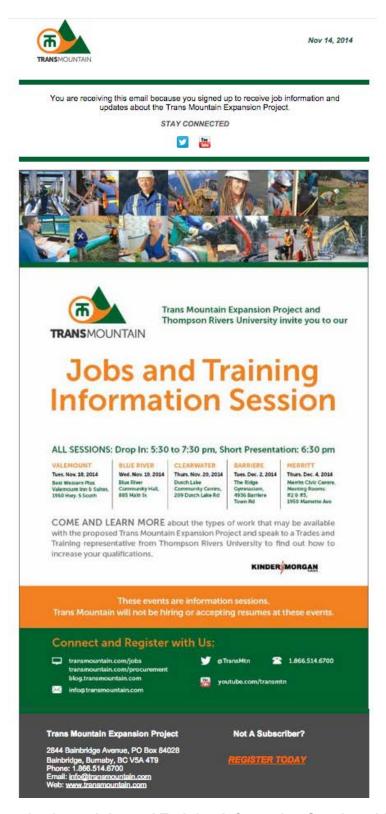


Figure 1.4.14-5 Jobs and Training Information Session eblast



Figure 1.4.14-6 Jobs and Training Information Session online banner ad

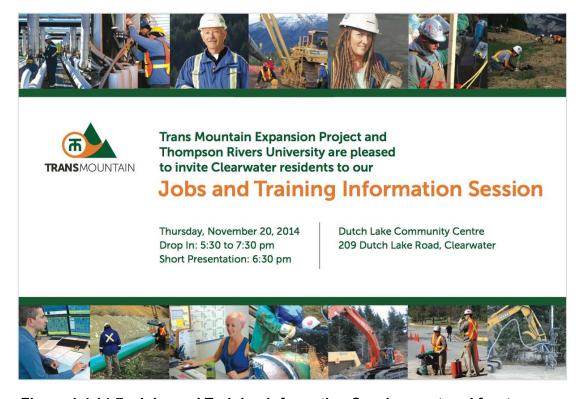


Figure 1.4.14-7 Jobs and Training Information Session postcard front



Figure 1.4.14-8 Jobs and Training Information Session postcard back

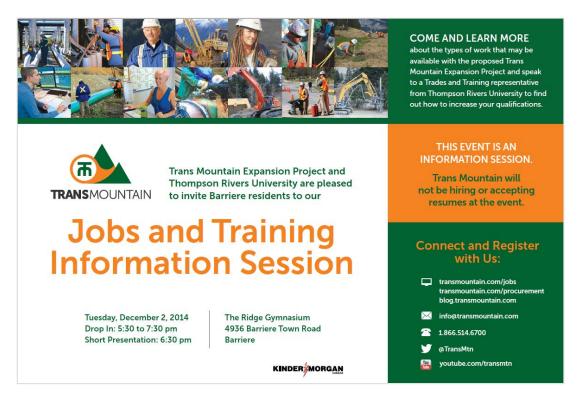


Figure 1.4.14-9 Jobs and Training Information Session advertisement

### **TABLE 1.4.14-3**

# **JOBS AND TRAINING INFORMATION SESSION ADVERTISING**

Publication	Insertion Date	Circulation
Barriere Star	December 4, 2014	1,287
Merritt Herald	November 27, 2014	6,630

On December 16, 2014, an Information Session was held in Black Pines, BC. A postcard was hand-delivered to approximately 150 area households to encourage attendance. Details about the Information Session can be found in Section 1.14.21. Figure 1.4.14-10 and Figure 1.4.14-11 provide the front and back of the postcard.



Figure 1.4.14-10 Black Pines Information Session postcard front



Figure 1.4.14-11 Black Pines Information Session postcard back

# 1.5 Stakeholder Engagement Activities – May 1 to December 31, 2014

Phase 5 engagement activities enabled the Project to continue to identify and ensure stakeholder concerns were captured. Engagement activities that occurred during the reporting period included, but were not limited to:

- community benefits;
- EMSW, Part 2;
- telephone town halls;
- twitter town halls;
- reactivation ongoing engagement;
- BC Parks;
- proposed pipeline corridor optimization;
- schools;
- jobs and training;
- ongoing meetings with environmental groups and ENGOs; and,
- face-to-face stakeholder meetings.

# 1.6 Community Benefits

Trans Mountain values the relationships it has with the communities along its existing pipeline system and the proposed Project corridor; these span more than 60 years of history. In recognition of the potential for public inconvenience and temporary disruption associated with pipeline construction, the company has been pursuing Community Benefit Memorandums of Understanding (MOU) with communities along the Project corridor that would provide direct benefits to communities should the proposed expansion be approved and constructed.

The Community Benefit Program initiatives provide for benefits in communities along the pipeline corridor over and above the financial compensation for construction and operation of the pipeline through community lands.

Trans Mountain aims to sign agreements with municipalities and communities along the pipeline corridor and has initiated discussions with local governments to explore community benefit opportunities. The overall objectives of these discussions were to:

- Identify and prioritize community projects that align with Kinder Morgan Canada's funding guidelines;
- mitigate/offset the anticipated impacts to environment and communities along the pipeline;
- maximize the benefits to the majority of the population within each community;
- leverage pipeline contractors for community enhancements (*i.e.*, trail systems) or environmental improvements (*i.e.*, restoration of adjacent lands);
- create a lasting Project legacy that will continue after construction has been completed; and
- identify programs that could be implemented and maintained by local organizations or foundations.

Through our ongoing engagement initiatives, priority areas for community benefit investments are identified with input from local and regional governments and other local stakeholders through a variety of engagement channels.

The Trans Mountain Community Benefit program has three priority areas of investment that aim to leave positive, lasting legacies of the project in communities directly affected by the construction and operation of TMEP:

- 1. Community programs/infrastructure improvements (including emergency response);
- 2. Environmental Stewardship; and
- 3. Education and Training Initiatives.

Community funding allocations were calculated based on a number of factors including, but not limited to, each community's degree of construction impact, length of pipeline within municipal boundaries, population and installation of new facilities.

Trans Mountain offered to meet with each municipality where it operates to discuss potential community benefits.

In Alberta, Community Benefit briefing meetings were held in Q2/Q3 of 2014 with the City of Edmonton, Strathcona County, the Town of Stony Plain, the Village of Wabamun, the Town of

Edson, and the Town of Hinton. Meetings with the Town of Spruce Grove and Yellowhead County are planned for 2015.

In the BC Interior, Community Benefit briefing meetings with the Village of Valemount, District of Clearwater, District of Barriere, City of Kamloops, City of Merritt, District of Hope and Thomson Nicola Regional District Areas A, B and O were initiated in Q1/Q2 of 2014 and are reported in Consultation Update No.2 Filing ID A62087, A62088). Follow-up meetings with all BC Interior communities, including the presentation of draft community benefit MOUs, were completed on September 23 and 24, 2014 in Whistler BC.

In the Lower Mainland and Fraser Valley, outreach included: City of Chilliwack, City of Abbotsford, Township of Langley, City of Surrey, City of Coquitlam and City of Burnaby should the project be approved. Conversations on community benefits are at different stages within each communities, with initial meetings completed in all communities except City of Abbotsford and City of Burnaby.

Investments in communities can include local emergency management enhancements, improvements to community parks and infrastructure as well as support for events and educational programs highly valued by their citizens. Within the reporting period two community benefit agreements have been signed; the press releases can be viewed in Appendix A. Additional details pertaining to the Community Benefits Program are contained in the response to NEB IR 3.36a.

On October 16, 2014, The District of Hope and Trans Mountain signed a Memorandum of Understanding (MOU) for a Community Benefit Agreement for a \$500,000 contribution towards upgrades at the Hope Community Recreation Park. The Hope Community Recreation Park Development Plan includes upgrades to outdoor recreation facilities for all community users.

On November 6, 2014, the District of Barriere and Trans Mountain signed a Memorandum of Understanding (MOU) for a Community Benefit Agreement that will see a \$290,000 contribution towards improvements in Barriere including upgrades to bike and pedestrian trails, construction of a playground splash pad, provision and planting of trees, and funding for education to provide support to students in the trades, technology and environmental programs.

A number of other communities are anticipated to sign agreements in Q1 2015 and onward.

Trans Mountain initiated conversations with the following municipalities in the BC Interior to review allocation and administration of education funds identified in some Community Benefit MOUs. The intent of the legacy funding is to enhance access to trades and training opportunities for community residents living in more remote locations. Meetings were held in the following BC Interior communities:

- Thompson Nicola Regional District (Areas A and B), BC on November 20, 2014;
- Clearwater on November 20, 2014;
- Barriere on December 2, 2014; and
- Merritt on December 4, 2014.

On December 15, 2014, Trans Mountain presented its first draft Community Benefits Memorandum of Understanding to the City of Chilliwack to review and provide input on.

Discussions in communities will continue through 2015.

# 1.6.1 Academic Partnership Discussions

Trans Mountain met with the following academic institutions to discuss legacy benefits:

- British Columbia Institute of Technology (BCIT) on June 23, 2014;
- Thompson Rivers University on August 5, and December 3, 2014;
- University of the Fraser Valley on August 21, 2014;
- Simon Fraser University on September 25, 2014; and
- Kwantlen Polytechnic University on January 6, 2015

In addition to discussions about legacy benefits Trans Mountain also met with Thompson Rivers University (TRU) to discuss potential academic institution benefits and partnerships. Trans Mountain partnered with the TRU Trades and Training faculty in the delivery of community Jobs and Training information sessions as described in Section 1.18.

Trans Mountain supported TRU students in the Natural Resource Sciences/Biological Sciences faculty in their successful applications for Natural Science and Engineering Research Council (NSERC) grants. The focus of funded research is the use of native seed in grasslands reclamation.

Conversations will continue with these academic organizations.

# 1.6.2 Westridge Marine Fisheries Offset Workshop

Details of the Westridge Marine Fisheries Offset Workshop are summarized in Tables 1.6.2-1 to 1.6.2-4

TABLE 1.6.2-1
WESTRIDGE MARINE FISHERIES OFFSET WORKSHOP, VANCOUVER BC

Region	Location	Date	Number of Attendees
Lower Mainland/Fraser Valley	Westridge Marine Workshop held at Stantec Office – 1100 – 111 Dunsmuir Street, Vancouver, BC	July 14, 2014 8:30 – 11:30 AM	9

Table 1.6.2-2 identifies those organizations invited to attend and Table 1.6.2-3 identifies the organizations in attendance at the Westridge Marine Fisheries Offset Workshop, Vancouver, BC.

**TABLE 1.6.2-2** 

# ORGANIZATIONS INVITED – WESTRIDGE MARINE FISHERIES OFFSET WORKSHOP, VANCOUVER BC

Organization		
City of Port Moody	Vancouver Aquarium	
District of North Vancouver	Village of Belcarra	
Pacific Wildlife Foundation University of British Columbia (UBC)		
Pacific Salmon Foundation		

**Note:** TMEP invited more than one representative from some organizations.

### **TABLE 1.6.2-3**

# WESTRIDGE MARINE FISHERIES OFFSET WORKSHOP, VANCOUVER BC - ATTENDEES

Organization		
City of Port Moody	Vancouver Aquarium	
District of North Vancouver	Village of Belcarra	
Pacific Wildlife Foundation University of British Columbia (UBC)		
Pacific Salmon Foundation		

Note:

Geotechnical Terrain

Some organizations had more than one representative in attendance.

Table 1.6.2-4 provides a summary of concerns raised at the Westridge Marine Fisheries Offset Workshop in Vancouver, BC:

**TABLE 1.6.2-4** 

**VANCOUVER BC** 

SUMMARY OF CONCERNS – WESTRIDGE MARINE FISHERIES OFFSET WORKSHOP.

# Category Environmental – Marine Corporate Policy – Legacy? Potential impacts from marine habitat enhancements attracting young harbor seals and sea lions Oceanographic processes around the Westridge Marine Terminal Potential negative impact on juvenile salmon moving through the area Eelgrass recovery/restoration in Burrard Inlet/Indian Arm Concern for invasive species Preference for a restoration process for whole inlet instead of one offs Who takes responsibility for the proposed reef? Environmental – Terrestrial

# 1.7 Emergency Management Stakeholder Workshops (EMSW), Part 2

Geotechnical feasibility of tunnel

Emergency planning and response have been areas of concern in both pipeline and marine communities.

# 1.7.1 Emergency Management One-on-One Meetings

Trans Mountain held a series of one-on-one meetings with first responders in the Lower Mainland/Fraser Valley. The purpose of the meetings was to introduce first responders to Mr. John Clarke who joined TMEP in spring 2014 as Lead, Emergency Management Programs for the Project, to ensure they had pertinent information about the proposed Project, and introduce the concept of EMSW.

Table 1.7.1-1 provides summary of the concerns raised during the one-on-one emergency response meetings.

### **TABLE 1.7.1-1**

### SUMMARY OF ONE-ON-ONE EMERGENCY RESPONSE MEETINGS

Stakeholder/Meeting Date	Discussion Summary	
Simon Fraser University (SFU) on September 2, 2014	<ul> <li>Interested in learning more about TMEP and existing operations specifically at Burnaby Terminal nearby.</li> <li>Understand relationship challenges with City of Burnaby.</li> </ul>	
City of Port Moody on September 11, 2014	Supportive of a combined Tri Cities workshop scenario.	
City of Port Coquitlam on September 16, 2014	Encouraged Trans Mountain to consider a combined Tri-Cities scenario due to close working relationship between the municipal first responders.	
City of Coquitlam on September 16, 2014	Supportive of a combined Tri-Cities workshop scenario.	
City of Surrey on October 20, 2014	First Responders had no outstanding issues with the company or concerns with expansion project	
	Better timing for City to hold workshop in spring 2015.	
Township of Langley on October 20, 2014	Willingness to share information amongst emergency planner network.	
City of Abbotsford on	Interested in equipment placement in community.	
November 12, 2014	Expressed interest in invitation being extended to First Nations to participate in scenario	
	Agreed to participate in EMSW Part 2.	
City of Chilliwack and Fraser Valley Regional District on	Interested in opportunity to participate in emergency management exercises and training.	
November 5, 2014	Discussed attendees and possible scenario locations within respective jurisdictions; recommended Stolo First Nation be invited to participate.	

Issues identified by participants that have not already been identified in previous Updates are further detailed in Section 2.3, Topics of Interest or Concern – Lower Mainland/Fraser Valley.

On September 7, 2014, Trans Mountain requested to meet with the City of New Westminster Fire Chief as part of its dialogue on Emergency Management related to the proposed Project. No response was received.

# 1.7.2 EMSW Part 2

Trans Mountain also hosted a series of Part 2 Emergency Management Stakeholder Workshops (EMSW) during Phase 5.

Part 1 EMSW workshops, reported in Consultation Update No. 2 (Filing ID A62087 and A62088) were half-day session with emergency managers and first responders. The agenda typically covered current operations and an overview of the proposed Project. Attendees were presented with highlights of the current emergency management programs and then organized into workgroups to explore their concerns about expanding the system and some early indications of what they would like to see considered as part of an updated Emergency Response Plan (ERP) for the expansion.

The purpose of the Part 2 EMSW was to meet stakeholder interest in reviewing desktop scenarios that explored a local sequence of events and local resources requirements in the event of an incident in a community. Part 2 EMSW also provided Trans Mountain the opportunity to utilise its Emergency Management Plans in practise, and to develop a working relationship with pertinent stakeholders involved in initial emergency response. Communities were the same as those engaged through Part 1 however, in Part 2 meetings were mostly held

with municipalities, regional districts (BC) and counties (AB) individually rather than the larger regional area meetings that were held in Part 1.

During the reporting period, Trans Mountain invited the same municipal, regional districts (BC) and counties (AB) to participate in scenario discussions. Part 2 EMSW were successfully held in the following communities:

- Jasper, AB on September 15, 2014;
- Edson, AB on September 17, 2014;
- Yellowhead County, AB on September 18, 2014;
- Strathcona County, AB on September 22, 2014;
- Wabamun, AB on September 22, 2014;
- Parkland County, AB on September 24, 2014;
- Spruce Grove, AB on September 24, 2014;
- Thompson Nicola Regional District (TNRD), BC on October 24, 2014;
- Barriere, BC on November 12, 2014;
- Kamloops, BC on November 13, 2014;
- Merritt, BC on November 14, 2014;
- Valemount, BC on November 19, 2014;
- Clearwater, BC on November 20, 2014;
- Stony Plain, AB on November 27, 2014;
- Edmonton, AB on November 27, 2014;
- Fraser Valley Regional District (FVRD) on December 8, 2014;
- Chilliwack, BC on December 8, 2014;
- Abbotsford, BC on December 11, 2014;
- Hope, BC, on December 12, 2014; and
- Langley, BC on December 15, 2014.

City of Surrey, City of Coquitlam (Tri Cities) and the Town of Hinton asked to postpone the discussion until spring 2015. City of Burnaby declined the invitation and no response was received from Metro Vancouver. Representatives from the Regional District of Fraser Fort George were invited to attend the Village of Valemount Part 2 EMSW but were unable to travel due to winter road conditions.

The scenario discussions centered on a map and reference materials available for review at the meetings including the ERP for the pipeline, the Incident Command System (ICS) Field Guide, the Control Points Manual and other resources such as the ERP for terminals as required.

Section 1.7 provide the details of the Part 2 EMSW held during the reporting period and are presented in chronological order.

# 1.7.3 Part 2 EMSW in Jasper, AB

During the reporting period, Trans Mountain participated in a meeting with emergency first responders and planners in Jasper. The following topics were discussed at the meeting in the context of a hypothetical emergency response scenario:

- first response;
- unified command;
- evacuation;
- environment, birds, fish and wildlife; and
- decontamination.

Details of the Part 2 EMSW in Jasper, AB are summarized in Tables 1.7.3-1 to 1.7.3-4.

### **TABLE 1.7.3-1**

# PART 2 EMSW - JASPER, AB

Region	Location	Date	Number of Attendees
Alberta	Jasper Emergency Services Building (Fire Hall), Training Room, 518 Geikie Street, Jasper, AB	September 15, 2014 1:30 – 4:30 PM	11

Table 1.7.3-2 identifies those organizations invited to attend and Table 1.7.3-3 identifies the organizations in attendance at the Part 2 EMSW in Jasper, AB.

# **TABLE 1.7.3-2**

### ORGANIZATIONS INVITED - JASPER, AB

Organization		
Municipality of Jasper		
Parks Canada Royal Canadian Mounted Police (RCMP)		
Jasper Ambulance		

**Note:** TMEP invited more than one representative from some organizations.

### **TABLE 1.7.3-3**

# PART 2 EMSW ATTENDEES - JASPER, AB

Organization		
Municipality of Jasper Jasper Fire Department		
Parks Canada Royal Canadian Mounted Police (RCMP)		

**Note:** Some organizations had more than one representative in attendance.

Table 1.7.3-4 provides a summary of concerns raised at the Part 2 EMSW in Jasper, AB:

### **TABLE 1.7.3-4**

# SUMMARY OF CONCERNS - JASPER, AB

Category	Summary of Concern Raised	
Safety		
Emergency Response	<ul> <li>Leak detection and identification of the type of product.</li> <li>Behavior of different products during spills.</li> <li>Company's spill detection and emergency response procedures.</li> <li>Parks Canada and Jasper emergency response procedures.</li> <li>Western Canadian Spill Services (WCSS) and other river spill capabilities.</li> <li>Wildlife management during spills and cleanup.</li> </ul>	
Environmental – Terrestr	ial	
Wetlands	Long-term damage to habitat, especially wetlands.	

Issues identified by participants that have not already been identified in previous Updates, are further detailed in Section 2.1, Topics of Interest or Concern – Alberta.

# 1.7.4 Part 2 EMSW in Edson, AB

During the reporting period, Trans Mountain participated in a meeting with emergency first responders and planners in Edson. The following topics were discussed at the meeting in the context of a hypothetical emergency response scenario:

- first response;
- unified command;
- evacuation;
- environment, birds, fish and wildlife; and
- decontamination.

Details of the Part 2 EMSW in Edson, AB are summarized in Tables 1.7.4-1 to 1.7.4-4.

# **TABLE 1.7.4-1**

# PART 2 EMSW - EDSON, AB

Region	Location	Date	Number of Attendees
Alberta	Edson Fire Hall, 4835 6th Avenue, Edson, AB	September 17, 2014 1:30 – 4:30 pm	6

Table 1.7.4-2 identifies those organizations invited to attend and Table 1.7.4-3 identifies the organizations in attendance at the Part 2 EMSW in Edson, AB.

### **TABLE 1.7.4-2**

# ORGANIZATIONS INVITED - EDSON, AB

Organization		
Town of Edson Associated Ambulance		
Royal Canadian Mounted Police (RCMP) Edson Fire Department		

Note:

TMEP invited more than one representative from some organizations.

### **TABLE 1.7.4-3**

### PART 2 EMSW ATTENDEES - EDSON, AB

Organization		
Town of Edson	Associated Ambulance	
Royal Canadian Mounted Police (RCMP)	Edson Fire Department	

Note:

Some organizations had more than one representative in attendance.

Table 1.7.4-4 provides a summary of concerns raised at the Part 2 EMSW in Edson, AB:

### **TABLE 1.7.4-4**

# SUMMARY OF CONCERNS - EDSON, AB

Category	Summary of Concern Raised
Safety	
Emergency Response	<ul><li>Emergency Response procedures and capabilities.</li><li>Mutual aid agreements and additional response partners.</li></ul>

Issues identified by participants that have not already been identified in previous Updates are further detailed in Section 2.1, Topics of Interest or Concern - Alberta.

# 1.7.5 Part 2 EMSW in Yellowhead County, AB

During the reporting period, Trans Mountain participated in a meeting with emergency first responders and planners in Yellowhead County. The following topics were discussed at the meeting in the context of a hypothetical emergency response scenario:

- first response;
- unified command;
- evacuation;
- · environment, birds, fish and wildlife; and
- decontamination.

Details of the Part 2 EMSW in Yellowhead County, AB are summarized in Tables 1.7.5-1 to 1.7.5-4.

# **TABLE 1.7.5-1**

# PART 2 EMSW - YELLOWHEAD COUNTY, AB

Region	Location	Date	Number of Attendees
Alberta	Yellowhead County Administration Office, Pembina Room, 2716 1st Avenue, Edson, AB	September 18, 2014 9:00 am – 12:00 pm	6

Table 1.7.5-2 identifies those organizations invited to attend and Table 1.7.5-3 identifies the organizations in attendance at the Part 2 EMSW in Yellowhead County, AB.

# **TABLE 1.7.5-2**

# ORGANIZATIONS INVITED - YELLOWHEAD COUNTY, AB

Orga	anization
Yellowhead County	Royal Canadian Mounted Police (RCMP)
Yellowhead County Fire Department	

Note:

TMEP invited more than one representative from some organizations.

# **TABLE 1.7.5-3**

# PART 2 EMSW ATTENDEES - YELLOWHEAD COUNTY, AB

Orga	anization
Yellowhead County	Royal Canadian Mounted Police (RCMP)
Yellowhead County Fire Department	

Note:

Some organizations had more than one representative in attendance.

Table 1.7.5-4 provides a summary of concerns raised at the Part 2 EMSW in Yellowhead County, AB.

### **TABLE 1.7.5-4**

# SUMMARY OF CONCERNS - YELLOWHEAD COUNTY, AB

Category	Summary of Concern Raised
Safety	
Emergency Response	<ul> <li>Emergency Response procedures and capabilities of both the company and Yellowhead County.</li> <li>Control points for spills into water bodies.</li> <li>Plans to deal with wildlife during a spill.</li> <li>Decontamination capabilities.</li> <li>Future consultation for the construction health and safety ERP.</li> </ul>

Issues identified by participants that have not already been identified in previous Updates are further detailed in Section 2.1, Topics of Interest or Concern – Alberta.

# 1.7.6 Part 2 EMSW in Strathcona County, AB

During the reporting period, Trans Mountain participated in a meeting with emergency first responders and planners in Strathcona County. The following topics were discussed at the meeting in the context of a hypothetical emergency response scenario:

- first response;
- unified command;
- evacuation;
- · environment, birds, fish and wildlife; and
- decontamination.

Details of the Part 2 EMSW in Strathcona County, AB are summarized in Tables 1.7.6-1 to 1.7.6-4.

### **TABLE 1.7.6-1**

# PART 2 EMSW - STRATHCONA COUNTY, AB

Region	Location	Date	Number of Attendees
Alberta	Fire Hall Station #6, 915 Bison Way, Sherwood Park, AB	September. 22, 2014 9:00 am – 12:00 pm	5

Table 1.7.6-2 identifies those organizations invited to attend and Table 1.7.6-3 identifies the organizations in attendance at the Part 2 EMSW in Strathcona County, AB.

### **TABLE 1.7.6-2**

# ORGANIZATIONS INVITED - STRATHCONA COUNTY, AB

	Organization
Strathcona County Fire Department	Strathcona County Emergency Management Agency (SCEMA)
Emergency Services Strathcona	Strathcona County

**Note:** TMEP invited more than one representative from some organizations.

### **TABLE 1.7.6-3**

### PART 2 EMSW ATTENDEES - STRATHCONA COUNTY, AB

Organization
Strathcona County Fire Department

**Note:** Some organizations had more than one representative in attendance.

Table 1.7.6-4 provides a summary of concerns raised at the Part 2 EMSW in Strathcona County, AB.

### **TABLE 1.7.6-4**

# SUMMARY OF CONCERNS - STRATHCONA COUNTY, AB

Category	Summary of Concern Raised
Safety	
Emergency Response	<ul> <li>Fire Department wants to see an assessment of total Kinder Morgan Canada Incorporated (KMC) risk in Strathcona (<i>i.e.</i>, pipeline, terminal and rail addressed all together).</li> <li>Emphasis on the importance of quick and informed decision making by company and good communications with Strathcona County during an emergency.</li> <li>Interest in mutual aid use of Oil Spill Containment and Recovery (OSCAR) trailer and other company spill response equipment.</li> </ul>

Issues identified by participants that have not already been identified in previous Updates are further detailed in the Summary of Outcomes, Section 2.0, Topics of Interest or Concern – Alberta.

# 1.7.7 Part 2 EMSW in Wabamun, AB

During the reporting period, Trans Mountain participated in a meeting with emergency first responders and planners in the Village of Wabamun. The following topics were discussed at the meeting in the context of a hypothetical emergency response scenario:

- first response;
- unified command;
- evacuation;
- · environment, birds, fish and wildlife; and
- decontamination.

Details of the Part 2 EMSW in Wabamun, AB are summarized in Tables 1.7.7-1 to 1.7.7-4.

### **TABLE 1.7.7-1**

# PART 2 EMSW - WABAMUN, AB

Region	Location	Date	Number of Attendees
Alberta	Wabamun Administration Building, Meeting Room, 5217-52 Street, Wabamun, AB	September 22, 2014 1:30 – 4:30 pm	4

Table 1.7.7-2 identifies those organizations invited to attend and Table 1.7.7-3 identifies the organizations in attendance at the Part 2 EMSW in Wabamun, AB.

### **TABLE 1.7.7-2**

# ORGANIZATIONS INVITED - WABAMUN, AB

	Organization
Royal Canadian Mounted Police (RCMP)	Seba Beach Protective Services Community Peace Officers
Village of Wabamun	

Note:

TMEP invited more than one representative from some organizations.

# **TABLE 1.7.7-3**

# PART 2 EMSW ATTENDEES – WABAMUN, AB

Organization	
Village of Wabamun	

Note:

Some organizations had more than one representative in attendance.

Table 1.7.7-4 provides a summary of concerns raised at the Part 2 EMSW in Wabamun, AB:

### **TABLE 1.7.7-4**

### SUMMARY OF CONCERNS - WABAMUN. AB

Category	Summary of Concern Raised	
Safety		
Emergency Response	<ul> <li>Participate in updating Control Points Document.</li> <li>Oil Spill Containment and Recovery (OSCAR) trailer as a community benefit for the Village of Wabamun to use in the event of any sort of spill. Trailer contents / inventory to be determined.</li> </ul>	
Environment – Terrestrial		
Spill – land based	Critical concerns regarding topography and the ability of a spill to enter their municipal water wells and Lake Wabamun.	

Issues identified by participants, which have not already been identified in previous Updates, are further detailed in Section 2.1, Topics of Interest or Concern – Alberta.

# 1.7.8 Part 2 EMSW in Parkland County, AB.

During the reporting period, Trans Mountain participated in a meeting with emergency first responders and planners in Parkland County. The following topics were discussed at the meeting in the context of a hypothetical emergency response scenario:

- first response;
- unified command;
- evacuation;
- environment, birds, fish and wildlife; and
- decontamination.

Details of the Part 2 EMSW in Parkland County, AB are summarized in Tables 1.7.8-1 to 1.7.8-4

### **TABLE 1.7.8-1**

# PART 2 EMSW - PARKLAND COUNTY, AB

Region	Location	Date	Number of Attendees
Alberta	Parkland County Services Building Training Room, 2700 48st, Stony Plain, AB	September 24, 2014 9:00 am – 12:00 pm	2

Table 1.7.8-2 identifies those organizations invited to attend and Table 1.7.8-3 identifies the organizations in attendance at the Part 2 EMSW in Parkland County, AB.

### **TABLE 1.7.8-2**

# ORGANIZATIONS INVITED - PARKLAND COUNTY, AB

Organization		
Parkland County Fire Services	Parkland County	

**Note:** TMEP invited more than one representative from some organizations.

### **TABLE 1.7.8-3**

# PART 2 EMSW ATTENDEES - PARKLAND COUNTY, AB

Organization	
Parkland County Fire Services	Parkland County
Royal Canadian Mounted Police (RCMP)	

**Note:** Some organizations had more than one representative in attendance.

Table 1.7.8-4 provides a summary of concerns raised at the Part 2 EMSW in Parkland County, AB:

### **TABLE 1.7.8-4**

# SUMMARY OF CONCERNS - PARKLAND COUNTY, AB

Category	Summary of Concern Raised
Safety	
Emergency Response	Emphasis on the importance of using ICS and including the County in Unified Command.
	Parkland County requested very open communication with residents.

Issues identified by participants that have not already been identified in previous Updates are further detailed in Section 2.1, Topics of Interest or Concern - Alberta.

# 1.7.9 Part 2 EMSW in Spruce Grove, AB

During the reporting period, Trans Mountain participated in a meeting with emergency first responders and planners in Spruce Grove. The following topics were discussed at the meeting in the context of a hypothetical emergency response scenario:

first response;

February 2015

- unified command;
- evacuation;
- · environment, birds, fish and wildlife; and
- decontamination.

Details of the Part 2 EMSW in Spruce Grove, AB are summarized in Tables 1.7.9-1 to 1.7.9-4.

# **TABLE 1.7.9-1**

# PART 2 EMSW - SPRUCE GROVE, AB

Region	Location	Date	Number of Attendees
Alberta	Fire Hall, 120 - 410 King Street, Spruce Grove, AB	September. 24, 2014	1
	Street, Sprace Grove, Ab	1:30 –4:30 pm	

Table 1.7.9-2 identifies those organizations invited to attend and Table 1.7.9-3 identifies the organizations in attendance at the Part 2 EMSW in Spruce Grove, AB.

### **TABLE 1.7.9-2**

# ORGANIZATIONS INVITED - SPRUCE GROVE, AB

Organization
Fire Services and Emergency Management Services (EMS) Administration

# **TABLE 1.7.9-3**

# PART 2 EMSW ATTENDEES - SPRUCE GROVE, AB

Organization
Fire Services and Emergency Management Services (EMS) Administration

**Note:** Some organizations had more than one representative in attendance.

Table 1.7.9-4 provides a summary of concerns raised at the Part 2 EMSW in Spruce Grove, AB:

# **TABLE 1.7.9-4**

# SUMMARY OF CONCERNS - SPRUCE GROVE, AB

Category	Summary of Concern Raised	
Safety		
Emergency Response	<ul> <li>No major concerns given the short length of pipe through Spruce Grove.</li> <li>There are limits to what the Spruce Grove Fire Department can/is willing to do.</li> </ul>	
	Majority of area potentially at risk is industrial.	

Issues identified by participants that have not already been identified in previous Updates are further detailed in Section 2.1, Topics of Interest or Concern – Alberta.

# 1.7.10 Part 2 EMSW in Thompson Nicola Regional District (TNRD), BC

The Thompson Nicola Regional District (TNRD) provides emergency management services and oversight to all unincorporated communities within the TNRD including Blue River, Avola, Vavenby, Black Pool and Little Fort. In addition, the TNRD contracts emergency management services to the District of Clearwater and the District of Barriere.

Details of the Part 2 EMSW in Thompson Nicola Regional District, BC are summarized in Tables 1.7.10-1 to 1.7.10-4

TABLE 1.7.10-1

PART 2 EMSW – THOMPSON NICOLA REGIONAL DISTRICT, BC

Region	Location	Date	Number of Attendees
BC Interior	Board Room, 3 <sup>rd</sup> Floor 300 - 465 Victoria Street Kamloops, BC V2C 2A0	October 24, 2014 1:00 – 4:00 pm	6

Table 1.7.10-2 identifies those organizations invited to attend and Table 1.7.10-3 identifies the organizations in attendance at the Part 2 EMSW in Thompson Nicola Regional District, BC.

**TABLE 1.7.10-2** 

# ORGANIZATIONS INVITED - THOMPSON NICOLA REGIONAL DISTRICT, BC

Organization		
Interior Health West, Health Emergency Management British Columbia	Ministry of Environment, Environmental Emergency Program, Interior Region	
Emergency Management British Columbia Central Region	Thompson Nicola Regional District	

**Note:** TMEP invited more than one representative from some organizations.

### **TABLE 1.7.10-3**

# PART 2 EMSW ATTENDEES – THOMPSON NICOLA REGIONAL DISTRICT, BC

Organization		
Interior Health West, Health Emergency Management British Columbia	Ministry of Environment, Environmental Emergency Program, Interior Region	
Emergency Management British Columbia Central Region	Thompson Nicola Regional District	

**Note:** Some organizations had more than one representative in attendance.

Table 1.7.10-4 provides a summary of concerns raised at the Part 2 EMSW in Thompson Nicola Regional District, BC:

# **TABLE 1.7.10-4**

# SUMMARY OF CONCERNS - THOMPSON NICOLA REGIONAL DISTRICT, BC

Category	Summary of Concern Raised		
Safety			
Disaster Planning	Incident notification, first response and co-ordinated response between relevant agencies clarified processes, roles and responsibilities.		
	<ul> <li>Requested education for first responders and Thompson Nicola Regional District (TNRD) staff.</li> <li>Need for increased awareness of First Nations archeological sites and environmentally sensitive areas for emergency response. Questions about how this information is made available to Kinder Morgan Canada (KMC) and responders in order to protect sensitive areas during emergency response. Is it possible to map Trans Mountain Expansion Project environmental and archaeological study results into the Emergency Response Plan?</li> <li>Interest in being involved in reassessment of control points on 2015 and incorporating local</li> </ul>		
	<ul> <li>knowledge.</li> <li>Pre-approval by Emergency Management British Columbia is possible for spill response equipment. This could expedite the authorization process in case of a spill.</li> <li>Some clarification was required to define Incident Command roles and TNRD involvement.</li> </ul>		
Emergency Response	Downstream water use and acute exposure at scene. The Interior Health Authority is only responsible for community water systems – need to identify individual water intakes (provincial registry).		
	<ul> <li>Potential for product contamination of TNRD's water intake infrastructures. Early notification would allow staff time to shut off pumps and protect the system. If KMC provided boom, local water operators could be trained to protect intakes.</li> </ul>		
	Responsibility for water testing and eventually declaring system clean for public use. Company contractor to be responsible for testing and would work with Public Health.		
	Payment policy – understand company would be responsible for a spill but not sure of billing process.		

Issues identified by participants that have not already been identified in previous Updates are further detailed in Section 2.2, Topics of Interest or Concern – BC Interior.

# 1.7.11 Part 2 EMSW in Barriere, BC

Details of the Part 2 EMSW in Barriere, BC are summarized in Tables 1.7.11-1 to 1.7.11-4.

### **TABLE 1.7.11-1**

# PART 2 EMSW - BARRIERE, BC

Region	Location	Date	Number of Attendees
BC Interior	The Ridge, Multi-Purpose Room, 4936 Barriere Town Road, Barriere, BC	November 12, 2014 1:00 – 4:00 pm	8

Table 1.7.11-2 identifies those organizations invited to attend and Table 1.7.11-3 identifies the organizations in attendance at the Part 2 EMSW in Barriere, BC.

# **TABLE 1.7.11-2**

# ORGANIZATIONS INVITED - BARRIERE, BC

Organization		
BC Ambulance Service	Emergency Support Services	
District of Barriere	BC Emergency Health Services	
District of Barriere Public Works	Thompson Nicola Regional District (TNRD)	
Barriere Fire Department	Barriere Royal Canadian Mounted Police (RCMP)	

**Note:** TMEP invited more than one representative from some organizations.

### **TABLE 1.7.11-3**

# PART 2 EMSW ATTENDEES – BARRIERE, BC

Organization		
District of Barriere Public Works	Thompson Nicola Regional District (TNRD)	
Barriere Fire Department	Barriere Royal Canadian Mounted Police (RCMP)	
District of Barriere Emergency Support Services		
District of Barriere Public Works	Thompson Nicola Regional District (TNRD)	

**Note:** Some organizations had more than one representative in attendance.

Table 1.7.11-4 provides a summary of concerns raised at the Part 2 EMSW in Barriere, BC:

# **TABLE 1.7.11-4**

# **SUMMARY OF CONCERNS - BARRIERE, BC**

Category	Summary of Concern Raised	
Safety		
Land Spills – Environmental Impact	Concerns raised regarding decontamination and care of affected wildlife, including potential facilities.	
Freshwater Spills – Safety	General discussion around the use of Personal Protection Equipment (PPE) and immediate controls that can be implemented to minimize the amount of product that reaches the waterway.	
Emergency Spill Response	General discussion of incident notification, first response and co-ordinated response between relevant agencies clarified processes, roles and responsibilities. Request for education for first responders and Simpcw Band.	
	Question raised around potential for fire in a spill situation and response to a fire from a spill. Barriere first responders would work under the direction of the company.	
	<ul> <li>Question raised regarding who is financially responsible for a spill and how claims are made. TNRD's main concern is the potential evacuation of citizens.</li> </ul>	
Environment-Terrestria	1	
Freshwater Spills – Environmental Impact	Concern raised regarding how quickly the spill would be contained if it entered the waterway and a potential endangered turtle habitat in the Barriere River.	

Issues identified by participants that have not already been identified in previous Updates are further detailed in Section 2.2, Topics of Interest or Concern – BC Interior.

# 1.7.12 Part 2 EMSW in Kamloops, BC

Details of the Part 2 EMSW in Kamloops, BC British Columbia are summarized in Tables 1.7.12-1 to 1.7.12-4.

# **TABLE 1.7.12-1**

# PART 2 EMSW - KAMLOOPS, BC

Region	Location	Date	Number of Attendees
BC Interior	City of Kamloops Emergency Operations Centre, 955 Concordia Way, Kamloops, BC V2C 6V3	November 13, 2014 1:00 – 4:00 pm	9

Table 1.7.12-2 identifies those organizations invited to attend and Table 1.7.12-3 identifies the organizations in attendance at the Part 2 EMSW in Kamloops, BC.

# **TABLE 1.7.12-2**

# ORGANIZATIONS INVITED - KAMLOOPS, BC

Organization		
Kamloops Fire Rescue	Emergency Social Services	
City of Kamloops	Emergency Management British Columbia Central Region	
Royal Canadian Mounted Police (RCMP)		

Note: TMEP in

TMEP invited more than one representative from some organizations.

### **TABLE 1.7.12-3**

# PART 2 EMSW ATTENDEES - KAMLOOPS, BC

Organization		
Kamloops Fire Rescue	Emergency Social Services	
City of Kamloops	Royal Canadian Mounted Police (RCMP)	
Emergency Management British Columbia Central Region		

Note:

Some organizations had more than one representative in attendance.

Table 1.7.12-4 provides a summary of concerns raised at the Part 2 EMSW in Kamloops, BC:

# **TABLE 1.7.12-4**

# **SUMMARY OF CONCERNS - KAMLOOPS, BC**

Category	Summary of Concern Raised	
Environment –Terre	estrial	
Freshwater Spills – Environmental Impact	Concern raised regarding the impact to the salmon habitat in the North Thompson River.	

# **TABLE 1.7.12-4 Cont'd**

Category	Summary of Concern Raised	
Freshwater Spills – Environmental Impact	<ul> <li>General discussion around the use of Personal Protection Equipment (PPE) and immediate controls that can be implemented to minimize the amount of product that reaches the waterway. Community indicated there is a system in place to protect the water intake should a spill enter the river.</li> <li>Concern raised around the fact that Kamloops does not have an emergency water supply if both of their water intakes need to be shut down.</li> <li>New Gold, and potentially Ajax Mine, have water intakes on the South side of the Thompson River.</li> <li>Assist Kamloops in communicating with the Tk'emlups Band around Emergency Spill Response because the Band has a water intake that could be impacted.</li> </ul>	
Freshwater Spills – Environmental Impact	<ul> <li>Concern was raised regarding a waterfowl area near Cinnamon Ridge.</li> <li>Question raised regarding a remediation plan for a spill.</li> <li>Community indicated the need to update its Geographic Information System (GIS) maps to identify engendered species.</li> </ul>	
Land Spills – Safety	General discussion around the use of PPE and the importance to the safety of first responders and affected individuals.	
Safety		
Emergency Response	<ul> <li>Alternative Unified Command locations need to be identified because capacity could be an issue at certain times of the year. Some community first responders expressed hesitation in joining KMC in Unified Command. Potential need for updated Incident Command System training to ensure that community first responders have a better understanding of Unified Command.</li> <li>Question was raised around public information sharing and clarification around proper messaging.</li> <li>First responders requested a decontamination trailer as a potential community benefit.</li> <li>Request for a Geographic Response Plan for any hazardous material risk that would be a shared plan including all potential stakeholders.</li> </ul>	
Emergency Spill Response:	<ul> <li>General discussion of incident notification, first response and co-ordinated response between relevant agencies clarified processes, roles and responsibilities.</li> <li>Strong request for the Community Awareness and Emergency Response (CAER) training for community first responders as well as Public Works employees.</li> <li>Interest in obtaining a Rapid Response Trailer, or equivalent equipment, as a potential community benefit.</li> <li>Discussions around who would be responsible for air monitoring and providing resources such as vacuum trucks in a spill situation.</li> <li>Questions raised around evacuations and who is responsible for the financial implications of a spill. KMC can only make recommendations around an evacuation but cannot legally evacuate people.</li> </ul>	

Issues identified by participants, which have not already been identified in previous Updates, are further detailed in Section 2.2, Topics of Interest or Concern – BC Interior.

# 1.7.13 Part 2 EMSW in Merritt, BC

Details of the Part 2 EMSW in Merritt, BC are summarized in Tables 1.7.13-1 to 1.7.13-4.

# **TABLE 1.7.13-1**

# PART 2 EMSW - MERRITT, BC

Region	Location	Date	Number of Attendees
BC Interior	Merritt Civic Centre, Room # 2, 1950 Mamette Avenue, Merritt, BC V1K 1B8	November 14, 2014 9:00 am – 12:00 pm	8

Table 1.7.13-2 identifies those organizations invited to attend and Table 1.7.13-3 identifies the organizations in attendance at the Part 2 EMSW in Merritt, BC.

# **TABLE 1.7.13-2**

# ORGANIZATIONS INVITED - MERRITT, BC

Organization		
Thompson Nicola Regional District (TNRD) Interior Health West, Health Emergency Management British Columbia		
City of Merritt	Merritt Detachment Royal Canadian Mounted Police (RCMP)	

**Note:** TMEP invited more than one representative from some organizations.

# **TABLE 1.7.13-3**

# PART 2 EMSW ATTENDEES – MERRITT, BC

Organization	
Thompson Nicola Regional District (TNRD)	Interior Health West, Health Emergency Management British Columbia
City of Merritt	Merritt Detachment Royal Canadian Mounted Police (RCMP)

**Note:** Some organizations had more than one representative in attendance.

Table 1.7.13-4 provides a summary of concerns raised at the Part 2 EMSW in Merritt, BC:

# **TABLE 1.7.13-4**

# SUMMARY OF CONCERNS - MERRITT, BC

Category	Summary of Concern Raised
Safety	
Emergency Response	Concern raised regarding the importance of the Merritt RCMP and Emergency     Communications for Southwest British Columbia Incorporated (E-Comm) to have Kinder     Morgan Canada Inc. (KMC) emergency number.
	<ul> <li>Request for assistance to enhance the municipal Emergency Response Plan. Merritt would work with Kinder Morgan Canada Inc. in emergency response situation.</li> </ul>

# **TABLE 1.7.13-4 Cont'd**

Category	Summary of Concern Raised
Emergency Spill Response	General discussion of incident notification, first response and co-ordinated response between relevant agencies
	Clarified processes, roles and responsibilities.
	• Concern raised regarding communication channels to the Merritt Fire Department in a spill situation where a third party contacts KMC directly rather than 911.
	Public Works indicated its primary role is to protect the aquifer and liaise with the fire department to arrange for diking and equipment.
	<ul> <li>Concerns raised regarding the Merritt Fire Department's fire boundary and whether they would be able to respond to a spill outside their boundaries. Representative expressed the ability for the Merritt Fire Department to assist and the potential to enter into agreements allowing them to respond outside their boundaries.</li> </ul>
	Desire by all first responders to obtain a notification checklist for a spill situation.
	Request for KMC to engage and education first responders in spill response.
	Questions regarding communication channels and consistent messaging to the public.
	Concern raised regarding the capacity for Merritt to be able to house evacuees and Unified Command at in the summer months.
	RCMP representative indicated the need to pull resources from Kamloops and Kelowna due to the size of Merritt's detachment.
Terrestrial	
Freshwater Spills – Environment Impact	Concern raised regarding product reaching the unconfined aquifer in Merritt, as well as fish habitat.
Land Spills – Environmental Impact	Concern raised regarding First Nations harvesting and hunting grounds, as well as sensitive ecology for Burrowing Owls and Red Hawks.

Issues identified by participants that have not already been identified in previous Updates are further detailed in Section 2.2, Topics of Interest or Concern – BC Interior.

# 1.7.14 Part 2 EMSW in Valemount, BC

Details of the Part 2 EMSW in Valemount, BC are summarized in Tables 1.7.14-1 to 1.7.14-4.

# **TABLE 1.7.14-1**

# PART 2 EMSW - VALEMOUNT, BC

Region	Location	Date	Number of Attendees
BC Interior	Valemount Council Chamber, 735 Cranberry Lake Road, Valemount, BC	November 19, 2014 12:00 – 3:00 pm	4

Table 1.7.14-2 identifies those organizations invited to attend and Table 1.7.14-3 identifies the organizations in attendance at the Part 2 EMSW in Valemount, BC.

# **TABLE 1.7.14-2**

# **ORGANIZATIONS INVITED - VALEMOUNT, BC**

Organization	
Village of Valemount	Royal Canadian Mounted Police (RCMP)
British Columbia Ambulance Service	Regional District of Fraser-Fort George

**Note:** TMEP invited more than one representative from some organizations.

# **TABLE 1.7.14-3**

# PART 2 EMSW ATTENDEES - VALEMOUNT, BC

Organization	
Village of Valemount	Royal Canadian Mounted Police (RCMP)
British Columbia Ambulance Service	Regional District of Fraser-Fort George

**Note:** Some organizations had more than one representative in attendance.

Table 1.7.14-4 provides a summary of concerns raised at the Part 2 EMSW in Valemount, BC:

# **TABLE 1.7.44-4**

# **SUMMARY OF CONCERNS - VALEMOUNT, BC**

Category	Summary of Concern Raised
Safety	
Emergency Response	Request to ensure that Valemount dispatch centres have the 24-hour emergency line number.      Valemount first reappointers and municipal employees would work with Kinder Margan.
	<ul> <li>Valemount first responders and municipal employees would work with Kinder Morgan Canada Inc. (KMC) in Unified Command.</li> </ul>
Emergency Response Spill	<ul> <li>General discussion of incident notification, first response and co-ordinated response between relevant agencies clarified processes, roles and responsibilities.</li> </ul>
	Discussion around two potential new control points.
	<ul> <li>Potential concerns around lack of resources within the Village of Valemount such as Public Health Inspector, Hazardous Material trailer and decontamination facilities</li> </ul>
	<ul> <li>Concern raised regarding any potential highway closures and the subsequent lack of access to get resources to Valemount in this situation.</li> </ul>
	<ul> <li>Concern raised regarding hotel capacity to house evacuees and Unified Command.</li> <li>Request for education for first responders.</li> </ul>
	<ul> <li>Question raised regarding who is responsible for calling an evacuation and the RCMP resources available to conduct an evacuation.</li> </ul>
	Concern raised regarding the need for community decontamination guidelines.
	<ul> <li>Request for decontamination equipment and air monitors as possible community benefits for Valemount.</li> </ul>
Environmental Terrestria	ıl
Freshwater Spills – Environmental Impact	Salmon habitat in Swift Creek. Drinking water from potentially impacted private landowner wells and the golf course.
Freshwater Spills – Safety	General discussion around the use of Personal Protection Equipment (PPE) and immediate controls that can be implemented to minimize the amount of product that reaches the waterway.
Land Spills – Environmental Impact	<ul> <li>Bird habitat near the Best Western Hotel and Lichen at Jackman Flats.</li> <li>First Nation's archeological sites near Tete Jeune Cache near McClellan River.</li> </ul>

Issues identified by participants that have not already been identified in previous Updates are further detailed in Section 2.2, Topics of Interest or Concern – BC Interior.

# 1.7.15 Part 2 EMSW in Clearwater, BC

Details of the Part 2 EMSW in Clearwater, BC are summarized in Tables 1.7.15-1 to 11.7.15-4.

# **TABLE 1.7.15-1**

# PART 2 EMSW - CLEARWATER, BC

Region	Location	Date	Number of Attendees
BC Interior	Municipal Hall, Meeting Room, 209 Dutch Lake Road, Clearwater, BC	November. 20, 2014 12:00 – 3:00 pm	6

Table 1.7.15-2 identifies those organizations invited to attend and Table 1.7.15-3 identifies the organizations in attendance at the Part 2 EMSW in Clearwater, BC.

### **TABLE 1.7.15-2**

# **ORGANIZATIONS INVITED - CLEARWATER, BC**

Organization	
District of Clearwater	Thompson Nicola Regional District (TNRD)
Royal Canadian Mounted Police (RCMP)	

Note:

TMEP invited more than one representative from some organizations.

### **TABLE 1.7.15-3**

# PART 2 EMSW ATTENDEES - CLEARWATER, BC

Organization	
District of Clearwater	Thompson Nicola Regional District (TNRD)
Royal Canadian Mounted Police (RCMP)	

Note:

Some organizations had more than one representative in attendance.

Table 1.7.15-4 provides a summary of concerns raised at the Part 2 EMSW in Clearwater, BC:

### **TABLE 1.7.15-4**

# SUMMARY OF CONCERNS - CLEARWATER, BC

Category	Summary of Concern Raised
Safety	
Emergency Response	Participants indicated they would join Kinder Morgan Canada Inc. (KMC) in Unified Command and Thompson Nicola Regional District (TNRD) would support with an Emergency Operations Centre (EOC).
	<ul> <li>Concern raised regarding lack of decontamination capabilities in Clearwater, as well as who is responsible for decontaminating people.</li> <li>Question raised regarding decontamination procedures.</li> </ul>

# **TABLE 1.7.15-4 Cont'd**

Category	Summary of Concern Raised
Emergency Spill Response	General discussion of incident notification, first response and co-ordinated response between relevant agencies clarified processes, roles and responsibilities.
	Concern raised regarding off-gassing and toxicity.
	Request for a new control point to be considered on Ferry Road.
	Concern raised regarding security for the spill site.
	<ul> <li>Request to have the Oil Spill Containment and Recovery (OSCAR) trailer in Clearwater on demo during Safety Week in 2015.</li> </ul>
	<ul> <li>Concern raised regarding the duration of a potential evacuation. Communication and messaging would be conducted from a Joint Information Centre (JIC) to maintain consistency.</li> </ul>
	<ul> <li>Question raised regarding an environment representative in Clearwater – need to rely on provincial representative.</li> </ul>
Terrestrial	
Land Spill – Environment Impact	Painted Turtle at North Thompson Park.

Issues identified by participants that have not already been identified in previous Updates are further detailed in Section 2.2, Topics of Interest or Concern – BC Interior.

# 1.7.16 Part 2 EMSW in Stony Plain, AB

During the reporting period, Trans Mountain participated in a meeting with emergency first responders and planners in Stony Plain. The following topics were discussed at the meeting in the context of a hypothetical emergency response scenario:

- first response;
- unified command;
- evacuation;
- environment, birds, fish and wildlife; and
- decontamination.

Details of the Part 2 EMSW in Stony Plain, AB are summarized in Tables 1.7.16-1 to 1.7.16-4.

### **TABLE 1.7.16-1**

# PART 2 EMSW - STONY PLAIN, AB

Region	Location	Date	Number of Attendees
Alberta	Town Office, 4905 51 Avenue, Stony Plain, AB	November 27, 2014 9:00 – 11:30 am	3

Table 1.7.16-2 identifies those organizations invited to attend and Table 1.7.16-3 identifies the organizations in attendance at the Part 2 EMSW in Stony Plain, AB.

### **TABLE 1.7.16-2**

# ORGANIZATIONS INVITED - STONY PLAIN, AB

Organization		
RCMP	Stony Plain Fire Department	
Town of Stony Plain		

### **TABLE 1.7.16-3**

# PART 2 EMSW ATTENDEES - STONY PLAIN, AB

Organization		
RCMP	Stony Plain Fire Department	
Town of Stony Plain		

**Note:** Some organizations had more than one representative in attendance.

Table 1.7.16-4 provides a summary of concerns raised at the Part 2 EMSW in Stony Plain, AB:

### **TABLE 1.7.16-4**

# SUMMARY OF CONCERNS - STONY PLAIN, AB

Category	Summary of Concern Raised
Safety	
Emergency Response	<ul> <li>Participants were very interested in learning more about KMC and its emergency response procedures and capabilities in order to better support KMC's response should an emergency occur.</li> <li>Participants were also keen to share information regarding their response capabilities and equipment with KMC.</li> </ul>

Issues identified by participants, that have not already been identified in previous Updates are further detailed in Section 2.1, Topics of Interest or Concern – Alberta.

# 1.7.17 Part 2 EMSW in Edmonton, AB

During the reporting period, Trans Mountain participated in a meeting with emergency first responders and planners in Edmonton. The following topics were discussed at the meeting in the context of a hypothetical emergency response scenario:

- first response;
- unified command;
- evacuation;
- · environment, birds, fish and wildlife; and
- decontamination.

Details of the Part 2 EMSW in Edmonton, AB are summarized in Tables 1.7.17-1 to 1.7.17-4.

# **TABLE 1.7.17-1**

# PART 2 EMSW - EDMONTON, AB

Region	Location	Date	Number of Attendees
Alberta	The City of Edmonton Emergency Operations Center (EOC), 10539- 105 Street, Edmonton, AB	November 27, 2014 1:00 – 4:00 pm	11

Table 1.7.17-2 identifies those organizations invited to attend and Table 1.7.17-3 identifies the organizations in attendance at the Part 2 EMSW in Edmonton, AB.

# **TABLE 1.7.17-2**

# ORGANIZATIONS INVITED - EDMONTON, AB

Organization		
Office of Emergency Management, City of Edmonton	Disaster and Emergency Operations Planning Section (DEOPS) - Edmonton Police Service	
Edmonton Police Service	RCMP - "K" Division Operational Readiness/ Response	
Edmonton Fire Rescue Service		

### **TABLE 1.7.17-3**

# PART 2 EMSW ATTENDEES - EDMONTON, AB

Organization		
City of Edmonton	Edmonton Police Service	
RCMP – "K" Division Operational Readiness/ Response	Edmonton Fire Rescue Service	

Note:

Some organizations had more than one representative in attendance.

Table 1.7.17-4 provides a summary of concerns raised at the Part 2 EMSW in Edmonton, AB:

# **TABLE 1.7.17-4**

# **SUMMARY OF CONCERNS - EDMONTON, AB**

Category	Summary of Concern Raised
Safety	
Emergency Response	<ul> <li>Emphasis on the chain of communication and the order in which proponents expect messaging to move.</li> <li>Unified Command with a non-government third party.</li> <li>Discussion to outline response roles and process within each organization.</li> <li>Discussion of KMC ERP with regard to hosting a joint command from a hotel when Edmonton has its own EOC.</li> <li>Sharing information with the public and clarification around proper messaging and media communications.</li> <li>Time sensitivity in such a large city with inherent media demands.</li> </ul>
Disaster Planning	<ul> <li>Discussion of response roles and processes within each organization.</li> <li>Identification of organizations and parties at an Emergency site.</li> <li>Work towards ongoing communication and preparation before a potential event.</li> </ul>

Issues identified by participants that have not already been identified in previous Updates are further detailed in Section 2.1, Topics of Interest or Concern – Alberta.

# 1.7.18 Part 2 EMSW in Fraser Valley Regional District (FVRD), BC

Details of the Part 2 EMSW in Fraser Valley Regional District (FVRD), BC are summarized in Tables 1.7.18-1 to 1.7.18-4.

### **TABLE 1.7.18-1**

# PART 2 EMSW - FRASER VALLEY REGIONAL DISTRICT, BC

Region	Location	Date	Number of Attendees
Lower Mainland/Fraser Valley	45950 Cheam Avenue, Chilliwack, BC	December 8, 2014 9:00 am – 12:00 pm	12

Table 1.7.18-2 identifies those organizations invited to attend and Table 1.7.18-3 identifies the organizations in attendance at the Part 2 EMSW in Fraser Valley Regional District (FVRD), BC.

### **TABLE 1.7.18-2**

# ORGANIZATIONS INVITED - FRASER VALLEY REGIONAL DISTRICT, BC

Organization	
Fraser Valley Regional District (FVRD)	Cheam First Nations
Royal Canadian Mounted Police (RCMP)	Peters Band First Nations
Popkum Fire Department	

### **TABLE 1.7.18-3**

# PART 2 EMSW ATTENDEES - FRASER VALLEY REGIONAL DISTRICT, BC

Organization		
Fraser Valley Regional District (FVRD)	Cheam First Nations	
Royal Canadian Mounted Police (RCMP)		

**Note:** Some organizations had more than one representative in attendance.

Table 1.7.18-4 provides a summary of concerns raised at the Part 2 EMSW in Fraser Valley Regional District (FVRD), BC:

# **TABLE 1.7.18-4**

# SUMMARY OF CONCERNS - FRASER VALLEY REGIONAL DISTRICT, BC

Category	Summary of Concern Raised			
Safety				
Disaster Planning	<ul> <li>Discussion about incident notification, first response and co-ordinated response between relevant agencies. Clarified processes, roles and responsibilities.</li> <li>Interest in future discussions with first responders and First Nations, regional Health Authority.</li> <li>Interest in incorporating local knowledge and being involved in reassessment of Control Points in 2015.</li> <li>General agreement and understanding of Incident Command roles and local government involvement.</li> <li>Questions about liaising with FVRD on communication protocols.</li> <li>Concern public health authorities need to be brought into conversation more. Ongoing engagement underway identified a need to bring Vancouver Coastal and Fraser Health Authorities into conversations in 2015.</li> </ul>			
Emergency Spill Response	<ul> <li>Outlined response roles and process within each organization. FVRD would like to see Kinder Morgan Canada (KMC) in Unified Command with other organizations.</li> <li>Questions about pipeline shut off procedures and timeline.</li> <li>Identified importance of aligning resources and communication during incident (KMC, FVRD and health authorities).</li> <li>Concern about potential for a Highway 1 closure.</li> <li>Identified need to pre-identify all culverts and outstanding items with stakeholders not currently identified in Geographical Response Plans (GRP).</li> <li>FVRD pleased to hear copy of unredacted Emergency Response Plan (ERP) is available to them.</li> </ul>			
Socio Economic				
Infrastructure and Services	<ul> <li>FVRD does not have a Public Works yard (<i>i.e.</i>, resources such as trucks, boats) to aid in response. Emergency Management British Columbia (EMBC) agreements in place with fire departments for sand and machinery but nothing on the ground is owned by regional district.</li> <li>Concern about impacts to potable water and sewer. Identified Popkum has its own water reservoir, GRP needs to be updated with this information; but could rely on regional district water in event of an emergency.</li> <li>Concerns about property values and degree to which the oil can be recovered from the environment.</li> <li>Identified a large parking lot near Cheam Lake that could serve as staging area or community meeting spot; although traffic flow would be a challenge.</li> </ul>			
Environmental – Terrestrial	g			
Land Spills – Environmental Impact (water bodies, water quality and quantity)	<ul> <li>Concern about effects of a spill into Cheam Lake and extremely sensitive ecosystem.</li> <li>Identified need to capture information about highly sensitive areas near Cheam Lake in GRP including no-go areas for reclamation.</li> <li>FVRD interested in being part of post recovery operations.</li> <li>Further discussion in 2015 about control points/sensitivities where there is high water at Control Point 6103 (with Chief Douglas) and to set parameters for SCAT (Shore Cleanup Assessment Team).</li> </ul>			

Issues identified by participants that have not already been identified in previous Updates, are further detailed in Section 2.3, Topics of Interest or Concern – Lower Mainland/Fraser Valley, BC.

# 1.7.19 Part 2 EMSW in Chilliwack, BC

Details of the Part 2 EMSW in Chilliwack, BC are summarized in Tables 1.7.19-1 to 1.7.19-4.

#### **TABLE 1.7.19-1**

# PART 2 EMSW - CHILLIWACK, BC

Region	Location	Date	Number of Attendees
Lower Mainland/Fraser Valley	45950 Cheam Avenue, Chilliwack, BC	December 8, 2014 1:00 – 4:00 pm	12

Table 1.7.19-2 identifies those organizations invited to attend and Table 1.7.19-3 identifies the organizations in attendance at the Part 2 EMSW in Chilliwack, BC.

#### **TABLE 1.7.19-2**

# ORGANIZATIONS INVITED - CHILLIWACK, BC

Organization					
City of Chilliwack Fire Department   Royal Canadian Mounted Police (RCMP)					
City of Chilliwack Stolo Nation					

#### **TABLE 1.7.19-3**

# PART 2 EMSW ATTENDEES – CHILLIWACK, BC

Organization				
City of Chilliwack Fire Department   Royal Canadian Mounted Police (RCM				
City of Chilliwack	Stolo Nation			

**Note:** Some organizations had more than one representative in attendance.

Table 1.7.19-4 provides a summary of concerns raised at the Part 2 EMSW in Chilliwack, BC:

#### **TABLE 1.7.19-4**

# **SUMMARY OF CONCERNS - CHILLIWACK, BC**

Category	Summary of Concern Raised				
Safety					
Disaster Planning	<ul> <li>General discussion of incident notification, first response and co-ordinated response between relevant agencies. Clarified processes, roles and responsibilities.</li> <li>Interest in and request for future table top exercise with first responders and First Nations.</li> <li>Concerns raised about sharing same information multiple times with Project staff and KMC through various exercises and meetings. Need to ground truth information already available.</li> </ul>				
	Interest in being involved in reassessment of control points on 2015 and incorporating local knowledge.				
	General agreement and understanding of Incident Command roles and local government involvement.				

# **TABLE 1.7.19-4 Cont'd**

Category	Summary of Concern Raised			
Emergency Spill Response	<ul> <li>Discussion to outline response roles and process within each organization.</li> <li>Concern about crude oil reaching aquifer, water courses and Tzeachten First Nation land. Ground water is very important to Chilliwack and local First Nations; additional conversations required on this topic.</li> <li>Concern about off-gassing and safe evacuation of schools. There are several schools in the area; need further discussion to understand co-ordinated response with local government, school district, first responders and First Nations.</li> <li>Identified opportunity for new shut-off valve in Chilliwack</li> <li>Identified there is no road access for boom deployment in the area.</li> </ul>			
Operations and Maintenance	<ul> <li>Questions about type of product moved in existing pipeline and different properties. Cited previous exercises with KMC where type of product was not known, concern about this happening during a real event.</li> </ul>			
Socio Economic				
Infrastructure and Services	<ul> <li>Ability to call in additional municipal staff and first responders during an incident to aid with evacuations – paid on-call firefighters, Hazardous Materials (Hazmat) team and additional Public Works staff.</li> </ul>			
	<ul> <li>Hazmat team available (agreement in place with Abbotsford) for decontamination, however, municipality has limited emergency response equipment available to first responders to respond to an oil spill.</li> </ul>			
Environmental – T	errestrial			
Land Spills – Environmental Impact (water bodies, water quality and quantity).	<ul> <li>Concern raised about effects of a spill into aquifer and water bodies nearby (Vedder Canal, Fraser River).</li> <li>Identified water wells in Watson Elementary parking lot.</li> <li>Concern about effects of spill on soils and long-term monitoring.</li> </ul>			

Issues identified by participants that have not already been identified in previous Updates are further detailed in Section 2.3, Topics of Interest or Concern – Lower Mainland/Fraser Valley.

# 1.7.20 Part 2 EMSW in Abbotsford, BC

Details of the Part 2 EMSW in Abbotsford, BC are summarized in Tables 1.7.20-1 to 1.7.20-4.

#### **TABLE 1.7.20-1**

# PART 2 EMSW – ABBOTSFORD, BC

Region	Location	Date	Number of Attendees
Lower Mainland/Fraser Valley	City of Abbotsford, Room #235, 32315 South Fraser Way, Abbotsford, BC	December 11, 2014 1:00 – 4:00 pm	15

Table 1.7.20-2 identifies those organizations invited to attend and Table 1.7.20-3 identifies the organizations in attendance at the Part 2 EMSW in Abbotsford, BC.

# **TABLE 1.7.20-2**

# ORGANIZATIONS INVITED - ABBOTSFORD, BC

Organization				
City of Abbotsford	Abbotsford Police Department			
Abbotsford Fire Rescue Service	Matsqui First Nation			
Sumas First Nation				

# **TABLE 1.7.20-3**

# PART 2 EMSW ATTENDEES - ABBOTSFORD, BC

Organization			
City of Abbotsford	Abbotsford Police Department		
Abbotsford Fire Rescue Service	Sumas First Nation		

**Note:** Some organizations had more than one representative in attendance.

Table 1.7.20-4 provides a summary of concerns raised at the Part 2 EMSW in Abbotsford, BC:

# **TABLE 1.7.20-4**

# SUMMARY OF CONCERNS - ABBOTSFORD, BC

Category	Summary of Concern Raised		
Safety			
Disaster Planning	<ul> <li>General discussion about incident notification, first response and co-ordinated response between relevant agencies. Clarified processes, roles and responsibilities.</li> </ul>		
	<ul> <li>General agreement and understanding of Incident Command roles and local government involvement.</li> </ul>		
	<ul> <li>Interest in and request for future discussion about Unified Command, Incident Command Post and Emergency Operations Centre (EOC).</li> </ul>		
	<ul> <li>Concerns raised about past participation in KMC planning and sharing information that was not incorporated into final documentation. Interest in incorporating local knowledge and being involved in reassessment of control points in 2015.</li> <li>Specifically, defining acceptable distance between spill and control points.</li> </ul>		
Category	Summary of Concern Raised		
Emergency Spill Response	<ul> <li>Outlined response roles and process within each organization.</li> <li>Abbotsford has a full Hazardous Materials (Hazmat) team available for full decontamination mock-up with three stations and a tent. It's easily accessible and can be activated in minutes.</li> </ul>		
	<ul> <li>Concerns raised about crude oil affecting irrigation and ground water.</li> <li>Concern about safe evacuation of Sandy Hill neighbourhood and Sumas First Nation – the most impacted by a Level 3 spill in the scenario. There are also two schools in the area; need further discussion to understand co-ordinated response with local government, school district, first responders and First Nations.</li> <li>Identified there are challenges executing evacuation in Sandy Hill neighbourhood – it is a difficult area for first responders to get in and out; must evacuate downwind to get to McKinley.</li> </ul>		
	<ul> <li>Questions about land-based spill response vs. marine and how equipment would arrive.</li> <li>Identified there is a need to determine an appropriate location for EOC that will handle all resources.</li> </ul>		

#### **TABLE 1.7.20-4 Cont'd**

Socio Economic			
Infrastructure and Services  • Ability to call in additional municipal staff and first responders during an including aid with evacuations – on-call firefighters, local Hazmat team and additional Works staff.			
Environmental – Terrestrial			
Land Spills – Environmental Impact (water bodies, water quality and quantity)	•	Concern raised about effects of a spill into nearby streams and water bodies (Nicholas Grove, Fraser River) as well as water courses and wetlands that drain into the Fraser River.	
	•	Identified potential for oil to enter Cedar Springs storm detention pond; the outlet is a natural water course that can be closed off.	

Issues identified by participants that have not already been identified in previous Updates are further detailed in Section 2.3, Topics of Interest or Concern – Lower Mainland/Fraser Valley, BC.

# 1.7.21 Part 2 EMSW in Hope, BC

Details of the Part 2 EMSW in Hope, BC are summarized in Tables 1.7.21-1 to 1.7.21-4.

#### **TABLE 1.7.21-1**

#### PART 2 EMSW - HOPE, BC

Region	Location	Date	Number of Attendees
BC Interior	Council Chambers, District of Hope, 325 Wallace Street, Hope, BC	December 12, 2014 10:00 am – 1:00 pm	8

Table 1.7.21-2 identifies those organizations invited to attend and Table 1.7.21-3 identifies the organizations in attendance at the Part 2 EMSW in Hope, BC.

#### **TABLE 1.7.21-2**

#### ORGANIZATIONS INVITED - HOPE, BC

Organization		
Royal Canadian Mounted Police (RCMP)	Fraser Valley Regional District (FVRD)	
District of Hope		

#### **TABLE 1.7.21-3**

#### PART 2 EMSW ATTENDEES - HOPE, BC

Organization		
Royal Canadian Mounted Police (RCMP)	District of Hope	

**Note:** Some organizations had more than one representative in attendance.

Table 1.7.21-4 provides a summary of concerns raised at the Part 2 EMSW in Hope, BC:

# **TABLE 1.7.21-4**

# **SUMMARY OF CONCERNS – HOPE, BC**

Category	Summary of Concern Raised	
Safety		
Disaster Planning	<ul> <li>Discussion about incident notification, first response and co-ordinated response between relevant agencies. Clarified processes, roles and responsibilities.</li> </ul>	
	<ul> <li>Interest in and request for future table top exercise with first responders.</li> </ul>	
	<ul> <li>Interest in incorporating local knowledge and being involved in reassessment of control points in 2015.</li> </ul>	
	<ul> <li>General agreement and understanding of Incident Command (IC) roles and local government involvement.</li> </ul>	
	<ul> <li>Appreciated that GRP will take into account differing water levels at various times of the year.</li> </ul>	
	<ul> <li>Identified District of Hope as being a choke point for railroads, highways and a hub for infrastructure; concern about access and egress in event of an emergency, including regionally available resources (people and equipment).</li> </ul>	
	<ul> <li>Identified that a new location is required for the Incident Command Post (ICP) in Hope: Heritage Hotel not large enough.</li> </ul>	
	<ul> <li>Offered to assist District of Hope with Hazardous Materials (Hazmat) awareness session.</li> </ul>	
Emergency Spill Response	Outlined response roles and process within each organization.	
	<ul> <li>Concerns raised about crude oil moving on surface water quickly (steep terrain, high seasonal rainfall).</li> </ul>	
	<ul> <li>Concerns raised about crude oil reaching aquifer. Ground water is very important to Hope and local First Nations; additional conversations required.</li> </ul>	
	<ul> <li>Identified there is no road access in June for boom deployment in the Fraser River (water levels too high).</li> </ul>	
	Minimal decontamination capabilities. Hazmat trailer available to region (stored in Abbotsford).	
	<ul> <li>Identified opportunity for a decontamination trailer (a joint effort between police, fire and KMC).</li> </ul>	
	Identified that Summer Road has private water supply and would require notification.	
	Note limited abilities to store supplies (i.e., Hazmat trailer) in Hope.	
Socio Economic		
Infrastructure and Services	<ul> <li>Ability to call in additional municipal staff and first responders from Chilliwack and Agassiz during an incident to aid with evacuations – police, fire and additional Public Works staff (as long as transportation access available).</li> </ul>	
	Note additional water resources would be needed for Hazmat team.	
	<ul> <li>Evacuation can cause issue for hospital because it's located across street from police and many hotels. Nearest hospital is Chilliwack.</li> </ul>	
Environmental – Terrestrial		
Land Spills – Environmental Impact (water bodies, water	Concern raised for effects of a spill into aquifer and water bodies nearby (Fraser River).	
quality and quantity)	High concern about protection of water supply/aquifers in this area. Quality of drinking water and adequate flow.	
	Concerns raised about crude oil moving on surface water quickly (steep terrain, high seasonal rainfall).	

Issues identified by participants that have not already been identified in previous Updates are further detailed in Section 2.2, Topics of Interest or Concern - BC Interior.

# 1.7.22 Part 2 EMSW in Langley, BC

Details of the Part 2 EMSW in Langley, BC are summarized in Tables 1.7.22-1 to 1.7.22-4.

#### **TABLE 1.7.22-1**

# PART 2 EMSW - LANGLEY, BC

Region Location		Date	Number of Attendees
Lower Mainland/Fraser Valley	Fire Hall #6, Meeting Room, 22170 - 50 Avenue, Langley, BC	December 15, 2014 1:00 – 4:00 pm	9

Table 1.7.22-2 identifies those organizations invited to attend and Table 1.7.22-3 identifies the organizations in attendance at the Part 2 EMSW in Langley, BC.

#### **TABLE 1.7.22-2**

# ORGANIZATIONS INVITED - LANGLEY, BC

Organization	
Royal Canadian Mounted Police (RCMP) Township of Lang	

# **TABLE 1.7.22-3**

# PART 2 EMSW ATTENDEES – LANGLEY, BC

Organization	
Royal Canadian Mounted Police (RCMP)	Township of Langley

Note:

Some organizations had more than one representative in attendance.

Table 1.7.22-4 provides a summary of concerns raised at the Part 2 EMSW in Langley, BC:

#### **TABLE 1.7.22-4**

# **SUMMARY OF CONCERNS – LANGLEY, BC**

Category	Summary of Concern Raised
Safety	
Disaster Planning	General discussion about incident notification, first response and coordinated response between relevant agencies. Clarified processes, roles and responsibilities.  Interest in and response for future table to a suggestion with first respondence.
	<ul> <li>Interest in and request for future table top exercise with first responders.</li> <li>Interest in incorporating local knowledge and being involved in reassessment of control points in 2015.</li> </ul>
	<ul> <li>General agreement and understanding of Incident Command roles and Township of Langley involvement.</li> </ul>
	<ul> <li>Identified that Township of Langley may want to consider adding to its plan a notice to airmen (temporary flight restriction) over Langley Regional Airport and private air strip along Fraser River in event of a spill (off-gassing hazardous).</li> </ul>

# **TABLE 1.7.22-4 Cont'd**

Emergency Spill Response	Outlined response roles and process within each organization.
	Township of Langley staff and first responders would look to Kinder Morgan Canada for direction during incident.
	Concern about product reaching Yorkson Creek and floodplain north of 96 <sup>th</sup> Ave; need to evaluate control points in this area and ensure they are appropriate. Salmon bearing stream of high value to First Nations and community.
	<ul> <li>Questions raised about who would be responsible for notifying provincial and federal government of product entering watercourse. Kinder Morgan Canada Incorporated (KMC) would be responsible and would work with general contractors on spill response and cleanup.</li> </ul>
	<ul> <li>Questions raised about claims and payment policy – understand KMC would be responsible for a spill but not sure of billing process. Follow up required.</li> </ul>
Earthquakes/Seismic	<ul> <li>Questions about likelihood of major earthquake in Metro Vancouver area causing severe damage to pipeline infrastructure and what effect this will have on the community.</li> </ul>
Regulatory	
NEB Process	Provided clarification outlining the formal regulatory process and Project timing (including construction and expected in-service date).
Operations and Maintenance	Discussion about type of product moved in existing pipeline and different properties.
	Questions raised about vapour emissions in Township of Langley – the fire department is receiving several odour complaints in Walnut Grove neighbourhood (rotten egg and manure-like smell). Trans Mountain Trans Mountain initiated an investigation and determined the cause was not related to the Trans Mountain pipeline or KMC operations.
Socio Economic	, , , , , , , , , , , , , , , , , , , ,
Infrastructure and Services	Township of Langley has ability to reinforce resources by calling in additional municipal staff and first responders during an incident to aid with evacuations – RCMP auxiliary, paid on-call firefighters, Search and Rescue and additional Public Works staff.
	Little or no response equipment available to first responders in Township of Langley to respond to oil spill
	Identified Langley Regional Airport as a strategic advantage to bring in additional equipment (Hercules-sized aircraft permitted); there is also a private landing strip near Fraser River (east of Salmon River/Fort Langley) that could be added to GRP. Need to determine exact length of runways.
Environmental – Terrestrial	,
Land Spills – Environmental Impact (fish, water bodies, wetlands, water quality and quantity)	Concern raised about effects of a spill into Yorkson Creek leading to the Fraser River and wetlands. Identified area north of 96 <sup>th</sup> Ave and rail tracks is wetland (Township of Langley purchased parcel recently that is a flood plain) and should be considered for potential control point if it isn't identified already.
	Important to local First Nations and watershed societies working hard to preserve salmon population

Issues identified by participants that have not already been identified in previous Updates are further detailed in Section 2.3, Topics of Interest or Concern – Lower Mainland/Fraser Valley, BC.

# 1.8 Telephone Town Halls

New this reporting period, Trans Mountain conducted a series of Telephone Town Halls. A computerized auto dialer in targeted BC communities notified stakeholders of the upcoming

Telephone Town Halls and provided them with information on how to participate. Telephone Town Halls were hosted on September 16, 2014 with stakeholders in Burnaby at 6:30 pm and with stakeholders in Coquitlam-Surrey at 7:45 pm, and again on September 18, 2014 with stakeholders in Vancouver at 6:30 pm and with stakeholders in Abbotsford-Chilliwack at 7:45 pm.

Telephone Town Hall participants were welcomed by a moderator and introduced to Kinder Morgan Canada President, Mr. Ian Anderson, who provided an initial update on the status of the Project. Trans Mountain answered as many questions from callers as time permitted. At the conclusion of each Telephone Town Hall, stakeholders were invited to remain on the line and leave a voice message with questions and or questions where time did not permit answering regarding the Project or alternatively, they could contact Trans Mountain directly at Info@itransmountain.com or toll-free at 1-866-514-6700.

The first Telephone Town Hall covered the communities of Coquitlam, Surrey and Langley, with more than 2,000 stakeholders participating throughout the session. The second Telephone Town Hall covered the community of Burnaby with more than 5,000 stakeholders participating throughout the session. Telephone Town Halls on September 18, 2014 covering the communities of Vancouver with more than 11,000 participants and Abbotsford-Chilliwack with more than 1,000 participants. In total, more than 20,000 people participated over the course of the four sessions.

Details of the Telephone Town Halls are summarized in Tables 1.8-1 to 1.8-6. Phone numbers called were those that were land lines and not on the Do Not Call List.

TABLE 1.8-1
TELEPHONE TOWN HALLS

Date	Community	Phone Numbers Listed	Do Not Call List	Participants during call
September 16, 2014	Burnaby	72,825	48,115	Over 5,000
	Coquitlam – Langley	36,988	22,576	Over 2,000
September 18, 2014	Vancouver	150,998	97,067	Over 11,000
	Abbotsford – Chilliwack	19,375	11,482	Over 1,000
	TOTAL	280,186	179,240	Over 20,000

In September 2014, Trans Mountain started a SoundCloud account at soundcloud.com/transmountain to coincide with a number of Telephone Town Halls being held in communities along the pipeline route. SoundCloud is used to host and share the audio files from events like the Telephone Town Halls, as well as other Project relevant events and interviews. Details of Trans Mountain's SoundCloud account are contained in Section 1.4.8.

Recordings of each telephone town hall are available on line, with both featured clips and full recordings.

- Burnaby at http://blog.transmountain.com/recap-burnaby-telephone-town-hall/.
- Coquitlam Langley at http://blog.transmountain.com/telephone-town-hall-surrey-langley-coquitlam/.
- Vancouver at http://blog.transmountain.com/telephone-town-hall-vancouver/.

Abbotsford – Chilliwack at http://blog.transmountain.com/telephone-town-hall-abbotsford-chilliwack/.

TABLE 1.8-2
SUMMARY OF QUESTIONS AND SUMMARY OF RESPONSES – BURNABY, BC

Category	Question	Summary of TMEP Response
Corporate Policy	Where will the oil go?	Decreasing demand in US and increasing Asian demand; described existing status quo and market mechanism.
	Could we build more refineries? How will the expansion impact gas prices?	Described cost of building refineries, demand for crude and existence of inactive refineries in Burrard Inlet. Provided explanation that impact on gas prices is not substantial, per a recent article.
Environmental	Concern and question about tanker traffic.	Provided an explanation of current and proposed tanker traffic, along with comparators to understand volume.
	Have you done an environmental risk assessment?	Confirmed approach to environmental risk assessment, offered to follow up with further references to Application.
Land Based	Question re Burnaby's opposition to TMEP.	Spoke about Trans Mountains desire to work constructively if possible. But this is ultimately a federal matter as seen through legal challenges.
Operations and Maintenance	Question re: jet fuel line	Clarified that jet fuel line is not in scope of proposal and is not being expanded. Explained jet fuel tanks. Briefly explained Vancouver airport situation.
Regulatory	Question regarding funding in relation to NEB.	Explained misinformation and funding mechanisms via levies on shippers. Explained that TMEP is funded by private capital, not government money.
Routing	Question re: local routing in relation to his property	Provided basic routing information and offered a follow- up call.
	Please clarify pipeline route near Pinehurst.	Provided basic routing information and offered a follow- up call.
Safety	Question about alternative modes of shipping oil (e.g., rail).	Described how product will move one way or another, need and demand for different modes. Pipelines are a safe, reliable option.
Socio-Economic	What's in it for Burnaby?	Described economic benefits to Burnaby including current and future property taxes, capital expenditures on proposed facilities and current and future jobs.
	What jobs will be created, especially in Burnaby?	Described types of jobs during construction and operation, along with explaining indirect jobs impacts through companies like Mott Electric in Burnaby.
Terrestrial	What are the emergency response plans?	Described emergency response approach and provided context recent discussion around publicizing plans.  Spoke about working with municipalities
	Question about storage tanks and emergency response in the context of tank farm expansion	Provided overview of tank facilities and safety precautions taken. Offered a follow-up call for more detailed information.
	What is the frequency and location of breaks and spills? What about the 2007 line hit?	Described spill record, pointed out that it is available online, spoke about nature of typical terrestrial spill issues ( <i>i.e.</i> , largely located in facilities). Described what happened in 2007 incident.

**Note**: Not all inquiries required a response. Some were comments only.

**TABLE 1.8-3** 

# SUMMARY OF QUESTIONS AND SUMMARY OF RESPONSES – COQUITLAM – LANGLEY, BC

Topic	Question	Summary of TMEP Response
Corporate Policy	How are you addressing climate change?	Discussion of time horizon for renewable energy, investing today's wealth in tomorrow's technology, addressing climate change. Trans Mountain is supportive of the oil industry's efforts to invest in renewable technologies.
Engagement Process	Opposition to Project – why are seniors opposed? Why are municipalities causing fear?	Addressed approach to the Project, some of the challenges faced in terms of why people are opposed.
	Who did we contact? Based on proximity?	Confirmed that we contacted listed phone numbers and explained how telephone town halls work. Follow-up call provided about routing and her location.
Environmental	Why have trees already been cut down along route? Remediation and field studies.	Described responsibilities and expectations regarding remediation and reclamation
Marine	What happens in water – does bitumen float or sink?	Describes fate and behaviour studies including discussion of recovery and implications of debris and turbidity.
Operations and Maintenance	What will be disruption from construction, focus on Coquitlam?	Discussion of construction timelines, routing to minimize disruption and approaches to traffic management.
Rights and Title	Have you been able to satisfy First Nations negotiations?	Discussed approach to working with First Nations: treating each band as unique, long history of relationships, every community has different needs and aspirations.
Routing	What is the pipeline route near Fraser River?	Trans Mountain provided overview of routing and mentioned maps online.
Safety	Age of pipeline – what's happening with existing line re earthquakes etc.?	A well maintained pipeline has an infinite lifespan, this includes regular inspections and upgrades to address seismic risks. Addressed seismic issues in Application, physical properties of pipelines.
Socio-Economic	How does this benefit tax payers?	Provided an overview of local, provincial and national economic benefits, including benefits of market access.
Terrestrial	Is this the twinning of existing line, what will be done with increased capacity?	Confirmed that this is a twinning, that product mix is defined by market demand and that primary shipper demand is for dilbit.
	What is in place for spill prevention – specifically line hits?	Described spill response, risk of third-party damage and investments in integrity management
	Supportive of Project, objected to municipal opposition. Asked about "rust on road near right-of-way?	Discussed efforts to work constructively with municipalities; there is support in many communities. Offered and provided a follow-up call to gather further information and address the question re "rust."
	What is in place for safety and spill prevention?	Described spill response regime and investments in integrity management

**Note**: Not all enquiries required a response. Some were comments only

Table 1.8-4 provides a summary of questions and TMEP responses from the second Telephone Town Hall covering Burnaby on September 16, 2014.

TABLE 1.8-4
SUMMARY OF QUESTIONS AND SUMMARY OF RESPONSES – VANCOUVER, BC

Category	Question	Summary of TMEP Response
Corporate Policy	How much of expansion is for export?	Twinned line is primarily focused on export. Existing line will continue to batch train different type of product.
	Why not invest in alternative fuels and energy instead?	Spoke about need to work together to address sustainability challenges. Trans Mountain is supportive of the oil industry's efforts to collaborate and invest in renewable technologies.
	How much will KM earn from the expansion?	Spoke about business case for the Project, why it makes sense both economically and commercially.
Land Based	Legal basis to perform destructive surveys without landowner agreement and rectification of damage, how clean is clean?	Provided clarification of role of NEB versus Burnaby bylaws, updated on current legal dynamic.
Marine	Spills and liability – who pays?	Provided explanation of marine liability and coverage.
	Spill scenarios in Burrard Inlet – how does product react?	Shared information about fate and behaviour studies and recovery of dilbit in water. Further description of marine safety regime and enhancements.
Regulatory	If Project receives federal and provincial approval would you proceed despite local opposition?	Spoke about desire to achieve local support, but this is ultimately a federal decision and the implications are greater than any one community.
Routing	What is the context of other pipelines in Canada?	Spoke about existing volume of pipelines in Canada and BC – we take them for granted. Touched on other proposals and how they relate to one another –all part of overall economic dynamic.
Safety	How can you expect people to trust you to run a safe project?	Spoke about engagement work, goal to build trust, safety culture of KM.
Socio- Economic	How will TMEP impact gas prices?	Provided explanation that impact on gas prices is not substantial, per a recent article. Canadian Fuels Association is a resource to understand fuel prices.
	What is the risk versus benefit?	Described economic benefits of the Project for communities, BC and Canada – emphasized focus on safety both on land and in the water.
	Volume of products in transport, why crude isn't being refined here? What does it feel like to face rejection of communities – Burnaby in particular	Described economic drivers of shipping crude based on global demand. We are working hard to earn trust and support in communities.
	Relationship of pipelines to funding social programs.	Spoke about taxes collected and spent, as well as touching on community benefits and legacies.
	What are the economic benefits	Described economic benefits in terms of taxes, jobs, etc. Follow-up call provided for further details as requested. Separate ROC filed for call.
Corporate Policy	How much of expansion is for export?	Twinned line is primarily focused on export. Existing line will continue to batch train different type of product.

**Note**: Not all enquiries required a response. Some were comments only

Table 1.8-5 provides a summary of questions and TMEP responses from the fourth Telephone Town Hall conducted on September 18, 2014 covering Abbotsford-Chilliwack.

**TABLE 1.8-5** 

# SUMMARY OF QUESTIONS AND SUMMARY OF RESPONSES – ABBOTSFORD– CHILLIWACK, BC

Category	Question	Summary of TMEP Response
Corporate Policy	How are you dealing with climate change?	Spoke about environmental efforts and the broader conversations we have beyond our formal regulatory scope. Touched on alternative energy.
	Alternative energy – why not do that instead?	Spoke about importance of investing today's wealth in tomorrow's technology; environment and economy are not incompatible. Trans Mountain is supportive of the oil industry's efforts to collaborate and invest in renewable technologies.
Marine	Contingency plan in case of spill?	Described safety regime, recent enhancements and ongoing process, Western Canada Marine Response Corporation (WCMRC), etc.
Operations and Maintenance	Maintaining the pipeline  – average life expectancy?	Lifespan of a well maintained pipeline is infinite. Spoke about integrity management program, proactive maintenance and increased investments in ensuring integrity.
	What products are being transported?	A variety of products are transported. Described the batch train process. Spoke about shifting product mix.
Routing	How closely will the expansion twin the line?	Majority will twin the line, except for re-routing where it makes sense to minimize community disruption or be environmentally benign. Trying to follow linear infrastructure when rerouting.
Safety	Pipelines vs. other methods of oil transport?	There is a role for different modes. Product will move to market. Pipelines are a safe, reliable and efficient mode of transport.
Socio-Economic	What are the benefits for the Fraser Valley?	Described jobs, investment, workforce spending and taxes in the Fraser Valley. TMEP accounts for a huge portion of planned capital spending in the Fraser Valley based on analysis using the major projects inventory, as noted in the Application.
Terrestrial	How do you stop flow in event of a leak?	Sensors, automatic and manual shutoff valves. Anyone can stop the pipeline but it takes executive signoff to restart it.
	Safety around Sumas tank farm and spill detection, contingency fund?	Discussed Sumas spill incident, how spill detection works, containment systems, and financial resources and mechanisms for spill response and recovery.

**Note**: Not all inquiries required a response. Some were comments only

On December 3, 2014, Trans Mountain hosted a Telephone Town Hall linked to the Burnaby Mountain communication initiative. The focus of the Telephone Town Hall was a return to constructive dialogue, addressing questions with regards to the Project, Trans Mountain's geotechnical work on Burnaby Mountain and the associated protestor activity.

Featuring the company's President, Mr. Ian Anderson, the Burnaby Mountain communications initiative consisted of television, print and online advertising including promoted tweets, and an eblast. The advertisements provided website information where people could register for a Telephone Town Hall scheduled for December 3, 2014 and information that they could watch the live stream. Stakeholders could also take an online survey that sought information on their preferences for engagement formats to continue to dialogue with Trans Mountain. A promoted tweet was also run to encourage participate in the survey.

A computerized auto dialer in targeted Burnaby land line phone numbers, not on the Do Not Call List, notified stakeholders of the upcoming Telephone Town Hall and provided them with information on how to participate. In addition, Trans Mountain communicated through its advertising that stakeholders could register to have their numbers called. This ensured we were able to reach those that wanted to participate. 134 registrations were received online for the

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December 3, 2014 Telephone Town Hall and 48,115 numbers were called. 4,937 participated in the session.

Using the same format, Telephone Town Hall participants were welcomed by a moderator and introduced to Kinder Morgan Canada President, Mr. Ian Anderson, who provided an initial update on the status of the Project. In addition the session was live streamed over the internet. Trans Mountain answered as many questions from callers as time permitted. At the conclusion of each Telephone Town Hall, stakeholders were invited to remain on the line and leave a voice message with questions and or questions where time did not permit answering regarding the Project or alternatively, they could contact Trans Mountain directly at Info@itransmountain.com or toll-free at 1-866-514-6700.

Table 1.8-6 provides a summary of questions and TMEP responses from the Burnaby Mountain Telephone Town Hall.

TABLE 1.8-6
SUMMARY OF QUESTIONS AND SUMMARY OF RESPONSES – BURNABY MOUNTAIN

Category	Question	Summary of TMEP Response
Corporate Policy	If you can't get GPS coordinates right, how can we trust you for a pipeline?	Looked at work, two measurements. Legal injunction defined area of work. Legal implications moved spaces, RCMP implications moved spaces and GPS co-ordinates weren't intentionally wrong or measure of incompetence.
	If asked will KM pay the policing cost?	We have not been asked. Our position is that policing is a municipal responsibility.
Economic Feasibility	With the current price of oil, will it have an impact on the construction of this pipeline?	No impact, we have firm commitments. Driven by current and near- term planned production. These projects and shippers are in it for the long term.
Engagement Process	Lots of things wrong, lots of things right. What have you learned and how are you going to move forward.	We continually change and learn as we go. That's why we learn and are reactive. We are transparent open and answered dozens of questions.
Land Based	Social Responsibility issue – Is it not breach of corporate responsibility to trump bylaws.	Federal Constitution. Same with highways, airports, and large infrastructure. Trans Mountain has federal responsibilities and authorities but will respect and understand local bylaws where possible. The work we needed to do was simple and our preference was to work with the City of Burnaby.
Marine	Does KM have a contingency fund set aside for a leak? What contains a spill?	Trans Mountain has \$750,000,000 of liability insurance and substantial cash on hand with a commitment to \$1,000,000,000 of financial capacity where required by legislation.
	Safe conduct of the oil finishes at the boat. How collectable are the clean-up costs? Who is responsible for the loading process	Port Authority, Chamber of Shipping responsible about loading. We load ships and nothing has occurred in ship movement through the port over 60 years. Lots of coverage both national and international. Government talking about lifting caps which would allow unlimited liability capture. We are also a principal shareholder of WCMRC.
Routing	What is the difference in size diameter in distance versus sky train tunnels?	Size would be 4 – 41/2 metres. Tunnel would connect two terminals together. 2.6 km in length
	Support pipeline through Burnaby Mountain, but why not Roberts Bank?	We looked at alt locations Roberts bank included. We end up trading issues to other sets of issues. Different seismic, environmental and facility concerns.
	What is the comparison in the amount of oil transported by rail vs. pipeline? What's the relationship of oil cars to barrels vs. in the pipeline?	Pipelines safer, not much crude moving by rail in comparison, not enough infrastructures.

#### TABLE 1.8-6 Cont'd

Category	Question	Summary of TMEP Response
Safety	How safe is the pipeline in an earthquake?	Terminal tanks designed to the highest standard available. Same standard as BC Hydro, Fortis, Big Building for Life, safety and infrastructure. Stay current with building code standards.
Sustainability	In light of the long-time consensus that we need reduce our reliance on oil, how do you feel about building a pipeline after that?	Demand is there for the projects and some country will fulfill it. Who better than Canada as a result of democracy, with environmental laws. Can make strides and be part of the solution.

#### 1.9 Twitter Town Halls

Trans Mountain hosted two Twitter Town Halls via its Twitter channel, @transmtn, between 8:00 and 9:00 pm on October 14, 2014 and October 27, 2014. This provided stakeholders with an additional venue to ask questions of Trans Mountain. The focus of the October 14 Twitter Town Hall was marine safety and the focus of the October 27 Twitter Town Hall was pipeline safety.

#### 1.9.1 October 14, 2014 Twitter Town Hall

In an effort to increase participation in the Twitter Town Halls, Trans Mountain promoted them through a variety of methods including: direct mail, promoted tweets and through the eNewsletter.

Trans Mountain distributed a direct mail postcard through Canada Post on October 6, 2014 to more than 750,000 homes in communities throughout the Lower Mainland, Fraser Valley, Vancouver Island and BC Interior. Depending on delivery service to each area, residents should have received the postcard between October 7 and 9, 2014. The postcard provided information about Trans Mountain's emergency response programs and encouraged residents to join Trans Mountain's Twitter Town Hall on October 14, 2014. Section 1.4.11, the People Behind the Pipeline, provide a front and back view of the direct mail postcard that was distributed.

Trans Mountain purchased promoted tweets aimed at raising awareness of its upcoming Twitter Town Hall. The promoted tweets ran from October 9 to 14, 2014, were geotargetted to British Columbia and Alberta, and delivered more than 88,500 impressions and resulted in more than 1,000 engagements, which may have included clicking on Trans Mountain's link, retweeting or favouriting the tweet. Figures 1.9.1-1 and 1.9.1-2 are the two promoted tweets.



Figure 1.9.1-1 Promoted tweet for the October 14, 2014 Twitter Town Hall



Figure 1.9.1-2 Promoted tweet with image for the October 14, 2014 Twitter Town Hall

Trans Mountain also promoted the Twitter Town Halls in its weekly eNewsletter on October 9, which was sent to 2,497 subscribers and more than 40 percent of subscribers opened the eNewsletter. Figure 1.9.1- 3 provides a screen capture of the October 9, 2014 eNewsletter featuring a story promoting the October 14, 2014 Twitter Town Hall.

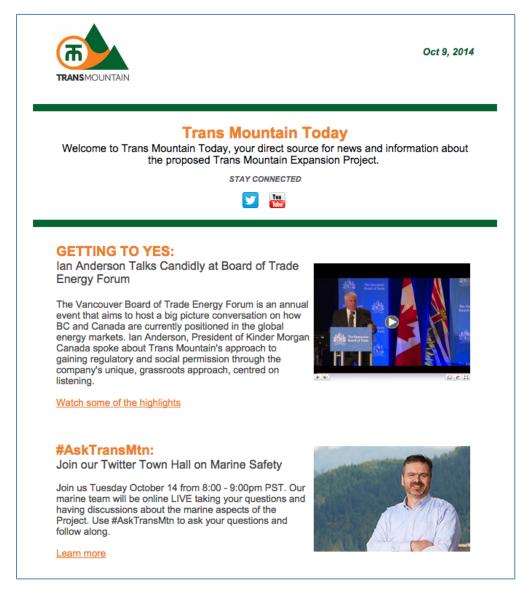


Figure 1.9.1-3 Screen Capture of Trans Mountain's October 9, 2014 eNewsletter

# 1.9.2 October 14, 2014 Twitter Town Hall Analytics

Trans Mountain created a hashtag for use in all tweets, #AskTransMtn, and asked those posing questions to use that same hashtag. This made tweets searchable for anyone to see.

During the one-hour Twitter Town Hall, there were approximately 2,100 tweets and retweets using the hashtag #AskTransMtn, resulting in the hashtag trending in BC and in Canada during the Twitter Town Hall. Trans Mountain was pleased to see such high engagement through the use of the hashtag.

Trans Mountain focused its responses during the Twitter Town Hall on those questions that were relevant to marine safety. Over a one-hour period Trans Mountain responded to 30 questions and following the Twitter Town Hall, Trans Mountain responded to the remaining questions.

Trans Mountain also provided a blog post with the answers to eight questions raised by the Dogwood Initiative. Those same eight questions were the focus of a large percentage of tweets submitted to the Twitter Town Hall. Trans Mountain responded to those who had tweeted or retweeted the eight questions posed by the Dogwood Initiative by providing a link to the blog post. Table 1.9.2-1 provides a transcript of the questions asked and answered by Trans Mountain as a result of its Twitter Town Hall.

TABLE 1.9.2-1

OCTOBER 14, 2014 TWITTER TOWN HALL QUESTIONS RAISED

Question	TMEP Response
When a marine-based oil spill happens - do you recover 10 or 15% of the bitumen spilled? #AskTransMtn #bcpoli	@GwenBarlee many factors effect spill recovery, including weather, location, spill size & oceanographic conditions #AskTransMtn ^MD ½
	@GwenBarlee In the 2007 Westridge spill conventional clean-up methods recovered ~95% of #dilbit from Burrard Inlet #AskTransMtn ^MD 2/2
Hey Mike, what's the enviro record of tankers off the BC Coast? What's @TransMtn doing to keep it enviro friendly? #AskTransMtn	@dckurek There have been no tanker spills from vessels leaving Westridge in its 60 year history. #AskTransMtn ^MD
How many tourism and other jobs that depend on clean environment would a marine oil spill near #yyj destroy? #AskTransMtn #bcpoli	@tmpear spills are unlikely & specific effects cannot be forecast. A liability regime compensates affected parties #AskTransMtn ^MD
How many metres of hull clearance does an Aframax tanker have under the Second Narrows bridge? http://bit.ly/ZBycFV #AskTransMtn	@HilaryStrang Normally she has about 10 metres of water under the hull @ 2nd N. Sec 2.1.4 of Vol 8A http://ow.ly/CLWOo #AskTransMtn ^BK
What is your plan for spilled dilbit in the Strait of Juan de Fuca? #AskTransMtn	@SHEEPDOGSROCK proposed enhanced oil spill response plan includes JdFuca see Vol 8A Table 5.5.3 http://ow.ly/CLX2i #AskTransMtn ^BK
Does Kinder Morgan still believe that oil spills can have "positive" impacts on local communities? #AskTransMtn #bcpoli	@GwenBarlee Preventing spills is our first priority. Spills are bad for everyone and not part of our Project justification #AskTransMtn ^MD
#AskTransMtn How are you going to stop spills/accidents? Is attempting to minimize the probability and damage the best you can do?	@IdeasOnTrees Prevention is the main focus. There's a well-established marine safety regime & we've proposed enhancements. #AskTransMtn ^MD
#AskTransMtn How far does bitumen travel in Fraser River? Remove this blight on our coast entirely Enron Jr. aka KM	@westendartist We modelled diluted bitumen spill in Fraser River in application Vol 8C-12 S9 http://ow.ly/CLXY3 #AskTransMtn ^BK
Would you be willing to dump a barrel of diluted bitumen into a wave tank in front of TV cameras? #AskTransMtn	@kiteboardjim Our 10day oil testing study was observed by govt agencies. See public report here http://ow.ly/CLXko ^MD
How likely is another Exxon Valdez-like disaster with increased tanker traffic? @TransMtn #AskTransMtn	@foe_us Since Exxon Valdez, many safety improvements have been undertaken to prevent a recurrence. http://ow.ly/CLYvt #AskTransMtn ^BK
#AskTransMtn How far will Tankers be escorted by safety tug boats from the Vancouver Port?	@PaulTarasoff We've proposed escorts to edge of Canadian waters 22km from coast. Sec 5.3.2.1 Vol 8A http://ow.ly/CLYGu #AskTransMtn ^BK
What marine protections will be put in place to mitigate disasters to waterways, wildlife and people?  @TransMtn #AskTransMtn	@foe_us Strong preventative regime exists. Proposed enhancements in TMEP Applcn Sec 5.3.2 Vol 8A http://ow.ly/CLXyU #AskTransMtn ^BK
Why should we believe @Kinder_Morgan claims that a big oil spill would only occur every 2500 years? @TransMtn #AskTransMtn	@foe_us Result based on a risk assessment prepared by an outside reputable marine risk consultant. http://ow.ly/CLZ5a #AskTransMtn ^MD
Mike & Bikram, what are your positions w/ @TransMtn? What makes your marine safety specialists? #AskTransMtn	@ADove Bikram has 40 yrs experience in the marine industry & 10+ yrs as Tanker Captain. Read more on Mike here <a href="http://ow.ly/CLZse">http://ow.ly/CLZse</a>

# **TABLE 1.9.2-1 Cont'd**

Question	TMEP Response
@TransMtn Dilbit sinks & cannot be cleaned up. What are your plans for a major spill besides plentiful apologies? #AskTransMtn #cdnpoli	@frackfreenb We've proposed enhancements to WCMRC to double capacity & halve response time. http://ow.ly/CLZwe #AskTransMtn ^MD
The @tsleilwaututh say no. How do you justify a possible spill, from a foreign company, in their unceded inlet, Kinder Morgan? #AskTransMtn	@collin_elder No spill is acceptable. Spill prevention & mitigation measures in Sec 5.3.2 Vol 8A http://ow.ly/CLZ6m #AskTransMtn ^BK
Have any KM CEO's ever kayaked in the Strait of Juan de Fuca? #AskTransMtn	@SHEEPDOGSROCK I can't speak for others, but I do. Mentioned my hobby here http://ow.ly/CLZYr #AskTransMtn ^MD
Is it true that bitumen sinks, making cleanup of spills impossible? #AskTransMtn #Kalamazoo	@lorithicke We move diluted bitumen @ density of 0.94 or <, fate & behaviour studies available http://ow.ly/CLZEJ #AskTransMtn ^BK
Your tankers go along the same migratory paths of endangered orcas. Do you not understand why that is a problem? #AskTransMtn	@Sammmertime All vessels bound for PMV transit same waterways. We support the DFO Action Plan http://ow.ly/CM0ch #AskTransMtn ^BK
#AskTransMtn When was your spill cleanup technology developed?	@hildathirteen Spill response technologies are constantly improving. We've proposed large investment in latest technology. #AskTransMtn ^MD
#AskTransMtn Will you be liable for any of the spills out of the port of Vancouver, or is that responsibility of the shipping line? #cdnpoli	@Urban_Su Spill liability is based on polluter pays principles. Update to regime provided today http://ow.ly/CM0mr #AskTransMtn ^BK
What happens when a 10 metre high wave hits a ship on our rocky coastline? #cdnpoli #bcpoli @ChristyClark #AskTransMtn	@suestroud Ships often encounter high waves at sea w/o any issues. #AskTransMtn ^BK
#AskTransMtn Where are stores of spill cleanup equipment and personnel located and how long will it take to implement your plan?	@hildathirteen Details of enhanced spill response plans in Applcn Vol 8C http://ow.ly/CM0ph before TMEP operational #AskTransMtn ^BK
#AskTransMtn: What percentage of cleanup costs is #KinderMorgan responsible for in the event of a spill in the #SalishSea? #bitumensinks	@wildernews KM resp for spills from our facilities. SOPF provides \$1.3B for ship spills http://ow.ly/CM0Aj . #AskTransMtn ^MD (1/2)
	@wildernews Federal govt considering changes to remove cap on industry-funded compensation http://ow.ly/CM0Bv . #AskTransMtn ^MD (2/2)
Isn't triple the capacity, triple the risk? @KM_Canada @TransMtn #AskTransMtn	@foe_us No. We've proposed enhancements to keep risk to similar level as today. Vol 8C TERMPOL 3.15 http://ow.ly/CM0Dg #AskTransMtn ^BK
How will you measure the environmental effect of increased traffic in the Strait of Juan de Fuca? #AskTransMtn #AskTransMtn	@SHEEPDOGSROCK Marine environmental Socio- Economic Assessment in Vol 8B http://ow.ly/CM0Nu #AskTransMtn ^BK
@Kinder_Morgan fund an Emergency Response Tug for Haro Strait like vessels that call on Washington ports in Neah Bay? #AskTransMtn	@foe_us Instead of standby rescue tug, we've proposed a tug accompany the tanker along the entire transit route. #AskTransMtn ^MD
@TransMtn What will YOU do to ensure mariners are adequately trained and safety systems are "world class"?#AskTransMtn	@ADove Stringent tanker acceptance program ensures high quality ships & crew operating to global best practices at dock #AskTransMtn ^BK
#AskTransMtn Dilbit DOES float. We agree. To make Dilbit you will ADD materials like Naptha/etc. This evaporates & then oil sinks. Correct?	@TundraGlobal Dilbits tested at Gainford over 10 days did not sink. Link to study: http://ow.ly/CM1x5 #AskTransMtn ^MD
Would your increased capacity cause 'mission-creep' and result in harbor dredging etc #AskTransMtn #askBC #bcpoli #notankers #yvr #yyj	@OrcaCedarbough Harbour dredging outside our jurisdiction. Dredging at Second Narrows not part of our application to NEB #AskTransMtn ^BK
#AskTransMtn In your reports and research, which species/populations would be most negatively affected by an oil spill in Juan de Fuca?	.@IdeasOnTrees Marine environmental socio-economic assessment in Vol 8B http://ow.ly/CM1B4 #AskTransMtn ^BK

The most popular topics tweeted about included:

- response to a worst-case spill scenario;
- buoyancy of diluted bitumen; and
- liability for a ship source spill.

Figure 1.9.2-1 provides a word cloud of the most common words used in tweets using the #AskTransMtn hashtag during the October 14, 2014 Twitter Town Hall. The size of the words and block represent the relative usage of the word or phrase.

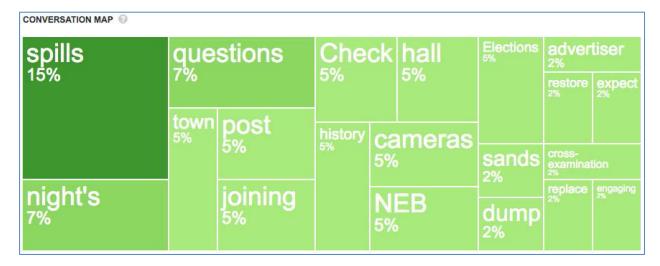


Figure 1.9.2-1 Word cloud of common terms in tweets during the October 14, 2014
Twitter Town Hall

On October 14, 2014, tweets that included #AskTransMtn averaged 915,000 impressions and peak impressions of 2.5 million. Trans Mountain received 112 click-throughs on links included in its tweets.

Trans Mountain created and distributed a Storify digest of all of the questions asked and answered during its Twitter Town Hall. Figure 1.9.2-2 provides a screen capture of a portion of the Storify digest that was shared via Trans Mountain's blog. The full post can be found at <a href="http://blog.transmountain.com/recap-twitter-town-hall-on-marine-safety/">http://blog.transmountain.com/recap-twitter-town-hall-on-marine-safety/</a>.

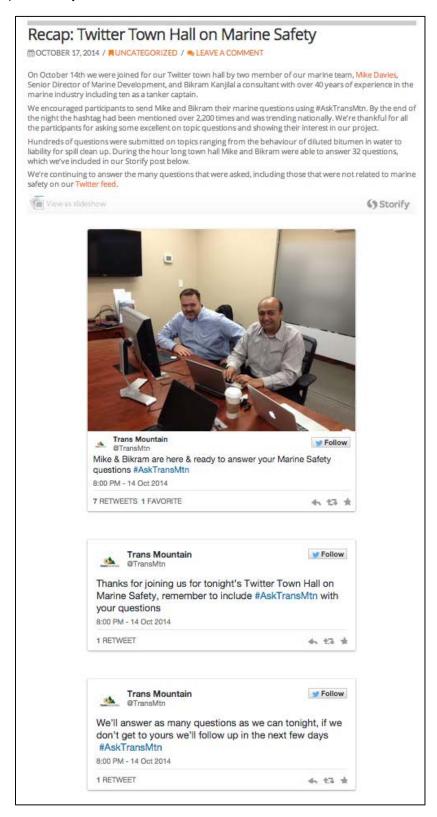


Figure 1.9.2-2 Screen capture of Storify digest summarizing the October 14, 2014
Twitter Town Hall

### 1.9.3 October 27, 2014 Twitter Town Hall

Trans Mountain hosted a second Twitter Town Hall on October 27, 2014. Trans Mountain used the same promotional techniques in order ensure broad awareness including direct mail, promoted tweets and its eNewsletter.

A direct mail postcard was distributed through Canada Post on October 17, 2014 to more than 750,000 homes in communities throughout the Lower Mainland, Fraser Valley, Vancouver Island and BC Interior. Depending on delivery service to each area, residents should have received the postcard between October 18 and 22, 2014. The postcard provided information about Trans Mountain's pipeline and marine safety initiatives and encouraged residents to join Trans Mountain's Twitter Town Hall on October 27, 2014. Figure 1.9.3-1 provide the front and back view of the postcard Trans Mountain distributed.



Figure 1.9.3-1 Direct Mail postcard promoting the October 27, 2014 Twitter Town Hall

Trans Mountain purchased promoted tweets aimed at raising awareness of its upcoming Twitter Town Hall. The promoted tweets ran from October 24 to 27, 2014, were geo-targeted to British Columbia and Alberta, and delivered more than 95,000 impressions and resulted in about 500 engagements, which may have included clicking on Trans Mountain's link, retweeting or favouriting the tweet. Figure 1.9.3-2 and Figure 1.9.3-3 are the two promoted tweets.

Join Senior Project Director, Greg Toth for a twitter town hall on #pipeline safety. Oct. 27 8-9pm PST ow.ly/Di8Xw #asktransmtn

Figure 1.9.3-2 One of two promoted tweets for the October 27, 2014 Twitter Town Hall



Figure 1.9.3-3 Second of two promoted tweets for the October 27, 2014 Twitter Town Hall

Trans Mountain also promoted the Twitter Town Halls in its weekly eNewsletter on October 23, 2014, which was sent to 2,544 subscribers and more than 40 per cent of subscribers opened the eNewsletter. Figure 1.9.3-4 provides a screen capture of the October 23, 2014 eNewsletter featuring a story promoting the October 27, 2014 Twitter Town Hall.

# TWITTER TOWN HALL ON PIPELINE SAFETY:

Your chance to #AskTransMtn again

On Monday, October 27, we will be hosting our second Twitter Town Hall - this time the focus will be on Pipeline Safety. Our Senior Project Director, Greg Toth, along with a few members of our Project team will be answering your pipeline safety-related questions between 8 and 9 pm PST.



Find out more

#### UPCOMING EVENT:

Building BC for the 21st Century: Innovation in Infrastructure

We're pleased to sponsor the 2014 BC Business Summit on November 7 at the Vancouver Convention Centre. This year's theme, "Building BC for the 21st Century: Innovation in Infrastructure" will bring together business leaders, government officials and global thought leaders to look at these issues and focus on the development of a strategic approach to infrastructure within the province.



Learn more and get tickets

#### IN THE NEWS:

"Kinder Morgan Canada president lan Anderson welcomes opposing views within company"

In this Business in Vancouver clip, Kinder Morgan Canada President Ian Anderson talks about his management style and how debates are invited in conversation to reach the best approach to various issues.



Watch the clip

Trans Mountain Expansion Project

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Figure 1.9.3-4 Screen capture of October 23, 2014 eNewsletter, featuring the October 27, 2014 Twitter Town Hall

# 1.9.4 October 27, 2014 Twitter Town Hall Analytics

Trans Mountain continued its use of the #AskTransMtn hashtag in all tweets for the October 27, 2014 Twitter Town Hall and asked those posing questions to do the same. There were approximately 80 tweets and retweets using the hashtag #AskTransMtn. Trans Mountain

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extended the close of its October 27 Twitter Town Hall in order to respond to all questions asked. Table 1.9.4-1 provides a transcript of the questions asked and answered by Trans Mountain as a result of its Twitter Town Hall.

TABLE 1.9.4-1

OCTOBER 27, 2014 TWITTER TOWN HALL QUESTIONS RAISED

Question	TMEP Response
#AskTransMtn who is currently your top 3 investors in the project? Can you be specific? #pipeline #bcpoli	@tiaretara Ownership is widely held. We are wholly owned subsidiary of KM Energy Partners and publicly traded on @NYSE #AskTransMtn 1/2
	@tiaretara TMEP has 13 commercial shippers http://www.transmountain.com/commercial-support #AskTransMtn 2/2
@TransMtn why is there no evacuation route for sfu students/Burnaby residents? Fire dept. has already stated unsafe #AskTransMtn	@luhtizzle This is a municipal responsibility, however we work together to ensure safety of the public. #AskTransMtn
Even a tiny chance of a #Kalamazoo-like spill on the Fraser is simply unacceptable. Why are you ok with this risk @TransMtn? #AskTransMtn	@TorranceCoste We work to mitigate risk with high design standards for protection of waterways in accordance w/ CSA Z662 #AskTransMtn
Why do u refer to 5 incidents (770,000 plus litre of spilled oil between 2005-2012 in the lower mainland) as "operating safely"? #AskTransMtn	@tessa_fryer While incidents have occurred, 3/5 were contained within facilities per safety designs. 2/5 3rd party damage #AskTransMtn 1/2
	@tessa_fryer #Pipeline Protection Program has info on how we're working to prevent 3rd party strikes http://ow.ly/DrgWx #AskTransMtn 2/2
@TransMtn what will you do to mitigate the risk of a spill because of an earthquake? #AskTransMtn	@simrath The risk from seismic activity is considered using the highest design standards and throughout operation. #AskTransMtn 1/2
	@simrath Modern steel pipelines that have undergone earthquakes have performed well. Read more: http://www.transmountain.com/seismic-safety-measures #AskTransMtn 2/2
#AskTransMtn when is the cut off date to stop harassing our #aboriginal in #BC in purchasing their land? particular date set? #salishsea	@tiaretara KM respects Aboriginal & treaty rights, unique culture, diversity, language & traditions of Aboriginal peoples. #AskTransMtn
You've admitted even without spills tanker impacts on #orca are significant & high probability. How is this acceptable to you? #AskTransMtn	@awoodsworth It's a complex issue & we've provided a protection program framework in an Info Request: http://ow.ly/DrjDX (4 pgs)
@TransMtn October.17 you stated safety is #1 ur concern. Why do you pass the responsibility off to the municipality then?	@luhtizzle Emergency response & assoc costs are our responsibility. We dont have legislative authority to oversee evacuation. #AskTransMtn
Given known gaps in #BC #oilspill response (http://klou.tt/lozq1t60March5 ) how is going ahead w/ #pipelines not reckless? @TransMtn #AskTransMtn	@TorranceCoste Pipelines remain safest mode of transport. Our Emergency Management program based on continual improvement. #AskTransMtn
@TransMtn what made you think cutting down 13 trees on conservation land is ok? #AskTransMtn	@luhtizzle Cut 7 trees to enable geotech work at NEB direction to determine if BBY MTN route is feasible avoiding landowners #AskTransMtn
@TransMtn There have been two spills close together on Sumas Mountain. the line was uncovered for two years; what happened?	@jrsm5 2005 spill caused by land movement due to soil stockpiling near right-of-way by landowner; 2012 inside Terminal. 1/2 #AskTransMtn
	@jrsm5 The uncovered line reference is due to ongoing pipeline maintenance work not related to Sumas events. 2/2 #AskTransMtn
How quickly can you shut off the line in case of emergency? #AskTransMtn	@KissMeCass Aprox. 10 mins for detection + verification by Control Centre; 5 mins for valve closure #AskTransMtn

# **TABLE 1.9.4-1 Cont'd**

Question	TMEP Response
#AskTransMtn @TransMtn Y don't u take initiative on something as simple as an evacuation plan 4 area residents/SFU if safety is #1 priority	@dez_may We don't have legislative authority over evac. This is a municipal responbility but we work together to ensure safety #AskTransMtn
#AskTransMtn Do you feel you have more right the #cityofburnaby and its property then the actual people who inhabit it and its #mayor	@tiaretara We are regulated by NEB and comply with applicable laws & regulations. #AskTransMtn

The most popular topics tweeted about included:

- · earthquake preparedness;
- spill response and liability; and
- emergency evacuation procedures.

Figure 1.9.4-1 provides a word cloud of the most common words used in tweets using the #AskTransMtn hashtag during the October 27, 2014 Twitter Town Hall. The size of the words and block represent the relative usage of the word or phrase.

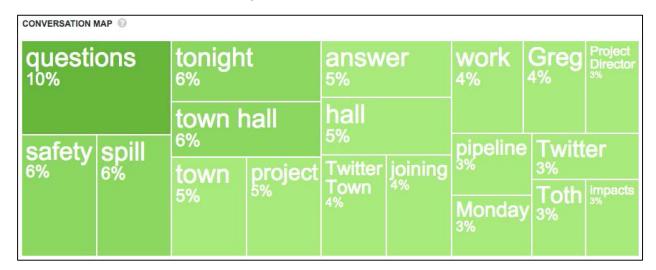


Figure 1.9.4-1 Word cloud of common terms in tweets during the October 27, 2014
Twitter Town Hall

On October 27, 2014, tweets that included #AskTransMtn averaged 39,000 impressions and peak impressions of 74,000. Trans Mountain received 62 click-throughs on links included in its tweets.

Trans Mountain created and distributed a Storify digest of all the questions asked and answered during its Twitter Town Hall. Figure 1.9.4-2 provides a screen capture of a portion of the Storify digest that was shared via Trans Mountain's blog. The full post can be found at <a href="http://blog.transmountain.com/recap-twitter-town-hall-on-pipeline-safety/">http://blog.transmountain.com/recap-twitter-town-hall-on-pipeline-safety/</a>.

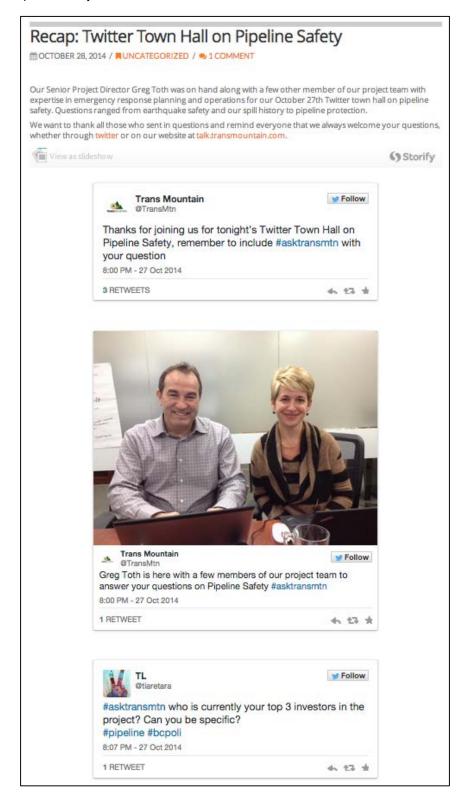


Figure 1.9.4-2 Screen capture of Storify digest summarizing the October 27, 2014
Twitter Town Hall

# 1.10 Engagement on Reactivation Sections

Engagement on the reactivation of segments of existing pipeline that form part of the Trans Mountain Expansion Project continued in Phase 5.

# 1.10.1 Reactivation Meeting – Jasper National Park

On August 12, 2014, Trans Mountain met with representatives of Jasper National Park and Mount Robson Provincial Park regarding reactivation of an existing pipeline through the parks, and natural hazard remediation. Attendees raised the following issues:

- location of valves;
- mitigation plans for natural hazard sites;
- level of disturbance to cultural resources sites compared to the 1950s as well as ancillary development such as access, power sites; and
- comprehensiveness of Aboriginal engagement.

The meeting concluded with a site visit co-ordinated with Parks representatives aimed at determining next steps for remediation. Issues identified by participants that have not already been identified in previous Updates are further detailed in Section 2.1, Topics of Interest or Concern – Alberta.

# 1.11 BC Parks Engagement

Trans Mountain's draft BC Parks Stage 2 Boundary Adjustment Application was reported in the Technical Update #3 on September 4, 2014 (Filing ID A4A7S3, A4A7S4, A4A7S5, A4A7S6, A4A7S7, A4A7S8, A4A7S9, and A4A7T1).

On October 23, 2014, Trans Mountain reported on engagement activities for the Coquihalla Summit Recreation Area in BC Parks Resource Use Permit (RUP) Application. A copy of the Resource Use Permit (RUP) Application is contained in Appendix B.

On November 13, 2014, Trans Mountain filed a Stage 2 Boundary Adjustment Application with BC Parks. A copy of the entire Application is located on Trans Mountain's website at <a href="http://www.transmountain.com/bc-parks-application">http://www.transmountain.com/bc-parks-application</a>. A copy of the Public Comment Report is contained in Appendix B. The BC Parks Stage 2 Boundary Adjustment Application reported on BC Parks engagement activities described in Consultation Update No. 2 (Filing ID A62087 and A62088) as well as information gathered during the public open comment period from August 25 to October 12, 2014. Comments were gathered from three sources:

- online comment form on www.transmountain.com website;
- email and phone submissions to Trans Mountain's email address (<u>info@transmountain.com</u>) and toll-free phone line (1-866-514-6700); and
- online comment form on BC Parks website (linked from <u>www.transmountain.com</u>).

Visitors to the Trans Mountain's website were encouraged to view documents and complete the comment form on that website. A link to the BC Parks hosted comment form was provided for those who wanted to provide comments directly to BC Parks. Comments submitted to BC Parks were subsequently shared with Trans Mountain as per the privacy agreement signed by the respondent. Information gathered during this open comment period met the guidelines provided by BC Parks for the development of the BC Parks Stage 2 Boundary Adjustment Application.

# 1.12 Parks and Recreation Areas Discussions with Local BC Governments

Between October 22, 2014 and December 15, 2014, Trans Mountain met with local governments in British Columbia to review potential construction impacts to municipal parks and seek feedback on how the parks are used by members of the community. In the Lower Mainland/Fraser Valley region meetings were held with the City of Surrey, City of Coquitlam, Township of Langley, City of Abbotsford and the City of Chilliwack. In the BC Interior Trans Mountain met with the City of Kamloops. These discussions will continue in Q1 2015 and there will be additional opportunity for feedback during engagement activities planned for spring 2015. The details of the discussions are summarized in Table 1.12-1 to 1.12-4.

TABLE 1.12-1
SUMMARY OF MEETINGS - PARKS DISCUSSION

Region	Location	Date	Number of Attendees
BC Interior	Kamloops Parks and Recreation Office	October 23, 2014	5
Lower	Surrey Municipal Hall	October 22, 2014	2
Mainland/Fraser	Coquitlam Municipal Hall	October 31, 2014	4
Valley	Township of Langley Civic Offices	November 24, 2014	3
	Abbotsford City Hall	November 24, 2014	6
	Chilliwack City Hall	December 15, 2014	1

SUMMARY OF NEW INTERESTS/CONCERNS – CITY OF COQUITLAM PARKS DISCUSSION

**TABLE 1.12-2** 

Category	Summary of Concern Raised
Environmental – Te	rrestrial
Environmental -	The Nelson Tributary is at King Edward Street
Terrestrial	All streams impacted in the United Boulevard area are Como watershed creeks
	Nelson Creek and Dawes Hill Creek are fish bearing
	Colony Farm watercourse is red coded (fish bearing and wet all year round)
	Nooksack dace in Stoney Creek (the south end is in Coquitlam)
	• There are western painted turtles and other species – be prepared to anticipate alternative habitat sites
	<ul> <li>Macquabeak Park is a boat launch providing the only access in Coquitlam to the Fraser River. It is important to keep access and ensure it is not compromised.</li> </ul>

**TABLE 1.12-3** 

# SUMMARY OF NEW INTERESTS/CONCERNS – CITY OF ABBOTSFORD PARKS DISCUSSION

Category	Summary of Concern Raised	
Environmental – Terrestria		
Terrain-geotechnical	<ul> <li>Construction footprint to accommodate deep gully at Clayburn Creek and creek through Straiton Park</li> <li>Wire sprinkler system. There are lots of wires underground at Ledgeview Golf</li> </ul>	
	Course  Protection of dykes at Sumas River	

#### TABLE 1.12-3 Cont'd

Category	Summary of Concern Raised
Forest Health/Timber	Loss of trees at Ledgeview Golf Course (Concern that no soil is put near large maple or cottonwood. We don't want to limit the roots, very significant).
	Loss of trees at Douglas Taylor Park
Water bodies	Fisheries value at creek through Straiton Park and in Douglas Taylor Park
Routing	
Current Land Use	Parking lot is used 10 months of year (Sumas River)
Operations and Maintenance - Construction	Duration of construction - Nesting season: Black Shir Glass nesting season and known blue heron nests in area (Sumas River)
Socio-Economic	
Human Health	Dredging may disturb naturally occurring asbestos (Sumas River)
Social and Cultural Well-	Impact to trail users, especially during construction (Straiton Park)
being	Historical value of Douglas Taylor Park and trail systems
Nuisance	Noise from construction (bore machine) in residential areas and recreation areas

#### **TABLE 1.12-4**

# SUMMARY OF NEW INTERESTS/CONCERNS – CITY OF CHILLIWACK PARKS DISCUSSION

Category	Summary of Concern Raised
Environmental – Terrestrial	
Environmental - Terrestrial	Future development of Balmoral Park

# 1.13 Technical Working Groups

New this reporting period, Trans Mountain initiated Technical Team Working Groups with local governments along the pipeline corridor. The purpose of these Working Groups is to provide an ongoing opportunity for Trans Mountain's engineering, routing and construction planning teams to work directly with the relevant local government staff to refine engineering, routing and construction plans and to address issues as they arise.

These Working Groups were initiated in communities throughout the Lower Mainland Fraser Valley region in late 2014 and will roll-out in the Interior BC and Alberta Regions in Q2/Q3 2015. The Technical Working Groups will meet on an as-needed basis throughout the construction planning phase with an option to be continued through construction if needed.

# 1.13.1 City of Coquitlam, August 11, 2014

On August 11, 2014 Trans Mountain met with the City of Coquitlam who identified the following:

- Positive response to potential re-alignment further west along Hartley Avenue to avoid Schooner Street.
- Interest in construction details such as plating at end of day and speed of construction progress.
- Concern about depth of pipe as it relates to future City works on Coquitlam infrastructure (i.e., storm sewer). United Boulevard is deteriorating. At some point the City will need to reconstruct the street and some of the side streets

- (i.e., Fawcett). Typically all utilities would come out, then be put back. Challenging earthworks. Prefer new pipe to be placed deeper.
- When Gateway traffic (heavy trucks) complete, Coquitlam will repave the area in 2015-2016. Requested Trans Mountain do work earlier rather than later. Coquitlam would hold off their work if practical until Trans Mountain complete.
- Methane capture wells in the area.
- Interest in method of crossing Nelson Creek.

### 1.13.2 Metro Vancouver Regional District, October 1, 2014

On October 1, 2014 Trans Mountain met with Metro Vancouver who identified the following concerns.

- Information Request process is cumbersome, meeting face-to-face is preferred.
   Metro Vancouver noted that meetings would be for exchange of technical information and do not indicate support for TMEP.
- Preference for alignment outside of Surrey Bend Park. Requested that TMEP consider alignment near southeast corner of Surrey Bend Park to deviate outside of the park (to the south) along an unused section of 104 Avenue (near 176 Street) to protect the park.
- Concerns about continuing need for access to right-of-way/pipeline within Surrey Bend Park (*i.e.*, don't want strip of grass where access is required).
- Concern about remediation of land after pipeline install through Surrey Bend Park (*i.e.*, don't want a strip of grass for remediation of sensitive wetland).
- Indicated that TMEP may need Provincial approval due to covenants on Surrey Bend Park.
- Concern about lack of clearance between Metro Vancouver water mains and pipeline. Metro Vancouver requires unrestricted access to water mains for future repairs.
- Concern about permits to work around Metro Vancouver water mains (*i.e.*, don't want onerous process to get approvals and inspectors out).
- Preferred option for routing on Coquitlam Landfill site (i.e., Eaglequest Golf Course) is to stay to north or central access road. Coquitlam interceptor (sewers) in area and many restrictions for working around them. Supportive of directional drill in this area.
- Concern about need to dredge at Second Narrows in the future (*i.e.*, Metro Vancouver water mains below the channel).
- Interest in the status of environmental surveys within Surrey Bend Park.

#### 1.13.3 City of Surrey, October 22, 2014

As part of ongoing engagement, Trans Mountain met with the City of Surrey on October 22, 2014 to provide an update on the Project, review the list of municipal parks and protected areas affected by proposed route and identify areas of interest or concern. The following issues/concerns were identified in the meeting.

- Municipal priority is to minimize impacts to residents, the environment and avoid impacts to City infrastructure (*i.e.*, roads).
- Construction techniques and location of the pipeline. Municipality believes pipeline should be located at the bottom of the hill near the new South Fraser Perimeter Road (SFPR) to minimize impacts to nearby residents.
- In Surrey Bend put back to wetland condition. Construct in August when less wet. Mitigation must be above and beyond what is required.
- There is habitat conservation near the Golden Ears Connector (GEC).
- Thought the idea of a walking path back along edge (i.e., border with SFPR) is not ideal. Too sensitive an area.

# 1.13.4 City of Abbotsford October 27, 2014

Trans Mountain met with the City of Abbotsford on October 27, 2014 when the following interests/concerns were raised:

- interest in TMEP commitment to undertake feasibility of trenchless technology in Sandy Hill area;
- concern about impact to park users if construction impacts park access;
- interest in learning more about mitigation plans for parks areas;
- concern about impact of TMEP on Ledgeview Golf Course, interest in ensuring adequate compensation;
- concern about impact to Douglas Fraser Park July 2017 Trans Canada Trail heritage celebration;
- relayed that the Sumas Band indicted recently to the City that all of Sumas Mountain is considered sacred;
- concern about gravel company blasting near pipeline on Sumas Mountain;
- interest in how High Consequence Areas are determined;
- interest in risk assessment and mitigation of risks;
- interest in learning whether additional valves and valve locations mean safer pipe;
- Concern that feedback will be seriously considered;
- concern about human error factoring into making spills more serious (i.e., Sumas Terminal January 2012 incident);
- water issues in agricultural areas (*i.e.*, flood control in winter and irrigation in summer);
- interest in knowing whether TMEP will abide by municipal bylaws;
- interested in learning more about construction communication plan; and
- Oregon spotted frog in the area Species at Risk Act species.

# 1.13.5 Fraser Valley Regional District (FVRD), November 3, 2014

On November 3, 2014 Trans Mountain met with FVRD who raised the following concerns.

- Sensitivity that the information presented in the Risk Assessment is baseline risk (*i.e.*, unmitigated).
- Concern about construction at water crossings.
- Developing an Official Community Plan (OCP) for Popkum. FVRD is considering development in this area and Minter Gardens is for sale, so road alignments not yet determined in the area. The FVRD water line is close to existing Trans Mountain Pipeline in Popkum. The community has plans for expansion of water infrastructure (i.e., 20 year future plan). Consultation on the OCP will occur spring 2015.
- Requested 90 days-notice in advance of doing geotechnical investigation.

# 1.13.6 Township of Langley, November 24, 2014

On November 24, 2014 Trans Mountain met with the Township of Langley who identified the following:

- Prefer pipeline not to be installed in 88th Avenue (i.e., main arterial route, could be expand to four lanes in future).
- Concern about future costs/process of installing and maintaining City infrastructure around future pipeline. Long-term impact with maintenance, crossings, and future work.
- Desire for future North-South trail connection in that area. Prefer trail on eastern or western boundary of Redwoods property.
- Water crossings a concern (i.e., aguifer contamination/interruption)
- Inquires about geotechnical risk in Langley.

# 1.13.7 Chilliwack Technical Team Meeting, December 15, 2014

On December 15, 2014 Trans Mountain met with the City of Chilliwack who identified the following concerns.

- Landowners requested that the pipe is installed deeper for agricultural practices.
- Concerned about detoured route around Balmoral Park and South Sumas Detour near IR 13.
- Concerned with 30 metre safety zone they are unable to maintain city streets without asking KMC for permission. City doesn't want to have to ask KMC'S permission for maintaining roadways.
- Impacts to residential neighbourhood (during construction and operation).
- City doesn't want TMEP in its roadways, prefers BC Hydro right-of-way alignment that avoids city roads.
- Construction delay in regulatory process may impact migratory birds.

- Impact to Vedder River spills.
- Landslides third-party damage are hazard concerns as is corrosion.
- Air quality.
- Noise of trenchless technology near residential areas and Watson Elementary School.

# 1.14 Ongoing Community Conversations/Notifications

During Phase 5, Trans Mountain continued to provide accurate and timely information, as well as gathering stakeholder feedback through a series of engagement activities. Feedback received through Trans Mountain's engagement activities for this reporting period that have not already been identified in previous Updates are further detailed in the Summary of Outcomes, Section 2.0.

# 1.14.1 Westridge Neighbours

On May 2, May 8 and May 9, 2014 Trans Mountain met or spoke with representatives of the Westridge community. During these conversations the residents raised the following concerns:

- recent concerns about existing operations (i.e., noise);
- aesthetics of the proposed dock location;
- concerns about increase in tanker noise and lighting;
- concern about property values; and
- concern about health impacts of emissions related to the expansion.

While outside of the reporting period for this document, on January 6, 2015, as part of ongoing engagement efforts, Trans Mountain mailed a letter to approximately 2,627 residents of Westridge and Burnaby Mountain neighbourhoods inviting neighbours to provide feedback on how they would like to be engaged in the Project going forward. The offer was extended via email to neighbours in the Meadowood subdivision as well. A copy of the letter is contained in Appendix C. Trans Mountain will incorporate feedback provided into continuing engagement efforts.

# 1.14.2 City of Abbotsford

At the request of Council, Kinder Morgan Canada President Ian Anderson met with the Mayor and CAO of the City of Abbotsford on May 7, 2014. Council was unhappy that Trans Mountain was not addressing the cities concerns adequately or in a timely manner. Trans Mountain reiterated its commitment to continue dialogue and address concerns raised to the extent practical. A follow-up meeting was arranged with staff for May 13, 2014, when the following interests/concerns were raised:

- request to relocate pipe around Sandy Hill neighbourhood;
- request for TMEP to hold event for Sandy Hill residents to learn more about Trans Mountain's plans in their neighbourhood;
- number and location of isolation valves; more isolation valves to reduce impact of spill in Abbotsford;

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- timely response of resources to a pipeline spill in Abbotsford;
- truck traffic disruption across Sumas Way (*i.e.*, no other option to re-route truck traffic but bedrock may challenge trenchless);
- pipeline installation technique near Mount Lehman Fire Hall; fire hall must remain open, road provides access to community facilities;
- reimbursement of city costs where staff spend time doing work to facilitate TMEP pipeline installation;
- tree removal in parks to accommodate right-of-way and temporary construction area; and
- relocation of pipeline to avoid Ledgeview.

### 1.14.3 Open House, Edmonton, AB

On June 9, 2014, Trans Mountain held an Open House in Edmonton, AB to discuss proposed pipeline corridor optimization in West Edmonton. Details of the Open House in Edmonton, AB are summarized in Table 1.14.3-1 to 1.14.3-2.

#### **TABLE 1.14.3-1**

# **OPEN HOUSE - CITY OF EDMONTON, AB**

Region	Location	Date	Number of Attendees
Alberta	West Edmonton	June 9, 2014	9

A summary of interests and concerns identified by participants are summarized in Table 1.13.3-2. See also Table 2.2-2, Engagement Summary – Whitemud Extension (RK 43.1 To RK 45.9) in Technical Update No. 2 (Filing ID A4A4A5).

**TABLE 1.14.3-2** 

#### SUMMARY OF NEW INTERESTS/CONCERNS - EDMONTON, AB

Category	Summary of Concern Raised		
Routing			
Current Land Use	Attendees raised questions regarding the proposed corridor and the potential for other corridors to be considered in the future.		
	Proximity of the pipeline in the Transportation/Utility Corridor (TUC) portion of the route to new high-density residential developments.		
Construction	Potential impacts to traffic flow during construction – particularly along Anthony Henday Drive.		
Future Land Use	Potential conflicts with City of Edmonton's plans along Whitemud Drive extension.		
Safety			
Pipeline Safety	Proximity of the proposed pipeline to residences along the TUC, as City of Edmonton does not require a setback for residential buildings along the TUC.		
Stakeholder Engagement			
Engagement	Social media and public outreach were suggested as ways to reach more members of the public, as well as mail drops to neighbours. Attendees indicated that they heard of the info session through various means including local signage, Twitter and community Facebook pages.		

# 1.14.4 City of Coquitlam

Trans Mountain met with the City of Coquitlam June 13, 2014. The City has two concerns.

- 1. Colony Farms temporary construction area:
  - Concern about temporary construction area in Colony Farms Regional Park.
  - City staff confirmed that Council did not raise concerns about routing or construction on non-park lands between Colony Farms Park and the Fraser River.
  - Interest in having Trans Mountain and Metro Vancouver work together on their construction schedule.
- 2. United Boulevard disruption:
  - United Boulevard area requires repaying.
  - There are only certain access points to United Boulevard and 23 per cent of all Coquitlam employment is in that area, with more than 500 businesses and. 8,000 people working in this area. It is a very important business area for Coquitlam.
  - Construction methods across creek crossings (i.e., Dawes Hill may be open channel).
  - Methane (i.e., safety) from an old dump in area.
  - Communications to United Boulevard area businesses during construction.

See Section 1.14.13 for additional information about the United Boulevard area.

# 1.14.5 Sandy Hill Neighbourhood Information Session

On June 25, 2014 Trans Mountain held an Information Session for Sandy Hill neighbourhood residents who live near the existing pipeline and may be impacted by plans to twin the pipeline through their residential neighbourhood. With input provided by the City of Abbotsford, invitations were sent to 430 residences within close proximity of the Trans Mountain pipeline in Sandy Hill, Abbotsford. The invitation was also extended to residents of Cedar Springs Strata via email. The event was attended by approximately 10 members of the community. A copy of the invitation is contained in Appendix C.

Sandy Hill neighbourhood residents raised the following concerns:

- construction impacts/ nuisance;
- Project timing;
- existing pipeline operations (i.e., maintenance and safety); and
- impact on property values.

#### 1.14.6 Port Moody Town Hall

On June 25, 2014, Trans Mountain participated in a public Town Hall panel organized by the City of Port Moody, for Port Moody residents. Residents in attendance raised the following concerns:

Application and NEB review process;

- health impacts;
- general environmental and socio-economic impacts of the Project such as allocation of benefits, costs and risks;
- potential environmental and socio-economic effects of marine shipping activities; and
- emergency response planning (both during construction and from operations) future expansion.

#### 1.14.7 City of New Westminster

On July 15, 2014 Trans Mountain met with City of New Westminster staff who identified the following concerns:

- proximity to environmentally sensitive Brunette River: impact from construction and in event of an oil spill;
- risk of oil spill; and
- concern with companies using contract emergency responders to respond to an emergency; indicated that experience with contract responders in other industries has not been positive.

#### 1.14.8 Kamloops Hotel Association

On July 17, 2014, Trans Mountain provided a project briefing and preliminary workforce hosting overview to 22 members of the Kamloops Hotel Association who represent the majority of hotel and motel accommodation properties in Kamloops. A copy of the presentation is provided in Appendix F. Attendees identified the following interests and issues:

- high interest in providing accommodation for workforce;
- concern about timing overlap with peak-capacity seasons; and
- interest in opportunities for local workforce and businesses.

#### 1.14.9 Village of Belcarra

On July 18, 2014 Trans Mountain met with the Mayor of the Village of Belcarra to share information about and seek input to a recreational boating study. In this meeting, the Mayor suggested Trans Mountain consider safety of the recreational boater and suggested measures such as navigational aids and traffic schemes. The Mayor also suggested Trans Mountain consider the following related to Westridge Marine Terminal:

- vessel traffic including recreational traffic;
- WCMRC geographic response plans, geo mapping;
- one workshop about developing response strategies;
- primary containment and secondary protection of environmentally sensitive areas;
- must have home based facilities on water with full time resources to deploy; and

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 the spill in 2007 generated lessons learned including access to facility, did not get acted on.

#### 1.14.10 Routing Notification Letters, Technical Update No. 1

On August 1, 2014 Trans Mountain filed its Technical Update No. 1, Part 1 – Routing and Consultation Update No. 2 with the NEB, which documented its engagement efforts related to ongoing route optimization (A62087 and A62088). In advance of that filing, Trans Mountain notified the Fraser Valley Regional District and the City of Chilliwack of the following revisions it would be filing with the NEB.

- Trans Mountain will be adjusting its corridor in the area of the Ohamil Indian Reserve No. 1, where the previously proposed pipeline corridor that crossed the Reserve between RK 1057.5 and RK 1059.0 will now become the alternative pipeline corridor. In addition, the proposed revised pipeline corridor will now avoid the Reserve and will be located within the easement associated with the Trans-Canada Highway. This decision is the result of an inability to reach an agreement on the proposed routing on Reserve lands with the Shw'ow'hamel First Nation.
- Trans Mountain will be adjusting its corridor in the area of the Grass Indian Reserve No. 15, where the previously proposed pipeline corridor that crossed the Reserve between RK 1091 and RK 1091.5 will now become the alternative pipeline corridor. In addition, the proposed revised pipeline corridor will now avoid the Reserve by following its east and south boundaries. This decision has been made because of the inability to reach an agreement on the proposed routing on Reserve lands with the Ts'elxweyeqw Tribe.

Figure 1.14.10-1 and Figure 1.14.10-2 provide a copy of the proposed pipeline corridor refinement notification letter to the City of Chilliwack dated July 25, 2014. Copies of the maps showing the adjusted corridor in the area of the Ohamil Indian Reserve No. 1 and in the area of the Grass Indian Reserve No. 15 are located in Appendix C.



Trans Mountain Expansion Project

☐ Email: info@transmountain.com | Phone: 1.866.514.6700 | Website: www.transmountain.com | TransMtn

July 25, 2014

Sharon Gaetz, Mayor City of Chilliwack 8550 Young Road Chilliwack, BC V2P 8A4

Dear Mayor Gaetz,

## Re: Trans Mountain Expansion Project – Proposed Pipeline Corridor Refinement at Grass

On December 16, 2013, Trans Mountain Pipeline L.P. (Trans Mountain) filed its Facilities Application with the National Energy Board (NEB) for a proposed expansion of the Trans Mountain Pipeline System. In the Application, Trans Mountain identified a proposed pipeline corridor and in some cases proposed alternative pipeline corridors. Following the December filing, Trans Mountain continued its work to optimize the route and reduce impacts to people and the environment through a combination of technical and environmental studies, engagement activities with stakeholders, landowners and Aboriginal groups, and on-the-ground fieldwork. Trans Mountain's engagement is ongoing.

This is to notify you of some recent revisions that may be of interest to you. In the coming weeks Trans Mountain will be filing this information with the NEB.

Trans Mountain will be adjusting its corridor in the area of the Grass Indian Reserve No. 15, where the previously proposed pipeline corridor that crossed the Reserve between RK 1091 and RK 1091.5 will now become the alternative pipeline corridor. In addition, the proposed revised pipeline corridor will now avoid the Reserve by following its east and south boundaries. This decision has been made because of the inability to reach an agreement on the proposed routing on Reserve lands with the Ts'elxweyeqw Tribe Limited Partnership. Please see the attached map that illustrates the proposed pipeline corridor refinement in this area.

The final route of the pipeline will not be determined until after the NEB issues a Certificate of Public Convenience and Necessity for the Project, and provides authorization under Section 34 of the NEB Act for the Project's detailed route.



Figure 1.14.10-1 Notification Letter to the City of Chilliwack, Page 1 of 2



Trans Mountain Expansion Project

Should you have questions about this pipeline refinement, please contact Lexa Hobenshield at 604.809.9869 or <a href="mailto:lexa\_hobenshield@kindermorgan.com">lexa\_hobenshield@kindermorgan.com</a>. More information about the proposed project is available at <a href="mailto:www.transmountain.com">www.transmountain.com</a>.

Sincerely,

Greg Toth

Senior Project Director

Attachment

.cc David Blain, City of Chilliwack

KINDER

2844 Bainbridge Avenue, PO Box 84028, Bainbridge, Burnaby, BC, V5A 4T9 CANADA

Figure 1.14.10-2 Notification Letter to the City of Chilliwack, Page 2 of 2

August 21, 2014, Trans Mountain notified via letter the City of Chilliwack of recent pipeline corridor revisions resulting from ongoing engagement with the Matsqui First Nation and of Trans Mountain's agreement to consider an alternative pipeline corridor that traverses the southwest

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corner of the Matsqui Main No. 2 Indian Reserve (IR) for approximately 160 m. The alternative pipeline corridor located between RK 1129.0 and RK 1129.8 was illustrated on an attached map. A copy of this letter and map is contained in Appendix C.

#### 1.14.11 Routing Notification Letters, Technical Update No. 2

On August 22, 2014, Trans Mountain notified Westridge neighbours and the City of Burnaby it had filed Technical Update No. 2 (Filing ID A4A4A5) with the National Energy Board. Figure 1.14.11-1 and Figure 1.14.11-2 provides a copy of the notification letter sent to Westridge neighbours. A of the letter sent to the City of Burnaby is contained in Appendix C.

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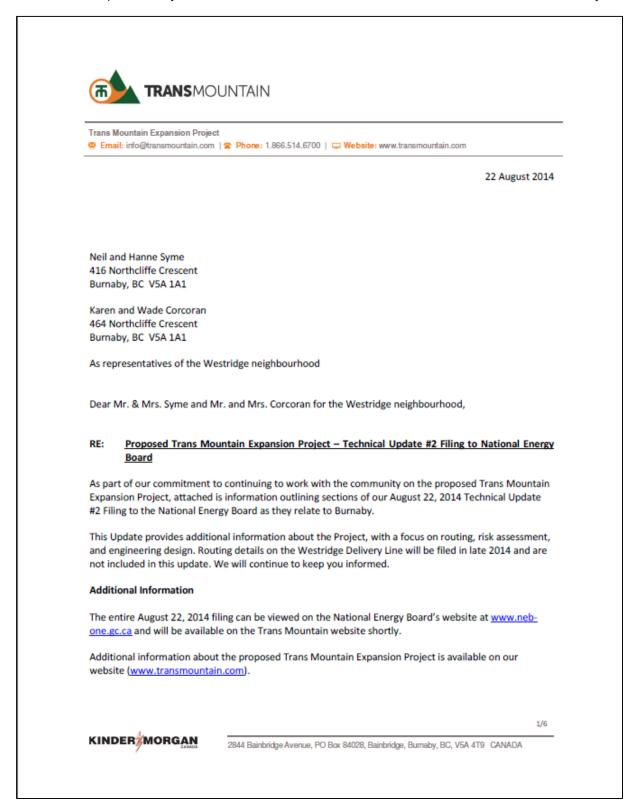


Figure 1.14.11-1 Notification Letter to Westridge Neighbours, Page 1 of 2



Figure 1.14.11-2 Notification Letter to Westridge Neighbours, Page 2 of 2

#### 1.14.12 District of Hope

In addition to routing engagement within the District of Hope that has been previously reported in Consultation Update No. 2 (Filing ID A62087 and A62088), Trans Mountain also met with District staff and Nestles Waters on September 17, 2014 to review specific interests related to the proposed routing alignment along Othello Road and through the Nestle Waters property.

#### 1.14.13 United Boulevard Information Session

In discussions with both the Tri-Cities Chamber of Commerce and City of Coquitlam, they advised that the Hard Rock Casino and other businesses in the United Boulevard business area had suffered business losses from recent construction projects in the area. The businesses in the area were interested in discussing their concerns with Trans Mountain. After discussions with some area businesses, Trans Mountain decided to host an event where the local business community could learn more about Trans Mountain's plans and ask questions.

Trans Mountain hosted an invitation-only workshop on September 17, 2014 to seek feedback on routing alternatives under consideration in the United Boulevard area of the City of Coquitlam. Invitations letters were sent to 354 businesses and 49 of those letters were returned (after the event) as undelivered. Following the Information session, 305 businesses were sent a follow-up letter inviting them to participate in an online survey of which four business provided information via the online survey. Copies of both letters are contained in Appendix E. Details of the United Boulevard Information Session are summarized in Tables 1.14.13-1 and 1.14.13-3

**TABLE 1.14.13-1** 

#### UNITED BOULEVARD INFORMATION SESSION - CITY OF COQUITLAM, BC

Region	Location	Date	Number of Attendees
Lower Mainland/Fraser Valley	Hard Rock Casino, 2080 United Boulevard, Coquitlam	September 17, 2014	10

The following is a listing of those organizations in attendance at the United Boulevard Workshop.

**TABLE 1.14.13-2** 

#### ATTENDEES - UNITED BOULEVARD INFORMATION SESSION

Organization	
Home Depot	Tri Cities Chamber of Commerce
Hard Rock Casino – Great Canadian Gaming Corporation	Williams Moving
Refrigerative Supply	City of Coquitlam
Rheama Health Products	Westminster Savings Credit Union

**Note**: Some organizations had more than one representative in attendance.

#### **TABLE 1.14.13-3**

# SUMMARY OF NEW INTERESTS/CONCERNS – UNITED BOULEVARD INFORMATION SESSION

Category	Summary of Concern Raised
Land Based	
Access – Private Land	<ul> <li>Impact to businesses – even minimal disruption will be negative.</li> <li>Need to be kept apprised of any road closures significant truck traffic to and from facility.</li> </ul>
Routing	
Future Land Use	<ul> <li>Interest and support for corridor alignment option further west along Hartley Avenue to existing Trans Mountain right-of-way, to avoid Schooner Street.</li> <li>Questions about why route did not follow CN corridor immediately south of Highway 1.</li> </ul>
Operations and Maintenance  – Construction	<ul> <li>Duration of construction directly in front of business and along the corridor – traffic delays can reduce business.</li> <li>Complete an engineering assessment on all buildings prior to construction commencing, could help to reduce damage claims later.</li> <li>TMEP consider a three to four-metre burial depth for the pipeline so that future utility upgrades could be done above it.</li> <li>Workers Compensation Board (WCB) of BC may have concerns regarding methane gas and excavation. Suggested gas sampling before excavating.</li> </ul>
Socio-Economic	
Economic Impact – access	Access to businesses during construction, loss of revenue, construction fatigue.
Nuisance	<ul><li>Disruption of services during construction – power/water.</li><li>Noise (bylaws).</li></ul>

The following materials presented at the United Boulevard Information Session are included in Appendix E:

- display boards; and
- local and regional maps.

As part of the invitation, Trans Mountain communicated it would deliver a short presentation during the Information Session, however due to small number of attendees, individual conversations were most effective and the presentation was not delivered to the group. On December 1, 2014, the City of Coquitlam requested that Trans Mountain provide a summary of consultation related to businesses in the United Boulevard area of Coquitlam. A summary of consultation was delivered to the City of Coquitlam on January 19, 2015 and a copy is contained in Appendix C. The document summarizes input related to its proposed routing in the United Boulevard area.

#### 1.14.14 Lower Mainland Fraser Valley Air Quality Coordinating Committee

Trans Mountain met with Metro Vancouver and other stakeholders via the Lower Mainland Fraser Valley Air Quality Coordinating Committee on September 25, 2014 to discuss issues related to air quality in the region as they relate to the Project. A summary of concerns raised in this meeting is contained in the PMV Consultation Summary contained in Appendix C.

#### 1.14.15 Stoney Creek Environment Committee Working Group (SCECWG)

Trans Mountain has been involved through its Operations with the Stoney Creek Environment Committee for many years. It participates in the Stoney Creek Environment Committee Working

Group (SCECWG), a group of stakeholders that have a common interest in the Stoney Creek corridor. The committee is chaired by City of Burnaby staff and includes other organizations such as SFU, UniverCity, Metro Vancouver, along with several resident volunteers to the committee. On October 22, 2014, Trans Mountain attending a bi-annual SCECWG meeting where it provided an update on its studies in the area and provided a TMEP routing update to the group.

#### 1.14.16 Chilliwack Economic Development Corporation (City of Chilliwack)

At their request, Trans Mountain met with the Chilliwack Economic Development Corporation (CEDC) on October 21, 2014 to discuss community benefits, academic benefits, jobs and procurement opportunities, construction opportunities, and spin-off economic development opportunities. CEDC is interested in taking advantage of opportunities for local businesses in the area throughout the project. Engagement on jobs and training will cotinine in 2015 Q1. Trans Mountain will include CEDC in future discussions about jobs training and procurement engagement.

#### 1.14.17 Eagle Creek Streamkeepers

On October 22, 2014, Trans Mountain met with the Eagle Creek Streamkeepers to provide a tour of Burnaby Terminal and review its proposed expansion plans for the site. Trans Mountain representatives provided a site layout of the proposed Project and provided brief overview of its operations. Eagle Creek Streamkeepers shared mapping of the watercourses on Burnaby Mountain. The group discussed water courses that flow through Burnaby Terminal and into Stony Creek and Eagle Creek tributaries. The Eagle Creek Streamkeepers raised the following concerns.

- Groundwater aeration is important (dissolved oxygen).
- Concerned about culverting above ground streams.
- Flashing. This site is different than a natural setting. There is a need to maintain groundwater input. The water is diverted from natural water quality. Miss the bugs, invertebrate's habitat.

#### 1.14.18 BC Hydro

On November 19, 2014 Trans Mountain met BC Hydro to discuss the status of a study being conducted by BC Hydro that would determine whether the pipeline could be placed within the BC Hydro right-of-way in Chilliwack to avoid alternate routing not favoured by the City of Chilliwack. This was one of several meetings with BC Hydro that took place during this timeframe. The others were technical in nature and are not included in this consultation update. BC Hydro estimated that the study would be complete in 2015 Q1. Trans Mountain needs this information in order to make detailed routing and engineering decisions.

To alleviate concern about the burden of working near Trans Mountain pipeline infrastructure, Trans Mountain is developing standard crossing agreements for a set of crossings that outline standard permissions required for working near its infrastructure.

BC Hydro was concerned about the risk of a spill on the BC Hydro right-of-way.

Additional meetings with BC Hydro to discuss consultation responsibilities and requirements in the BC Interior related to potential power upgrades are reported in Section 1.16.

#### 1.14.19 Simon Fraser University (SFU)

On December 9, 2014 Trans Mountain met with Simon Fraser University (SFU) to review a desktop scenario that explored a local sequence of events and local resources requirements in the event of an incident with current operations at Burnaby Terminal. Emergency planning and response have been areas of concern.

The following provides a summary of the issues identified in that meeting.

- Desire to understand air quality measurement.
- Desire to have access to air monitoring information.
- Concern that the company wants to tie into City water that supplies Burnaby Mountain potable water.
- Concern about sufficient availability of water in the company's fire water pond.
- Desire to understand water flow on Burnaby Terminal site and how it leaves Burnaby Terminal, given significant effort SFU has put into its water handling and drainage in recent years.
- Concern about water handling during operations, emergency response and proposed construction.
- Desire to communicate about expansion.
- Concern that City of Burnaby Fire Department's refusal to respond would create additional harm to residents and students/staff on Burnaby Mountain.
- Concern about SFU ability to shelter in place.
- SFU has its own hazmat issues in event of emergency.
- Desire to understand company's level of preparedness for 'worst case' (*i.e.*, fire, terrorism, seismic).
- Concern about expanded Emergency 'Zones' of impact with proposed Project as tanks will be located closer to Burnaby Mountain community.
- Concern that trained resources are not in place to respond to an emergency (*i.e.*, company staff, contractors, equipment) and location of those resources.
- Desire to understand communication process in event of emergency.
- Concerns about access and egress from Burnaby Mountain in event of emergency (i.e., only road access to/from mountain is directly above Burnaby Terminal).

#### 1.14.20 Facility Neighbour - Meadowood Subdivision

On December 16, 2014, Trans Mountain meet with a facility neighbour in the Meadowood subdivision, immediately south of Shellmont Street across from its Burnaby Terminal. The stakeholder raised the following concerns.

 Potential impact on a treed buffer area west of the subdivision but located on Shell's property. Trans Mountain confirmed in the meeting that the 'treed buffer' would not be disturbed, with the exception of danger trees (if any) to ensure safe construction working conditions.

 How Trans Mountain would address surface drainage during construction as water is an issue around homes in the neighbourhood. Trans Mountain will survey the Shell site to identify site drainage and create a plan to address water run off during construction.

#### 1.14.21 Community Information Session, Black Pines, BC

In December 16, 2014, Trans Mountain met with residents of Black Pines community in Kamloops, BC to provide an overview of the Trans Mountain Expansion Project, information about the proposed and current right-of-way, landowner engagement activities and the proposed pump station location. The details of the meeting with Black Pines community residents are summarized in Table 1.14.21-1 to 1.14.21-3. Issues identified by participants that have not already been identified in previous Updates are further detailed in Section 2.2, Topics of Interest or Concern – BC Interior.

#### **TABLE 1.14.21-1**

#### COMMUNITY INFORMATION SESSION, BLACK PINES, BC

Region	Location	Date	Number of Attendees
BC Interior	Whispering Pines Community Hall	December 16, 2014	31

#### **TABLE 1.14.21-2**

#### ATTENDEES - BLACK PINES, BC

Organizations		
Thompson-Nicola Regional District (TNRD) Area Director	TNRD Public Works Director	
Thompson-Nicola Regional District, Chief Administration Officer (TNRD CAO)	Residents in Area P between City of Kamloops and Whispering Pines Reserve	
Members of Whispering Pines Indian Band		

Table 1.14.21-3 provides a summary of interests/concerns identified by attendees at the meeting with residents of Black Pines.

#### **TABLE 1.14.21-3**

#### SUMMARY OF NEW INTERESTS/CONCERNS - BLACK PINES COMMUNITY, BC

Issue Category	Summary of Concerns Raised
Routing	
Future Land Use	Landowner concern new proposed right-of-way will run diagonally through property.  Already has Trans Mountain Pipeline right-of-way on one end of property
Other	<ul> <li>Questions re need for additional right-of-way for TMEP.</li> <li>Width of TMEP right-of-way where it aligns with TMPL right-of-way.</li> </ul>
Safety	
Emergency Response	Concern regarding lack of fire protection at new pump site location and measures that will be put in place to assist with fire mitigation.

#### **TABLE 1.14.21-3 Cont'd**

Issue Category	Summary of Concerns Raised
Socio-Economic	
Economic Benefit/Impact	Residents were interested in TMEP support for a new water intake.

#### 1.15 Information Requests

As part of its ongoing stakeholder engagement and communication activities, Trans Mountain continues to respond to inquiries from stakeholders; these are outside of the formal NEB regulatory process. The following section provides an overview of responses to stakeholders issued during the reporting period.

Trans Mountain received and responded to the following Information Requests during the reporting period. These are in addition to the daily emails, letters and phone calls Trans Mountain receives and responds to.

#### 1.15.1 Port Metro Vancouver (PMV)

On June 11, 2014, Port Metro Vancouver (PMV) requested a summary of all consultation related to marine issues raised by stakeholders for TMEP. On January 5, 2015, Trans Mountain provided PMV with a summary that included all consultation on marine matters in the jurisdiction of PMV that have occurred since the Project was announced in May 2012. A copy of Trans Mountain's response is contained in Appendix C.

#### 1.15.2 Kamloops Naturalist Club

On July 11, 2014, Trans Mountain responded to a letter submitted by the Kamloops Naturalist Club requesting a detailed explanation of the cost savings anticipated by Trans Mountain if the Lac du Bois route were selected. A copy of Trans Mountain's repsonse is contained in Appendix C.

#### 1.15.3 City of Chilliwack

On August 1, 2014, the City of Chilliwack requested Trans Mountain to identify the documents filed with the NEB that addressed the issues of most concern to the City of Chilliwack. Specifically, they requested assistance to locate information within the NEB filings about:

- 1. Sardis-Vedder aquifer assessment of potential impacts of a pipeline spill
- 2. Mitigation measures proposed to minimize the impacts of the above
- 3. Vedder River Crossing Evaluation of value of the environmental feature
- 4. Proposed construction methodology
- 5. Measures proposed to limit potential impacts
- 6. Farmland construction restoration methodology and compensation proposed for lost crop production.
- 7. Procedure for crossing major roadways
- 8. Construction in backyards (if any) construction procedure, restoration standards, compensation (if applicable)

On November 12, 2014, Trans Mountain responded providing the locations of this information. A copy of Trans Mountain's response is contained in Appendix C.

### 1.15.4 Simon Fraser University (SFU)

On August 11, 2014, Simon Fraser University requested information from Trans Mountain about the following topics.

- What is the emergency plan for evacuation for SFU if there should be a fire at the tank farm and also how would SFU be affected by fumes/smoke in the case of such an emergency.
- When will the environmental base line studies for the area in and around the tank farm and the proposed route through Burnaby Mountain Park be completed?
- Concern about fuel vapours from Burnaby Terminal (noticeable on warm temperature days in July). Is Trans Mountain aware and is there any measurement of air quality at this time and how air quality may be affected with the tank farm expansion?

On September 22, 2014 Trans Mountain responded to the information request. A copy of Trans Mountain's response is contained in Appendix C.

#### 1.15.5 Member of the Legislative Assembly (Chilliwack-Hope)

On September 10, 2014 the Member of the Legislative Assembly (Chilliwack-Hope) requested information on behalf of a constituent from Trans Mountain concerning:

- pipeline crossings of the Coquihalla River, both existing and proposed;
- pipeline placement under the river or aerial crossing;
- valve locations to protect the Coguihalla River; and
- pipe specifications.

Trans Mountain's response dated October 22, 2014 is contained in Appendix C.

#### 1.15.6 Grasslands Conservation Council of British Columbia

On November 14, 2014, Trans Mountain responded to a letter submitted by the Grasslands Conservation Council (GCC) of British Columbia on October 12, 2014 that provided analysis and input into Trans Mountain's Stage 2 Detailed Proposal for the Lac du Bois Grasslands Protected Area. This written response was in follow up to the in-person meeting held on October 22, 2014 with representaives from the GCC and BC Parks to review topics on interest identified in the letter received by Trans Mountain.

At both the meeting and in the follow-up ritten response, Trans Mountain addressed the following concerns raised by the Grasslands Conservation Council:

- route selection;
- minimizing environmental impact;
- impacts on grazing; and
- financial implications.

A copy of Trans Mountain's repsonse is contained in Appendix C.

#### 1.16 Notice of Potential Pipeline Design Reconfiguration

In its December 1, 2014 filing with the NEB, Trans Mountain provided an overview of potential modifications to it project scope in the North Thompson Valley. The potential modifications would serve to reduce environmental impacts and significantly reduce the scope of upgrades to the utility power infrastructure currently required for the Project. Details of Trans Mountain's stakeholder engagement activities related to the proposed changes in project scope are contained in Technical Update No. 3, Section 3.1, Part 2 Hargreaves to Blue River (Filing ID A4F5G2).

Following consultation with local governments described in Technical Update 3, Trans Mountain provided a change of scope phone briefing to staff at the Regional District of Fraser Fort George (RDFFG) and the Village of Valemount. Topics of interest included the decreased environmental footprint of the pump station reconfiguration and decreased projected power requirements associated with the scope change, as well as updated spill modelling. Trans Mountain provided GIS files to the RDFFG as follow up to the briefing call.

Trans Mountain met with BC Hydro to understand the scope consultation requirements as part of the initial consideration of potential power upgrades. As an outcome of these meetings, Trans Mountain and BC Hydro developed collaborative processes outlining relative responsibilities for communication and engagement with First Nations and communities. These processes were then revised to reflect the subsequent pipeline design reconfiguration and associated reduction in power requirements.

#### 1.17 Schools Engagement

On October 17, 2014, Trans Mountain sent letters to the Superintendents of School Districts in British Columbia and Alberta where schools were identified to be within 300 m of the proposed pipeline corridor. The letter included a map that identified the proposed pipeline corridor in each school region. Copies of the letters and maps are contained in Appendix D.

Trans Mountain offered to set up a meeting with the Superintendent and/or representatives from the school[s] listed to discuss the proposed Project and to answer any questions they may have. Table 1.17-1 provides details of letters sent during the reporting period.

TABLE 1.17-1
SUMMARY OF LETTERS SENT TO SCHOOLS SCHOOL DISTRICTS

Date	School
October 17, 2014	Abbotsford School District (No. 34)
	Burnaby School District (No. 41)
	Chilliwack School District (No. 33)
	Langley School District (No. 35)
	Grande Yellowhead Public School Division No. 77
October 24, 2014	Abbotsford Christian Elementary School - Abbotsford School District advised letter was incorrectly addressed and should be forwarded directly to school
	Langley School District (No. 35) - sent to correct error in the superintendent title

To date, none of the School Districts or Schools, have requested a meeting to discuss the proposed project as outlined in Trans Mountain's invitation.

#### 1.18 Jobs and Training Engagement

Trans Mountain held a series of Open Houses focused on building community and resident readiness for potential employment opportunities related to the proposed Project, informing, increasing visibility and public support by communicating a positive employment story and demonstrating the third-party support by partnering with Post-Secondary Education Institutions. During the reporting period Jobs and Training Open Houses were held in the following communities:

- Valemount, BC on November 18, 2014;
- Blue River, BC on November 19, 2014;
- Clearwater, BC on November 20, 2014;
- Barriere, BC on December 2, 2014;
- Thompson Rivers University, BC on December 3, 2014; and
- Merritt, BC on December 4, 2014.

Jobs and Training Information Sessions were offered to Secondary Schools in each community where a community information was held. Sessions were adapted to align with education level and job readiness, and so were provided separately to grades 10, 11 and 12 students in the following communities:

- Clearwater, BC on November 20, 2014 (included Blue River students);
- Barriere, BC on December 2, 2014; and
- Merritt, BC on December 4, 2014.

In addition to the advertising described in Section 1.4.14, Trans Mountain also submitted a story to the Valley Sentinel (circulation 2,396) in Valemount, BC in an effort to promote the Jobs and Training Information Session in Valemount and Blue River. A copy of the story submitted is contained in Appendix G.

#### 1.18.1 Valemount. BC

Details of the Open House held in Valemount, BC are summarized in Table 1.18.1-1.

#### **TABLE 1.18.1-1**

#### OPEN HOUSE - VALEMOUNT, BC

Region	Location	Date	Number of Attendees
British Columbia, Interior	Banquet Room Best Western Plus Valemount Inn and Suites 1950, Valemount, BC V0E	November 18, 2014 5:30 –7:30 pm	40

Table 1.18.1-2 provides a summary of interests/concerns identified by attendees at Valemount Open House.

#### **TABLE 1.18.1-2**

#### SUMMARY OF NEW INTERESTS/CONCERNS - VALEMOUNT, BC OPEN HOUSE

Category	Summary of Interests/Concerns
Socio-Economic	
Employment/Training	<ul> <li>Interest in information on training and certification associated with potential job opportunities.</li> </ul>
	Questions raised regarding how to register for potential jobs.
	Identified some highly skilled local residents.
	<ul> <li>Questions raised regarding engineering and safety job opportunities.</li> </ul>
	<ul> <li>Residents expressed interest in safety training that would enable them to be eligible for semi-skilled work.</li> </ul>
Economic Benefit/Impact	Residents express interest in community workforce accommodation for managers and inspectors.
Procurement/Business Opportunities	Identified a potential safety contractor – referred to Lead Employment and Training.
	<ul> <li>Some residents expressed interest in receiving information regarding procurement opportunities.</li> </ul>
Community Capacity Building	Strong interest and support for the Project.
	<ul> <li>Appreciation for the early information sharing about potential employment opportunities in the community.</li> </ul>
	<ul> <li>Interest in how skills gained on the pipeline Project could transfer to other employment opportunities.</li> </ul>

Issues identified by participants that have not already been identified in previous Updates are further detailed in Section 2.2 Topics of Interest or Concern – BC Interior.

#### 1.18.2 Blue River, BC

Details of the Open House held in Blue River, BC are summarized in Table 1.18.2-1.

#### **TABLE 1.18.2-1**

#### OPEN HOUSE BLUE RIVER, BC

Region	Location	Date	Number of Attendees
British Columbia, Interior	Blue River Community Hall 885 Main Street Blue River, BC V0E1J0	November 19, 2014 5:30 – 7:30 pm	13

Table 1.18.2-2 provides a summary of interests/concerns identified by attendees at the Blue River Open House.

**TABLE 1.18.2-2** 

#### SUMMARY OF NEW INTERESTS/CONCERNS - BLUE RIVER, BC OPEN HOUSE

Category	Summary of Interests/Concerns	
Socio-Economic		
Employment/Training	<ul> <li>Interest in information on training and certification associated with potential job opportunities.</li> <li>Residents expressed interest in safety training that would enable them to be eligible for semi-skilled work.</li> <li>Residents were interested in educational information specific to trades.</li> <li>Strong interested in labourer and safety job opportunities.</li> <li>Question raised regarding minimum qualifications for potential labour jobs.</li> <li>Question raised regarding whether Trans Mountain will be hiring locally.</li> <li>Question raised around funding programs available for people to get trained and be job ready.</li> <li>Question raised regarding the need for the Project to hire those with First Aid qualifications.</li> <li>One resident asked for clarification on what is meant by the job title Heavy Duty Transport.</li> </ul>	
Economic Benefit	<ul> <li>One resident expressed the positive economic impact the Project could have on the community.</li> <li>One resident expressed interest in Trans Mountain building a sportsplex as a potential community benefit.</li> </ul>	
Community Capacity Building	<ul> <li>Strong interest and support for the Project</li> <li>Appreciation for the early information sharing about potential employment opportunities in the community.</li> <li>Interest in how skills gained on the pipeline Project could transfer to other employment opportunities.</li> <li>One resident expressed desire to have greater attendance at the event.</li> </ul>	

Issues identified by participants that have not already been identified in previous Updates are further detailed in Section 2.2, Topics of Interest or Concern – BC Interior.

#### 1.18.3 Clearwater, BC

Trans Mountain held one Open House and multiple Secondary School sessions in Clearwater, BC. Details of the events held in Clearwater, BC are summarized in Table 1.18.3-1.

TABLE 1.18.3-1

OPEN HOUSE AND SECONDARY SCHOOL, CLEARWATER, BC

Region	Location	Date	Number of Attendees
BC Interior	Clearwater Secondary School Gymnasium 440 Murtle Crescent, Clearwater, BC	November 20, 2104 8:30 am – 12:30 pm	99
	Dutch Lake Community Centre 209 Dutch Lake Rd Clearwater, BC, V0E 1N2	November 20, 2014 5:30 – 7:30 pm	22

Table 1.18.3-2 provides a summary of interests/concerns identified by attendees at the Clearwater Open Houses.

#### **TABLE 1.18.3-2**

#### SUMMARY OF NEW INTERESTS/CONCERNS - CLEARWATER COMMUNITY EVENTS

Category	Summary of Interests/Concerns	
Socio-Economic		
Employment/Training	Interest in information on training and certification associated with potential job opportunities.	
	<ul> <li>Identified some highly skilled local residents with more than one trade.</li> </ul>	
	• Students expressed interest in a wide variety of potential job opportunities, including construction and operations.	
	High level of interest in semi-skilled and trade positions.	
	High number of students expressed their desire to become welders.	
Community Capacity	Strong interest and support for the Project.	
Building	<ul> <li>Appreciation for the early information sharing about potential employment opportunities in the community.</li> </ul>	
	<ul> <li>Interest in how skills gained on the pipeline Project could transfer to other employment opportunities.</li> </ul>	
	Outreach and increased visibility of the Trans Mountain Project to grade 10-12 students, teachers and school administration.	

Issues identified by participants that have not already been identified in previous Updates are further detailed in Section 2.2, Topics of Interest or Concern – BC Interior.

#### 1.18.4 Barriere, BC

Trans Mountain held one Open House and multiple Secondary School sessions in Barriere, BC. Details of these events are summarized in Table 1.18.4-1.

TABLE 1.18.4-1

OPEN HOUSE AND SECONDARY SCHOOL SESSIONS IN BARRIERE, BC

Region	Location	Date	Number of Attendees
BC Interior	Barriere Secondary School Gymnasium 4811 Town Road, Barriere, BC V0E 1E0	December 2, 2014 11:30 am – 1:00 pm	72
	The Ridge Gymnasium 4936 Barriere Town Road Barriere, BC V0E 1E1	December 2, 2014 5:30 – 7:30 pm	17

Table 1.18.4-2 provide a summary of interests/concerns identified by attendees at the Barriere Open Houses.

#### **TABLE 1.18.4-2**

#### SUMMARY OF NEW INTERESTS/CONCERNS - BARRIERE EVENTS

Category	Summary of Interests/Concerns
Socio-Economic	
Employment/Training	Interest in information on training and certification associated with potential job opportunities.
	<ul> <li>High level of interest in the online registry and being connected for potential job opportunities.</li> </ul>
	Strong interest in a broad spectrum of jobs including construction and operations.
	Strong interest in potential job opportunities that would keep them close to home.
	Question raised regarding the length of time people will be potentially employed.
	Question raised regarding the different between a Red Seal and Journeyman ticket.
Community Capacity	Strong interest and support for the Project.
Building	Appreciation for the early information sharing about potential employment opportunities in the community.
	Outreach and increased visibility of the Trans Mountain Project to grade 10-12 students, teachers and school administration.

Issues identified by participants that have not already been identified in previous Updates are further detailed in Section 2.2, Topics of Interest or Concern – BC Interior.

#### 1.18.5 Thompson Rivers University, BC

Details of the Open House held at Thompson Rivers University, BC are summarized in Table 1.18.5-1.

TABLE 1.18.5-1

OPEN HOUSE - THOMPSON RIVERS UNIVERSITY, BC

Region	Location	Date	Number of Attendees
BC Interior	Thompson Rivers University School of Trades and Technology Room TT219 900 McGill Road Kamloops British Columbia V2C 0C8	December 3, 2014 11:30-13:00	82

Table 1.18.5-2 provide a summary of interests/concerns identified by attendees at the Thompson Rivers University Open House.

#### **TABLE 1.18.5-2**

#### SUMMARY OF NEW INTERESTS/CONCERNS - THOMPSON RIVERS UNIVERSITY, BC

Category	Summary of Interests/Concerns	
Socio-Economic		
Employment/Training	<ul> <li>Interest in information on training and certification associated with potential job opportunities.</li> <li>Strong interest in construction jobs, specifically trades opportunities.</li> <li>Strong interest in knowledge around construction timeline in relation to employment and educational pursuits.</li> <li>Question raised regarding the minimum qualifications needed to work on the pipeline.</li> <li>Question raised regarding the need for safety certifications for potential job opportunities.</li> </ul>	
Employment/Training (cont'd)	<ul> <li>Question raised regarding the job registry process.</li> <li>Question raised regarding on the job training and apprenticeship programs for the proposed Project.</li> </ul>	
Safety		
Emergency Spill Response	Question raised regarding measures taken to mitigate spills.	
Community Capacity Building	Outreach and increased visibility of the Trans Mountain Project to trades and technical students, professors, and administration.	

Issues identified by participants, which have not already been identified in previous Updates, are further detailed in Section 2.2, Topics of Interest or Concern – BC Interior.

#### 1.18.6 Merritt, BC

Trans Mountain held one Open House and multiple Secondary School sessions in Merritt, BC Details of these events are summarized in Table 1.18.6-1.

TABLE 1.18.6-1

OPEN HOUSE AND SECONDARY SCHOOL MERRITT, BC

Region	Location	Date	Number of Attendees
BC Interior	Merritt Secondary School Gymnasium 2040 Voght St. Merritt, BC	December 4, 2014 11:30 am – 1:00 pm	90
	Merritt Civic Centre Meeting Rooms: #2 and #3 1950 Mamette Ave. Merritt, BC V1K 1R6	December 4, 2014 5:30 – 7:30 pm	46

Table 1.18.6-2 provides a summary of interests/concerns identified by attendees at the Merritt Open Houses.

#### **TABLE 1.18.6-2**

#### SUMMARY OF NEW INTERESTS/CONCERNS – MERRITT EVENTS

Category	Summary of Interests/Concerns
Socio-Economic	
Employment/Training	<ul> <li>Interest in information on training and certification associated with potential job opportunities.</li> <li>Strong interest in semi-skilled and trades jobs.</li> <li>Questions raised regarding how to register for potential jobs.</li> <li>Identified some highly skilled local residents.</li> <li>Resident expressed interest in first aid job opportunities and certification to be eligible for these jobs.</li> <li>Question raised regarding further job events.</li> </ul>
O	
Community Capacity Building	<ul> <li>Strong interest and support for the Project.</li> <li>Appreciation for the early information sharing about potential employment opportunities in the community.</li> </ul>
Community Capacity Building (cont'd)	Outreach and increased visibility of the Trans Mountain Expansion Project to grade 10-12 students, teachers and school administration.

Issues identified by participants that have not already been identified in previous Updates are further detailed in Section 2.2, Topics of Interest or Concern – BC Interior.

#### 1.19 Emergency Preparedness and Business Continuity Conference

Trans Mountain participated in an Emergency Preparedness and Business Continuity Conference, held from November 18 - 20, 2014 at the Wall Centre, Vancouver, BC. The following issues were identified by attendees of the conference:

- geotechnical stability of Burnaby Mountain;
- emergency response;
- seismic stability and routing through Burnaby;
- ICS Training provided to employees;
- pipeline safety;
- risks associated with tanker traffic due to increased movement; and
- expansion of Puget Sound line.

Issues identified by participants that have not already been identified in previous Updates are further detailed in Section 2.3, Topics of Interest or Concern – Lower Mainland/Fraser Valley.

#### 1.20 Marine Engagement - Underwater Noise and Marine Mammals

Trans Mountain has been conducting an active engagement program with marine communities and First Nations in southwestern British Columbia and southern Vancouver Island for over two years. Trans Mountain has identified underwater noise and potential effects on marine mammals as a common concern related to the marine shipping sector. This is an issue not specific to the Project, but rather a shared concern across all marine development proposed to take place in this coastal area of BC.

February 2015

Since Trans Mountain filed its comment to Department of Fisheries and Oceans (DFO) Action Plan for the recovery of the Southern Resident Killer Whale in April 2014, the Project Team has participated in several industry-led discussions about multi-party, collaborative measures to proactively attempt to mitigate the impacts of underwater noise on marine mammals. Trans Mountain is not leading these discussions, but rather helping to inform them by sharing details of the company's marine operations and participating in the discussions that will evolve new best practices in marine shipping. For example Kinder Morgan Canada's Westridge Marine Terminal is a member of Green Marine (www.green-marine.org) which has initiated a working group to identify potential for a new performance metric to manage the commercial shipping sector's contribution to underwater noise. The committee has met three times to date and it expects to take approximately one year to develop the metrics and then another year phasing in potential application among the other evaluation criteria for member certification.

#### 1.21 Government Relations

Trans Mountain considers as part of its engagement with the broader range of stakeholders those who are public office holders, including those at the local, provincial and federal level – both elected and bureaucratic. Meetings with elected representatives are meant to communicate and understand community concern and interest as identified by these public officials. Meetings with ministry or local government staff are focused more on how the Project intersects with public policy and regulatory issues under the purview of each respective agency.

Trans Mountain attended most of the British Columbia local government regional conferences in 2014, as well as the 2014 Union of BC Municipalities (UBCM) Conference in Whistler, BC. Trans Mountain representatives were on hand at these events to engage with public office holders both formally and over the course of the various conference functions.

Since the Project was announced in 2012, Trans Mountain representatives have made themselves available to the community, including to mayors, councillors, regional district members, Members of Legislative Assembly (MLA) and Members of Parliament (MP). These various elected officials have met or contacted TMEP to understand the Project better to convey community interests as they have heard it from their constituents.

Federally, between May 1, 2014 and December 31, 2014, there were up to 24 interactions with federal designated public office holders either by phone, email or in-person contact. These meetings were to provide updates on the Project to both elected representatives within the geographical areas of our proposed Project and non-elected officials in the various agencies who have regulatory or policy interest in the Project.

Provincially, between May 1, 2014 and December 31, 2014, there were up to 74 interactions with BC or Alberta provincial public office holders (including those in Crown agencies), either by phone, email or in-person. The purpose of these meetings were primarily to exchange information between the Project and provincial regulatory bodies on matters of provincial interest — including, for example, impacts to provincial transportation right-of-ways and infrastructure due to Project planning and construction. As well, the Project has sought to provide the Province of BC with information on significant matters when they happen, viewing communication as a positive effort to keep provincial decision makers informed and current on Trans Mountain's public activities. Similar communications are provided to other stakeholders be they governmental or not as circumstances require.

In respect for local communities and in accordance with the *Local Government Elections Act*, Trans Mountain chose not to participate in any of the various municipal elections or associated elections for public office holders and referenda in November 2014. Trans Mountain chose not to contribute to any candidate, nor did it provide any company resources or support to any person or party running.

#### 1.21.1 Union of British Columbia Municipalities (UBCM)

Trans Mountain representatives attended the Union of British Columbia Municipalities (UBCM) conference with more than 2,000 delegates representing 196 communities in the Province of BC. For many communities, this conference provided an opportunity to maintain relationships and lines of communication with community leaders.

In addition to attending meetings and policy debates at this conference, Trans Mountain held nine formal meetings with government representatives from various communities and regions in BC.

Table 1.21.1-1 provides details of the UBCM Conference held in Whistler, BC from September 23 – 26 2014.

**TABLE 1.21.1-1** 

#### **UBCM CONFERENCE, WHISTLER, BC**

Region	Location	Date	Number of Attendees
Lower Mainland/Fraser Valley	Whistler, BC	September 23-26, 2014	Over 2,000

Trans Mountain had conversations with the organizations summarized in Tables 1.21.1-2 to 1.21.1-4.

**TABLE 1.21.1-2** 

#### AGENCY AND LOCAL GOVERNMENT ENGAGEMENT AT UBCM

Organization		
BC Green Party	Fraser Valley Regional District (FVRD)	
BC Professional Fireman's Association	District of North Cowichan	
Canadian National (CN) Rail	District of Sooke	
City of Abbotsford	Dogwood Initiative	
City of Burnaby	Government of British Columbia MLAs	
City of Chilliwack	Insurance Company of British Columbia (ICBC)	
City of Coquitlam	Port Metro Vancouver	
City of Surrey	Township of Langley	
Citizen of Central Saanich	Village of Belcarra	

Table 1.21.1-3 provide details for the nine formal meetings held during UBCM.

**TABLE 1.21.1-3** 

#### **MEETING WITH GOVERNMENTS AT UBCM**

Community	Date
Village of Valemount	September 23, 2014 1:00 – 1:30 pm
District of Barriere	September 24, 2014 10:00 – 10:30 am

#### **TABLE 1.21.1-3 Cont'd**

TNRD Area A	September 24, 2014 11:00 – 11:30 am
TNRD Areas B and O	September 24, 2014 2:00 – 2:30 pm
District of Clearwater	September 24, 2014 2:00 – 2:30 pm
City of Merritt	September 24, 2014 2:00 – 2:30 pm
District of Hope	September 24, 2014 3:00 – 3:30 am
City of Kamloops	September 24, 2014 3:00 – 4:00 pm
Township of Langley	September 24, 2014 4:30 – 5:00 pm

Table 1.21.1-4 provides a summary of concerns raised at the UBCM Conference:

TABLE 1.21.1-4
SUMMARY OF CONCERNS RAISED - UBCM, WHISTLER BC

Category	Summary of Concern Raised
Safety	
Emergency	TMEP and WCMRC response to post-mortem from 2007 oil spill.
Response	Emergency response capabilities and impact of a spill in Township of Langley.
Land Use	
Routing	The potential to have fibre optic line in pipeline right-of-way.
	Impacts from routing to landowners.
	Impacts to owner-operator and residents from routing through the Redwoods golf course in Langley.
Environmental – Ma	rine
Navigational Safety	Traffic analysis for TMEP and Pacific Coast Terminals combined. The concern is not for day to day traffic but instead in instances such as fog where there could be a backlog.
	Safety brochure for Burrard Inlet (like the fish safe one for the Fraser River).
Environmental – Ter	restrial
Traffic Noise	Noise related to traffic (In Surrey, the Province is constructing the Golden Ears Connector.) TMEP will add our pipeline to the corridor adjacent to this neighbourhood. This may mean additional tree removal. Residents are concerned about noise from roadway and rail. Believe that a community benefit would be to abate noise.
Regulatory – NEB	Inadequate responses provided to Township of Langley Information Requests during round one.
Socio-Economic – Infrastructure and Services	Potential future cost implications of working around proposed Trans Mountain Expansion Project and impact to land use.

#### 1.21.2 Alberta Environment and Sustainable Resources Development (ESRD)

During the reporting period, Trans Mountain participated in a meeting with Alberta Environment and Sustainable Resources Development (ESRD). The following topics were discussed at the meeting:

easements and deviations outside of the existing right-of-way;

- geotechnical studies on the Pembina River crossing;
- Crown land crossed by the Project that is within the traditional territories of First Nations;
- Aboriginal engagement and consultation; and
- resourcing needs.

Details of the meeting are provided in Tables 1.21.2-1 and 1.21.2-2

#### **TABLE 1.21.2-1**

#### **MEETING WITH ESRD**

Region	Location	Date	Number of Attendees
Alberta	250 Diamond Avenue, Spruce	November 21, 2014	8
	Grove, AB	11:00 am	

#### **TABLE 1.21.2-2**

#### ATTENDEES - MEETING WITH ESRD

ESRD	
Senior Water Administration Engineer – Regional Approvals	Water Technologist – Regional Integrated Approvals
Approvals Manager – Regional Integrated Approvals	Municipal Engineer – Regional Approvals
Consultation Advisor – North West Central Region, Aboriginal Relations	Senior Manager – Environmental Assessment Approvals
Region Lead, Upper Athabasca, North West Central Region, Aboriginal Relations	District Approvals Manager – Regional Integrated Approvals
Acting Team Lead – Regional Integrated Approvals	Land Use Office – West Central Region

Issues identified during these conversations are detailed in Section 2.1, Topics of Interest or Concern – Alberta.

#### 1.22 Permitting Discussions

In addition to the regulatory process by the National Energy Board (NEB), planning is also underway to address British Columbia and Alberta provincial permitting requirements, given the breadth and volume of anticipated provincial permits.

For British Columbia, the Province's Ministry of Environment has delegated the procedural aspects of permit consultation to Trans Mountain. Key objectives in permit planning are:

- To ensure environmental studies completed to date and planned in the future, as part of the National Energy Board (NEB) review, address Provincial and other needs.
- To ensure Trans Mountain's approach to Aboriginal engagement is formulated in a manner that addresses Trans Mountain's permit engagement needs and enhances Crown consultation efforts in British Columbia and Alberta.

February 2015

During the reporting period, Trans Mountain had discussions with specific stakeholder groups to gather information related to geotechnical investigative use activities requiring a range of authorizations.

Details of specific permitting discussions with federal and provincial agencies are summarized in Table 1.22-1. The meetings reported extend beyond this reporting period, up to January 30, 2015, which demonstrates the progressive nature of permitting discussions where Trans Mountain continues to initiate new discussions and continue other discussions with specific federal and provincial agencies.

TABLE 1.22-1
PERMITTING DISCUSSIONS

Date	Summary of Agency Activities	Summary of TMED Activities
	, , ,	Summary of TMEP Activities
July 3, 2014	Canadian Wildlife Service (CWS) meeting to review pipeline routing considerations and changes and discuss critical habitat and wildlife species. Discussion also included Sumas Mountain Routing, Species at Risk (SAR) Species, Wildlife field survey results, HDD options     CWS to prepare shape files of SAR species to support planning	TMEP will receive and integrate SAR files into environmental review and routing considerations and provide certain field survey information to CWS.
Sept 25, 2014	Environment Canada, Province of BC, Regional Districts meeting to discuss Air Quality.	Understanding of jurisdictional matters between agencies responsible for air quality.
December 3, 2014	Major Projects Management Office and federal agencies (Fisheries and Oceans, Environment Canada, Port Metro Vancouver, Transport Canada, Parks Canada, Natural Resources Canada, Aboriginal Affairs) meeting to discuss timelines related to federal permits and the NEB process.	Trans Mountain will submit certain permitting applications after the close of the NEB record in October 2015.
Discussions with	<b>ower Authority (BC Hydro)</b> please also refer to BC Hydro include topics beyond just permitting a ning for Land Act tenure application.	
May 15, 2014	Discussed two transmission lines to be constructed by TMEP for the TMEP project which will require a crown Land Act tenures.     Provided a list of the First Nation Groups that were identified by BC Hydro as requiring consultation for both the Kingsvale and Black Pines transmission lines.	Thanked BC Hydro for the information.
June 17, 2014	Emailed explaining BC Hydro had re- evaluated the study area and has determined that a potential BCH transmission project (including taps) were in the asserted territories of 19 First Nations and six collective organizations as per the BC Provincial Consultative Area Database.	Thanked BC Hydro for the information.

Date	Summary of Agency Activities	Summary of TMEP Activities
August 22, 2014	<ul> <li>Provided the BC Utilities Commission decision on the adequacy of BC Hydro's consultation on the Interior to Lower Mainland Project - the matters encountered during consultation on the Interior to Lower Mainland Project.</li> <li>Will get further information to support expected information needs beyond Traditional Use Studies.</li> </ul>	Thanked BC Hydro for the information.
August 25, 2014	Requested to review all information to be shared with First Nation Communities, prior to TMEP distributing notice of potential Kingsvale transmission.	Provided BC Hydro with a draft notification letter for the Kingsvale Transmission Line that would be sent to all First Nation communities.
September 4, 2014	Provided information regarding which First Nations have Traditional Land Use Studies and explained that they are confidential.	TMEP representative thanked BC Hydro Representative for the information.
September 9, 2014	Meeting to review the status of TMEP Engineering work and initiate the discussion where the Pipeline is adjacent to powerlines.	• N/A
November 19, 2014	Meeting to discuss the technical requirements related to TMEP's request to BC Hydro for parallel infrastructure in the right of way and BC Hydro's study expectations for a future TMEP Crown permit.	<ul> <li>Opportunity to share corridor and reduce footprint.</li> <li>Identify process to advance discussions, studies and associated requirements.</li> </ul>
December 15, 2014	Meeting to discuss the type and volume of property referral requests and establish processes to share required information and any required funding considerations.	<ul> <li>Understand BC Hydro's requirements for property access (i.e. referral requests) for investigative and long-term rights of way.</li> <li>Understand BC Hydro's cost recovery model for addressing the volume of referral requests.</li> </ul>
December 28, 2014	Meeting to discuss the distribution lines and the Project Timelines for Construction.	<ul> <li>Next steps, timeline and costs for TMEP System Impact Study now that North Thompson pipeline is proposed to be 42"</li> <li>BCH Construction Standards for Kingsvale and Black Pines line design</li> <li>Understand BCH cost and reporting</li> <li>Set up re-occurring meeting schedule</li> </ul>
January 27, 2015	<ul> <li>Requested information regarding meeting with Upper Nicola Indian Band be shared</li> <li>Requested an introductory meeting between new BC Hydro Project Team and TMEP Project Team.</li> </ul>	TMEP explained the meeting that had recently taken place with Upper Nicola Indian Band.
BC Ministry of E	nvironment (BC Parks) please also refer to Sec	tion 1.11 for further information
May 12, 2014	<ul> <li>Requested information report on TMEP's March/April Parks Boundary Adjustment Workshops.</li> </ul>	TMEP provided information.
June 2014	Call to discuss Stage 2 Parks Boundary Adjustment Application and Consultation	Understanding of the permit content and timing of submission.
August 6, 2014	Email advising that TMEP's proposed access to Lac du Bois Park for seed collection and restoration crew was denied.	TMEP had previously sought to collect native grass seed for restoration purposes in Lac du Bois Protected Area.
August 13-14, 2014	Communication regarding the Stage 2     Boundary Adjustment and coordination of posting the application on line.	Stage 2 Boundary Adjustment Application posted on-line.

Date	Summary of Agency Activities	Summary of TMEP Activities
October 22, 2014	Meeting to discuss Lac du Bois Protected Area, restoration of grasslands, weed control and the Stage 2 Boundary Adjustment application.	Seeking feedback on restoration planning for Lac du Bois.
October 22, 2014	<ul> <li>Advised by email they had received interest in Stage 2 Parks Boundary Adjustment Application</li> <li>Would TMEP attend meetings with Aboriginal Groups if requested?</li> </ul>	<ul> <li>Affirmed TMEP will attend meetings with Aboriginal Groups as requested jointly by BC Parks and the Aboriginal Group.</li> </ul>
November 14, 2014	<ul> <li>Received feedback from First Nation on TMEP Stage 2 Parks Boundary Adjustment Application.</li> <li>Confirmed two First Nations who requested to meet.</li> </ul>	TMEP understanding the nature of First Nations' advice to BC Parks.
December 4, 2014	Meeting between BC Parks, TMEP and Peters Band to review Stage 2 Parks Boundary Adjustment Application for Bridal Veil Falls Park.	TMEP to further understand potential impacts of the project.
December 4, 2014	<ul> <li>Meeting between BC Parks, TMEP and Shxw'ōwhámel Band to review Stage 2 Parks Boundary Adjustment Application for Bridal Veil Falls Park.</li> </ul>	TMEP to further understand potential impacts of the project.
December 15, 2014	Provided summary of key points from Shxw'ōwhámel meeting December 4 and requested information on the Archeological Impact Assessment	<ul> <li>TMEP provided a summary of responses on December 23, 2014 and committed further information in the new year.</li> <li>Follow-up information was provided on January 19.</li> </ul>
December 19, 2014	Agreed to schedule a meeting in January to better understand TMEP Aboriginal group engagement efforts on the Stage 2 Parks Boundary Adjustment Application. An email was sent December 20, 2014 to affirm direction.	Provide information to support the analysis of the Stage 2 Parks Boundary Adjustment application.
January 22, 2014	Establish agenda for meetings to occur on January 26, 2015. Discussion to include Stage 2 Park Boundary Adjustment and consultation approach on Research and Education Use Permit	<ul> <li>TMEP provided comments on the draft agenda and affirmed it seeks to clarify additional engagement required for the refiled Research and Education Permit.</li> <li>On January 25, 2014 TMEP provided to MOE a letter and data reflecting First Nation participation in field studies, traditional land use and traditional ecological knowledge participation since 2012.</li> </ul>
January 26, 2015	<ul> <li>BC MOE and Ministry of Natural Gas         Development meeting to discuss status of         the BC Parks Stage 2 Boundary         Adjustment review Process.</li> <li>Discussed feedback received on the Stage         2 Boundary Adjustment Application and the         process going forward.</li> <li>Also discussed was the Parks Research         and Education Use Permit review process.</li> </ul>	<ul> <li>Any additional information required by MOE to make a permit decision?</li> <li>Understand the Crown consultation process for the Parks Research and Education Use Permit.</li> </ul>

Date	Summary of Agency Activities	Summary of TMEP Activities
BC Ministry of Fo	orest Lands and Natural Resource Operations	s (FLNRO)
May 8, 2014	Discuss of crossing flood protection structures, water quality and quantity, species at risk, wildlife management areas, compensation and offsetting, fisheries sensitive watersheds, old growth management areas, forest health, access, land use plans. visual quality objectives, socio-economic cumulative effects, permits, paleo resources, and crown land.	Clarification of Application process and linkage to federal requirements.
August 13, 26 and 27, 2014	Discussed process of Application for an Activity or Event requiring Authorization under Section 16 of the Forest Recreation Regulation for Recreational Lands	Clarification on Application Process
September 3, 2014	Email regarding an enquiry related to Section 16 Forest Recreation Regulation.	Seek understanding of the implications of the regulation.
September 9, 2014	Phone call to discuss permit 2013-165/site assessment direction with Archeology Branch staff.	Receive direction on a site assessment
January 7, 2015	TMEP staff member contacted FLNRO and discussed the status of an archeology permit consultation process.  ransportation and Infrastructure (MOTI)	Clarification on consultation process.
	T T	
December 3, 2014	Meeting to discuss processes for Investigative Use access, First Nations permit engagement and routing interests in the Thompson-Okanagan Region.	Understand MOTI permitting process.
January 8, 2015	<ul> <li>Met to discuss project updates on Land, Permitting and Engineering requirements.</li> <li>Status of current routing considerations, the geotechnical investigation program, First Nations consultation, next steps in advancing permitting and engineering details given volume of anticipated crossings and route considerations.</li> </ul>	Create technical working groups to address specific information requirements going forward.
BC Oil and Gas O	Commission (OGC)	
August 20 and 22, 2014	Discussion of OGC permitting requirements, and Aboriginal Consultation requirements.	<ul> <li>TMEP provided Project overview, timing of the project, nature, volume and timing off anticipated permits.</li> <li>TMEP to provide master permitting list.</li> <li>Agreed to meet again to review and updated list of activities and permits.</li> <li>Agreed to separate meeting to discuss the process for Aboriginal consultation in the BC OGC permitting process.</li> </ul>
September 3, 2014	Appropriate timelines for consultation on OGC Investigative Use permits.	<ul> <li>TMEP inquired on the status of a permit and progress between OGC and First Nations to achieve agreement on consultation processes.</li> </ul>
October 17, 2014	Continued discussion on Construction related permitting requirements, presentation of draft permitting plan and master list of permits, discussion on Aboriginal Consultation.	<ul> <li>TMEP and BC OGC to schedule a follow-up workshop to discuss engagement with Aboriginal group.</li> <li>TMEP and OGC to continue discussions on breadth and management of permits and application processes.</li> </ul>

Date	Summary of Agency Activities	Summary of TMEP Activities
October 31, 2014	A conference call to discuss planning for the Aboriginal Workshop including objectives and understanding of permitting processes.	TMEP to provide information supporting Aboriginal engagement to date and volume and timing of permits.
December 4, 2014	<ul> <li>Workshop to discuss aboriginal consultation program, communities engaged, and overview and status of ongoing consultation.</li> </ul>	Plan effective processes for permit application to support engagement with First Nations and BC OGC Consultation.
January 15, 2015	Meeting to discuss the NEB OGC Pipeline Application process and explore requirements and options for how information is provided.	TMEP will prepare a Variance Proposal to address large volume of permit requirements and present to BC OGC for discussion.
Port Metro Vanco	ouver (PMV) please also refer to Section 1.15.1	for further information
July 3, 2014	<ul> <li>PMV shared the Authorization and Schedule of Environmental Conditions for the work, plus the borehole location plan and Environmental Management Plan.</li> <li>Schedule of Environmental Conditions and notification was not a requirement for the work.</li> </ul>	Thanked PMV for the information.
July 15, 2014	Discussed the Aboriginal Engagement requirements in connection to the Westridge Marine Terminal expansion permit application.	Will share aboriginal engagement logs with Port Metro Vancouver in order to streamline the identification of aboriginal interests and concerns and ensure that they are addressed.
July 18, 2014	PMV provided list of the First Nations with traditional territories that intersect the specific project area where the proposed Westridge Terminal enhancements/in water works will be located and, First Nations with traditional territories that intersect the navigational route within PMV jurisdiction. (i.e., Burrard Inlet and English Bay, to the limit of PMV jurisdiction at Georgia Straight)	TMEP committed to provide any further engagement log updates and future IR's for any First Nation on PMV list.
Government of A	Alberta	
November 21, 2014	Environment and Sustainable Resource Development meeting to discuss regulatory planning and provide a project update; routing considerations, environmental studies, Aboriginal engagement and land requirements. (see Section 1.21.2 for further information)	A meeting to discuss First Nation engagement related to provincial permitting, will be scheduled with the Aboriginal Consultation Office.
January 28, 2015	<ul> <li>Aboriginal Consultation Office (ACO) meeting to discuss permit timing and other planning processes.</li> <li>Discussed the ACO's approach to First Nation permit consultation and their advisory role with Alberta Crown agencies.</li> </ul>	<ul> <li>Understanding permit review timelines and First Nation consultation process for permit planning purposes with Alberta regulators.</li> </ul>

#### 2.0 SUMMARY OF OUTCOMES – MAY 1 TO DECEMBER 31, 2014

During the reporting period, Trans Mountain continued to provide accurate and timely Project information, as well as gathering stakeholder feedback through a series of workshops, open houses and meetings with local government and interested parties, attendance at various community events, presentations/speaking opportunities and digital engagement efforts. Feedback on the Project has been received through the following:

- comments and questions posted on the Project website's online engagement portal;
- inquiries to the Project phone line and email address;
- workshops and open houses;
- social media; and
- stakeholder meetings and interactions.

Feedback received through Trans Mountain's ongoing engagement activities that has not previously been identified and addressed in either Volume 3A (Filing ID A3S0R2) of the Application or Consultation Update No. 1 and Errata (Filing ID A3Z8E6) or Consultation Update No. 2 (Filing ID A62087 and A62088) is summarized by Region in Tables 2.1 through 2.5.

#### 2.1 Topics of Interest or Concern - Alberta

Figure 2.1-1 displays new topics of interest or concern raised since the filing of the Application - May 2012 to July 31, 2013, (Filing ID's A3S0R2 to A3S0R59), and not previously addressed in the Consultation Update No. 1 - August 1 to December 31, 2013 (Filing ID A3Z8E6), or the Consultation Update No. 2 - January 1, 2014 – April 30, 2014 (Filing ID A4A4A5). This includes all comments from all engagement activities during the reporting period including the Workshops and Open Houses, social media, stakeholder meetings and interactions, and inquiries to the Project phone line and email.

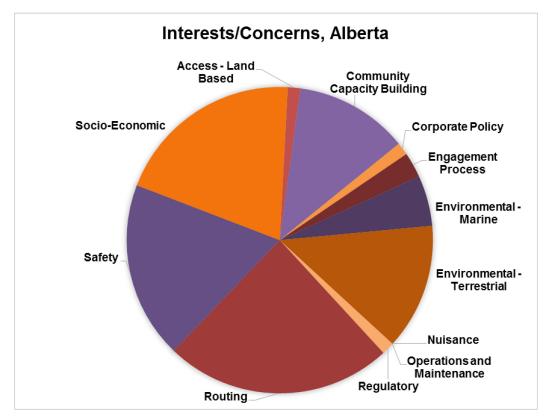


Figure 2.1-1 Topics of Interest or Concern in Trans Mountain's Alberta Region

Table 2.1 provides a summary of issues identified in Trans Mountain's Alberta Region during the reporting period that have not already been identified in previous Updates and Trans Mountain's response to the interest or concern.

# **TABLE 2.1 INTERESTS OR CONCERNS – ALBERTA**

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Environment - Te	rrestrial	-		
Wetlands	Long-term damage to habitat, especially wetlands.	This topic has already been addressed in the Application in Section 7.2.10 of Volume 5A (Filing ID A3S1Q9), which includes a discussion of each individual potential residual effect pathway for the wildlife indicators along with the mitigation measures proposed to minimize these potential effects. Likewise for wetlands affected by vegetation clearing on the Project Footprint, graminoid and shrub vegetation species are anticipated to regenerate and wetland hydrology is anticipated to be restored in the medium term, however, wetland biogeochemical function is anticipated to be reclaimed once sedimentation has been controlled and vegetation is re-established (medium to long term). Therefore, the residual effects of the Project on habitat for wildlife indicators that are associated with early seral habitats, wetlands and grasslands ( <i>i.e.</i> , moose [foraging], grassland/shrub-steppe birds, early seral forest birds, riparian and wetland birds, short-eared owl, common nighthawk, pond-dwelling amphibians arid habitat snakes) are also reversible in the long term, following decommissioning or abandonment and restoration of native vegetation over the disturbed Project Footprint.	Volume 5A, ESA – Biophysical - Section 7.2.10	A3S1Q9
Routing	1		1	1
Future Land Use	City of Edmonton's plans along Whitemud Drive extension pose possible routing conflicts.	This topic has already been addressed in NEB IRs 1.12, and 1.40. There are three changes to the previously proposed pipeline corridor in the Edmonton to Hinton segment of the Project that have been made since Trans Mountain filed its Application with the National Energy Board (NEB) in December 2013 and were documented in the responses to NEB IRs 1.12, 1.40 (Filing IDs A3W9H8) and 1.84 (Filing ID A3W9H9). These include: Edmonton East Transportation Utility Corridor (TUC), Whitemud Extension and Wabamun Lake Provincial Park. These three revisions optimizations to the proposed pipeline corridor are discussed in more detail in Technical Update No. 1. Pipeline Corridor and Facility Site Selection (Filing ID A3Z8E6).	NEB IRs 1.12, and 1.40	A3W9H8 1.84 A3W9H9

## TABLE 2.1 Cont'd

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Safety	<u>.</u>			
Emergency Response	Company's spill detection and emergency response procedures.	This topic has already been addressed in Volume 4C of the Application. In addition to computer-based systems, other methods to detect leaks, currently used on the existing TMPL system will be also used on the expanded TMPL system. These include In-line Inspection (ILI) runs using smart ball tools, a highly sensitive acoustic technology that can pinpoint very small pipeline leaks, regularly scheduled aerial and ground patrols of the rights-of-way and facilities, public awareness programs including the engagement of local municipal and emergency response agencies. Signage at all road and watercourse crossings provides emergency contact information in case members of the municipal emergency responders or the general public detect petroleum odors or conditions of concern.	Volume 4C, Project Design and Execution - Operations and Maintenance Section 7.1.11.4 and 7.1.11.5	A3S1L1
		As discussed in Section 7.1.5, of Volume 4C, a leak at a facility will typically trigger an alarm by activating a level transmitter or switch, a hydrocarbon detector or a combustible gas detector. In most cases, this will cause an emergency shut down (ESD) of the facility or the area within the facility where the transmitter of detector was activated. If a leak is not intended to cause an ESD by design and an alarm is triggered in the Primary Control Centre (PCC), the Control Centre Operations (CCO) will take appropriate action to shut down and isolate the facility or the area within the facility following the Control Centre Procedures. In the case of an ESD, the CCO may take actions to create additional isolation. In either case, the CCO will dispatch field operations personnel to the facility to investigate the cause of the alarm.		
	Parks Canada and Jasper emergency response procedures.	This topic has already been addressed in Volume 7 of the Application. The Supervisory Control and Data Acquisition (SCADA) and leak detection systems continuously monitor the pipeline for changes in operating parameters that would indicate a possible leak. Trans Mountain owns, maintains and operates dedicated spill response equipment at strategic points along the existing TMPL system. Oil spill containment and recovery (OSCAR) units are located at Trans Mountain facilities in Edmonton and Jasper, AB. Each OSCAR unit contains about 300 m of oil recovery boom and support equipment, including a river jet boat for deployment. All equipment is helicopter transportable for delivery to remote locations not accessible by road. Specialized equipment has been developed in-house by Trans Mountain employees for intercepting and recovering oil, if required, from beneath the ice on frozen rivers and lakes. This equipment is stored in the Jasper and Edmonton OSCAR units.	Volume 7, Section 2.0 and 4.0 – Risk Assessments and Management of Pipeline and Facility Spills	A3S4V5

## TABLE 2.1 Cont'd

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Emergency Response (cont'd)	See above	In the event of a release, and in addition to prevention measures, steps would be taken to minimize the consequence of a release by quickly shutting down and isolating the damaged section of the pipeline or facility. Trans Mountain has developed comprehensive emergency response procedures that the control centre and local operators must follow. These procedures, together with aerial and ground patrols, calls from the public to Trans Mountain's toll-free emergency number, and continuous SCADA monitoring and leak detection systems combine to form the first line of defense in reducing the consequences of a spill.	See above	See above
	Wildlife management during spills and cleanup.	This topic has already been addressed in Volume 6B of the Application. Every effort is made to minimize impact to wildlife, watercourses and key wildlife biodiversity zones. Volume 6B of the Application contains a detailed Environmental Protection Plan (EPP) that identifies resource-specific mitigation measures for key wildlife and wildlife habitat along the Project's proposed pipeline corridor. The key wildlife or wildlife habitat features encountered are provided in Table L-1. The resource site-specific mitigation measures are provided in Table L-2.	Volume 6B – EPP, Appendix L, Wildlife and Wildlife Habitat (Resource - Specific Mitigation)	A3S2S3
		Refer to the Wildlife Technical Report for further details regarding key wildlife and wildlife habitat encountered and coinciding mitigation recommendations.		
	Control points for spills into water bodies.	This topic has already been addressed in Volume 7 of the Application. Safety is our highest priority. Trans Mountain has comprehensive spill response plans in place for TMPL and facilities. These plans are constantly being updated to keep them current and are regularly practiced through deployment exercises. While the specific strategies used in response to a spill will vary depending on the circumstances, the primary objectives in all cases is to ensure safety and to minimize environmental damage. There are a range of strategies available to achieve these objectives including: mechanical recovery (using skimmers), insitu burning (controlled burning the oil) and dispersion (use of dispersing agents to dilute and disperse the oil reducing its concentration).	Volume 7, Risk Assessments and Management of Pipeline and Facility Spills Volume 5D, ESA – Socio- Economic Technical	A3S4V5 A3S2J5
		Trans Mountain maintains a geographically based ERP that includes route maps depicting control points and environmentally sensitive areas.	Reports Section 8.6.1.1	
	Decontamination resources used in the ERP and how they integrate into the TMEP.	This topic is addressed in Kinder Morgan Emergency Response Plan. The Operations Section of Incident Command, as outlined in the Decontamination Plan, is responsible for the tactical assignments in the response. These include all contractors and other agencies that supply tactical response resources in the response to the incident. They might include representatives from the fire department, the police and the ambulance service as well as response organizations.	Kinder Morgan Emergency Response Plan – Trans Mountain Pipeline	A4D3F2

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing
Pipeline Safety	Proximity of the proposed pipeline to residences along the TUC in the City of Edmonton	This topic has already been addressed in Volume 5B and Volume 7 of the Application. The Edmonton Municipal Development Plan (MDP) outlines municipal policies related to pipeline corridors such as: develop a risk management approach; collaborate with the Edmonton Area Pipeline and Utility Operators' Committee, Alberta Energy Regulator (AER); ensure development setbacks from pipelines; if possible, plan pipelines within other utility corridors. Within Edmonton, the proposed pipeline corridor mainly crosses through the TUC (City of Edmonton 2010).  Trans Mountain has a comprehensive pipeline safety and emergency response program in place for the existing pipeline system. Trans Mountain will complete a thorough risk assessment for the proposed pipeline and develop a detailed emergency response program. Trans Mountain will share information about the assessment and mitigation as it becomes available.	Volume 5B, ESA – Socio- Economic Section 5.0 –  Volume 7 – Risk Assessments and Management of Pipeline and Facility Spills	A3S1R7 A3S4V5 A3S4V6
		There is more information about the pipeline safety program available on the websites:  www.kindermorgan.com/pipelinesafety and www.transmountain.com/industry-safety		

#### 2.2 Topics of Interest or Concern – BC Interior

Figure 2.2-1 displays new topics of interest or concern raised since the filing of the Application - May 2012 to July 31, 2013, (Filing ID's A3S0R2 to A3S0R59), and not previously addressed in the Consultation Update No. 1 - August 1 to December 31, 2013 (Filing ID A3Z8E6), or the Consultation Update No. 2 - January 1, 2014 – April 30, 2014 (Filing ID A4A4A5). This includes all comments from all engagement activities during the reporting period including the Workshops and Open Houses, social media, stakeholder meetings and interactions, and inquiries to the Project phone line and email.

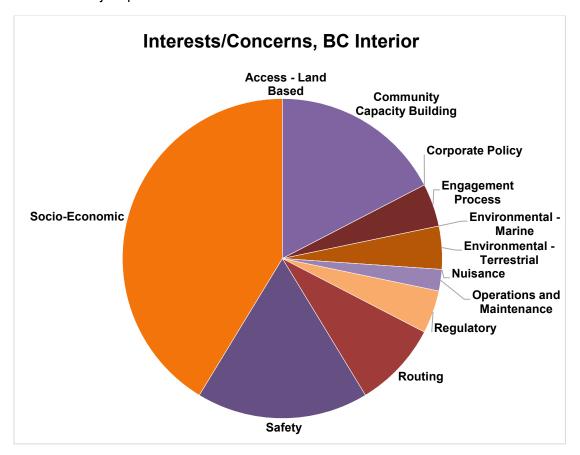


Figure 2.2-1 Topics of Interest or Concern in the Trans Mountain's BC Interior Region

Table 2.2 provides a summary of issues identified in Trans Mountain's BC Interior Region during the reporting period that have not already been identified in previous Updates and Trans Mountain's response to the interest or concern.

Trans Mountain Pipeline ULC
Trans Mountain Expansion Project

**TABLE 2.2** 

#### INTERESTS OR CONCERNS – BC INTERIOR

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Engagement				
Stakeholder	Interest in being involved in reassessment of control points on 2015 and incorporating local knowledge.	Trans Mountain's engagement is ongoing. In particular, it will continue to meet with stakeholders who will be impacted by the Trans Mountain Expansion Project to understand and mitigate their concerns where possible. Trans Mountain remains committed to ongoing dialogue and mitigation of issues with its neighbours as the proposed Project proceeds.	Volume 3A, Public Consultation - Section 1.2.2	A3S0R2
		Trans Mountain will address this topic in its ongoing route optimization conversations planned to occur throughout 2015. Stakeholders will be notified of opportunities to participate in engagement initiatives through the variety of communications channels Trans Mountain utilizes.		
Environment - Te	rrestrial			
Freshwater -Spills	Concern was raised regarding a waterfowl area near Cinnamon Ridge.	·	Volume 5A, ESA - Biophysical Section 3.2.3	A3S1L3
	Question raised regarding a remediation plan for a spill.	Trans Mountain maintains a geographically based Emergency Response Plan (ERP) that includes route maps depicting control points and environmentally sensitive areas. Communities will have an opportunity to review plans as part of ongoing consultation efforts as requested by the NEB as per draft Conditions of Approval for the Project (NEB Filing ID A3V8Z8).	NEB Draft Conditions for Approval	
Safety				
Emergency Response	Downstream water use and acute exposure at spill scene.	This topic has already been addressed in Volume 7 of the Application. In order to experience physical effects from hydrocarbon exposure, a person must inhale, ingest or touch the spilled product, and be exposed for a long enough period for it to be harmful. This can happen through a number of pathways, including:	Volume 7, Risk Assessment and Management of Pipeline and Facility Spills Section 6.3.2 and 7.1.1.1.2	A3S4V6 A4D3F2 A60834
		<ul> <li>Inhaling hydrocarbon vapours released from spilled hydrocarbons</li> <li>Direct contact with contaminated soil, or ingesting food that is grown in contaminated soil</li> <li>Drinking from a source contaminated by a spill</li> </ul>		
		Eating plants or animals contaminated by a spill		

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Emergency Response (cont'd)	See above	When discussing human health effects, the potential effects associated with short-term and long-term exposure to hydrocarbons are referred to as acute	See above	See above
		and chronic effects, respectively. In the event of a spill, the Trans Mountain ERP will be activated (see Section 4.0 of the ERP) and municipal, provincial and federal authorities responsible for the protection of public health will be	KMC Emergency Response Plan	
		notified. Evacuation of affected areas will occur if health and safety of the public is threatened and this will limit opportunities for short-term exposure to hydrocarbon vapours and potential for acute effects. Involvement of local, provincial and federal public health officials will also ensure that controls to limit long-term exposure and chronic effects potential will be implemented if warranted. Examples of such controls include closure of recreational or commercial fisheries, beach closures, the issuance of drinking water or food consumption advisories and forced evacuation. This will limit long-term exposure from all pathways, including: inhalation; ingesting contaminated food, plants or animals; drinking from a contaminated source; or incidental skin contact with hydrocarbons.	Surrey Teachers Association, IR 1.05	
	Concerns around lack of resources such as Public Health Inspector, Hazardous Material trailer and decontamination facilities.	This topic has already been addressed in Volume 7 of the Application. Kinder Morgan Canada maintains a network of response resources that includes internal and external equipment and personnel that would be called upon, as needed in the unlikely event of a spill.	Volume 7 – Risk Assessment and Management of Pipeline and Facility Spills	A3S4V5 A3S4V6
	Concern raised regarding any potential highway closures and the subsequent lack of access to get resources to Valemount in this situation.	This topic has already been addressed in Volume 7 of the Application. All equipment is helicopter transportable for delivery to remote locations not accessible by road.	Volume 7 – Risk Assessment and Management of Pipeline and Facility Spills	A3S4V5 A3S4V6

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Emergency Response (cont'd)	Potential for product contamination of TNRD's water intake infrastructures. Early notification would allow staff time to shut off pumps and protect the system. If KMC provided boom, local water operators could be trained to protect intakes.	This topic has already been addressed in Volume 7 of the Application. Kinder Morgan Canada considers the prevention of spills to be its' primary goal and will employ the necessary management systems and resources to ensure that this goal is achieved on the TMEP. The measures available to prevent and mitigate spills from new pipelines and facilities will depend on the nature of the threat and the associated consequences of a spill. Many of the prevention and mitigation measures considered have been identified in the Application: engineering designs that eliminate or minimize integrity threats are detailed in Volume 4A, construction and quality assurance practices that will ensure the integrity of the pipeline and facilities through to commissioning in Volume 4B, and ongoing Integrity Management Programs (IMP) that will be applied once the pipeline and facilities are operational in Volume 4C.	Volume 7, Risk Assessment and Management of Pipeline and Facility Spills - Section 2.0	A3S4V5
	Responsibility for water testing and eventually declaring system clean for public use. KMC contractor to be responsible for testing and would work with Public Health.	This topic has already been addressed in Trans Mountain's response to Intervenor Information Requests. Please refer to Trans Mountain's Response to PIPEUP Network IR No. 1. As with post-construction monitoring, the work would be done by qualified and independent contractors and labs. Trans Mountain would be responsible for all work required.	Response to PIPEUP Network IR No. 1 Province of British Columbia; Environment Manual, Groundwater Monitoring	A3Z2C0 A3Y2Z1
Emergency Response (cont'd)	Request for education for first responders and Simpcw Band. Question raised around potential for fire in a spill situation and response to a fire from a spill. Barriere first responders would work under the direction of KMC.	This topic has already been addressed in Volume 5B and Volume 7 of the Application. Trans Mountain will continue with its existing interfaces with community emergency response services as part of maintaining its normal operations ERP and in the development of its construction ERP. Community-based emergency response initiatives Trans Mountain is involved in include CAER, whereby it collaborates with regional emergency services to review emergency response procedures and community monitoring. Trans Mountain will also be part of a forthcoming collaborative mutual aid protocol between members of the energy pipeline industry, spearheaded by the Canadian Energy Pipeline Association (CEPA), to support each other's emergency response efforts as needed. Trans Mountain is also working with specific Aboriginal communities within the Socio-Economic Regional Study Area (RSA) to involve communities in emergency preparedness.  ERPs also address general requirements for - incidents such as security, explosions, and fires, and include a detailed air monitoring plan that is applied as required. Risk of fires is explores in Volume 7 of the Application.	Volume 5B, ESA – Socio-Economic Section 5.5.6.1  Volume 7, Risk Assessment and Management of Pipeline and Facility Spills - Section 4.4, Emergency Response Manuals and Reference Material  Volume 7, Risk Assessment and Management of Pipeline and Facility Spills - Section 3.2.2 – Secondary Containment and Tank Fire Risk Assessments	A3S1S4 A3S4V5

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
See above	How are people that are remotely located, notified when a spill occurs? (Nooaitch First Nations was not notified when the Kingsvale Spill occurred and this was a concern for the community).	This topic has already been addressed in Trans Mountain's response to and Intervenor Information Request. Trans Mountain's existing Emergency Response Plans provide notification procedures and contact information for external contacts including federal, provincial, Aboriginal and municipal authorities and first responders. Public notification priorities are determined based on the type of incident and the potential impacts it has to the safety of the public. Trans Mountain works with local Authorities in the event of an emergency to ensure protection of the public through a coordinated response, including immediate notifications as required.	Trans Mountain Response to City Burnaby IR No. 1	A3Y2E6
Emergency Response (cont'd)	Request for a Geographic Response Plan for any Hazardous Material risk that a plan be shared with all potential stakeholders.	This topic has already been addressed in Volume 5D of the Application. Trans Mountain has established emergency response protocols, programs and protocols at the community and regional level. Trans Mountain delivers its CAER program to emergency services organizations and government authorities along the TMPL system. The objectives of the program are to familiarize first responders with the pipeline location, explain the properties of the pipeline's contents and promote information exchange and co-ordination of response efforts in the event of an incident. As part of the response management system, Trans Mountain staff members are trained in the emergency response procedures and conduct regular emergency exercises, some of which include local first responders. Trans Mountain also has standing agreements for contract resources to provide response equipment and labour, air and human health monitoring, environmental assessment and emergency management.  Trans Mountain maintains a geographically based ERP that includes route maps depicting control points and environmentally sensitive areas. Communities will have an opportunity to review plans as part of ongoing consultation efforts as requested by the NEB as per draft Conditions of Approval for the Project (NEB Filing ID A3V8Z8).	Volume 5D, ESA – Socio- Economic Technical Reports Section 8.6.1.1 NEB Draft Conditions for Approval	A3S2J5 A4D3F2

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
See above	Who would be responsible for air monitoring and providing resources such as vacuum trucks in a spill situation?	This topic has already been addressed in Volume 7 of the Application. If releases occur, Trans Mountain implements an air monitoring program for the protection of responders and local area residents. In the event the potential exists for hydrocarbon vapours to reach unsafe concentrations in the community, it is likely after consultation with Unified Command, that the local police force will be requested to initiate evacuation.	Volume 7, Risk Assessment and Management of Pipeline and Facility Spills Section 4.4	A3S4V5
		Trans Mountain uses the ICS to manage incidents. ICS outlines clear roles and responsibilities with respect to emergency response and includes Unified Command for co-ordination with federal, provincial, municipal and Aboriginal agencies. Trans Mountain works closely with local emergency responders and regularly practices table top and deployment exercises. From alert to isolation, this procedure can take about 15 minutes or less. If an incident were to occur, Trans Mountain can act quickly to protect its employees and the public as well as mitigate any harm to the environment or property.		
		Teams prepare for these worst-case scenarios on a regular basis using the Trans Mountain Emergency Response Plan (ERP) and the ICS.		
Land Spills – Environmental impact	Concerns were raised regarding decontamination and care of affected wildlife, including potential facilities.	This topic has already been addressed in Trans Mountain's response to an Intervenor Information Request. To handle wildlife issues, the Responsible Party (RP) will engage an established wildlife group such as Focus Wildlife to address region-specific emergency wildlife issues. This group would work closely with federal agencies (Environment Canada/Canadian Wildlife Services and Fisheries and Oceans Canada) and the Provincial Government (Ministry of the Environment) and certified spill responder (such as WCSS) within the ICS to ensure impact on birds and wildlife is managed in a responsible manner.	Response to Cowichan Tribes IR No. 1	A3Y2I8

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
	Concern raised regarding First Nations harvesting and hunting grounds as well as sensitive ecology for Burrowing Owls and Red Hawks.	This topic has already been addressed in Volume 5B of the Application and in Trans Mountain's response to an Intervenor Information Request. Alteration of subsistence resources may occur during construction and operations of the Project as identified in Section 7.2.2.6 of Volume 5B of the Application (Filing ID A3S1S7). The duration of the alteration of subsistence resources residual effect was determined to be short term as events causing the disturbance will be construction activity and site-specific maintenance. The effect was determined to be reversible in the long term. The effects of disturbance to traditionally harvested resources will be dependent on each target species sensitivities and could extend greater than 10 years following decommissioning and abandonment once native vegetation regenerates over the Project Footprint. Both of these criteria refer to future use of resources and, therefore, demonstrate that future use was considered in the assessment.  The disruption of subsistence hunting, fishing, trapping and plant gathering activities was also considered as a potential residual effect of the Project (refer to Section 7.2.2.6 of Volume 5B of the Application [Filing ID A3S1S7]). The disruption of subsistence activities refers to the possibility that traditional resource users could be prevented from accessing key harvesting areas resulting from limited access to these areas during construction. The duration of the disruption to subsistence activities was determined to be short term since events causing the disruption will be construction and site-specific maintenance activities. The effect was determined to be reversible in the long term. The disruption of subsistence hunting, trapping, fishing and plant gathering is limited to the construction phase of the Project. However, changes to preferred harvesting locales could result in indirect effects such as harvesters having to spend more time and money to travel further for subsistence activities and could extend greater than 10 years following dec		A3S1S7 A3Y2T0

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Land Spills – Environmental impact (cont'd)	Concern raised regarding First Nations harvesting and hunting grounds as well as sensitive ecology for Burrowing Owls and Red Hawks. (cont'd)	Further discussion of the assessment of the Project on traditional land and resource use is provided in Section 7.2.2.6 of Volume 5B (Filing ID A3S1S7). Trans Mountain would like to note that while its understanding of Traditional Land and Resource Use (TLRU) does not explicitly state 'future use' in its definition in the Application, Trans Mountain conducts its assessment of effects under the assumption that First Nations will exercise their Aboriginal rights today as well as into the foreseeable future.	See above	See above
Land Spills – Environmental impact (cont'd)	Bird habitat near the Best Western Hotel and Lichen at Jackman Flats. First Nations archeological sites near Tete Jeune Cache near McClellan River.	This topic has already been addressed in Volume 5A of the Application. Trans Mountain will work with Environment Canada and comply with the <i>Migratory Birds Convention Act</i> and <i>Migratory Birds Sanctuary Regulations</i> related to the Project components and impacts. Trans Mountain will conduct clearing and preconstruction activities outside the minimum migratory bird restricted activity period (RAP) of May 1 to July 31 where practical. In the event the schedule changes and clearing activities are planned during the migratory bird RAP, a migratory bird nest sweep will be conducted. In the event an active nest is found, a protective buffer will be established around the nest. The size of the buffer will be influenced by the status of the bird.  Trans Mountain is committed to best practices in reclamation, always striving for opportunities leading to advancement. As with all of its construction projects, Trans Mountain will reclaim any areas that are affected by the proposed pipeline Project. Reclamation efforts could include the planting of native plant and grass species, riparian and wetland areas, wildlife habitats and any other areas disturbed during construction.	Volume 5A, ESA – Biophysical Section 3.2.3, 5.9 and 7.2.9	A3S1L3 A3S1L7 A3S1Q9
	Painted Turtle at North Thompson Park.	This topic has already been addressed in Technical Report 7-1, Volume 7, Ecological Risk Assessment of Pipeline Spills Technical Report (Stantec Consulting Ltd. December 2013), which evaluates potential acute and chronic environmental effects to various aquatic organisms and wildlife over the range of watercourses and flow conditions traversed by the Project. The ecological risk assessment focuses on different groups of ecological receptors that might be exposed to spilled oil as a result of their habitats and life cycles, as it is neither practical nor necessary to individually assess every receptor that may potentially be affected by a hypothetical spill. Ecological risk assessment methods and the selection of representative receptors including certain species at risk ( <i>i.e.</i> , great blue heron and western painted turtle) are described in detail in Technical Report 7-1.	Trans Mountain Response to City Burnaby IR No. 1  Volume 7, Technical Report TR 7-1, Ecological Risk Assessment of Pipeline Spills Technical Report (Stantec Consulting Ltd. December 2013)  Volume 7, Section 7.1.1.1.1 Ecological Receptors	A3Y2E6 A3S4W9 A3S4V6

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Land Spills – Environmental impact (cont'd)	Painted Turtle at North Thompson Park. (cont'd)	The environmental effects of a spill at the scenario locations are representative of the environmental effects that could result from a large oil spill at almost any location along the proposed pipeline corridor. The ecological receptors considered in the ecological risk assessment are intended to be representative of species that could be affected by an accidental oil spill (see Volume 7, Section 7.1.1.1.1 Ecological Receptors).	See above	See above
	The use of Personal Protection Equipment (PPE), and immediate controls that can be implemented to minimize the amount of product that reaches the waterway.	This topic has already been addressed in Trans Mountain's response to an Intervenor Information Request. Trans Mountain's CAER program for First Responders provides some guidance and advice on how First Responders should approach a potential emergency such as an oil spill, with an emphasis on keeping themselves and the public safe. Personal Protective Equipment (PPE) is a necessary element to any response situation. The choice PPE is based upon the product involved and in most cases must be fit tested by a qualified person prior to use .During an incident, the required PPE will be identified and personnel required to use it, as directed by Unified Command and part of the ICS.	Trans Mountain Response to Moon K-M IR No. 1	A3Y2W6
		The CAER Program focuses on the safety of responders and the public, whereas the pipeline and facilities ERPs provide guidance and direction on response equipment and resources to be employed in the event of a spill. The EMSW provide TMEP with an opportunity to review with communities KMC's Emergency Management Program (EMP) document, which include the pipeline's geographic response plans as well as control points for the protection of waterways.		
	Concern raised regarding how quickly the spill would be contained if it entered the waterway.	This topic has already been addressed in Volume 7 of the Application. While the specific strategies used in response to a spill will vary depending on the circumstances, the primary objective in all cases is to ensure safety and to minimize environmental damage. There are a range of strategies available to achieve these objectives including: mechanical recovery (using skimmers), in-situ burning (controlled burning the oil), and dispersion (use of dispersing agents to dilute and disperse the oil reducing its concentration).	Volume 7, Risk Assessment and Management of Pipeline and Facility Spills - Section 5.3.2	A3S4V6

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
See above	Concern raised regarding product reaching the unconfined aquifer in Merritt, as well as fish habitat.	This topic has already been addressed in Trans Mountain's response to an Intervenor Information Request. As part of groundwater mitigation activities, geologic conditions will be assessed by environmental and engineering inspectors during construction excavation activities, near identified highly vulnerable aquifers ( <i>i.e.</i> , shallow unconfined aquifers with little natural protection). This level of detail about geological conditions will help inform Trans Mountain's geographically based Emergency Response Plan (ERP) that includes route maps depicting control points and environmentally sensitive areas. This information will be considered in the update to current plans for the expansion. Communities will have an opportunity to review plans as part of ongoing consultation efforts as requested by the NEB as per draft Conditions of Approval for the Project (NEB Filing IDA3V8Z8).	Trans Mountain Response to GoC NRCan IR No. 1 NEB Draft Conditions	A3X6G0
Socio-Economic				
Infrastructure and Services	Evacuation can cause issue for hospital because it's located across street from police and many hotels. Nearest hospital is Chilliwack.	This topic has already been addressed in Trans Mountain's response to an Intervenor Information Request. Kinder Morgan Canada Inc. (KMC) expects to work co-operatively with the municipal first/emergency responders in the unlikely event of an emergency occurring. The needs for fire, police and health services greatly depend on the type of emergency. KMC anticipates working with the local first responders through an Incident Command System (ICS) structure to co-ordinate these and other activities in the unlikely event the need arises. Volume 7, Section 4 of the application provides an explanation of ICS.	Trans Mountain Response to Varo H IR No. 1	A3Y3V6
		If needed, rescue activities would be coordinated under ICS with local emergency responders who have responsibility and authority for rescue and evacuations.		

#### 2.3 Topics of Interest or Concern – Lower Mainland/Fraser Valley, BC

Figure 2.3-1 displays new topics of interest or concern raised since the filing of the Application - May 2012 to July 31, 2013, (Filing ID's A3S0R2 to A3S0R59), and not previously addressed in the Consultation Update No. 1 - August 1 to December 31, 2013 (Filing ID A3Z8E6), or the Consultation Update No. 2 - January 1, 2014 – April 30, 2014 (Filing ID A4A4A5). This includes all comments from all engagement activities during the reporting period including the Workshops and Open Houses, social media, stakeholder meetings and interactions, and inquiries to the Project phone line and email.

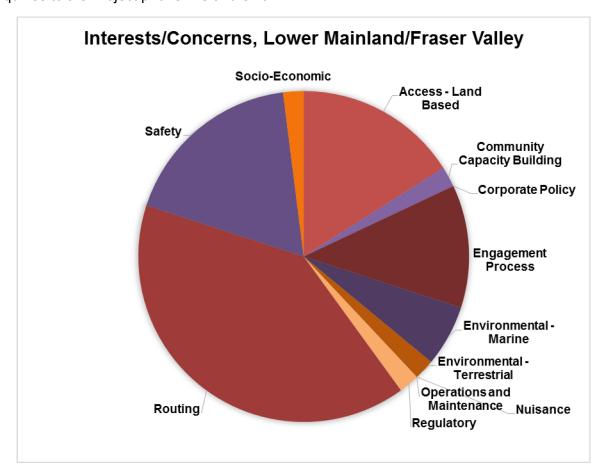


Figure 2.3-1 Topics of Interest or Concern in Trans Mountain's Lower Mainland/Fraser Valley Region

Table 2.3 provides a summary of issues identified in Trans Mountain's Lower Mainland/Fraser Valley Region during the reporting period that have not already been identified in previous Updates and Trans Mountain's response to the interest or concern.

**TABLE 2.3** INTERESTS OR CONCERNS - LOWER MAINLAND/FRASER VALLEY, BC

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Environment – Terres	strial			
Land Spills	Control points/sensitivities where there is high water at Control Point 6103 (with Chief Douglas) and to set parameters for SCAT (Shore Clean up Assessment Team).	This topic has already been addressed in Volume 5D of the Application. Trans Mountain maintains a geographically-based ERP that includes route maps depicting control points and environmentally sensitive areas.	Volume 5D, ESA – Socio-Economic Technical Reports Section 8.6.1.1	A3S2J5 A3V8Z8
		This information will be considered in the update to current plans for the expansion. Communities will have an opportunity to review plans as part of ongoing consultation efforts as requested by the NEB as per draft Conditions of Approval for the Project (NEB Filing ID A3V8Z8).	Draft NEB Conditions of Approval	
	Effects of a spill into Cheam Lake and extremely sensitive ecosystem.	This topic has already been addressed in Trans Mountain's response to an Intervenor Information Request. The previously proposed corridor from RK 1078.7 to RK 1081.4 is no longer being considered for use by the Project. The revised pipeline corridor will not pass through or adjacent to FVRD Cheam Lake Wetland Regional Park.	Trans Mountain Response to FVRD IR No. 1 (1.26)	A3Y2K7
		Please refer to map 50 of 55 in the 1:50,000 scale map book provided in response to NEB IR No. 1.84a for a depiction of the proposed revised pipeline corridor selected by Trans Mountain.		
	Post recovery operations	This topic has already been addressed in Volume 7 of the Application. Containment, recovery, and clean-up actions undertaken would be specific to the affected receiving environment and include consideration of local sensitivities such as human health, public safety, priority ecosystem values, weather, and other site-specific considerations (Section 4.0).	Volume 7 — Risk Assessment and Management of Pipeline and Facility Spills - Section 4.0	A3S4V5

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Land Spills (cont'd)	Concern about the risk of a spill on the BC Hydro right-of-way	This topic has already been addressed in Volume 7, Section 3.1.1. The risk assessment method being used for the pipeline is best characterized as a semi-quantitative risk assessment in which quantitative estimates of failure frequency (expressed in units of failures/km-year), are combined with qualitative estimates of consequence values. The final result will be a relative ranking of risk for all segments along the pipeline.	Volume 7 — Risk Assessment and Management of Pipeline and Facility Spills - Section 3.1.1	A3S4V5
	Post recovery operations	This topic has already been addressed Trans Mountain's response to New Democratic Party (NDP) IR No. 1.1.5h filed with the NEB on June 18, 2014, which includes the Summary of Clean Up and Effects of the 2007 Oil Spill from Trans Mountain Pipeline to Burrard Inlet report prepared by Stantec.  The Westridge Oil Spill on Inlet Drive in 2007 provides	New Democratic Party (NDP) IR No. 1.1.5h, Summary of Clean up and Effects of the 2007 Spill of Oil form TMP to Burrard Inlet, Pages 1- 13	A3Y2X7
		information about post recovery operations. In the case of this spill, a SCAT team composed of First Nations, Port Metro Vancouver and federal, provincial and municipal officials signed off that the shoreline cleanup met the predefined recovery end points.		
		<ul> <li>The endpoints included:</li> <li>Approved remediation plan for high-use areas, public access shorelines, and sensitive cultural and archaeological resource areas was met in summer 2007.</li> </ul>		
		<ul> <li>Industrial shorelines (except Westridge Terminal) was met in spring 2008.</li> <li>Industrial shoreline at Westridge Terminal was met following completion of additional remediation in May 2008.</li> </ul>		

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Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Land Spills (cont'd)	Post recovery operations (cont'd)	A long-term monitoring program was developed after the spill to monitor recovery of impacted areas, assess changes in levels of contaminants from the spilled oil in the marine environment, and evaluate potential effects on marine organisms. The long-term monitoring program began in 2008 and will continue each year until all recovery endpoints in the marine environment are reached and stakeholders have signed off on the program. The monitoring results are evaluated each year to identify whether further remediation is needed. To date, five of the six components have met the recovery endpoints.  Recovery endpoints were established through consultation with the NEB, federal, provincial and municipal governments, Tsleil-Waututh First Nation and Squamish First Nation. The endpoints recognize the prespill conditions (historic and current sources of PAHs in the Inlet) in addition to the Kinder Morgan release.	See above	See above
		As of July 2012, five of the six components had met the recovery endpoints.		
	Concern about effects of spill on soils and long-term monitoring.	This topic has already been addressed in Trans Mountain's response to an Intervenor Information Request. As described in Technical Report 7-1 of Volume 7, Ecological Risk Assessment of Pipeline Spills Technical Report (Stantec Consulting Ltd. December 2013), oil spills to terrestrial environments result in the same types of effects to both soil invertebrates and terrestrial vegetation including physical smothering, habitat modification and direct toxicity. As a result, the Canadian Council of Ministers of the Environment (CCME) has developed ecological soil contact Canadawide Standards for Petroleum Hydrocarbons (PHC) in Soil based on endpoints observed in both soil invertebrate and plant toxicity testing. In the event of an oil spill to riparian and upland areas, remediation activities will result in restoration of soil quality to levels that will support the	Trans Mountain Response to Kwantlen First Nation IR No. 1	A3Y2T0

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
		recovery of both plant and invertebrate life.		
Land Spills (cont'd)	Concern raised about effects of a spill into nearby streams and waterbodies (Nicholas Grove, Fraser River) as well as water courses and wetlands that drain into the Fraser River.	This topic has already been addressed in Volume 7, Sections 6 and 7 which addresses potential effects of hypothetical pipeline spills to lakes, rivers and streams.  Information related to Trans Mountain's preparedness to respond to pipeline and facilities spills is also provided in Volume 7 of the Application. More specifically: Section 2.0 of Volume 7 identifies measures to prevent and mitigate oil spills; Section 4.0 outlines Trans Mountain's emergency preparedness and planned response to spills; Section 6.0 describes potential effects of pipeline releases; and Section 7.0 provides hypothetical pipeline spill scenarios for the Athabasca River, North Thompson River and Fraser River.	Volume 7, Risk Assessment and Management of Pipeline and Facility Spills - Section 2, 4, 6 and 7	A3S4V5 A3S4V6
Air Emissions/Greenhouse Gas	Air quality measurement and access to air monitoring information (SFU).	This topic has already been addressed in Trans Mountain's response to an Information Request. There is an ambient air quality monitoring station located at Burnaby Terminal monitoring hydrocarbon vapours. In July, it was upgraded with new sensors capable of measuring hydrogen sulphide (H <sub>2</sub> S) and sulphur dioxide (SO <sub>2</sub> ) levels. Calibration and quality assurance of the data were completed by July 19, 2014.	Part 1 Westridge Delivery Line-App Email Response to Sustainable SFU; Page 1-2	A4F5E3
		Since installation of the new instrumentation there have been no readings above any provincial regulatory guidelines observed at the fence line or any abnormally high peaks. The volatile organic compound (VOC) sensor has been working since early June and there have been some intermittent peaks of VOC emissions observed, but these were detected in early August. Most of July showed little activity for VOC emissions readings and after July 19, there were no abnormal H2S or SO2 readings. The peak observed on August 10 showed dominant wind direction prevailing from WSW, which would put SFU in the downstream direction of the terminal.		
Groundwater/Water	Concern about sufficient availability of	This topic has already been addressed in Trans	Trans Mountain	A3Y2E6

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Quality and Quantity	water in KMC's fire water pond.	Mountain's response to an Intervenor Information Request. When the design basis for the proposed fire protection systems at Burnaby Terminal is finalized during the detailed engineering and design phase, specifications and drawings will be developed under the supervision of experienced and competent professional engineers, specializing in fire protection and registered in British Columbia. Trans Mountain also retains the services of an industrial fire-fighting specialist to provide advice on conceptual and detailed design. Trans Mountain remains open to opportunities to continue discussions on the proposed fire protection systems, both in concept and in detail, with the City of Burnaby when it is ready to reengage.	Response to City Burnaby IR No. 1 (1.13.02a)	
	Concern about water handling during operations, emergency response and proposed construction.	This topic has already been addressed in Volume 5B of the Application. The Project is expected to cause a temporary increase in demand for water during construction due to direct water needs of the Project and the indirect potable water needs of the construction workforce. As part of the Worker Accommodation Strategy, Trans Mountain will work closely with municipal and regional officials to identify and implement actions to prevent workforce demands exacerbating any municipal water supply capacity issues.	Volume 5B,– ESA – Socio-Economic- Section 7.2.5.5	A3S1S7
	Surface drainage during construction as water is an issue around homes in the neighbourhood of Meadowood.	Trans Mountain responded directly during its meeting with a stakeholder indicating that Trans Mountain will survey the Shell site to identify site drainage and create a plan to address water run off during construction.	Response provided directly to stakeholder	N/A

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Quality and Quantity (cont'd)	Concerns raised about crude oil affecting irrigation and ground water.	This topic has already been addressed in Trans Mountain's response to an Intervenor Information Request and in Volume 5A of the Application. Protection of the environment is our highest priority. Construction will be completed in accordance with all regulatory conditions, the Environmental Protection Plan and use of appropriate construction practices. Water quality will be monitored during all instream activity. Each watercourse will be approached correctly so the cumulative impact of changes to all the crossings and the surrounding watershed will be limited.  Section 7.2.3 of Volume 5A discusses groundwater contamination and Table 7.2.3-2 identifies the potential effects of contamination of groundwater.	Trans Mountain Response to PIPEUP Network IR No. 1 (2vii, 3.8)  Volume 5A, ESA – Biophysical - Section 7.2.3 –	A3Y2Y7
Environmental – Marine				
Tanker Traffic	Concerns about the proposed incinerator in the Lower Mainland and tanker traffic causing increased emissions.	This topic has already been addressed in Trans Mountain's response to an Information Request and in its Technical Update No. 4. All vessels calling PMV are required to comply with international and local regulations on the types of engines (propulsion and generators) that they are fitted with. Those engines have to meet strict exhaust emission requirements set by the IMO and carry manufacturers' certificates to show that. Regular surveys and checks are conducted by local authorities to verify this and to ensure that the engines are maintained to ensure their continued adherence to those standards.  There is ongoing internationally mandated process underway to improve the type of fuel used by the ships. Vancouver is part of the North American Emissions Control Area (as are Seattle, San Francisco, and Los Angeles) and all ships entering or plying within 200 miles of our coast have to change over to cleaner burning fuel. Mandated further improvement in fuel standards take effect in 2015 and 2020, which period straddles the project's late 2017 coming into operation schedule. An	Response to Metro Vancouver IR No. 1  Part 3 to Technical Update No. 4: An update to the Marine Air Quality and GHG Technical Report for Marine Transportation  Part 12 of Technical Update No. 4: responses to Lower Fraser Valley Air Quality Coordinating Committee Informal Information Requests from September 25 and November 13, 2014 Meetings	A3Y2V0 A3Y1G0 to A3Y1G2 A4F5H8 to A4F5I2 A4F5C9

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
		assessment of tug boats and other marine vessels was filed with the NEB as a supplemental marine air quality and greenhouse gas report for marine transportation on June 16, 2014.		
		Trans Mountain has since engaged with all regulatory authorities regarding air quality, this includes Metro Vancouver, Fraser Valley Regional District, Port Metro Vancouver, Environment Canada and the BC Ministry of Environment. On December 1, 2014 an update to the Marine Air Quality and GHG Technical Report for Marine Transportation was filed with the NEB as Part 3 to Technical Update No. 4 which indicated emissions will remain within Metro Vancouver, provincial and national objectives In addition, responses to Lower Fraser Valley Air Quality Coordinating Committee Informal Information Requests from September 25 and November 13, 2014 Meetings was also filed as Part 12 of Technical Update No. 4.		
Tanker Traffic (cont'd)	Concerns about the proposed incinerator in the Lower Mainland and tanker traffic causing increased emissions. (cont'd)	In addition, every ocean going commercial vessel is currently required by the IMO to have in place a Shipboard Energy Efficiency Management Plan. From a more practical perspective, given the high cost of fuel, ship operators benefit greatly by taking extra care to ensure that the ship's engines operate efficiently, which plays a very positive overall role in reducing emissions as well. All of the above factors help recent degradation of air quality in the region from shipping. Trans Mountain, as part of pre-arrival checks shall only accept modern vessels that meet and follow all of the above international requirements to load t Westridge.	See above	See above
		An updated assessment of tug boats and other marine vessels was filed with the NEB as a supplemental marine air quality and greenhouse gas report for marine transportation on June 16, 2014. (Filing ID A31G0-A31G2)		

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Routing				
Current land use	Impact to Lazuli Buntings, and other species at risk in Colony Farm Park.	This topic has already been addressed in Trans Mountian's response to an Intervenor Information Request and in Volume 5A of the Application. The proposed pipeline corridor is not located within the boundaries of Colony Farm Regional Park. However, the area of the proposed pipeline corridor that borders the Park is considered environmentally sensitive by the Burke Mountain Naturalists (and or by local stakeholders) and the laydown area for the horizontal directional drill of the Fraser River extends outside the west and northwest boundary of Colony Farm Regional Park on a CP Rail Spur. Using this rail spur is subject to agreement with CP Rail. We continue active discussions with CP Rail regarding use of the rail spur. Although we do not yet have a formal agreement, at this time we do not plan to use Colony Farms Park for temporary construction purposes. It remains a priority to advance our discussions with CP Rail.	Volume 5A, ESA Biophysical - Section 7.2.10, Table 7.2.10-3  Volume 5C, Section 6.1, Table 6.1- 1 Trans Mountain Response to GoC EC IR No. 1	A3S1Q9 A3S1U1 A3Y2K9
	Impact to Lazuli Buntings, and other species at risk in Colony Farm Park. (cont'd)	Impacts to federally-listed species will be reduced by minimizing and/or narrowing the Project Footprint where feasible, avoiding activity during sensitive time periods for wildlife species to the extent feasible, conducting preconstruction surveys and implementing appropriate setbacks and/or timing windows (refer to Section 7.2.10, Table 7.2.10-3 of Volume 5A and Section 6.1, Table 6.1-1 in Technical Report 5C, Wildlife Technical Report). Consultation will continue with Colony Farm Regional Park representatives to discuss potential mitigation opportunities.	See above	See above

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Current land use (cont'd)	Impact to old field habitat within Colony Farm Park.	This topic has already been addressed in Trans Mountian's response to an Intervenor Information Request and in Volume 5C of the Application. Trans Mountain is continuing with field studies for lands where access was not available in 2013 and along route refinement areas where new lands are being crossed in order to update field habitat ratings (see the Application, Section 6.3 in Technical Report 5C-11 in Volume 5C, Wildlife Habitat Modelling Technical Report). Wildlife supplemental field studies will be completed according to the methods described in Section 3.7 in Technical Report 5C-11 in Volume 5C, Wildlife Habitat Modelling Technical Report. Field data points collected will be overlaid with the habitat models developed for the Project to evaluate and refine model performance	Volume 5C, Technical Report TR5C-11 in Wildlife Habitat Modelling Section 6.3 Volume 5C, Technical Report TR5C11 Wildlife Habitat Modelling Trans Mountain Section 3.7 – Response to GoC EC IR No. 1	A3S2R5 A3Y2K9
C E W lo	Concern public health authorities should be more involved in conversations in the Lower Mainland going forward.	Trans Mountain has met with Health Authorities along the pipline route, including the Fraser Health Authority and Vancouver Coastal Health, and will continue to meet with health authorities through it's ongoing engagement activities. In Q1 2015, Trans Mountain will extend an invitation to meet with health authorities along the pipeline corridor.	N/A	
	Concern about impact of expanded Emergency 'Zones' at Burnaby Terminal with proposed expansion, as tanks will be located closer to Burnaby Mountain community. In particular, impact on the only access to and from the mountain.	This topic has already been addressed in Trans Mountian's response to an Intervenor Information Request. Kinder Morgan Canada's first priority is safety of the public, our employees and contractors, and the environment.	BTA IR No. 1.4	A3X5X3

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Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Disaster Planning (cont'd)	Concern about impact of expanded Emergency 'Zones' at Burnaby Terminal with proposed expansion, as tanks will be located closer to Burnaby Mountain community. In particular, impact on the only access to and from the mountain. (cont'd)	In the unlikely event of an emergency at one of its facilities, Kinder Morgan Canada Inc. (KMC) would immediately isolate the equipment that is of concern, thus stopping release of petroleum. At the same time, emergency services would be contacted immediately and trained KMC technicians would be dispatched to the location to help local Authorities secure the area and commence air monitoring to ensure air quality for those in the immediate vicinity.	See above	See above
		KMC uses the ICS to respond to emergencies. The ICS provides for seamless coordinated action with government agencies and Aboriginal communities. KMC would work together with the local Authority to determine the best course of action to protect the public.  Each situation would be different and the response would address the specific circumstances presented.		
	Concerns raised about past (Abbotsford) participation in KMC planning and sharing information that was not incorporated into final documentation. How will information be used to update GRP?	The stakeholder engagement program was designed to take into account the unique and varying needs of the communities along the Project corridor, and to be responsive and adaptive to the feedback received throughout the various stages of the engagement program. In addition, the feedback received has been incorporated into the program and has influenced the design of subsequent phases of stakeholder engagement.	Volume 3A – Public Consultation	A3S0R2
		Trans Mountain is committed to ongoing engagement throughout the life of the system. To date, the Project team has received feedback from public open houses (also referred to as information sessions), workshops, one-on-one meetings, public presentations, online discussion forums and comment forms, and directly through email and telephone contact. Feedback collected has helped shape aspects of the Project.		
		Detailed engagement on the draft plans / documents contained as part of the enhanced ERP for Trans		

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
		Mountain, including the GRP, will continue in 2015. Communities will have an opportunity to review and comment on the draft plans.		
		Trans Mountain will address this topic in its ongoing stakeholder engagement initiatives planned for 2015; commencing in Q2 2015.		
Emergency Response	Pipeline shut off procedures and timeline.	This topic has already been addressed in Trans Mountian's response to an Intervenor Information Request. The pipeline is equipped with pressure and flow monitors that exercise local control and transmit data to the Control Centre. These systems are set up to alarm or shut down on preset deviations of pressure flow. In case of an alarm, Control Centre personnel will take the appropriate actions in accordance with operating procedures. A summary of the operating procedures for automated spill detection are found in Section 2.1.1 of Kinder Morgan Canada's Trans Mountain Expansion Project Emergency Response Plan.  A summary of the operating procedures for automated spill detection are found in Section 2.1.1 of Kinder Morgan Canada's Trans Mountain Expansion Project Emergency Response Plan.  Among the assumptions cited in the response to NEB IR No. 1.95b is a 10-minute shutdown. As indicated in the response to City of Abbotsford IR No. 1.15h, Trans Mountain feels that a 10-minute shutdown is highly realistic given modern pipeline monitoring and control technology, especially in consideration of a worst-case scenario full-bore release. The 10-minute interval described in the Application, Volume 7, Section 3.1.6, was used to calculate the credible worst case (full-bore rupture) spill outflow volume. Trans Mountain believes that 10 minutes for such an event is conservative.	Kinder Morgan Canada's Trans Mountain Expansion Project Emergency Response Plan. NEB IR No. 1.95b City of Abbotsford IR No. 1.15h	A4D3F2 A3X5Z2 A3S4V6

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Emergency Response (cont'd)	See above	A trained Control Centre Operator (CCO) would recognize the indications of a large leak in much less than 10 minutes and initiate an immediate shut down. Shut-down time following a leak alarm will depend on the time required to determine whether the alarm is a probable false alarm or a probable leak, however, a CCO has the authority and the responsibility to shut down a pipeline if he or she does not believe it can continue to be operated safely. The CCO will not be faulted for shutting down under these circumstances.	See above	See above
	Potential for a Highway 1 closure	This topic has already been addressed in Trans Mountian's response to an Intervenor Information Request. KMC does not have the authority to order evacuation, and/or conduct the evacuation of residents, schools, daycares, hospitals, businesses, parks, recreation facilities, and other public/private places, nor does it have the authority to close roads, redirect traffic, public transit and other transportation related infrastructure. KMC agrees with the interpretation of the federal, provincial and municipal legislation dealing with emergency programs.	Burnaby Teachers Association (BTA) IR No. 1.0 to 1.8)	A3X5X3
		KMC takes full responsibility for any emergency that results from the Trans Mountain Pipeline system and its facilities and plans to jointly manage such an incident with the local, provincial and federal authorities in the jurisdiction of the emergency using Unified Command.		
		The likely hood of a road closure depends on the size and location of a spill as well as many other factors such as weather, proximity to urban areas and type of product spilled.  If deemed necessary, road closures would be ordered by local authorities through Unified Command as stated in Section 4.5.2 of Volume 7.		

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Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Emergency Response (cont'd)	Crude oil reaching aquifer, water courses and Tzeachten First Nation land. Ground water is very important to Chilliwack and local First Nations; additional conversations required on this topic.	This topic has already been addressed in Volume 5C of the Application. Potential mitigation of groundwater-related issues are contained in Table 4.1-1 on page 4-3, of the Groundwater Technical Report 5C-3, Volume 5C.	Volume 5C Biophysical, TR 5C-5 Groundwater Technical Report  Volume 7, Section 6.2.2.1 and Appendix C (Page 89 of 97)	A3S1U8 A3S4V6 A3S4W5 A3S4W6
	Crude oil reaching aquifer, water courses and Tzeachten First Nation land. Ground water is very important to Chilliwack and local First Nations; additional conversations required on this topic. (cont'd)	Through this mitigation, Trans Mountain is committed to ensuring the continuity of water supply. In Section 6.2.2.1, Volume 7, Trans Mountain acknowledged that "Without treatment or physical removal, oil would be a long-term source of groundwater contamination if it contacted the water table. For this reason, spill response efforts aim to reduce potential for groundwater contamination by removing pooled oil and affected surface materials as quickly as possible, and as deeply as needed to remove contamination so that aquifers are not affected." With this focus on timely clean-up activities, impacts to aquifers can be minimized. With respect to the Sardis-Vedder aquifer, the pipeline traverses north and down-gradient of the capture zone of existing City of Chilliwack municipal wells according to available aquifer modelling (AMEC, 2007).  Overland and Stream Flow Modeling of Potential Full-Bore Ruptures included in Volume 7, Appendix C (Page 89 of 97) indicates that surface releases along the pipeline in this area would tend to continue downslope generally to the north and away from the municipal wells in this area. In the event that a pipeline release somehow impacted aquifer conditions around one of the City of Chilliwack community wells, Trans Mountain would commit to work with the City of Chilliwack to identify surplus capacity from other wells in the system, while suitable replacement alternatives were established and implemented.	See above	See above

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Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Emergency Response (cont'd)	Significant concern about off- gassing and safe evacuation of schools (Chilliwack).	This topic has already been addressed in Trans Mountian's response to an Intervenor Information Request and in Volume 7 and Volume 5D of the Application. Off - gassing of light - ends has safety implications for responders and the public during the initial hours of exposure to a release, as is the case for most oil spills.  Trans Mountain has established emergency response protocols, programs, and protocols at the community and regional level. Trans Mountain delivers its CAER program to emergency services organizations and government authorities along the TMPL system. The objectives of the program are to familiarize first responders with the pipeline location, explain the properties of the pipeline's contents, and promote information exchange and coordination of response efforts in the event of an incident. As part of the response management system, Trans Mountain staff are trained in the emergency response procedures and conduct regular emergency exercises, some of which include local first responders. Trans Mountain also has standing agreements for contract resources to provide response equipment and labour, air and human health monitoring, environmental assessment and emergency management.  Kinder Morgan Canada (KMC) does not have the legislative authority to order evacuation, and/or conduct the evacuation of residents, schools, daycares, hospitals, businesses, parks, recreation facilities and other public/private places, nor does it have the legislative authority to close roads, redirect traffic, public transit and other transportation-related infrastructure. Local first responders would make the decision to evacuate residents and would conduct such evacuations. KMC agrees with the interpretation of the federal, provincial and municipal legislation dealing with emergency programs. KMC anticipates working collaboratively with	Trans Mountain Response to Halston Hills IR No. 1  Volume 7, Section 6.2.2.8 – Gainford Trails of Diluted Bitumen Behaviour on Marine Waters  Volume 5D, ESA Socio Economic Technical Reports Section 8.6.1.1 –	A3Y2E6 A3Y2S1 A3S4V6 A3S2J5

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
		the local first responders through an ICS structure to co- ordinate these and other activities in the unlikely event the need arises.		
Emergency Response (cont'd)	SFU has concerns about access and egress from Burnaby Mountain in event of emergency (only access to/from mountain directly above Burnaby Terminal).	Safety is KMC's priority. Kinder Morgan Canada's (KMC) goal is to protect people and the environment. KMC has always been committed to working with organizations, both public and private, to ensure there is a mutual understanding how the pipeline and/or operations at facilities could impact those organizations for incorporation in their own emergency response plan. However, KMC is not responsible for the emergency planning of other organizations. KMC is committed to engaging with external stakeholders where our pipelines operate. KMC offers to review emergency response plans, educate on KMC's operations and provide advice on proper response techniques. KMC conducts regular emergency response exercises and equipment deployments that include participation from local emergency responders. KMC's Public Awareness Program is designed to promote awareness of KMC's pipelines in the geographic area, increase knowledge of the regulations and KMC's requirements for working near our pipelines, educate first responders on KMC's emergency preparedness and response activities and protocols, prevent third-party damage to KMC's pipelines and to enhance public safety. KMC does this through annual mailing programs, presentations, meetings, and participating in industry tradeshows and community events. Our program is continually evolving as we endeavor to meet the changing needs of our stakeholders and regulatory requirements. In addition, we welcome the opportunity to involve stakeholders, such as SFU in scenario exercises and training events.	Trans Mountain Response to City Burnaby IR No. 1	A3Y2E6

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Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Emergency Response (cont'd)	Concern about safe evacuation of Sandy Hill neighbourhood and Sumas First Nation – the most impacted by a Level 3 spill in the scenario.	This topic has already been addressed in Trans Mountian's response to an Intervenor Information Request and in Volume 7 of the Application. Kinder Morgan Canada (KMC)'s priority is safety of the public, our employees, our contractors and the environment. Trans Mountain has a comprehensive response plan that includes working with local authorities to make sure the public and environment are kept safe.  KMC uses the Incident Command System to respond to emergencies and would work together in Unified Command with local authorities to determine the best course of action to protect the public and the environment. This includes supporting the local authority in the selection, staffing and set up of an evacuation centre consistent with their emergency response planning for the community.  The needs for fire, police and health services greatly depend on the type of emergency. KMC does not have the authority to order evacuation, and/or conduct the evacuation of public/private places, nor does it have the authority to close roads, redirect traffic, public transit and other transportation-related infrastructure. KMC anticipates working collaboratively with the local first responders through an ICS structure to co-ordinate these and other activities in the unlikely event the need arises.	Trans Mountain Response to Doherty D IR No. 1  Volume 7, Section 4.3.1 – Table 4.3.1	A3Y2K2 A3S4V5

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID	
Operations and Mainten	Operations and Maintenance				
Type of Product	Type of product moved in existing pipeline and different properties. (Cited previous exercises with KMC where type of product was not known, concern about this happening during a real event).	This topic has already been addressed in Volume 7 of the Application and the information is also available on Trans Mountain's website <a href="www.transmountain.com">www.transmountain.com</a> . The Trans Mountain Pipeline transports crude oil, semi-refined and refined products in a series in the same pipeline. This process is known within the industry as "batching." Trans Mountain is the only pipeline in North America that carries both Refined Product and Crude Oil in batches. The products currently shipped in the Trans Mountain pipeline: <ul> <li>Refined Petroleum (i.e., Gasoline, Diesel, or Iso-Octane)</li> <li>Synthetic Crude (i.e., crocessed bitumen)</li> <li>Semi-refined (i.e., conventionally sourced Crude Oil)</li> <li>Heavy Crude (i.e., Diluted Bitumen)</li> </ul>	Volume 7, Section 4.8	A3S4V5	
Type of Product (cont'd)	Type of product moved in existing pipeline and different properties. (Cited previous exercises with KMC where type of product was not known, concern about this happening during a real event). (cont'd)	There are a number of techniques used in the cleanup of petroleum products, the plans for which are developed at the time of an incident based on the amount and type of product and the substrate or vegetation that is oiled. The Emergency Response Plans have general procedures that may be considered in the clean-up of spilled product if the type of product is not known. It is typical for these procedures to be conservative in their approach in order to ensure the safety of responders and the public. Applicable procedures will be determined, and undertaken, as part of ICS.  The Application, Volume 7, Section 4.8 outlines the process to enhance Kinder Morgan Canada's (KMC) existing emergency management programs as they relate to the Trans Mountain Pipeline system to address the needs of the Project. The final programs will be developed in a manner consistent with the NEB's draft conditions.	See above	See above	

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Socio-economic	·			
Infrastructure and Services	Concern about impacts to potable water and sewer. Identified Popkum has its own water reservoir, GRP needs to be updated with this information; but could rely on Regional District water in event of an emergency.	This topic has already been addressed in Volume 5B of the Application. Trans Mountain maintains a geographically based Emergency Response Plan (ERP) that includes route maps depicting control points and environmentally sensitive areas. This information will be considered in the update to current plans for the expansion. Communities will have an opportunity to review plans as part of ongoing consultation efforts as requested by the NEB as per draft Conditions of Approval for the Project (NEB Filing ID A3V8Z8).	Volume 5B, ESA – Socio-Economic - Section 7	A3S1S7 A3V8Z8
Infrastructure and Services (cont'd)	There are only certain access points to United Boulevard. 23 per cent of all Coquitlam employment in United Boulevard area, more than 500 businesses, and 8,000 people work in this area. It is a very important business area for Coquitlam.	This topic has already been addressed in Volume 5B of the Application. Some businesses may, despite best construction practices, experience disruptions due to residual sensory disturbance related to noise and dust from construction activities, including construction-related traffic. In places where certain municipal roads are being crossed or used for construction purposes, nearby businesses may experience disrupted access. These factors could result in changes in customer behavior such that customers choose not to visit, or reduce their visits to these business locations during the construction phase. To the extent such nuisance factors result in reduced customers and business, they could contribute to temporary decline in business income in select locations during specific periods of construction. Standard urban construction mitigation measures will be implemented to reduce noise, dust, and access disturbance, and the assumption of compensation agreements for direct economic loss due to property disturbance will reduce effects. Compensation will be negotiated in some form for any proven economic loss due to disturbance of property.	Volume 5B, ESA - Socio-Economic - Section 7.0 -	A3S1S7

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Social and Cultural well-being	Impact to "old field habitat."	This topic has already been addressed in Volume 5C of the Application. Trans Mountain is continuing with field studies for lands where access was not available in 2013 and along route refinement areas where new lands are being crossed in order to update field habitat ratings (see the Application, Section 6.3 in Technical Report 5C-11 in Volume 5C, Wildlife Habitat Modelling Technical Report). Wildlife supplemental field studies will be completed according to the methods described in Section 3.7 in Technical Report 5C-11 in Volume 5C, Wildlife Habitat Modelling Technical Report. Field data points collected will be overlaid with the habitat models developed for the Project to evaluate and refine model performance	Volume 5C, Technical Report TR5C-11 in Wildlife Habitat Modelling - Section 6.3 Volume 5C, Technical Report TR5C11 Wildlife Habitat Modelling - Section 3.7 Trans Mountain Response to GoC EC IR No. 1	A3S2R5 A3Y2K9

#### 2.4 Topics of Interest or Concern – Mainland Coastal, BC

Figure 2.4-1 displays new topics of interest or concern raised since the filing of the Application - May 2012 to July 31, 2013, (Filing ID's A3S0R2 to A3S0R59), and not previously addressed in the Consultation Update No. 1 - August 1 to December 31, 2013 (Filing ID A3Z8E6), or the Consultation Update No. 2 - January 1, 2014 – April 30, 2014 (Filing ID A4A4A5). This includes all comments from all engagement activities during the reporting period including the Workshops and Open Houses, social media, stakeholder meetings and interactions, and inquiries to the Project phone line and email.

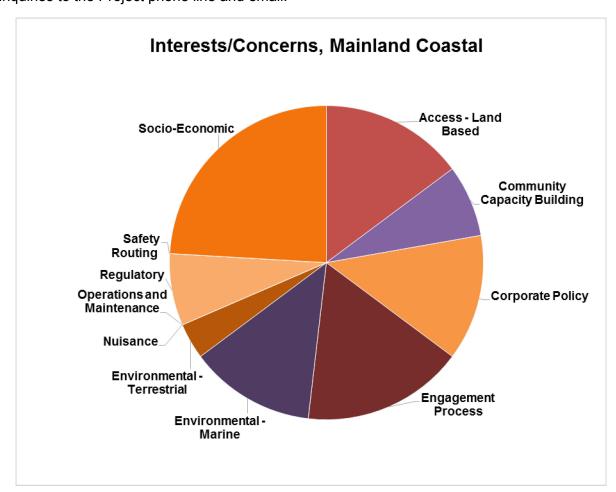


Figure 2.4-1 Topics of Interest or Concern in Trans Mountain's Mainland Coastal Region

Table 2.4 provides a summary of issues identified in Trans Mountain's Mainland Coastal Region during the reporting period that have not already been identified in previous Updates and Trans Mountain's response to the interest or concern.

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**TABLE 2.4** INTERESTS OR CONCERNS - MAINLAND COASTAL, BC

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Corporate Police	cy	-		
Economic Feasibility	Funding model for the application phase of Kinder Morgan's Trans Mountain pipeline.	This topic has already been addressed in Trans Mountain's response to an Intervenor Information Request. The funding for this project will be raised by and provided to Trans Mountain by its owner, Kinder Morgan Energy Partners L.P. Kinder Morgan Energy Partners makes investment decisions based on expected internal rate of return over the life of the project. Kinder Morgan Energy Partners does not make investment decisions based on cost of service considerations.	Response to Eliesen M IR No.1.08	A3X6D1
Environment –	Marine			
Spills - Environmental Impact	Impact to sea otters living in the Olympic peninsula and in the event of oil spills, would Kinder Morgan Canada (KMC) do a program to support a vigorous and effective new otter aid?	This topic has already been addressed in Volume 8A of the Application. The potential effects of a spill from the increased Project-related marine vessel traffic, including effects on sea otters, are discussed in Section 5.0 of Volume 8A of the Application. Vessel strikes with sea otters are considered unlikely, however, an assessment of potential vessel strikes with baleen whales is presented in Section 4.3.13 of Volume 8A. Please also refer to the response to NEB IR No. 1.56 for a description of the Marine Mammal Protection Program framework.	Volume 8A, Marine Transportation – Section 4.3.13 NEB IR No. 1.56	A3S4Y3 A3W9H8
	Information directly related to a contingency plan for if/when there is a spill.	This topic has already been addressed in Volume 8A of the Application. Under the Canada Shipping Act, 2001 a federally certified response organization is required to have prescribed levels of equipment and resources available to carry out oil spill response activities upon request of one of their members or upon direction of the designated Authorities ( <i>i.e.</i> , CCG or Transport Canada (TC)).  Western Canada Marine Response Corporation (WCMRC) is the TC-certified spill responder for Canada's west coast. WCMRC's mandate is to ensure there is a state of preparedness in place and to mitigate the impact should an oil spill occur. This includes the protection of wildlife, economic and environmental sensitivities, and the safety of both the responders and the public. View WCMRC's website at <a href="http://wcmrc.com">http://wcmrc.com</a> .  Trans Mountain is a member of WCMRC and works closely with them and other members to ensure WCMRC remains capable of responding to spills from vessels loading or unloading product or transporting within their area of jurisdiction.	Volume 8A, Section 5.5  Technical Report TR 8C-12 S 12 Future Oil Spill Response Approach Plan Recommendations on Bases and Equipment	A3S5Q3 A3S5I9

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Spills - Environmental Impact cont'd	See above	The Application contains numerous risk assessments as well as proposal for enhanced spill response measures which is included in the Technical Reports of Volume 8C.	See above	See above
Environment -	Terrestrial			
Air Monitoring and Noise	Auxiliary engines on the vessel associated with the vessels and their noise while docked at PMV. These are community issues that will be associated with the Project.	This topic has already been addressed in Trans Mountain's response to an Intervenor Information Request and in Volumes 5C, 6A, 6D and 8B of the Application. Trans Mountain has been working with PMV and the COSBC to communicate guidelines for all vessels that may use the anchorages near Westridge and has encouraged their support in educating vessel operators about common community complaints related to local shipping. PMV also has a community information line in place for any public complaints that may arise from shipping activity so they can investigate.  Trans Mountain will be planning the port turnaround of the tankers carefully to minimize the time tankers spend at anchor. For when vessels are docked at Trans Mountain's Westridge Marine Terminal, Environmental Management Plans and Noise Management Plans are draft NEB Conditions of Approval. Once engineering is finalized, noise predictions will be updated based on final design data as committed in the mitigation for the Westridge Marine Terminal in the ESA and the Westridge Marine Terminal Environmental Protection Plan.  The noise assessment for the Project studied receptors for the Westridge Marine Terminal which are which are which are listed in Table 4-39 of Technical Report 5C-3 in Volume 5C, Terrestrial Noise and Vibration Technical Report (RWDI December 2013) of the Application. Need for noise controls would be focused those locations nearest the Westridge Marine Terminal.  The need for noise controls will be focused on those locations nearest the Westridge Marine Terminal property. These will be the locations used to determine compliance during the post-construction monitoring program.	Trans Mountain Response to PMV IR No. 1 Volume 8B, Technical reports – TR8B-3  Volume 5C, Technical Report TR5C-3 Volume 6A, Environmental Compliance – Section 9.10 Section 7.6 of Volume 5A, Effects Assessment, Westridge Marine Terminal Expansion Volume 6D, Westridge EPP	A3X6V4 A3S4J7 A3S1T7 A3S2S1 A3S1Q9 A3S1R0 A3S2S9 A59688

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Air Monitoring and Noise (cont'd)	See above	The predicted existing sound levels for the Westridge Marine Terminal are reported in Table 4-42 of Technical Report 5C-3 in Volume 5C. The predicted sound levels due to construction activities associated with the proposed expansion of the Westridge Marine Terminal is presented in Table 5-32 of Technical Report 5C-3. Finally, the predicted terrestrial operational sound levels of the proposed expanded Westridge Marine Terminal are provided in Tables 6-55 to 6-57 of Technical Report 5C-3.  Sound level predictions are also shown spatially on the sound level contour as shown in Figure 6-13 of Technical Report 5C-3, the worst-case surrounding representative receptors (residences) were chosen for modelling and reporting purposes. As shown on the figure, the predicted sound levels on the south shore of Dollarton Highway would be in the 35-40 dBA range, which is below the predicted values for the nearest receptors to the Westridge Marine Terminal reported in Table 6-55 of Technical Report 5C-3 which ranged between 45-47 dBA. 2) A post-construction noise monitoring survey will be completed for the Westridge Marine Terminal as noted in the Application, Section 9.10 of Volume 6A (Environmental Compliance), and will include the requirements of the NEB such as those related to post-construction noise surveys at select terminals associated with NEB Draft Condition No. 57 of the NEB's <i>Letter – Draft Conditions and Regulatory Oversight</i> (NEB 2014). These sound level measurements generally include spectrum (usually include 1/3 octave band) data that can be used to verify the values presented in Section 6.12 of Technical Report 5C-3 in Volume 5C, Terrestrial Noise and Vibration Technical Report (RWDI December 2013).	See above	See above
Forest Health/Timber	Concern about clear cutting in the Burnaby Mountain Conservation area.	This topic has already been addressed through stories and postings to Trans Mountain's website <a href="www.transmountain.com">www.transmountain.com</a> and in responding to media inquiries. Based on a report dated August 17, 2014, seven Red Alder trees deemed in health decline by a professional arborist and were removed in order to provide a safe working area for the geotechnical investigations, providing details. Further information regarding the Burnaby Mountain geotechnical studies and aerial footage of the area as well as additional information is provided in the following links. <a href="http://www.transmountain.com/updates/burnaby-mountain-geotechnical-">http://www.transmountain.com/updates/burnaby-mountain-geotechnical-</a>	N/A	N/A

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
		http://www.transmountain.com/updates/update-trans-mountain-completes-portion-of-preparatory-work-for-geotechnical-investigation-in-burnaby-mountain-conservation-area.	V. 1. 5. 50.	100410
Invasive Species	Concerns for Japanese Knot Weed - treatment has resulted in gnarly nodules. East Lake near Brick and ICBC	This topic has already been addressed in Volume 5A and 5C of the Application. Stakeholders, including attendees of the Hope Community Workshop, Abbotsford Community Workshop, Coquitlam Community Workshop and Langley Community Workshop as well as representatives of the FVRD, the GVRD, the Fraser Valley Invasive Plant Council and the Invasive Species Council of Metro Vancouver, were contacted regarding weeds of concern and their associated websites were consulted. These stakeholders expressed concerns regarding a number of native and non-native species. Stakeholders' concerns are discussed in the Vegetation Technical Report of Volume 5C (Fraser Valley Invasive Plants Council 2012, FVRD 2008a, Metro Vancouver 2011b). The Provincial Noxious weeds of concern identified by stakeholders during consultation are listed in Table 5.9-11. Table 5.9-11 also indicates which of these Provincial Noxious weeds were observed during the 2013 vegetation surveys within this segment. Nonnative and invasive species that were observed during 2013 vegetation surveys along the Hope to Burnaby Segment of the Project are also included in the Vegetation Technical Report of Volume 5C.	Volume 5A, ESA Biophysical, Section 5.9.4.4 of - Hope to Burnaby Segment  Volume 5C9 Vegetation Technical Report (Fraser Valley Invasive Plants Council 2012	A3S1L9 A3S2I7

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### TABLE 2.4 Cont'd

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Routing				
Current Land Use	Concerns about routing through Shell property and proximity to homes in Meadowood subdivision/vegetation buffer removal.	This topic has already been addressed in Volume 5A, 5C, 6B and 6C of the Application. During the 2012 and 2013 field seasons, a number of environmental and engineering field programs were conducted for the proposed Project. These programs took place in both Alberta and BC, and involve the work of a number of teams in various disciplines. The studies included a vegetation field study to record the presence of rare plant communities and species at risk, as well as the identification of weeds. Weed control measures have been introduced as part of the ESA and included in the Pipeline and Facilities EPPs.  Further discussion is provided under vegetation in Sections 5.9 and 7.2.9 and in the Vegetation Technical Report of Volume 5A. Mitigation measures are outlined in the Pipeline and Facilities EPPs (Volumes 6B and 6C).	Volume 5A, ESA Biphysical Sections Table 3.1-10  Volume 5C Vegetation Technical Report- Section 5.9 and 7.2.9  Volumes 6B and 6C Pipeline and Facilities EPPs	A3S1L3 A3S2I7 A3S2S3 A3S2S6
Safety				
Disaster Planning	Are responders planning well for marine oil spills or if they plan to keep this information confidential?	This topic has already been addressed in Volume 8C and Volume 7 of the Application. As described in the West Coast Marine Response Corp. (WCMRC) Information Handbook (2012), the overall response to a marine oil spill could include, as appropriate, the participation of the Canada Coast Guard (CCG), Regional Environmental Emergency Team (REET), the Province, harbour authorities such as Port Metro Vancouver, local emergency response teams, the Responsible Party (Incident Commander) and the certified oil spill Response Organization (WCMRC).	Technical Report TR 8C 12 Supplemental TR S12, Future Oil Spill Response and Approach Plan, WCMRC Volume 7,Section 4.3.1	A3S519 A3S4V5
		KMC and WCMRC are committed to utilizing Incident Command Structure (ICS) and Unified Command. ICS is an internationally recognized, standardized, on-scene, all-hazard command and control structure that allows its users to adopt an integrated organizational structure to match the complexities and demands of single incident or multiple incidents without being hindered by jurisdictional boundaries.		

### TABLE 2.4 Cont'd

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Disaster Planning (cont'd)	See above	The Application, Volume 7, Section 4.3.1 outlines the response organization and the three-tiered response structure (Table 4.3.1) used by KMC. ICS is an internationally recognized, standardized, on-scene, all-hazard command and control structure that allows its users to adopt an integrated organizational structure to match the complexities and demands of single incident or multiple incidents without being hindered by jurisdictional boundaries.  The Application contains numerous risk assessments as well as	See above	See above
		proposal for enhanced spill response measures proposed by WCMRC which is included in the Technical Reports of Volume 8C.		

### 2.5 Topics of Interest or Concern – Island Coastal, BC

Figure 2.5-1 displays new topics of interest or concern raised since the filing of the Application - May 2012 to July 31, 2013, (Filing ID's A3S0R2 to A3S0R59), and not previously addressed in the Consultation Update No. 1 - August 1 to December 31, 2013 (Filing ID A3Z8E6), or the Consultation Update No. 2 - January 1, 2014 – April 30, 2014 (Filing ID A4A4A5). This includes all comments from all engagement activities during the reporting period including the Workshops and Open Houses, social media, stakeholder meetings and interactions, and inquiries to the Project phone line and email.

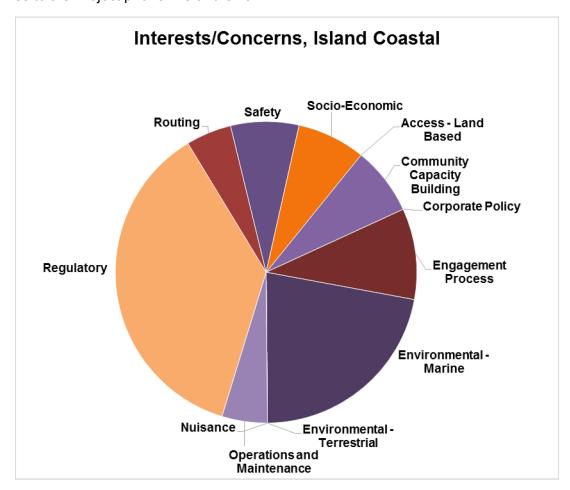


Figure 2.5-1 Topics of Interest or Concern in Trans Mountain's Island Coastal Region

Table 2.5 provides a summary of issues identified in Trans Mountain's Island Coastal Region during the reporting period that have not already been identified in previous Updates and Trans Mountain's response to the interest or concern.

### **TABLE 2.5**

### INTERESTS OR CONCERNS - ISLAND COASTAL, BC

Topic	Interest or Concern	Summary Response	Location in NEB Filed Materials	NEB Filing ID
Environ	Environment – Terrestrial			
Forest Health	Ensure current and future forest health risk is adequately identified along all sections of the proposed route.	This topic has already been addressed in Volume 5D of the Application. The potential effects on managed forest areas, merchantable timber and forest health associated with the construction and operation of the Project were identified listed in Table 19 of Volume 5D, TR5D4 (Managed Forest Areas and Forest Health) were based on the results of the literature review, desktop analysis, field reconnaissance as well as consultation with regulatory authorities and stakeholders.  A summary of recommended mitigation measures provided in Table 19 was principally developed in accordance with industry and provincial standards, as well as in accordance with Trans Mountain standards. Through the implementation of these measures, it is believed the Project meets the standards of AESRD and BC Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) and the land use objectives of the BC MFLNRO.	Volume 5D, ESA – Socio- economic Technical Reports Managed Forest Areas and Forest Health Technical Report;	A3S2J9

Trans Mountain Expansion Project

February 2015

### 3.0 REFERENCES

Canadian Council of Ministers of the Environment. 2008. Canada-Wide Standard for Petroleum Hydrocarbons (PHC) in Soil: Scientific Rationale. Supporting Technical Document.

### **APPENDIX A**

#### **COMMUNICATION MATERIALS**

### **Project Update:**

Trans Mountain Project Update, September, 2014

### Letters to the Editor:

- Oil Spills are Good for the Economy, May 6, 2014
- Response: Kinder Morgan: Putting the Salish Sea at Risk, July 11, 2014
- Pump Prices and the Trans Mountain Expansion Project, July 13, 2014
- Yet Again; Facts Don't Back Claims, September 10, 2014
- Kinder Morgan Assures Pipeline Safety, October 2, 2014

#### **Opinion Editorials:**

- Energy Company Kinder Morgan used service fee for pipeline fund, July 3, 2014
- Intervenor withdraws from NEB flawed process, November 10, 2014

### Valemont Valley Sentinel:

- Trans Mountain Expansion Project's application for BC Parks boundary adjustment, September 24, 2014
- Change of scenery brings new challenges, opportunities for pipeline worker, October 23, 2014
- Paul First Nation and Kinder Morgan Canada Sign Mutual Benefits Agreement, October 30, 2014
- Trans Mountain and TRU Partner to Host Jobs and Training Information Session, November 13, 2014
- District of Barriere and Trans Mountain Sign Community Benefit Agreement: Project to contribute \$290,000 to Barriere, November 13, 2014
- Trans Mountain helps Valemount maintain access to popular backcountry, November 20, 2014
- Project refinement submitted for portion of pipeline, December 22, 2014

### Releases:

- District of Hope and Trans Mountain sign Community Benefit Agreement: Project to Contribute \$0.5M
   To Hope Community Park, October 27, 2014
- District of Barriere and Trans Mountain sign Community Benefit Agreement: Project to Contribute \$290,000 to Barriere, November 6, 2014

### TRANSMOUNTAIN EXPANSION PROJECT

### **Project Update**

September 2014

#### **BEST-IN-CLASS APPROACH**

While some recent events have delayed the timeline for the Trans Mountain Expansion Project a bit, the values and approach driving our work remains the same.



Ian Anderson, President, Kinder Morgan Canada

Our Expansion Project takes a best-in-class approach to pipeline safety and enhances a marine shipping regime that has carried oil through the Salish Sea without incident since the Westridge Marine Terminal opened in 1953.

We are embracing Aboriginal engagement and opportunity seeking, and are identifying and creating local economic benefits for businesses and workers in communities along the pipeline route.

The Project's economic impact continues to be a robust focus and promises to generate thousands of well-paying jobs and billions of dollars to assist government in covering the cost of important services such as health care and education.

Our expectation when we filed our Facilities Application with the National Energy Board (NEB) in December 2013 was to move through a 15-month review and, subject to regulatory approval, begin construction

in early 2016. Our initial reaction was disappointment when the NEB in July 2014 revised the hearing schedule, delaying the NEB's recommendation to the Government of Canada on our Project by seven months.

This decision occurred after Trans Mountain, in response to community feedback, announced a review of options for trenchless technology through Burnaby Mountain rather than building the pipeline through a neighbourhood between our Burnaby Tank Terminal and the Westridge Marine Terminal. We respect the NEB's decision, which contributes to the transparency of the Project review by giving Intervenors and others additional time to submit written Information Requests (IRs) to us. We answered more than 10,000 questions in the first round of IRs earlier in 2014. We remain committed to fully answering all questions, within the scope of the issues for the hearing process.

A central element of the review is the oral hearing in which Aboriginal Intervenors have the opportunity to present traditional evidence before the NEB. That process commenced in late August 2014 and will continue through late this year.

As the IR process proceeds, engagement with stakeholders including landowners, governments and the general public continues. So does work to refine details of the pipeline route. Engineering, field studies and geotechnical work are all proceeding.

Already, endorsements are coming in. The Chambers of Commerce for British Columbia and Alberta passed resolutions recognizing the economic advantages of our Project and our commitment to safe operations. Reed Point Marina, a neighbour of the Westridge Marine Terminal, expressed confidence in the Project's marine safety enhancements in a Letter of Comment to the NEB. Others will step forward, in Alberta and across BC, as the Application proceeds.

We have now entered into many support agreements with Aboriginal communities impacted by the Project and we continue to develop unique and targeted opportunities for these communities.

We are confident that in the months ahead a commitment to transparency, as well as the scope, depth and integrity of our work, will lead many other individuals and organizations to the same conclusions.



Economic Benefits Flow Across the Country

laximizing Employment

Keeping Our Communities Safe

Emergency Response Program Summary

Partial List of Products
Made from Petroleum

Project Timeline and NEB Process

4



### **ECONOMIC BENEFITS FLOW ACROSS THE COUNTRY**

If approved, the Trans Mountain Expansion Project (TMEP) is expected to generate 108,300 person-years of employment and produce \$18.5 billion of fiscal benefits between 2012 and 2037, according to a recent Conference Board of Canada report.

Submitted as part of the Facilities Application to the National Energy Board in December 2013 and published on the Conference Board of Canada's website in June 2014, the report, Seeking Tidewater: Understanding the Economic Impacts of the Trans Mountain Expansion Project, assessed three areas. • Construction of the pipeline and related infrastructure • Pipeline operations • Higher prices for oil producers once the pipeline is operational

In terms of the employment impacts, a person-year of employment is equivalent to one year of work by one person. For example, one job held by one person for five years is five person-years of employment.

"The employment impacts of the Trans Mountain Expansion Project would be concentrated in British Columbia, and, to a lesser extent, in Alberta," said Michael Burt. Director, Industrial Economic Trends, The

Conference Board of Canada. "The revenues flowing into government coffers, however, would be spread across the country."

In addressing government revenues, the report found that federal and provincial governments would earn an estimated \$18.5 billion over 25 years, with \$14.7 billion in revenues coming from higher oil prices anticipated on the world market that an

expanded Trans Mountain Pipeline would allow companies to access.

By making it possible for significant volumes of Canadian oil to reach offshore markets, the proposed expansion Project would help end the current situation where oil is landlocked in a stagnant North American market, which is due in part to an oil transportation infrastructure largely confined to exporting Canadian production to the American Midwest.













Minimum





According to the Conference Board report, the proposed expansion Project would generate direct impacts from spending on materials and services associated with building the pipeline, along with additional economic benefit as a result of worker spending.

Over seven years, the development phase would support 58,037 person-years of employment with the peak years of employment between 2016 and 2017.

TMEP would generate an estimated \$1.2 billion in government revenue, divided between the federal (\$646 million) and provincial (\$568 million) governments.

About 62% of the jobs generated would be in British Columbia, with about 25% in Alberta.

### **OPERATIONS PHASE**

Minimum **50.273** 











The report found that the operations phase would support a minimum of 50,273 person-years of employment over 20 years. Most of the employment gains would continue to be in British Columbia (60%) and Alberta (21%), while more than 15% of the jobs would be generated in Central Canada, where many industry-related professional services firms and manufacturers are located.







The pipeline operations would be expected to generate between \$2.5 and \$3.3 billion in tax revenues over the first 20 years of operations. More than 60% of the revenue would come from taxes on corporate profits, followed by personal income taxes (generated from direct and indirect jobs related to the pipeline) at 19.7% and indirect taxes (such as sales taxes and taxes on fuel) at 12.5%.

### **HIGHER PRICES CONTRIBUTE** TO CANADIAN **PROSPERITY**

In recent years, the price of Canadian oil has lagged considerably behind global prices. A study by IHS Global Canada indicates the Project could raise the prices Canadian producers of heavy oil receive - also known as netbacks. These netbacks would lead to higher revenues and profits, which would in turn generate \$14.7 billion for federal and provincial governments over 20 years.

"This reality makes the pipeline a strategic issue that will have an impact on Canada's overall prosperity. Ultimately, pipelines that facilitate sales to global buyers are one way for Canada to maximize the value it receives for its non-renewable oil resources." said Glen Hodgson, Senior Vice-President and Chief Economist, The Conference Board of Canada.

The report was commissioned by the Trans Mountain Expansion Project and has been submitted to the National Energy Board as part of our Application process. See the full report on The Conference Board of Canada's website: conferenceboard. ca/e-library/abstract.aspx?did=6317

### **MAXIMIZING Employment Opportunities**

The proposed Trans Mountain Expansion Project is committed to providing pipeline and facilities construction employment opportunities for Aboriginal and local community members. Trans Mountain's plans are to maximize local, regional and Aboriginal employment opportunities by working with communities, construction companies and industry associations along the pipeline corridor.

The pipeline development (construction) phase and the first 20 years of operations are expected to generate 108,300 person years of employment.

Approximately 79,000 of these jobs represent direct jobs for our proposed pipeline expansion, long-term operations jobs with Kinder Morgan Canada and many high-paying indirect jobs supporting construction and operation of our expanded line.



"We plan to provide as many local and regional jobs as possible to maximize local benefit," says Senior Project Director, Greg Toth. "We will achieve this objective by reaching out to Aboriginal and other communities along the pipeline right-ofway, and to local contractors, construction companies and industry associations."

If the proposed Trans Mountain Expansion Project is approved, construction will take place in a phased approach between 2016 and 2018.

A project as large as this requires many workers including labourers, skilled trades, truck drivers, clerks, project managers, technicians and engineers.

Contractors will do most of the hiring for jobs created during pipeline construction.

An overview of employment opportunities in a wide array of skilled and semi-skilled workers that will be needed during construction can be found at transmountain. com/jobs. Job requirements and qualifications are outlined, along with information on employment locations.

We are committed to keeping the public informed about the opportunities our Project will create. Prospective workers can register at transmountain.com/jobs to receive updates on our employment program.

### **Keeping Our Communities SAFE**

With a deep commitment to the communities in which we operate, Trans Mountain has been operating safely for more than 60 years. That has been made possible by the diligent safety teams and pipeline integrity programs in place at Trans Mountain.

The most critical part of any emergency response program is prevention – our Application outlines the engineering and design elements that will help prevent spills – and our current program has a strong focus on ensuring the integrity of the pipeline.

For the existing pipeline, we have a robust emergency response program, including our Emergency Response Plan (ERP), which is audited by the National Energy Board (NEB). The plan is made available to organizations, including municipalities along the pipeline corridor that are required by regulation to have a copy, subject to confidentiality agreements.

As part of developing the expansion project, we are doing the studies and work needed to ensure a robust and detailed emergency response plan is developed for the new pipeline and associated facilities.

"We are committed to following the steps within the regulatory process set out by the NEB, which includes submitting a detailed emergency response plan after Project approval and in advance of the new line and facilities going into operation," explains Michael Davies, Senior Director. "We have been operating responsibly in communities for more than 60 years and our existing operations and emergency response plans in place today are audited and regulated by the NEB. Safety is always our top priority and we remain committed to ensuring our pipeline communities are prepared to respond in the event of an emergency."

If the proposed Project is approved, a new detailed emergency response plan will be developed prior to operation. However, as part of our ongoing engagement with stakeholders, we have already developed a summary of the existing program to communicate and discuss our current plans in the context of the proposed expansion.

### EMERGENCY RESPONSE Program Summary

The Emergency Response Program Summary is an introductory synopsis created for workshops with first responders and emergency managers held in the fall of 2013 and early 2014 along the pipeline corridor.

Trans Mountain has a number of programs in place to prevent potential problems, including community and contractor awareness programs, pipeline integrity verification programs and regular surveillance of activity near the right-of-way (ROW). Trans Mountain also monitors the pipeline 24 hours a day with dedicated control centre operators backed up by leak detection programs.

However, if a pipeline leak or other emergency should occur, Trans Mountain is prepared to react quickly and effectively. The Emergency Response Summary outlines the basic standards and procedures Trans Mountain regularly undertakes to use in the event of an emergency.

Trans Mountain uses the Incident Command System (ICS) to manage emergencies. ICS outlines clear roles and responsibilities with respect to emergency response and includes Unified Command for co-ordination with federal, provincial, municipal and Aboriginal agencies.

Trans Mountain works closely with local emergency responders and regularly practices table-top and deployment exercises. If an incident were to occur, Trans Mountain can act quickly to protect its employees and the public as well as mitigate any harm to the environment or property.

Trans Mountain plans to continue with emergency management workshops throughout the course of the regulatory review process to share information about current emergency plans and to seek input from emergency professionals about what new information and resources should be considered in updating the plan to accommodate the proposed expansion.

Read the summary here: transmountain.com/uploads/papers/1404858289-13-12-03-erp-summary-updated-f.pdf





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- puzzles darts Frisbees golf balls & golf bags shotgun shells loudspeakers knitting needles rubber cement dentures rulers
- face masks skin cleanser deodorants moisturizing cream soap holders disposable razors leather conditioner mouthwash combs
- irrigation piping polyethylene polypropylene bags & packaging pesticides & herbicides food preservatives fertilizers ballet tights
- nylon cord polyester: clothing beads bracelets pantyhose nylon zippers plastic hangers purses thongs & flip flops earrings
- ribbons fake fur windbreakers sandals garment bags shoelaces raincoats• iron-on patches sneakers sweaters hair brushes
- sofa pillow material cologne lipstick permanent wave curlers perfume hair colour mascara petroleum jelly foam rubber curlers
- shampoo contact lenses & cases hair spray hand lotion shaving foam waterproof clothing stadium cushions earphones yarn
- kites tennis racquets fabric dye decoys life jackets nylon strings face protectors volley balls model cars plastic water guns
- fishing bobbers soccer balls oil paints parachutes fishing rods light sticks earphones playing cards photographs diving boards
- poker chips goggles skateboard wheels whistles guitar strings picks rafts ice chests tents sleeping bags pole vaulting poles
- motorcycle helmets skis, water skis rubber cement plastic flowerpots hot tub covers sails snorkels tires candles vinegar bottles

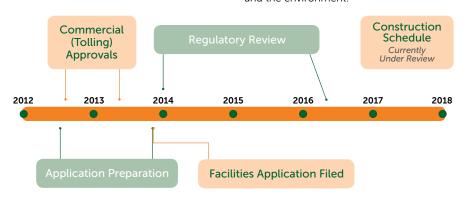
### PROJECT TIMELINE AND NEB PROCESS

In December 2013, Trans Mountain submitted its 15,000-page Application to the National Energy Board (NEB), representing one of the most extensive pipeline Applications ever made.

There are 400 Intervenors with full process-rights, the greatest number of Intervenors to participate in any NEB hearing, with an additional 1,200 individuals and organizations named as Commenters on the Application.

The NEB hearing process for the Project includes multiple rounds of written questions from Intervenors and the NEB

itself, and written responses from the Project team. Additionally, there are Aboriginal Oral Hearings that began in the summer and will continue through the fall. Engagement efforts, environmental work and studies are continuing throughout the regulatory review stage as we refine the Project plans to minimize impacts to people and the environment.



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### Draft – Response to Macleans Magazine Article

I am writing in response to your columnist, Andrew Leach's recent article (Oil spills boost the economy? That's as dumb as it sounds, May 4, 2014). In it, he questioned Trans Mountain's choice of words in our Application related to spills and the economy and the underlying methodology for calculating the value of our project. Regrettably, some have taken a statement about oil spills in our 15,000-page Application to the National Energy Board out of context. Spills are not part of our economic benefits analysis, nor do we in any way say that money spent on spill response would be justification for our project. No spill is acceptable to us anywhere, any time, for any reason.

We do, however, as our interpretation of the NEB's filing manual, list, in depth, the various socio-economic effects of a worst-case-scenario spill. We all know that at the end of the day the total effect of a spill is negative and every effort must be expended to prevent such a thing from happening.

There are many positive economic benefits that will result from our project – jobs, local tax dollars and national benefits for all Canadians – and we have provided extensive studies of those benefits in sections of our Application that are unrelated to those in which the effects of a spill are analyzed.

Our description of the socio-economic impacts of spills should have been more sensitive to people who might read it without context. However we are confident that our Facilities Application demonstrates our commitment to transparency, safety and that moving oil in an expanded Trans Mountain pipeline benefits oil producers, government, and Canadian taxpayers.

Scott Stoness, Vice President, Regulatory and Finance, Kinder Morgan Canada

I am writing in response to a feature article in your recent edition titled: *Kinder Morgan: Putting the Salish Sea at Risk* authored by Raincoast Conservation Foundation Executive Director Chris Genovali. As Mr. Genovali notes, the Salish Sea is an area of particular natural beauty. As a company who has been in operation in BC for more than 60 years and through our most recent engagement with coastal communities and First Nations along the marine shipping corridor, we know that the Salish Sea is of significant cultural, economic and environmental value to the people who live and work here.

Today our pipeline terminal serves about five tankers per month and if our proposed Trans Mountain Expansion Project is approved this could increase up to 34 tankers per month calling at the facility. The maximum size of the tankers however is not changing. The Aframax class vessels calling at Westridge are no larger than the tankers currently calling at the major refineries in Washington State. If approved tankers, which have been shipping oil from Burrard Inlet since the 1950s, would transit along the established marine shipping corridors that extend from Burrard Inlet to the mouth of the Juan de Fuca.

The marine safety regime in the Salish Sea meets global best practices. Loaded vessels leaving our Westridge Terminal are all inspected and vetted prior to even arriving in Canada. Ship traffic is monitored by Canadian Coast Guard and US Coast Guard through a coordinated vessel traffic service. Two BC Coast Pilots (certified by Pacific Pilotage Authority) are responsible for safe transit of the tankers between the Westridge Terminal and Victoria. As well tethered tug escorts are required during transit through Vancouver Harbour, Haro Straits and Boundary Pass. However, in our Application to the National Energy Board, we have recommended an extended tug escort to be in effect for the entire transit through the Salish Sea. Additionally we have recommended that a Moving Safety Zone be put into effect around all loaded tankers to ensure awareness of their position in and further

reduce collision risks with other large vessels. In addition to these preventative measures we have also proposed a major enhancement of the spill response regime along the shipping route which would involve the establishment of five new spill response bases to greatly enhance spill response capacity and response times. This would provide spill response capacity for all shipping, not just the tankers calling at our terminal.

I welcome Mr. Genovali's opinions on our project and I encourage others to learn more about our project and our proposed marine safety enhancements at <a href="www.transmountain.com">www.transmountain.com</a>. It is important as Canadians and as residents of the Salish Sea that we all engage in the discussion about projects such as ours.

Michael Davies, Senior Director, Marine Development Kinder Morgan Canada Pump Prices and the Trans Mountain Expansion Project

Dear Editor:

On July 10, 2014, the Burnaby NOW published a letter from Robyn Allan suggesting that if the proposed Trans Mountain Expansion Project is approved, Metro Vancouver residents would pay higher gasoline prices. The facts do not back up her claims. Prices paid by local consumers at the pumps are driven by world oil prices, not Alberta oil prices, so any increase in price per-barrel as a result of Alberta producers accessing world markets due to expanded pipelines does not mean higher gasoline prices for locals. Her argument also ignores the many factors that go into the price paid by consumers for gasoline – taxes, refining costs, seasonal fluctuations and the general rules of supply and demand. The cost of crude oil makes up less than 50% of the ultimate price you pay at the pump.

In addition, she ignores the reality in the Vancouver area, that refineries including Chevron in Burnaby, cannot get enough raw product from Alberta by pipeline and are currently supplementing their supply by transporting crude oil on rail. Our project would allow for more, not less, supply for both local refineries and world markets.

There are many independent sources for information about gasoline prices and we encourage your readers to learn the facts.

Natural Resources Canada nrcan.gc.ca

The Canadian Centre for Energy Information centreforenergy.com

Scott Stoness, Vice President, Regulatory and Finance, Kinder Morgan Canada

Yet Again; Facts don't back claims.

Dear Editor,

RE: "Burnaby Takes Action Against Kinder Morgan".

During the course of development of the Trans Mountain Expansion Project, many of the claims made by others about our plans are inaccurately represented. The most recent example of these inaccuracies are reports of our activities on Burnaby Mountain.

For the past two years, Trans Mountain has been undertaking fieldwork and studies to help us further assess the pipeline corridor. We would like to tell the citizens of Burnaby where the pipeline route will go and in order to do so further on the groundwork is required.

After confirming our rights with the National Energy Board, Trans Mountain began preparations to conduct geotechnical and seismic studies on Burnaby Mountain. At this point we consulted a professional arborist, who helped us determine two locations where we could conduct our studies; one in a natural clearing in order to minimize impacts.

On September  $2^{nd}$ , Trans Mountain workers cleared seven red alder trees, all in various stages of decline, to create a  $20 \times 20$  metre "canopy" for our workers to safely carry out testing. Red Alders are "pioneer species," which means that they are the first to grow and the first to die – they have an average lifespan of 40-60 years. These trees were in an area not close to any trail, and would otherwise not be visible to park users. On the ground, space required for our equipment is  $8 \times 10$  metres. Neither our canopy nor our equipment space resembles the size of football field as stated by the City of Burnaby, a CFL football field is  $137 \times 60$  metres.

We have ensured that all the practicable steps possible have been conducted to minimize impacts to the Burnaby Mountain Conservation Area and will fully restore or compensate for any impacts by re-planting trees and vegetation. Currently, we are awaiting a ruling by the National Energy Board continue.

Scott Stoness, Vice President, Regulatory and Finance, Kinder Morgan Canada

Dennis O'Keefe ("Safety of current pipeline questioned") writes that he is concerned about potential safety risks on the existing Trans Mountain Pipeline.

We can reassure readers of the Hope Standard that safety is a top priority for Kinder Morgan and all of its employees. As we've stated in previous communications with Mr. O'Keefe, we take a proactive approach to pipeline protection all along our existing route, including through the Hope area.

The Trans Mountain Pipeline system has been successfully operating for more than 60 years as a result of ongoing proactive maintenance and our well-established pipeline integrity and pipeline protection programs. This includes safely shipping diluted bitumen since the 1980's.

For example there are seven block valves located on the existing pipeline between the Kingsvale and Hope stations. The majority of these block valve locations were selected during the original design of the pipeline and are located at pump stations and in strategic locations, with two of the valves installed in 2013 as part of system upgrades. The valves enable us to section off portions of the pipeline to allow maintenance work and to respond effectively in the event of an emergency.

We continually reassess valve locations and system protection as part of our Integrity Management Program as indicated by the two new valves added on each side of the Coquihalla Canyon in the summer of 2013.

Safety is a primary consideration for the proposed Trans Mountain Expansion Project as well. The Project team is committed to an open and responsive approach to sharing information and ongoing engagement. Project plans include installation of automated block valves at locations based on results of spill modelling and formalized risk assessment, the ability to isolate the pipeline in the event of an emergency.

Mr. O'Keefe correctly notes that there is not currently a plan for additional valves to be placed in Hope, nor are there plans to increase the pipeline wall thickness or decommission the existing pipeline in Hope. However it should be noted that the current pipeline materials and their thickness (9.52 mm at the Coquihalla River crossing) are fully compliant with the Canadian Standards Association's Oil and Gas Pipeline Systems Z662-11 standard. We can also confirm that the pipeline design and pipe wall thickness satisfy the NEB requirements for the licensed operating

pressure. To this regard, much of the Coquihalla Canyon was hydrostatically pressure tested in 2013 at pressures greater than operating pressures as part of the ongoing Integrity Management Program. Mr. O'Keefe also incorrectly states that the minimum pipeline wall thickness specified in the CSA Z662 code is ½ inch (12.7mm) as numerous factors are considered in the design of a pipeline river crossing.

Mr. O'Keefe also mentions tax revenues associated with our proposed expansion. We are proud of the economic impact our proposed project will have. The Trans Mountain Expansion Project is a \$5.4 billion construction project. That is all private sector risk capital, not taxpayer dollars.

At the peak of construction, some 4,500 people will be working on the pipeline expansion. We estimate there will be more than 4,000 worker months of employment in the Hope area, and workers on the proposed project will spend more than \$28 million in the local community on items such as accommodations and meals. The expansion will also create approximately 3,000 direct, indirect and induced jobs per year in B.C. and Alberta for at least 20 years of operations.

The Project will generate \$4.3B in tax revenues from construction and 20 years of operation, accruing to all levels of government. Local governments and Reserves crossed by the Project will accrue aggregate property tax increases of more than \$23 million annually in BC, more than doubling what we already contribute. In Hope, we estimate over 20 years, an expanded pipeline will pay more than \$25M in property taxes alone.

More broadly speaking, the purpose of the Trans Mountain Expansion Project is to unlock access to better-paying world markets for Canadian oil. In recent years, Canada has left billions of dollars on the table selling our oil into a U.S. market where a domestic production boom is well under way. The Trans Mountain Project will enable our customers to capture an additional \$45B in revenues over 20 years. This will yield at least \$14.7 billion in additional taxes and royalties – a sizeable economic legacy that will benefit both Hope and all of Canada.

We understand and expect that people have questions and concerns about the pipeline. We are always happy to answer questions and hear your feedback about the current line or our proposed expansion. We hope that interested Hope and area residents will take the time to learn more and provide their views at <a href="https://www.transmountain.com">www.transmountain.com</a>.

### Energy Company Kinder Morgan used service fee for pipeline fund

Over the past several days various media outlets have reported on a report prepared by Robyn Allan related to the development cost funding of Kinder Morgan's proposed expansion of the Trans Mountain Pipeline. The stories and the report in no way present a full explanation of the facts. Let me attempt to describe the fairly complex arrangement that is place.

In 2008, Trans Mountain found itself facing a growing and unprecedented demand from its shippers for tanker loadings at its Burnaby facility. As our pipeline also serves the important lower mainland gasoline market, and the refinery market in Washington State, the amount of oil we can deliver to our dock in Burnaby is limited. At the same time, our shippers were attempting to grow offshore markets, and the monthly bidding process that determined who got access to the limited dock space did not provide the certainty they needed to develop these off shore markets.

The solution Trans Mountain proposed, and was supported by our shippers, was we would "auction" space at the dock to the highest bidder for a 10 year period. This process resulted in five of our shippers securing this "firm service" at premiums over the normal pipeline toll. The fees collected by Trans Mountain for this service are on average \$1.45/barrel, or roughly \$28 million per year.

Rather than keeping this additional revenue, Trans Mountain agreed with its shippers, to put the money in reserve to help pay for system improvements, including expansion development plans. The real long term solution to the pipeline constraints that lead to the firm service offering is the expansion of the pipeline as is currently being proposed.

The agreement we struck with our shippers was the firm service fees would cover development cost risk for the project, and they would be used to reduce the ultimate total cost of the project if it was approved and built by late 2017. If we are successful in getting the project approved, approximately \$136 million will have been set aside to credit against the total cost of \$5.4 billion. If the project does not proceed, the firm service fees will offset much of the anticipated development cost, and any cost in excess of fees collected will be shared with our shippers.

For large projects such as this, shipper backstopping of development costs is not uncommon. In this case we agreed to use the fee that shippers volunteered to pay for all important increased capacity to BC, Washington State and tidewater towards the development cost.

Ms. Allan is correct in that the fees paid by those few shippers will be treated as an expense for them, and they are not considered revenue to the pipeline. However, the important fact she overlooks is that the revenue realized by the shipper for those exported barrels will ultimately be higher than they could otherwise attract selling into the North American market. Otherwise, they would never voluntarily pay more for the firm dock service. The shipper, and the Canadian economy is net better off by exporting the barrel and accessing a world price that exceeds the North American price.

I have continued to attempt to convey the facts about our pipeline expansion plans, and will continue to
do so in the face of opponents who prefer to misrepresent the facts in order to sway the public's
opinion.

Ian Anderson,

President, Kinder Morgan Canada

Last week, an individual participating as an Intervenor in the National Energy Board regulatory review of the Trans Mountain Expansion Project withdrew from the process, detailing the reasons in a letter and a blog post.

Marc Eliesen's letter states the NEB process is inadequate and flawed, including that Trans Mountain failed to complete Information Requests (IRs) submitted to the NEB. In the first round of IR's, Trans Mountain answered more than 10,000 questions. Of the 179 IR's Mr. Eliesen put forward he did not object to 120 responses, and of those questions half were rejected by the NEB because they were out of cope. One of our responses to his 179 IR's was determined incomplete by the NEB, and we have since provided further information.

The role of an Intervenor in the process is an important one. The NEB has followed a practice of accepting parties close to the pipeline or with specific knowledge on relevant issues as Intervenors. This has resulted in 403 Intervenors and more than 1,200 commenters on our project ranging from parties such as the City of Burnaby, environmental organizations and Aboriginal Groups. This represents the most Intervenors ever to be involved in a pipeline review in Canada. Trans Mountain's 15,000-page Application is one of the most extensive pipeline Applications ever made.

It is unfortunate Mr. Eliesen chose to withdraw rather than continue in the process and have his questions asked and answered, however, it isn't unusual for Intervenors in this rigorous process to decide either to not exercise their full rights or to withdraw.

We believe the NEB has outlined a fair and efficient timeline and review process which provides multiple opportunities for public involvement including another round of IRs in 2015 and opportunity to present oral arguments.

As part of our ongoing engagement efforts we're listening and seeking feedback from those not directly involved in the process and will continue to do so throughout regulatory review. We encourage questions from the public, please contact us at: <a href="mailto:info@transmountain.com">info@transmountain.com</a> or find out more about the project on our website <a href="http://Transmountain.com">http://Transmountain.com</a>.

Scott Stoness, VP Regulatory & Finance, Kinder Morgan Canada

# http://www.thevalleysentinel.com/trans-mountain-expansion-projects-application-for-bc-parks-boundary-adjustment/

# Trans Mountain Expansion Project's application for BC Parks boundary adjustment

By: Trans Mountain Pipeline Expansion Project

September 19, 2014

Trans Mountain understands and respects the value of Parks. Our comprehensive consultation has resulted in us avoiding three BC provincial parks, and we are now only pursuing temporary boundary amendments for five provincial parks and protected areas.

As part of the Trans Mountain Expansion Project (TMEP), the proposed pipeline corridor crosses five parks or protected areas (PPAs) under the jurisdiction of BC Parks. They are: Finn Creek Provincial Park, North Thompson River Provincial Park, Lac du Bois Protected Area, Coquihalla Summit Recreation Area and Bridal Veil Falls Provincial Park.

In all five PPAs, the pipeline pre-dates the park designation where our pipeline system exists today. The existing Trans Mountain pipeline traverses an additional three provincial parks that are not impacted by the proposed TMEP. These parks are Coldwater River Provincial Park, Coquihalla River Provincial Park and Rearguard Falls Provincial Park. We are working to align the pipeline in the least sensitive areas within the parks. Although the existing line goes through Rearguard Falls Provincial Park, our routing team has been able to avoid this park for TMEP. Also, we do not impact Jackman Flats Provincial Park, which is north of Valemount.

Trans Mountain has filed a Facilities Application with the National Energy Board (NEB) to seek approval for the expansion project. In a parallel regulatory process, Trans Mountain is also going through BC's provincial protected area boundary adjustment process in order to seek temporary boundary adjustments to allow for the construction of the proposed expansion through four of the five PPAs.

The BC Parks boundary adjustment process is a two-stage process: Stage 1 is an Initial Proposal, and Stage 2 is a Detailed Proposal. Trans Mountain has submitted and received approval for our Stage 1 Initial Proposal in October 2013. Research permits were subsequently granted in November 2013.

Trans Mountain filed the Stage 2 Detailed Proposal on August 18, 2014. The Stage 2 consultation process includes a 45-day open comment period. This comment period will be closed on October 3, 2014. The Stage 2 proposal is an extensive document encompassing routing, environmental and stakeholder records for each of the four PPAs. The Stage 2 application is hosted on <a href="www.transmountain.com">www.transmountain.com</a>. Comments are submitted to Trans Mountain and will be shared with BC Parks. Stakeholders have an option of submitting comments directly to BC Parks.

Following the BC Parks assessment of the Stage 2 Application, a recommendation is made to the Minister. Any boundary adjustments must be made in the legislature. A decision will be made on each PPA separately and implementation of the boundary adjustment can be subject to NEB approval of TMEP.

If approved, the boundary amendment would be temporary to permit for construction of the pipeline and restoration of the pipeline right of way and working space. Following the full restoration and monitoring period, the ROW would be returned to the province.

Our goal for any disruption into any park or protected area is to minimize impact to the environment and habitat, and to strive for community benefits to the park based on stakeholder input.

For more information on the proposed route, visit <a href="http://www.transmountain.com/planning-the-route">http://www.transmountain.com/planning-the-route</a>.

For more information about the process and the Provincial Protected Areas Policy, Process and Guidelines document, visit <a href="http://www.env.gov.bc.ca/bcparks/planning/docs/boundary\_adj\_guide.pdf">http://www.env.gov.bc.ca/bcparks/planning/docs/boundary\_adj\_guide.pdf</a>.

# http://www.thevalleysentinel.com/change-of-scenery-brings-new-challenges-opportunities-for-pipeline-worker/

# Change of scenery brings new challenges, opportunities for pipeline worker

By: Trans Mountain Pipeline Expansion Project

October 17, 2014

It was a dream come true for Cam Smith when he joined the Trans Mountain pipeline team in spring 2014.

A native of Devon, Alberta, he'd been working at an Edmonton factory that retreads commercial truck tires. But he was anxious for a new challenge and a change of scenery. Cam and his wife are outdoor enthusiasts, fond of camping, backpacking and canoeing.

So when an opening came up for a millwright at Trans Mountain's Valemount pump station, was quick to act.

"My wife and I have been looking to move to the mountains for quite some time. But it's hard to find a job in the mountains. All the (saw) mills have shut down. This was a great opportunity, so I jumped on it."

A millwright is a mechanic who is typically employed to maintain heavy equipment in an industrial facility. Smith got his start a couple of decades ago at a printing plant, running presses before working his way up to mechanical maintenance foreman.

At Valemount, he's the newest member of a team that looks after a pump station, as well as related equipment along the North Thompson section of the Trans Mountain pipeline right of way.

At the station, which is about the size of an average single-family home, one of his duties is looking after two 5,000-horsepower pumps that help move oil through the line at rate of about 2,000 cubic metres per hour. In one day, up to 300,000 barrels of oil move through the pipeline at a speed of five kilometres per hour.

Each day is different.

"Today, being the last day of my week, I started out doing station checks for all of the equipment at the station. This afternoon we're going to head out and winterize some valves on the right of way. The work varies every day. I don't think I've done the same job twice."

One thing that's constant is a focus on safety.

"Safety checks are performed a minimum of twice a week at the station. There's a routine facility check procedure. It includes security checks, housekeeping checks, safety checks, environmental checks, equipment checks, a whole variety of stuff we go through.

"On the pipeline right of way we will do checks on the valves biannually, usually spring and fall.

"It's amazing how safety-oriented this company is. At some of the places I've worked you kind of get the feeling that it's more talk than anything else. Here, it's not just talk. It is rule.

"Any time you are going to do a job, if you're not sure about it or if you want a refresher, you will find that it's covered in the safety manual. I have yet to find anything that isn't covered in depth.

"Obviously I want to be safe. I want to go home at the end of every day. I want my coworkers to go home at the end of every day. I have a higher standard for myself now."

Cam adds that safety training is a continual process for all employees.

"It's not going to end. The current training modules and safety plans get renewed every three years, and you have to renew your training on all of them. This is going to be ongoing, throughout my career."

# http://www.thevalleysentinel.com/paul-first-nation-and-kinder-morgan-canada-sign-mutual-benefits-agreement/

### Paul First Nation and Kinder Morgan Canada Sign Mutual Benefits Agreement

By: Trans Mountain Expansion Project

October 24, 2014

Employment and business opportunities are expected to surge at Paul First Nation following a milestone agreement with Kinder Morgan Canada.

The Paul First Nation and Kinder Morgan recently concluded a Mutual Benefits Agreement (MBA) regarding the Trans Mountain Expansion Project. MBAs are confidential agreements that define a mutually beneficial long-term relationship between an individual Aboriginal group and Kinder Morgan. They can include agreements on education and training related to pipeline construction and related job skills, enhancement of community services or infrastructure, business opportunities and other benefits.

The initial phase of the MBA between Paul First Nation and Kinder Morgan, already implemented and audited, includes immediate and targeted economic, community and cultural capacity-building initiatives. The Paul First Nation is a 1,926-member community located about 50 kilometres west of Edmonton. It is active in pursuing business development opportunities that support greater economic self-sufficiency and diversification.

In the next phase of the MBA, Band members, Band-owned companies, and the Paul First Nation's Joint Venture Partnerships (JVPs) are poised to participate and fully benefit from expansion project-related activity within the Nation's Traditional Territories.

"Our MBA with Kinder Morgan is already helping our people, our companies and our JVPs – such as industry and environmental leader Canadian Mat Systems, Focus Equities, and Western Canadian Mulching – prepare themselves for the opportunities which lie ahead," Chief Casey Bird said.

"These JVPs reflect our values of social, cultural and environmental sustainability, are highly-competitive and will continue to earn and win opportunities for our people and community for many years to come. Kinder Morgan's ongoing support of the training, employment and community benefits that come from respectful, two-way partnerships is just what is needed to move our community forward and we wish them well as they continue to go through the regulatory approval process."

Chief Bird noted that the positive economic impacts of the agreement extend beyond Traditional Territories. "The timber that Canadian Mat uses to build mats that protect soil and reduce environmental impact in the energy exploration sector is sourced from sustainably managed forests on Vancouver Island and processed at manufacturing facilities in and around Cowichan Bay, within the Traditional Territory of the Cowichan Tribes."

Kinder Morgan Canada President Ian Anderson said the agreement with Paul First Nation reflects the company's long-term commitment to working with Aboriginal groups. "We thank Chief Bird and Paul First Nation Councillors and community members for their hard work and effort in reaching this

milestone agreement," Anderson said. "We look forward to working with them as our project proceeds through its National Energy Board review, and if approved, when construction on our project begins."

Anderson said Trans Mountain is committed to a respectful working relationship with Aboriginal groups, and to developing long term working relationships that are based on respect and mutual benefit.

"Our approach to doing business includes respect for the role of First Nations in our society, and the importance of creating opportunities for them to share the prosperity that natural resource development can bring to all Canadians."

The Paul First Nation made headlines in December 2013 with a public statement that it generally supports the responsible and respectful expansion of Canada's pipeline infrastructure as the preferred transportation mode for moving increased volumes of Alberta oil and gas production to new offshore markets. This statement included an expression of support for the Trans Mountain Expansion Project.

# http://www.thevalleysentinel.com/trans-mountain-and-tru-partner-to-host-jobs-and-training-information-session/

### Trans Mountain and TRU Partner to Host Jobs and Training Information Session

The Trans Mountain Expansion Project and Thompson Rivers University are holding a community Jobs and Training Information Session in Valemount on November 18<sup>th</sup> and Blue River on November 19<sup>th</sup>.

From planning and permitting, to clearing, digging trenches and testing the new pipe, building a new pipeline requires a variety of skilled workers. The majority of the potential jobs will be created during pipeline construction and span a wide variety of responsibilities, skill levels and trade specializations.

The proposed Trans Mountain Expansion Project, at its peak construction, will require a workforce of 4,500. It is important to talk with, and build community readiness for potential employment opportunities related to the project. Community residents, including skilled and unskilled workers, interested in knowing more about potential employment opportunities with the Trans Mountain Expansion Project are welcome to attend. The information session is also useful for community residents interested in speaking to a trades and training representative from Thompson Rivers University.

Trans Mountain will not be hiring or accepting resumes at this information session.

#### Where and when:

Drop in to one of the following locations between 5:30 and 7:30PM. There will be a brief presentation at 6:30PM.

- Valemount Tuesday, November 18, 2014 Eagleview Room, Best Western Plus Valemount Inn and Suites, 1950 Hwy. 5 South
- Blue River Wednesday, November 19, 2014 Blue River Community Hall, 885 Main Street

#### What is it about:

- An overview of the Trans Mountain Expansion Project, as well as provincial workforce predictions.
- Potential employment opportunities with the Trans Mountain Expansion Project. Attendees will hear from an employee who has worked on the pipeline for 33 years.
- Thompson Rivers University Training and Education opportunities to increase job qualifications.

For more information on the community employment information session:

Thompson Rivers University Wendy Blaskovic Wblaskovic@tru.ca

Trans Mountain Expansion Project <a href="mailto:info@transmountain.com">info@transmountain.com</a>
1-866-514-6700

# District of Barriere and Trans Mountain Sign Community Benefit Agreement: Project to contribute \$290,000 to Barriere

By: Trans Mountain Expansion Project

November 7, 2014

The District of Barriere and the Trans Mountain Expansion Project have entered into a Memorandum of Understanding for a Community Benefit Agreement that will see a \$290,000 contribution towards improvements in Barriere. Trans Mountain has been pursuing Community Benefit Agreements with those along the pipeline corridor to provide direct benefits to communities if the proposed expansion project is approved and constructed. This contribution by Trans Mountain will be used by the community towards upgrading bike and pedestrian trails; construction of a playground splash pad; provisioning and planting of trees; and funding for education to provide support to students in the trades, technology and environmental programs. This is the second Community Benefit Agreement signed along the proposed pipeline corridor.

"Our community is watching closely the progress of this proposed expansion project," said Bill Humphreys, Mayor of Barriere. "If this project is approved for construction, there will be impacts to those living in this region. This investment announced today recognizes the impact and is in addition to the other contributions we see the company makes to our region today and into the future."

"It is critical to myself and our team to see that construction impacts along the route are addressed with the communities we operate in," said Ian Anderson, President of Kinder Morgan Canada. "Today we pay \$5.65M in taxes to the Thompson Nicola Regional District and should our project be approved, our annual contribution to the District will be over \$13M. Today's \$290,000 investment is reflective of the impacts our expansion work will have in this region, in addition to the taxation amounts we pay each year."

Kinder Morgan values the relationships it has with the communities along its existing pipeline system and the proposed pipeline project; these span over more than 60 years of history. This agreement was signed as part of an overall effort underway by Kinder Morgan Canada to work with pipeline-affected communities to identify local opportunities to give something back in recognition of the public inconveniences and temporary disruption created by construction of the proposed expansion. Additional agreements with municipalities and communities along the pipeline corridor are expected over the coming months as project planning continues.

### Trans Mountain helps Valemount maintain access to popular backcountry

By: Trans Mountain Expansion Project

November 14, 2014

With a long history of supporting the communities along its pipeline corridor, Trans Mountain has recently collaborated with the Valemount and Area Recreation Development Association (VARDA) to help make this winter a stellar one for local snowmobile enthusiasts.

VARDA, which assists government in the management of the recreational snowmobiling sector in the Valemount area, has been developing the local terrain for several years. In order to access a particular part of the area, the snowmobiles need to use the Trans Mountain right-of-way (ROW) and cross Robina Creek, located between Valemount and Blue River.

With permission granted to use the Trans Mountain ROW, VARDA had a small bridge it pulled across Robina Creek just before the snow season started each year. But when Trans Mountain was required do some integrity work on the Robina Creek crossing in October 2012, the creek became wider than in the past. As a result, the previous bridging could no longer span the creek, preventing the club from accessing the area.

In August 2013, VARDA approached Trans Mountain Operations Liaison Rob Scott to ask for his help. Fortunately, Rob was able to arrange for Trans Mountain to donate a rig mat left behind from the Anchor Loop construction project in 2008.

"The mat was long enough to span the creek, but the only obstacle was the club's inability to move the bridge into place," explains Rob. "As a community service to the club, our local Trans Mountain supervisor offered to install the bridge each fall and remove it in the spring."

Rob has received many thanks from the VARDA Snowmobile Club, which mentioned Trans Mountain's contribution in its membership newsletter. In a thank you note to Rob, VARDA representative Curtis Pawliuk wrote, "It looks like this will be a great long-term solution to our access issue." This is the second year the temporary bridge at Robina Creek has been installed.

Valemount has struggled economically over the past few years as a result of the down turn in the local logging industry and the closing of its mill. Known for its open terrain, spectacular scenery and amazing powder snow, Valemount has grown into a popular snowmobiling destination. Avid "sledders" from all over the area flock to the town in winter, helping to give the local economy a welcome boost. So keeping the Robina Creek crossing available means VARDA can accommodate visitors and locals alike.

Over the years, Trans Mountain has been involved in a variety of local community projects, such as participating in the annual Blue River town clean up and hauling shoots and fencing in and out for the annual rodeo in Jasper.

### Project refinement submitted for portion of pipeline

By: Trans Mountain Expansion Project

December 16, 2014

In order to improve operating and utility power efficiency and reduce environmental impact, a project refinement for the Trans Mountain Expansion Project (TMEP) for a 121 kilometre portion of the proposed 994 kilometre pipeline has been submitted to the National Energy Board (NEB) – an increase from the 36-inch pipe to a 42-inch pipe and a rebalancing of horsepower requirements within the Upper North Thompson Valley.

Trans Mountain has continued to optimize the pipeline design since the Application was filed through ongoing engineering analysis, hydraulic modelling and consultation with the Aboriginal communities, government agencies, the general public and industry representatives.

Trans Mountain identified refinements to the Project which reduce environmental impact and significantly reduce the scope of upgrades to the utility power infrastructure in the North Thompson Valley.

The Project refinements include increased pipeline size from 36-inch to 42-inch diameter for the 121 kilometre segment of the pipeline between Hargreaves, BC and Blue River, BC. The larger diameter pipe will be constructed within the existing study corridor and the final layout will have a similar working space and remain within an 18-metre right-of-way.

The refinement also eliminates the need for the proposed new pump station at Rearguard and reduces the Project's power requirements in the Upper North Thompson Valley, with reductions in horsepower at the Blue River and Blackpool pump stations and addition of a new station at Trans Mountain's existing McMurphy pump station. The elimination of the Rearguard pump station decreases the Project's environmental footprint by eliminating four kilometres of pipeline and two crossings of the Fraser River.

It is important to note these Project scope changes do not result in additional pipeline hydraulic capacity. The project risk profile for the larger 42-inch pipeline segment has been maintained comparable to that for the previous 36-inch pipeline segment through the addition of nine new valve sites.

KMC remains committed to the comprehensive regulatory review of its Facilities Application for the proposed Project. As part of the project design and planning, TMEP continues to seek ways to optimize the project and minimize impacts on Aboriginal communities, landowners, communities and the environment.





# DISTRICT OF HOPE AND TRANS MOUNTAIN SIGN COMMUNITY BENEFIT AGREEMENT

### Project to Contribute \$0.5M To Hope Community Park

Hope, British Columbia, October 27, 2014

HOPE, October 27, 2014 – The District of Hope and The Trans Mountain Expansion Project have entered into a Memorandum of Understanding for a Community Benefit Agreement that will see a \$500,000 contribution towards improvements to a community park in Hope. Trans Mountain has been pursuing Community Benefit Agreements with those along the pipeline corridor to provide direct benefits to communities if the proposed expansion project is approved and constructed. This contribution by Trans Mountain will be used towards upgrades at the Hope Community Recreation Park and is the first Community Benefit Agreement signed along the proposed pipeline corridor.

Kinder Morgan values the relationships it has with the communities along its existing pipeline system and the proposed pipeline project; these span over more than 60 years of history. The agreement was signed as part of an overall effort underway by Kinder Morgan Canada to work with pipeline-affected communities to identify local opportunities to give something back in recognition of the public inconveniences and temporary disruption created by construction. Additional agreements with municipalities and communities along the pipeline corridor are expected over the coming months as project planning continues.

"If the proposed Trans Mountain Expansion Project is approved and constructed, it will have a direct impact upon our community," said Susan Johnston, Mayor of the District of Hope. "These impacts will include jobs and increased municipal taxes, but also increased activity within our community during construction and activation of the pipeline. This community benefits investment, which will be used towards upgrades at the Hope Community Recreational Park, is in recognition of those impacts and provides a meaningful contribution to our community."

"Providing local direct benefits to communities where we operate our pipeline is critically important," said Ian Anderson, President of Kinder Morgan Canada. "Last year we paid \$680,000 in municipal taxes to the District of Hope and, post construction, our annual tax payments will be over \$1.2 million annually. With this agreement we are looking to add to the investment we are making to the community of Hope and ultimately provide a legacy to the people who live and work here."

### **Contacts**

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# DISTRICT OF BARRIERE AND TRANS MOUNTAIN SIGN COMMUNITY BENEFIT AGREEMENT

### Project to Contribute \$290,000 To Barriere

Barriere, British Columbia, November 6, 2014

BARRIERE, November 6, 2014 – The District of Barriere and the Trans Mountain Expansion Project have entered into a Memorandum of Understanding for a Community Benefit Agreement that will see a \$290,000 contribution towards improvements in Barriere. Trans Mountain has been pursuing Community Benefit Agreements with those along the pipeline corridor to provide direct benefits to communities if the proposed expansion project is approved and constructed. This contribution by Trans Mountain will be used by the community towards upgrading bike and pedestrian trails; construction of a playground splash pad; provisioning and planting of trees; and funding for education to provide support to students in the trades, technology and environmental programs. This is the second Community Benefit Agreement signed along the proposed pipeline corridor.

"Our community is watching closely the progress of this proposed expansion project," said Bill Humphreys, Mayor of Barriere. "If this project is approved for construction, there will be impacts to those living in this region. This investment announced today recognizes the impact and is in addition to the other contributions we see the company makes to our region today and into the future."

"It is critical to myself and our team to see that construction impacts along the route are addressed with the communities we operate in," said Ian Anderson, President of Kinder Morgan Canada. "Today we pay \$5.65M in taxes to the Thompson Nicola Regional District and should our project be approved, our annual contribution to the District will be over \$13M. Today's \$290,000 investment is reflective of the impacts our expansion work will have in this region, in addition to the taxation amounts we pay each year."

Kinder Morgan values the relationships it has with the communities along its existing pipeline system and the proposed pipeline project; these span over more than 60 years of history. This agreement was signed as part of an overall effort underway by Kinder Morgan Canada to work with pipeline-affected

communities to identify local opportunities to give something back in recognition of the public inconveniences and temporary disruption created by construction of the proposed expansion. Additional agreements with municipalities and communities along the pipeline corridor are expected over the coming months as project planning continues.

#### **About Trans Mountain Expansion Project**

In spring 2012, Kinder Morgan Canada announced it will move forward with its proposed plans to expand the existing Trans Mountain Pipeline system – between Edmonton, Alberta and Burnaby, British Columbia – following strong commitments received from its customers. To date, as part of a comprehensive stakeholder engagement program we've consulted with thousands of individuals through 93 open houses or workshops along the pipeline and marine corridors and more than 1,234 meetings between project team members and stakeholder groups. For almost 60 years, the 1,150—km Trans Mountain pipeline system has been safely and efficiently providing the only West Coast access for Canadian oil products, including about 90 per cent of the gasoline supplied to the interior and south coast of British Columbia. For more information, please visit <a href="https://www.transmountain.com">www.transmountain.com</a>.

#### **About District of Barriere**

http://www.barriere.ca/siteengine/activepage.asp

#### **Contacts**

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## TOWN OF STONY PLAIN AND TRANS MOUNTAIN SIGN COMMUNITY BENEFIT AGREEMENT

### Project to Contribute \$225,000 To Stony Plain

STONY PLAIN, January 22, 2015 – The Town of Stony Plain and the Trans Mountain Expansion Project have entered into a Memorandum of Understanding (MOU) for a Community Benefit Agreement that will see a \$225,000 contribution toward development in the community. Trans Mountain has been pursuing Community Benefit Agreements with those along the pipeline corridor to provide direct benefits to communities if the proposed expansion project is approved and constructed. This contribution by Trans Mountain will be used by Stony Plain to construct new trails.

"We are excited about the opportunity to work with Trans Mountain on the Trail Enhancement Project," said William Choy, Mayor of Stony Plain. "Our residents thoroughly enjoy the trail system in Stony Plain and this addition will be welcomed by everyone. It will promote healthy lifestyles and will ensure our community has additional trails to enjoy for their leisure time."

"This agreement with the Town of Stony Plain will provide local and direct benefit to the people of this community," said Ian Anderson, President of Kinder Morgan Canada. "Our goal is to ensure the communities we operate in and are impacted by construction are fully acknowledged."

Kinder Morgan values the relationships it has with the communities along its existing pipeline system and the proposed pipeline project; these span over more than 60 years of history. This agreement was signed as part of an overall effort underway by Kinder Morgan Canada to work with pipeline-affected communities to identify local opportunities to give something back in recognition of the public inconveniences and temporary disruption created by construction of the proposed expansion. Additional agreements with municipalities and communities along the pipeline corridor are expected as project planning continues.

### **About Trans Mountain Expansion Project**

In spring 2012, Kinder Morgan Canada announced it will move forward with its proposed plans to expand the existing Trans Mountain Pipeline system – between Edmonton, Alberta and Burnaby, British Columbia – following strong commitments received from its customers. To date, as part of a comprehensive stakeholder engagement program we've consulted with thousands of individuals through 93 open houses or workshops along the pipeline and marine

corridors and more than 1,234 meetings between project team members and stakeholder groups. For almost 60 years, the 1,150-km Trans Mountain pipeline system has been safely and efficiently providing the only West Coast access for Canadian oil products, including about 90 per cent of the gasoline supplied to the interior and south coast of British Columbia. For more information, please visit <a href="https://www.transmountain.com">www.transmountain.com</a>.

#### **About Town of Stony Plain**

http://www.stonyplain.com/

#### Contacts

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#### TOWN OF HINTON AND TRANS MOUNTAIN SIGN COMMUNITY BENEFIT AGREEMENT

#### Project to Contribute \$250,000 To Hinton

HINTON, January 22, 2015 – The Town of Hinton and the Trans Mountain Expansion Project have entered into a Memorandum of Understanding (MOU) for a Community Benefit Agreement that will see a \$250,000 contribution toward development and improvement in the community. Trans Mountain has been pursuing Community Benefit Agreements with those along the pipeline corridor to provide direct benefits to communities if the proposed expansion project is approved and constructed. This contribution by Trans Mountain will be used by Hinton for constructing an expanded parking lot for Hinton Bike Park, expanding Hinton's trail network and connections to regional trail systems and funding for education to provide support to students in the trades, technology and environmental programs.

"Our agreement with Trans Mountain will allow Council to further key projects intended to benefit the community," said Rob Mackin, Mayor of Hinton. "With potential impacts to the Town should the Project receive approval, this agreement would provide positive outcomes for our community. This MOU can open up new investment opportunities in the community resulting from the Trans Mountain Expansion Project."

"It is a critical goal for all of us working on the Project to ensure the communities we operate in and are impacted by construction are fully acknowledged," said Ian Anderson, President of Kinder Morgan Canada. "This agreement with the Town of Hinton will provide local and direct benefit to the people of this community through enhancements to parks and trails. Students, particularly in programs relating to the pipeline industry, will also benefit from funding toward their education."

Kinder Morgan values the relationships it has with the communities along its existing pipeline system and the proposed pipeline project; these span over more than 60 years of history. This agreement was signed as part of an overall effort underway by Kinder Morgan Canada to work with pipeline-affected communities to identify local opportunities to give something back in recognition of the public inconveniences and temporary disruption created by construction of the proposed expansion. Additional agreements with municipalities and communities along the pipeline corridor are expected as project planning continues.

#### **About Trans Mountain Expansion Project**

In spring 2012, Kinder Morgan Canada announced it will move forward with its proposed plans to expand the existing Trans Mountain Pipeline system – between Edmonton, Alberta and Burnaby, British Columbia – following strong commitments received from its customers. To

date, as part of a comprehensive stakeholder engagement program we've consulted with thousands of individuals through 93 open houses or workshops along the pipeline and marine corridors and more than 1,234 meetings between project team members and stakeholder groups. For almost 60 years, the 1,150-km Trans Mountain pipeline system has been safely and efficiently providing the only West Coast access for Canadian oil products, including about 90 per cent of the gasoline supplied to the interior and south coast of British Columbia. For more information, please visit <a href="https://www.transmountain.com">www.transmountain.com</a>.

#### **About Town of Hinton**

http://www.hinton.ca/

#### Contacts

Rob Mackin Mayor, Town of Hinton 780-865-6005 mayor@hinton.ca

Media Relations
Trans Mountain Pipeline Expansion Project
(604) 908-9734 or (855) 908-9734

media@transmountain.com
@TransMtn



# DISTRICT OF BARRIERE AND TRANS MOUNTAIN SIGN COMMUNITY BENEFIT AGREEMENT

#### Project to Contribute \$290,000 To Barriere

Barriere, British Columbia, November 6, 2014

BARRIERE, November 6, 2014 – The District of Barriere and the Trans Mountain Expansion Project have entered into a Memorandum of Understanding for a Community Benefit Agreement that will see a \$290,000 contribution towards improvements in Barriere. Trans Mountain has been pursuing Community Benefit Agreements with those along the pipeline corridor to provide direct benefits to communities if the proposed expansion project is approved and constructed. This contribution by Trans Mountain will be used by the community towards upgrading bike and pedestrian trails; construction of a playground splash pad; provisioning and planting of trees; and funding for education to provide support to students in the trades, technology and environmental programs. This is the second Community Benefit Agreement signed along the proposed pipeline corridor.

"Our community is watching closely the progress of this proposed expansion project," said Bill Humphreys, Mayor of Barriere. "If this project is approved for construction, there will be impacts to those living in this region. This investment announced today recognizes the impact and is in addition to the other contributions we see the company makes to our region today and into the future."

"It is critical to myself and our team to see that construction impacts along the route are addressed with the communities we operate in," said Ian Anderson, President of Kinder Morgan Canada. "Today we pay \$5.65M in taxes to the Thompson Nicola Regional District and should our project be approved, our annual contribution to the District will be over \$13M. Today's \$290,000 investment is reflective of the impacts our expansion work will have in this region, in addition to the taxation amounts we pay each year."

Kinder Morgan values the relationships it has with the communities along its existing pipeline system and the proposed pipeline project; these span over more than 60 years of history. This agreement was signed as part of an overall effort underway by Kinder Morgan Canada to work with pipeline-affected

communities to identify local opportunities to give something back in recognition of the public inconveniences and temporary disruption created by construction of the proposed expansion. Additional agreements with municipalities and communities along the pipeline corridor are expected over the coming months as project planning continues.

#### **About Trans Mountain Expansion Project**

In spring 2012, Kinder Morgan Canada announced it will move forward with its proposed plans to expand the existing Trans Mountain Pipeline system – between Edmonton, Alberta and Burnaby, British Columbia – following strong commitments received from its customers. To date, as part of a comprehensive stakeholder engagement program we've consulted with thousands of individuals through 93 open houses or workshops along the pipeline and marine corridors and more than 1,234 meetings between project team members and stakeholder groups. For almost 60 years, the 1,150—km Trans Mountain pipeline system has been safely and efficiently providing the only West Coast access for Canadian oil products, including about 90 per cent of the gasoline supplied to the interior and south coast of British Columbia. For more information, please visit <a href="https://www.transmountain.com">www.transmountain.com</a>.

#### **About District of Barriere**

http://www.barriere.ca/siteengine/activepage.asp

#### **Contacts**

Bill Humphreys Mayor, District of Barriere (250) 851-6165 mayor@barriere.ca

Media Relations Trans Mountain Pipeline Expansion Project (604) 908-9734 or (855) 908-9734 media@transmountain.com @TransMtn

February 2015

#### **APPENDIX B**

#### **BC PARKS**

- Coquihalla Summit Recreation Area in BC Parks Resource Use Permit (RUP) Application
- Stage 2 Boundary Adjustment Application with BC Parks, Public Comment Report



# BC PARKS LAND USE / OCCUPANCY RESOURCE USE PERMIT FOR COQUIHALLA SUMMIT RECREATION AREA FOR THE TRANS MOUNTAIN EXPANSION PROJECT

October 2014 Rev. 0

**APL-BCMOE-TERA-00015** 

Prepared for:



Trans Mountain Pipeline ULC

Kinder Morgan Canada Inc. Suite 2700, 300 – 5th Avenue S.W. Calgary, Alberta T2P 5J2 Ph: 403-514-6400

Prepared by:



A CH2M HILL Company

CH2M HILL Energy Canada, Ltd. Suite 1100, 815 - 8th Avenue S.W. Calgary, Alberta T2P 3P2 Ph: 403-265-2885

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# Coquihalla Summit Recreation Area Land Use / Occupancy Resource Use Permit

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#### **DEFINITIONS AND ACRONYM LIST**

Definition/Acronym	Full Name					
AADT	Annual Average Daily Traffic					
AB	Alberta					
AK	alternate kilometre post					
AIA	Archaeological Impact Assessment					
ASL	ambient sound level					
avoidance	A means to prevent a potential adverse effect through routing/siting of the Project, changes to project design or construction timing.					
BC	British Columbia					
BC CDC	BC Conservation Data Centre					
BC MFLNRO	BC Ministry of Forests, Lands and Natural Resource Operations					
BC MOE	BC Ministry of Environment					
BC MOF	BC Ministry of Forests					
BC MWLAP	BC Ministry of Water, Land and Air Protection					
BC OGC	BC Oil and Gas Commission					
BBOP	Business and Biodiversity Offsets Programme					
BGC	biogeoclimatic					
CAC	criteria air contaminants					
CAPP	Canadian Association of Petroleum Producers					
CCME	Canadian Council of Ministers of the Environment					
CPCN	Certificate of Public Convenience and Necessity					
CLI	Canada Land Inventory					
СМНА	Coastal Mountain-heather Alpine					
CMT	Culturally Modified Trees					
CO	carbon monoxide					
CO <sub>2</sub>	carbon dioxide					
compensation	A means intended to compensate unavoidable and potentially significant or unacceptable effects any may consist of offsets (no net loss), research, education programs and financial compensation (considered only when all other options have been exhausted).					
COSEWIC	Committee on the Status of Endangered Wildlife in Canada					
CSA	Canadian Standards Association					
CWH	Coastal Western Hemlock					
DFO	Fisheries and Oceans Canada					
DUC	Ducks Unlimited Canada					
EEBMA	Emergency Bark Beetle Management Area					
element	A technical discipline or discrete component of the biophysical or human environment identified in the National Energy Board <i>Filing Manual</i> .					
ENGO	environmental nongovernment organization					
EPP	Environmental Protection Plan					
ESA	Environmental and Socio-Economic Assessment					
ESSF	Engelmann Spruce – Subalpine Fir					
ESC	erosion and sediment control measures					
FOTS	Fiber Optic Transmission System					
FTE	full time equivalent					
GDP	gross domestic product					
GHG	greenhouse gas					
H <sub>2</sub> S	hydrogen sulphide					
HDD	horizontal directional drill					
HORU	human occupancy and resource use					
IBA	Important Bird Areas					

Definition/Acronym	Full Name				
indicator	A biophysical, social or economic property or variable that society considers to be important and is assessed to predict Project-related changes and focus the impact assessment on key issues. One or more indicators are selected and used as surrogates to describe the present and predicted future condition of an element. Societal views reflect published information such as management plans and engagement with regulators, public, Aboriginal and other interested groups.				
IMHA	Interior Mountain-heather Alpine				
IVM	Integrated vegetation management				
KMC	Kinder Morgan Canada Inc.				
KP	kilometre post				
Local Study Area	The zone of influence or area where the element and associated indicators are most likely to be affected by Project construction and operation This generally represents a buffer from the centre of the proposed pipeline corridor.				
LSA	Local Study Area				
MADT	monthly average daily traffic				
mitigation	The elimination, reduction or control of the adverse environmental effects of the Project and includes restitution for any damage to the environment caused by such effects through replacement, restoration, compensation or any other means.				
MH	Mountain hemlock				
MS	Mountain Spruce				
$N_2O$	nitrogen dioxide				
NEB	National Energy Board				
NOVA Gas	NOVA Gas Transmission Ltd				
NRC	Natural Resources Canada				
NTU	nephelometric turbidity units				
OHV	off highway vehicle				
OIC	Orders in Council				
PPV	particle velocity				
PCEM	Post-Construction Environmental Monitoring				
post-construction monitoring	A type of monitoring program that may be used to verify that mitigation measures were properly implemented and that such measures effectively mitigate the predicted adverse environmental effects.				
PM	particulate matter				
proposed pipeline corridor	Generally a 150 m wide corridor encompassing the pipeline construction right-of-way, temporary workspace and valves.				
QEP	Qualified Environmental Professional				
Regional Study Area	The area extending beyond the Local Study Area boundary where the direct and indirect influence of other activities could overlap with Project-specific effects and cause cumulative effects on the environmental or socio-economic indicator.				
RK	reference kilometre post				
RSA	Regional Study Area				
SARA	Species at Risk Act				
SEMP	Socio-economic Management Plan				
SO <sub>2</sub>	sulphur dioxide				
supplemental studies	Studies to be conducted post submission of the Application to address data gaps.				
TEK	Traditional Ecological Knowledge				
TERA	TERA Environmental Consultants				
TLRU	traditional land and resource use				
TMEP	Trans Mountain Expansion Project				
TMPL	Trans Mountain Pipeline				
Trans Mountain	Trans Mountain Pipeline ULC				
TSS	turbidity/total suspended solids				
TWS	temporary workspace				
the Project	Trans Mountain Expansion Project				
UNESCO	United Nations Educational, Scientific and Cultural Organization				

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Trans Mountain Pipeline ULC
Trans Mountain Expansion Project

Coquihalla Summit Recreation Area
Land Use / Occupancy Resource Use Permit

Definition/Acronym	Full Name		
VOC volatile organic compound			
WHSRN	Western Hemisphere Shorebird Reserves Network		
ZOI	zone of influence		

REV 0 Land Use / Occupancy Resource Use Permit

#### 1.0 APPLICATION FORM AND TABLE OF CONCORDANCE

A completed BC Parks Land Use / Occupancy Resource Use Permit Application form is included in this section.

Additional information requested on the form is provided in the remainder of this Application. A Table of Concordance is provided in Table 1 to show where the Land Use / Occupancy Resource Use Permit application requirements, as listed on page 3 of the BC Parks Land Use / Occupancy Resource Use Permit Application form, can be found in this Application.

This Land Use / Occupancy Resource Use Permit Application exceeds that of which is normally required. Trans Mountain recognizes the importance of recreational areas having operated in this area for over 61 years. As such, Trans Mountain has prepared an application that is comprehensive and to the same level of environmental assessment and study of a Boundary Adjustment Application. BC Parks has determined that a Boundary Adjustment is not warranted for work in Coquihalla Summit Recreation Area.



# Land Use / Occupancy Park Use Permit Application

Only applications that are considered by BC Parks to be compatible with the conservation and recreation objectives identified for the park(s), protected area(s), conservancy(ies) and recreation area(s) (collectively 'parks') involved in the proposal will be evaluated.

All applications must include completed application form, map, attachments (as indicated below) and non-refundable application fee (plus applicable taxes). Please make payment by VISA/MasterCard/American Express or by cheque, made payable to the Minister of Finance.

INFORMATION REGARDING APPLYING FOR A PARK USE PERMIT AVAILABLE AT: <a href="http://www.frontcounterbc.ca/">http://www.frontcounterbc.ca/</a>								
Application Type:								
New								
Renewal (Authorizat	ion #)		Are y	ou requesting cl	hanges to ye	our authoriza	tion? 🗌 Y	es 🗌 No
☐ Amendment (Author	ization #)							
If you are requesting charges.	anges to your authorize	ation, ple	ase o	clearly indicate t	the changes	s under <b>Part</b>	2: List of	Proposed
Requested Period of Us	se (inclusive):	From	09/	30/13	to	12/31/23		
•	,		mm/	dd/yy		mm/dd/yy		
PART 1. NAME(S) AN	D MAILING ADDRE	SS	A 0.0	70002				
Applicant Name:			7100	7 0000				
FULL LEGAL NAME (EN	NTITY):							
Trans Mountain Pip	eline ULC							
Contact Name(s):	<u> Margaret Mears, E</u>	nvironm	nent	Lead	Age:	19 or over	Yes	☐ No
BC Incorporation #_	🗆 !	BC Regis	strati	on #	□	Society Ac	t#_A0070	)893
☐ Individual(s)	<b>☑</b> Coi	mpany			Registe	red Society o	or Association	on
☐ Federal Government	☐ Pro	vincial G	overn	ıment	☐ Municip	al Governme	nt/Regiona	I District
☐ First Nation/Indian Ba	☐ First Nation/Indian Band ☐ University, College or Museum ☐ Private School or Public School (K-12)				(K-12)			
Legal Mailing Address: Billing Address (if different from legal mailing add.):								
Kinder Morgan Cana	ada Inc							
Suite 2700, 300 5th	Avenue SW							
City/Town: Calgary			City/Town:				· · · · · · · · · · · · · · · · · · ·	
Province: AB Postal code: T2P 5J2		Province: Postal code:						
Contact Information:			Contact Infor	mation:				
Daytime Phone:	403-514-6462			Daytime Phone	e: _			
Cell:	403-998-1607			Cell:	_			
Fax:	403-514-6427			Fax:	_			
Email Address: margar	et_mears@kinderr	norgan.	com	Email Address	s: _			
Preferred method of contact: ☐ Phone ☐ Cell Phone ☐ Regular mail ☑ Email								

Do you hold a Crown Land Tenure: ✓Yes ☐No	Have you previously held a Park Use Permit or Resource Use Permit:						
If yes, provide file number(s): Many	If yes, provide file number(s): <u>105085, 101929,</u> _102621, 9910176, 103199, 106069						
PART 2: PURPOSE, LOCATION, AREA	PART 2: PURPOSE, LOCATION, AREA						
Name of Park(s): Coquihalla Summit Recreation Area							
Purpose (Summary of Proposed Activity: Please select all that apply							
Aquaculture and mariculture Alternative power project Grazing Meteorological or hydrological station Seismic and gravity station Navigation Aid Trapping Trapline cabin Forestry Activities Mining, sand and gravel quarry Restoration/habitat enhancement project Roads and Trails Rights-of-way	☐ Privately owned structure ☐ Cabin ☐ Private moorage ☐ Other: ☐ Provincially owned structure ☐ Communication sites ☐ Hydro transmission/distribution lines ☑ Pipelines (gas or oil) ☐ Telephone Booths ☐ Telephone lines ☐ Water impoundment (dam or dyke) ☐ Waterline/sewer						
Location of Proposed Activities:							
1) Is the activity proposed for any frontcountry* areas?	<b>▼</b> Yes □No						
***"Frontcountry" means an area within one kilometre o	f either side of the centreline of a park road or a highway.						
2) Are the activities selected above the same for all parks	listed on the application?						
***If 'No', please indicate which park(s) each activity is attachment):	proposed for (if not enough space, please provide an						
List of Proposed Changes (Renewal and/or Amendment of Please refer to Section 3.0 of attached detailed prop							

#### **PART 3: DETAILED PROPOSAL**

Please attach a detailed proposal description that addresses the following (A-D):

- **A.** Please describe the proposed activity and provide the following information:
  - a) Purpose of the land use or occupancy;
  - b) Details of the existing uses, vegetation cover, wildlife present, water resources, geology, and historical/cultural significance of the proposed site and adjacent area;
  - c) Location and size of all proposed and current improvements (facilities/structures);
  - d) If applicable, details of the physical changes to the site that would be required to meet the needs of the proposal and the proposed mitigation of such changes;
  - e) Construction schedule (if applicable) for proposed new permanent and/or temporary facilities;
  - f) Photographs of the site and area adjacent to the proposed land use/occupancy;
  - g) Proposed site and adjacent area description and mapping in terms of its current legal status;
  - h) Type of transportation and access route to the proposed site(s); and
  - i) The initial 5 year operational plan related to this proposal.
- **B.** List all experiences of the applicant and/or others involved in this proposal in previous park use permits including the name, number, date and location of the permit(s).
- C. Describe expected or potential impacts on the park' environmental, cultural, recreational values changes including, but not limited to:
  - a) Habitat for vegetation and wildlife, particularly listed species or species at risk;
  - b) Any watercourses or water bodies (diversions, flows, potential siltation, etc.)
  - c) Special features such as unique geological formations;
  - d) Access to the park, and the area of the park under consideration;
  - e) aesthetics and visual values;
  - f) Cultural values, including traditional use of the area by First Nations;
  - g) Park visitors and local communities, including public health and safety and recreational use or enjoyment of the park; and
  - h) Actions that will be taken to mitigate identified impacts on the park(s).
- **D.** Provide maps of the proposed application area, including (if required):
  - General Location Map: A map(s) of the individual protected areas within the application, drawn to 1:50 000 to 1:250 000 (or larger if required to encompass boundaries of permit area) scale that illustrates at a landscape level scale the general location of the area under application, including boundaries of the proposed permit area and major landmarks, travel/access routes.
  - Permit Area Map: Where the land use/occupancy utilizes improvements or structures, a more detailed map(s) of the proposed permit area(s) within each park, drawn to 1:20 000 to 1:50 000 scale showing the exact proposed boundaries of the permit area, including the area (in hectares) as well as any watercourses or other identifying features (trails, facilities, roads, etc.). The permit area map must clearly identify the location of travel/access routes, and specific activity site(s). If applicable, the location and construction description of any temporary facilities or the use of existing facilities within the permit area, as well as the location and size of all proposed improvements must also be included.
  - c) Detailed Site Map: Where the operation proposes to use any existing or to construct any new improvements, a detailed site map at 1:1 000 to 1:5 000 scale must be submitted identifying the location of all improvements (buildings, structures, roads, power lines, fences, docks, etc.) in relation to the boundaries of the permit area.

Last Updated: August 7, 2014

#### **PART 4: APPLICATION CERTIFICATION**

All applications must be complete. Incomplete applications will not be processed until information is submitted. All of the following must be attached to or enclosed with this application form:

- completed application form, including attached management plan;
- map(s) to standards detailed in application requirements;
- attachments as indicated below; and
- non-refundable application fee (plus applicable taxes).

Upon submission of a complete application and application fee, allow 140 days to evaluate proposals. Applications requiring additional steps, or supplying insufficient information may delay evaluation. BC Parks reserves the right to deny any application. The information you provide will be subject to the *Freedom of Information and Protection of Privacy Act*. The submission of this form does not in any manner convey any rights to use or occupy land within a park, protected area, recreation area or conservancy.

- Businesses must either be licensed to do business in BC, or if licensed/incorporated outside of British Columbia (considered to be 'extra-provincial companies') must be in compliance with section 375 of the *Business Corporations Act* to operate in British Columbia.
- Extraprovincial societies must be registered under the *Society Act* in British Columbia in order to hold a park use permit or resource use permit. An extraprovincial society is a society or association formed outside British Columbia, and includes a branch of that society or association.

#### Additional costs and requirements:

Upon evaluation of the proposal it may be determined that additional costs and requirements must be provided prior to issuance of the permit, such as financial guarantees, or survey and inspection costs (as per Section 21 of the *Park Act*).

Commercial General Liability (CGL) insurance in the amount of \$2 million per occurrence may be required as a minimum for in parks, protected areas, conservancies and recreation areas. Applications will be assessed to determine whether additional types of insurance, such as aviation liability or marine liability, may also be required. Insurers must be licensed to do business in British Columbia or Canada.

Additional information on insurance is available at

http://www.env.gov.bc.ca/pasb/applications/process/park\_use.html#insurance

# THE APPLICANT HEREBY CERTIFIES THAT ALL THE INFORMATION PROVIDED IN THIS APPLICATION IS TRUE AND CORRECT.

Signature of Applicant or Authorized Signatory of Applicant:

Date: October 9, 2014

Interest will be charge on all overdue accounts, the interest rate charged is 3% + the prime lending rate of the principal banker to the Province as established each 3 month quarter starting Oct 1st.

#### Send completed application and proposal description to:

Ministry of Forests, Lands, and Natural Resource Operations FrontCounter BC

**For additional information** on how or where to submit your application, please call the FrontCounter BC Contact Centre or visit the website to determine an office nearest you:

Call FrontCounter BC toll free at: 1-877-855-3222

FrontCounter BC Website: http://www.frontcounterbc.ca/locations/

#### PLEASE RETAIN A COPY OF THIS APPLICATION FOR YOUR RECORDS

#### **First Nations Consultations**

#### Consulting with First Nations

The Province of British Columbia's legal duty to consult with First Nations arises from section 35 of the Canadian Constitution Act, which recognizes and affirms aboriginal and treaty rights. The duty to consult arises when the Crown has knowledge, real or constructive, of the potential existence of the Aboriginal right or title and contemplates conduct that might adversely affect it. Consultation with First Nations will be guided by principles of good faith, and meaningful dialogue with the intent to fully understand the nature and scope of the aboriginal right, the potential to adversely affect that aboriginal right, and address those potential impacts to an aboriginal right while balancing societal interests.

#### Agreements with First Nations

In many locations, the Province has agreements with First Nations. These agreements may be referred to as Collaborative Management Agreements, Reconciliation Protocol Agreements, Memorandum of Understanding or simply Working Agreements. In some cases the Province and Canada have entered into a treaty with a First Nation, which contains certain provisions regarding treaty rights within parks and protected areas. Modern treaties contain provisions to address those treaty rights in the management of parks and protected areas where a treaty right exists.

These agreements apply to a variety of parks and protected areas and conservancies and include obligations by the Province to discuss operational delivery of programs in addition to information associated with applications for park use permits with a First Nation. These discussions provide the First Nation and the Province with an opportunity to raise any questions or concerns associated with a park use permit application and/or the proposed activity in relation to aboriginal rights or title.

#### Important Considerations for Park Use Permit Applications

Applicants for park use permits should be aware of the Province's consultation obligations with First Nations and associated time requirements to seek meaningful consultation. There may be occasions when BC Parks may require additional, detailed information to allow for the necessary review of an application. It is important that applicants provide the necessary, detailed information as requested on the application form in order to avoid a longer than anticipated period of time to evaluate the application.

Last Updated: August 7, 2014

#### **TABLE 1.1.1-1**

#### **TABLE OF CONCORDANCE**

	Land Use / Occupancy Resour	ce Use	Permit Application Requirement	Location in this Application
A.	Please describe the proposed activity and	a)	Purpose of the land use or occupancy;	Section 2.2
	provide the following information:	b)	Details of the existing uses, vegetation cover, wildlife present, water resources, geology, and historical/cultural significance of the proposed site and adjacent area;	Section 6.0
		c)	Location and size of all proposed and current improvements (facilities/structures);	Section 3.0
		d)	If applicable, details of the physical changes that would be required to meet the needs of the proposal and proposed mitigation measures;	Section 3.0 Section 7.0
		e)	Construction schedule (if applicable) for proposed new permanent and/or temporary facilities;	Section 3.4
		f)	Photographs of the site and area adjacent to the proposed land use/occupancy;	Appendix A
		g)	Proposed site and adjacent area description and mapping in terms of its current legal status	Figure 3.1-1
		h)	Type of transportation and access route the proposed site(s); and	Section 3.3
		i)	The initial five-year operational plan related to this proposal.	Section 3.5
B.	List all experiences of the applicant and/or otl including the name, number, date and location			Section 2.1
C.	Describe expected of potential impacts on the recreation area's environmental,	a)	Habitat for vegetation and wildlife, particularly listed species or species at risk;	Section 7.0
	cultural, recreational values changes including, but not limited to:	b)	Any watercourse or waterbodies (diversion, flows, potential siltation, etc.);	Section 7.0
		c)	Special features such as unique geological formations;	Section 7.0
		d)	Access to the recreation area, and the area of the recreation area under consideration;	Section 7.0
		e)	Aesthetics and visual values;	Section 7.0
		f)	Cultural values, including traditional use of the area by First Nations;	Section 7.0
		g)	Park visitors and local communities, including public health and safety and recreational use of enjoyment of the recreation area;	Section 7.0
			Actions that will be taken to mitigate identified impacts on the recreation area(s).	Section 8.0
D.	Provide maps of the proposed application	a)	General Location Map;	Figure 3.1-1
	area, including (if required):		Permit Area Map; and	Figure 3.1-2
		c)	Detailed Site Map.	Figure 3.1-3

#### 2.0 INTRODUCTION

Trans Mountain Pipeline ULC (Trans Mountain) is a Canadian corporation with its head office located in Calgary, Alberta (AB). Trans Mountain is a general partner of Trans Mountain Pipeline L.P., which is operated by Kinder Morgan Canada Inc. (KMC) and fully owned by Kinder Morgan Energy Partners, L.P. (Kinder Morgan) Trans Mountain is the holder of the National Energy Board (NEB) certificates for the Trans Mountain Pipeline (TMPL) system.

The TMPL system commenced operations 61 years ago and now transports a range of crude oil and petroleum products from Western Canada to locations in central and southwestern British Columbia (BC), Washington state and offshore. Trans Mountain currently supplies much of the crude oil and refined products used in BC. TMPL is operated and maintained by staff located at Trans Mountain's regional and local offices in AB (Edmonton, Edson and Jasper) and BC (Clearwater, Kamloops, Hope, Abbotsford and Burnaby).

The TMPL system has an operating capacity of approximately 47,690 m<sup>3</sup>/d (300,000 bbl/d), using 24 active pump stations and 40 tanks. The expansion will increase the capacity to 141,500 m<sup>3</sup>/d (890,000 bbl/d).

The proposed expansion will comprise the following:

- pipeline facilities that complete a twinning (or "looping") of the pipeline in AB and BC with about 987 km of new buried pipeline;
- new and modified facilities, including pump stations and tanks; and
- a total of three new berths at the Westridge Marine Terminal in Burnaby, BC, each capable of handling Aframax tanker size.

The expansion has been developed in response to requests from Western Canadian oil producers and West Coast refiners for increased pipeline capacity in support of growing oil production and access to growing West Coast and offshore markets. The recent NEB decision RH-001-2012 reinforces market support for the expansion and provides Trans Mountain the necessary economic incentive to proceed with design, consultation and regulatory applications.

An application was submitted to the NEB on December 16, 2013, pursuant to Section 52 of the *NEB Act* for the proposed Trans Mountain Expansion Project (referred to as "TMEP" or "the Project"). The NEB completed a detailed review and will hold hearings to determine if it is in the public interest to recommend a Certificate of Public Convenience and Necessity (CPCN) for construction and operation of the Project. Subject to the outcome of the NEB hearing process, Trans Mountain plans to begin construction in 2016 and go in to service in 2018.

Trans Mountain has embarked on an extensive program to engage Aboriginal communities and to consult with landowners, government agencies (*e.g.*, regulators and municipalities), stakeholders and the general public. Information on the Project is also available at www.transmountain.com.

#### 2.1 Proponent

Kinder Morgan is the largest midstream and the third largest energy company (based on combined enterprise value) in North America. Kinder Morgan owns an interest in or operates approximately 130,000 kilometers of pipelines transporting natural gas, refined petroleum products, crude oil and carbon dioxide (CO<sub>2</sub>).

Kinder Morgan, through its operating company Kinder Morgan Canada, has owned and operated the Trans Mountain pipeline since 2005. Trans Mountain is the holder of the operating certificate from the NEB for the Trans Mountain pipeline and it is the Applicant for the Trans Mountain Expansion Project.

Completed in 2008, Trans Mountain's award winning Anchor Loop Project involved installing a second pipeline adjacent to the existing TMPL between Hinton, Alberta, just west of the Mount Robson Provincial Park, both designated part of the Canadian Rocky Mountain Parks, a United Nations Educational, Scientific, and Cultural Organization (UNESCO) World Heritage Site. In 2012, Kinder Morgan received a prestigious

Land Use / Occupancy Resource Use Permit

Emerald Award from the Alberta Emerald Foundation. Each year, Emerald Awards "recognize and reward the excellent environmental initiatives undertaken by large and small corporations, individuals, not-for-profit associations, community groups and governments."

Kinder Morgan Canada has been operating the Trans Mountain pipeline in 8 protected areas for 61 years.

## 2.2 Purpose of Land Use / Occupancy Resource Use Permit in Coquihalla Summit Recreation Area

The existing TMPL was constructed in 1952 and 1953, prior to the establishment most of the protected areas along the route, except for Mount Robson Provincial Park which was established in 1913. Over the subsequent years, eight provincial parks and protected areas have been established in areas through which TMPL passes. In each case, the 18 m TMPL right-of-way has been exempted or acknowledged within the protected areas by Orders in Council (OIC), which grants the following rights:

"For laying down, construction, operation, maintenance, inspection, alteration, removal, replacement, reconstruction, and/or repair of one or more pipelines, together with all works of Trans Mountain Oil Pipe Line Company necessary for its undertaking, herein referred to as installations, including but not limiting the generality of the foregoing all such pumping and other stations, structures, communication systems, including pole lines, drips, valves, fittings, meters, and other equipment and appurtenances as may be necessary or convenient in connection herewith the carriage, conveyance, transportation, storage and/or handling of oil and/or any by-products thereof together with the right of ingress and egress to and from the same for its servants, agents, contractors and subcontractors with vehicles, supplies and equipment for all purposes necessary or incidental to its undertaking, over, on, under and/or through a strip of Crown Land."

In the summer of 2012, Trans Mountain began a preliminary route assessment of the existing TMPL corridor to identify routing options for the Project. In conducting this assessment, Trans Mountain was assisted by consultants to acquire detailed and site-specific information about the environmental, socio-economic, traditional knowledge, geological and geotechnical conditions along each corridor. Corridor selection is based on a number of criteria, including limiting creation of new right-of-way by paralleling existing rights-of-way, where practical. Through the process of examining corridor options along the existing TMPL, Trans Mountain proposed alternatives that completely avoid three of the eight protected areas.

The proposed pipeline corridor crosses five protected areas (three provincial parks, one *Environment and Land Use Act* Protected Area and one Recreational Area) in BC (Table 2.2-1). The proposed pipeline corridor is 150 m wide encompassing the pipeline construction right-of-way and temporary workspace.

TABLE 2.2-1

PROTECTED AREAS CROSSED BY
THE EXISTING TMPL AND THE PROPOSED PIPELINE CORRIDOR

Protected Areas	Lead Regulatory Agency	Class Designation	Orders In Council	RK/AK Range	Length of TMPL Right-of-Way (km)	Length of proposed TMEP Right-of-Way (km)	Boundary Adjustment Requested
Finn Creek Provincial Park	BC Parks	Class A	2412	AK 638.6 to AK 639.3	0.7	0.7	Temporary
North Thompson River Provincial Park	BC Parks	Class A	2925	AK 725.4 to AK 727.8	1.7	1.9	Temporary
Lac Du Bois Grasslands Protected Area	BC Parks	Environment and Land Use Act Protected Area	578 547	RK 828.4 to RK 836.9 RK 842.3 to RK 843.9	0.4	10.1	Temporary
Coquihalla Summit Recreational Area	BC Parks	Recreation Area	1705	RK 992.3 to RK 1005.2	12.6	13.3	Not applicable

Trans Mountain Expansion Project

Land Use / Occupancy Resource Use Permit

#### TABLE 2.2-1 Cont'd

Protected Areas	Lead Regulatory Agency	Class Designation	Orders In Council	RK/AK Range	Length of TMPL Right-of-Way (km)	Length of proposed TMEP Right-of-Way (km)	Boundary Adjustment Requested
Bridal Veil Falls Provincial Park	BC Parks	Class A	Easement #152475 C (same clause as the OICs)	AK 1079.4 to AK 1079.8	0.4	0.4	Temporary

Trans Mountain submitted to BC Ministry of Environment (MOE) a Stage 1 Request for the Boundary Adjustment Process in accordance with the *Provincial Protected Area Boundary Adjustment Policy, Process and Guidelines*. The Stage 1 Request for a Boundary Adjustment was submitted to BC Parks on March 5, 2013 for Lac du Bois Grasslands Protected Area and on June 13, 2013 for the remaining four protected areas.

In October 2013, Trans Mountain was provided approval to proceed to the second stage of the Boundary Adjustment Process, the preparation and submission of a Detailed Proposal (Stage 2 of the Boundary Adjustment Process) for four of the five protected areas. It was deemed by BC Parks that Coquihalla Summit Recreation Area would require a Land Use / Occupancy Resource Use Permit instead of the Stage 2 Detailed Proposal because of its class designation. The Stage 2 Detailed Proposal was submitted to BC Parks on August 28, 2014. BC Parks did request that the proposed work within Coquihalla Summit Recreation Area undergo the same level of environmental assessment as the other protected areas.

This report has been prepared in support of Trans Mountain's formal request to allow for the construction of the TMEP and use of temporary associated facilities including access to the right-of-way in Coquihalla Summit Recreation Area.

Trans Mountain Expansion Project

## 3.0 PROPOSED ACTIVITY AND PHYSICAL CHANGES TO COQUIHALLA SUMMIT RECREATION AREA

#### 3.1 Project Components

TMEP will include temporary and permanent components within the Coquihalla Summit Recreation Area (Table 3.1-1). The project components will be restored after the construction phase of TMEP is complete. The proposed pipeline will be located in an 18 m permanent right-of-way. No new access will be required; existing access routes to the proposed development in Coquihalla Summit Recreation Area are shown in Figure 3.1-2).

The locations of the proposed pipeline corridor and other infrastructure required within the Coquihalla Summit Recreation Area are identified in the Detailed Site Map (Figure 3.1-3).

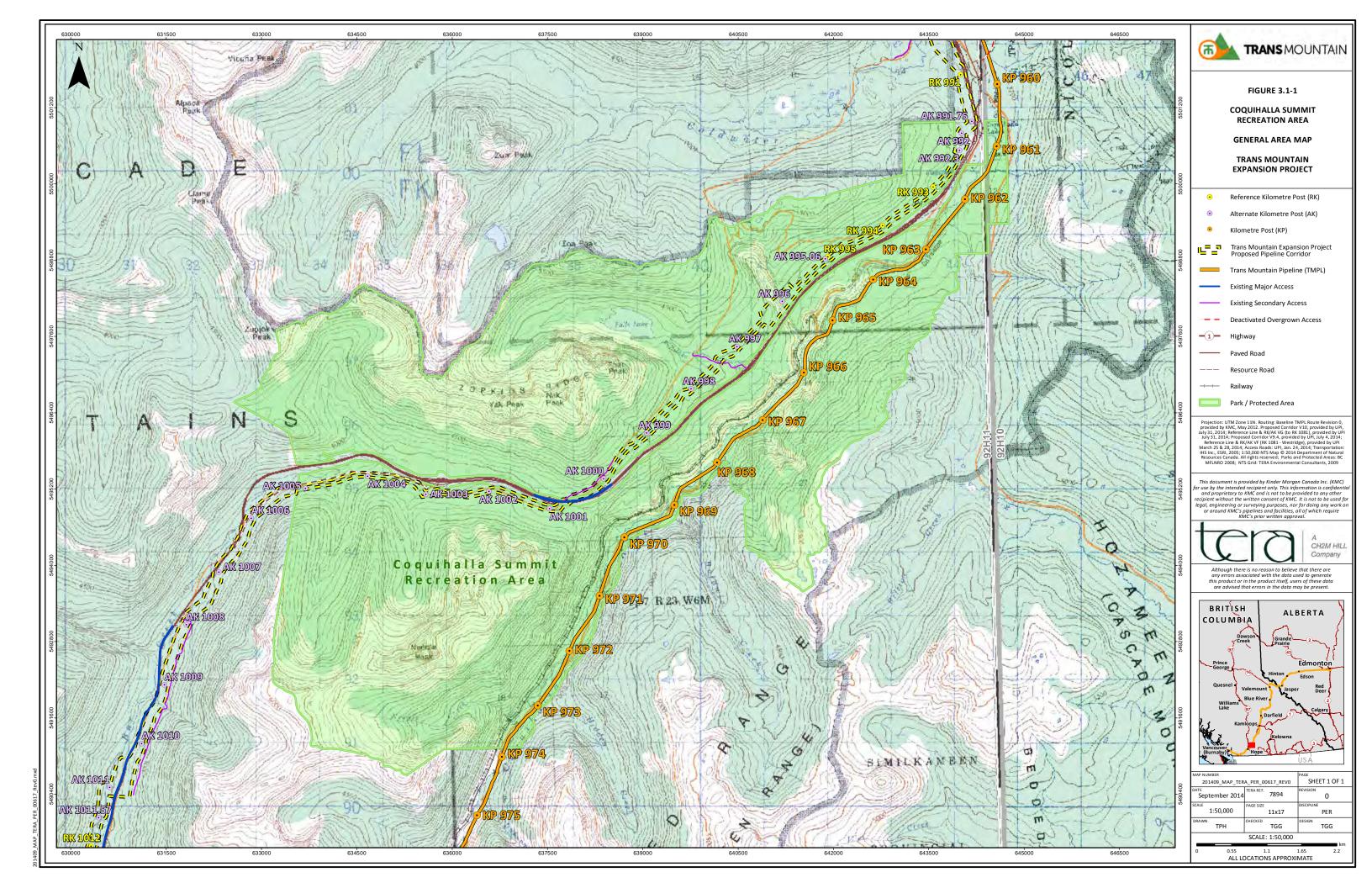
#### **TABLE 3.1-1**

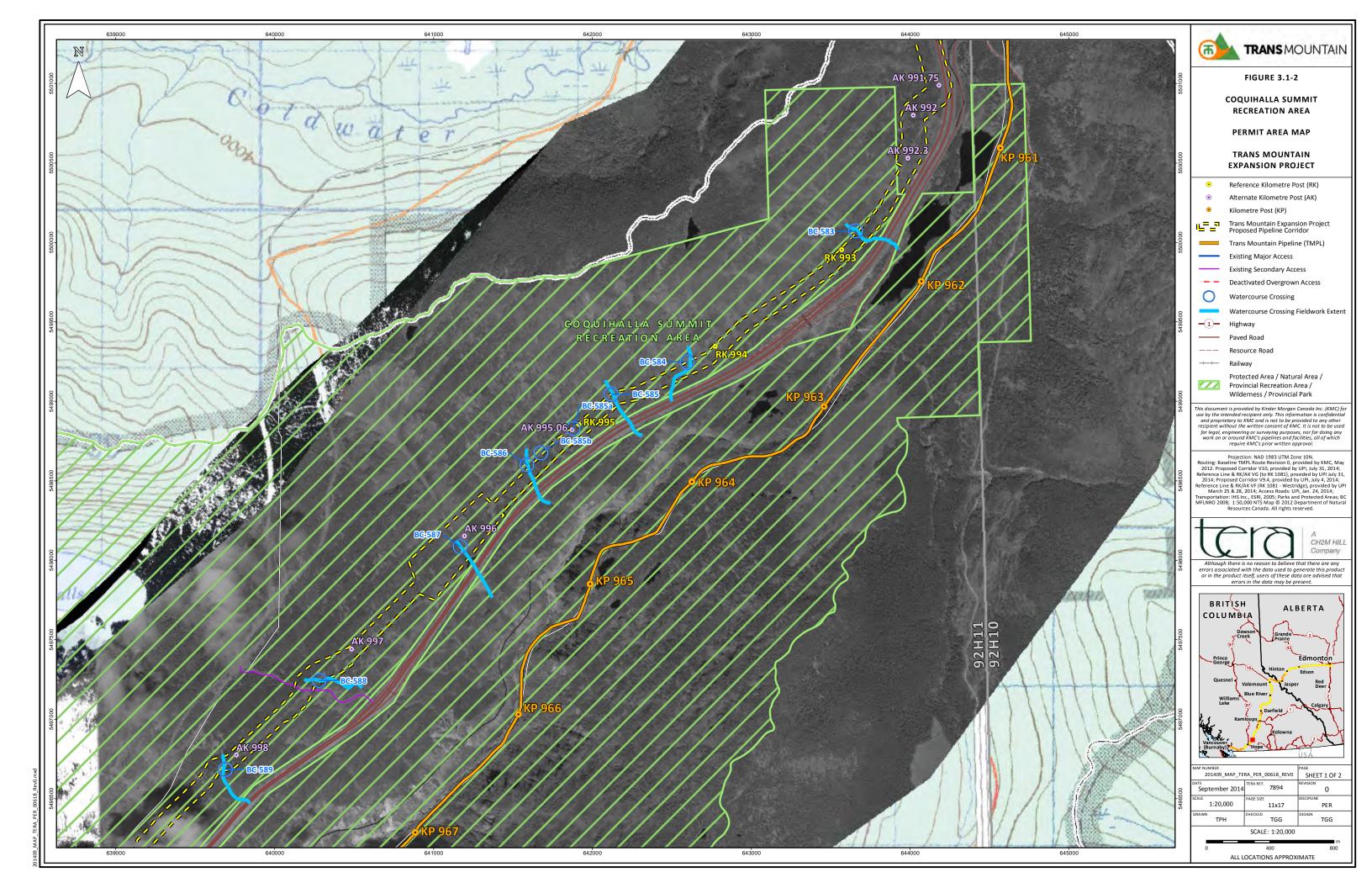
## TRANS MOUNTAIN PROJECT COMPONENTS IN THE COQUIHALLA SUMMIT RECREATION AREA

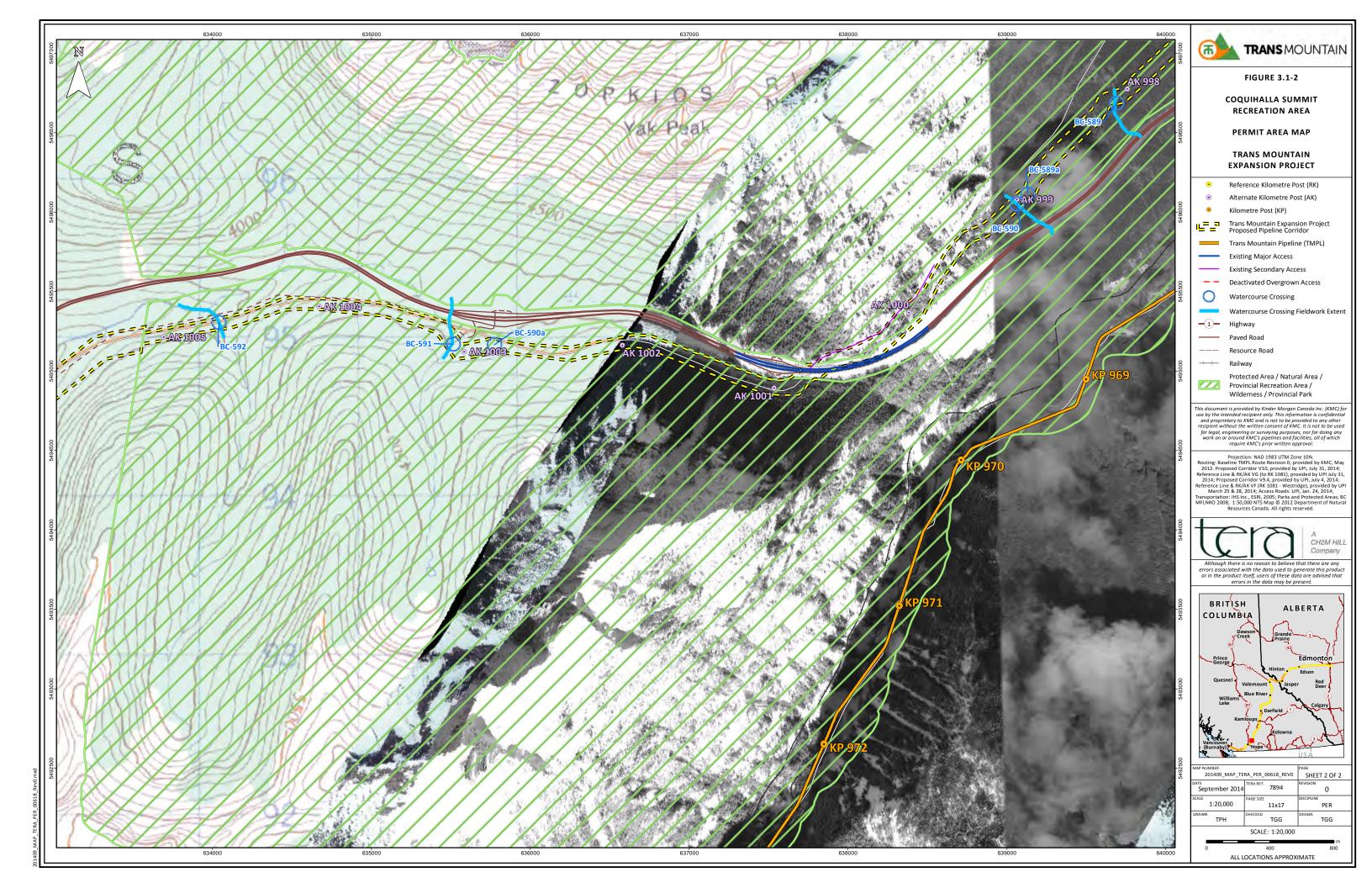
Project Components	Dimensions	Duration
Temporary Workspace	During construction, additional workspace is required to accommodate ditch material, pipe and construction equipment and difficult terrain. While workspace requirements may vary, a 38 m wide area is typically required for pipeline construction.	Temporary
Watercourse crossings	Proposed pipeline crossings: isolation crossing method if water present and an open cut contingency crossing method during dry conditions (refer to Table 8.1.3-3 for the proposed pipeline and vehicle crossing methods associated with the watercourses crossed by the TMEP in Coquihalla Summit Recreation Area).	Temporary
	Proposed vehicle crossings: ramp and culvert or clear span bridge.	Temporary
Pipeline route	After construction, an 18 m wide portion of the proposed pipeline corridor will become a permanent right-of-way. Areas outside the 18 m permanent right-of-way will be restored following construction.  Length of pipeline corridor: 12.7 km  Area of 18 m permanent right-of-way: 22.86 ha	Permanent

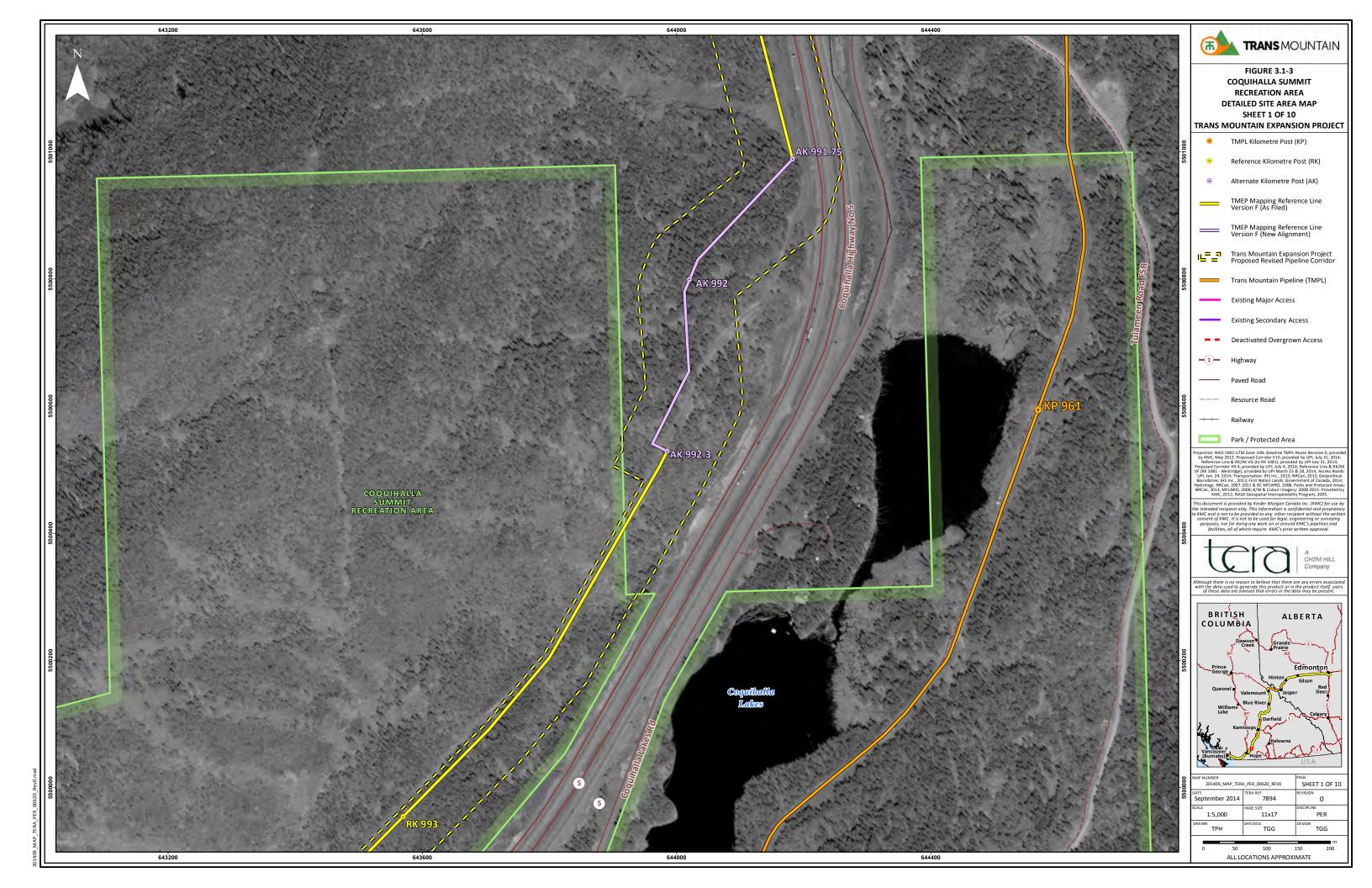
#### 3.2 Existing Trans Mountain Pipeline Route

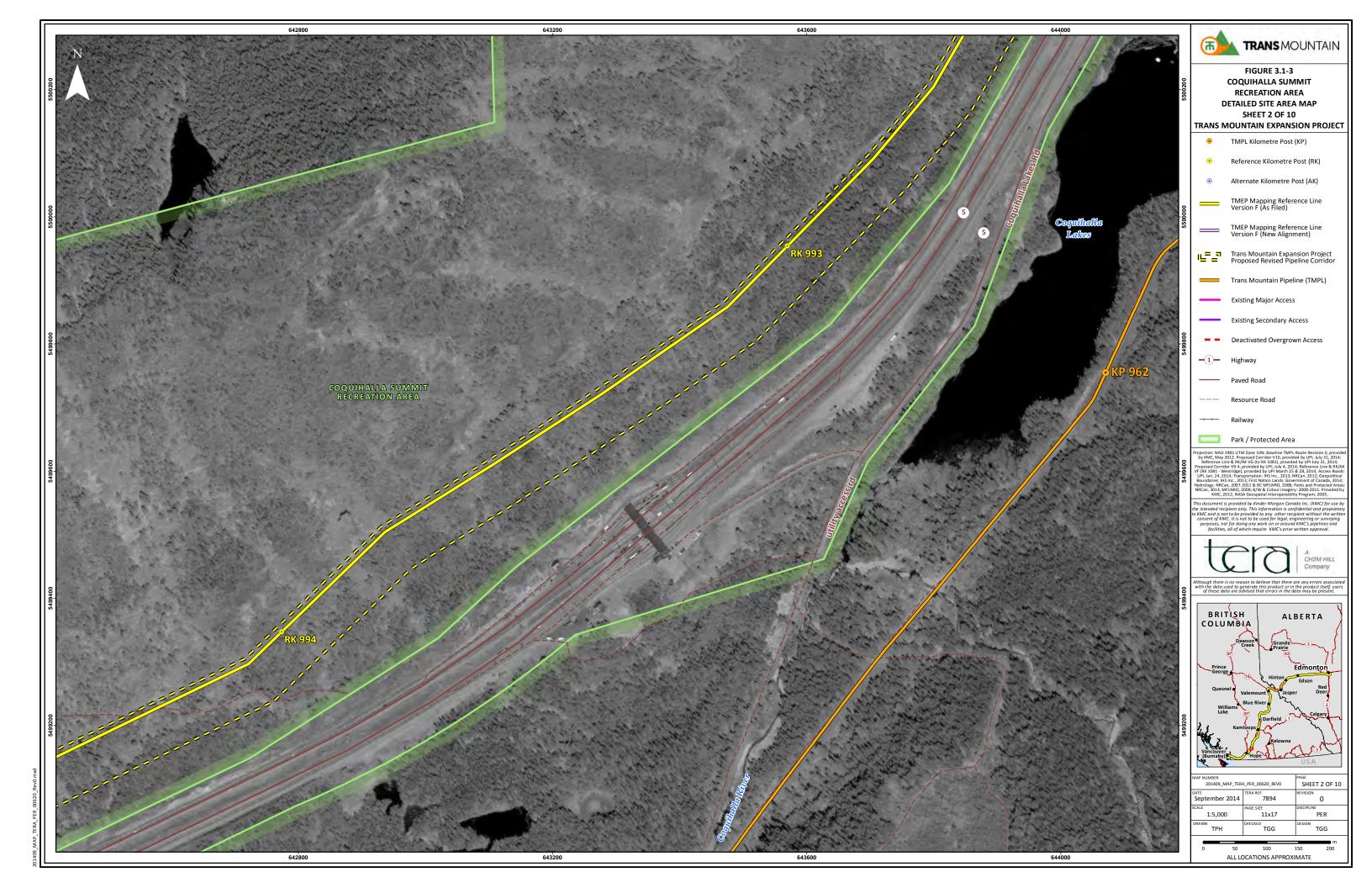
The existing TMPL traverses the recreation area for approximately 12.7 km, within the Natural Environment Zone of the recreation area established in 1986. Trans Mountain holds Order in Council 1705, which sets out the status of the existing right-of-way through the recreation area. In 2009, Trans Mountain obtained a park use permit to construct armoured training berms for two streams within the recreation area.

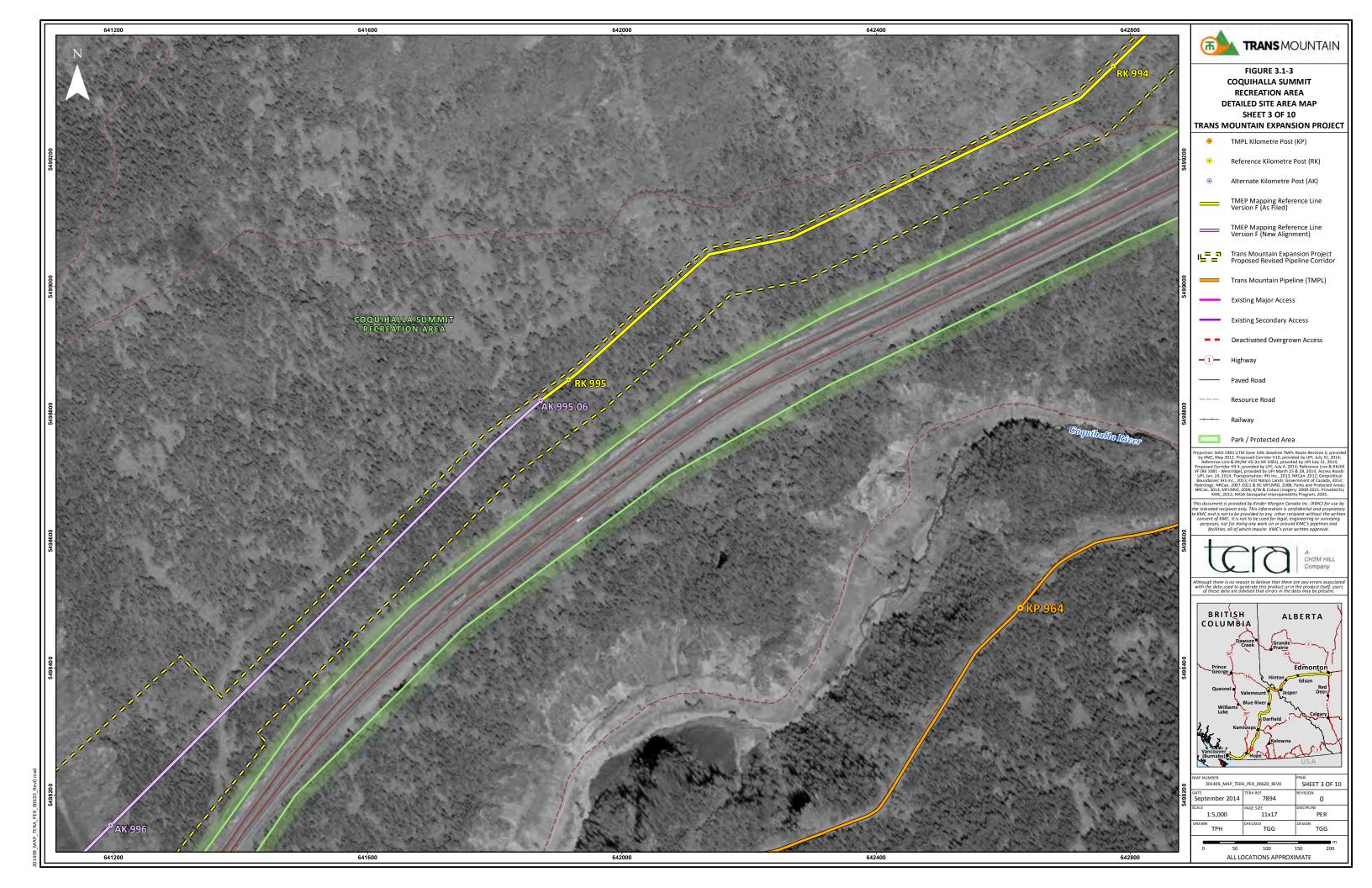


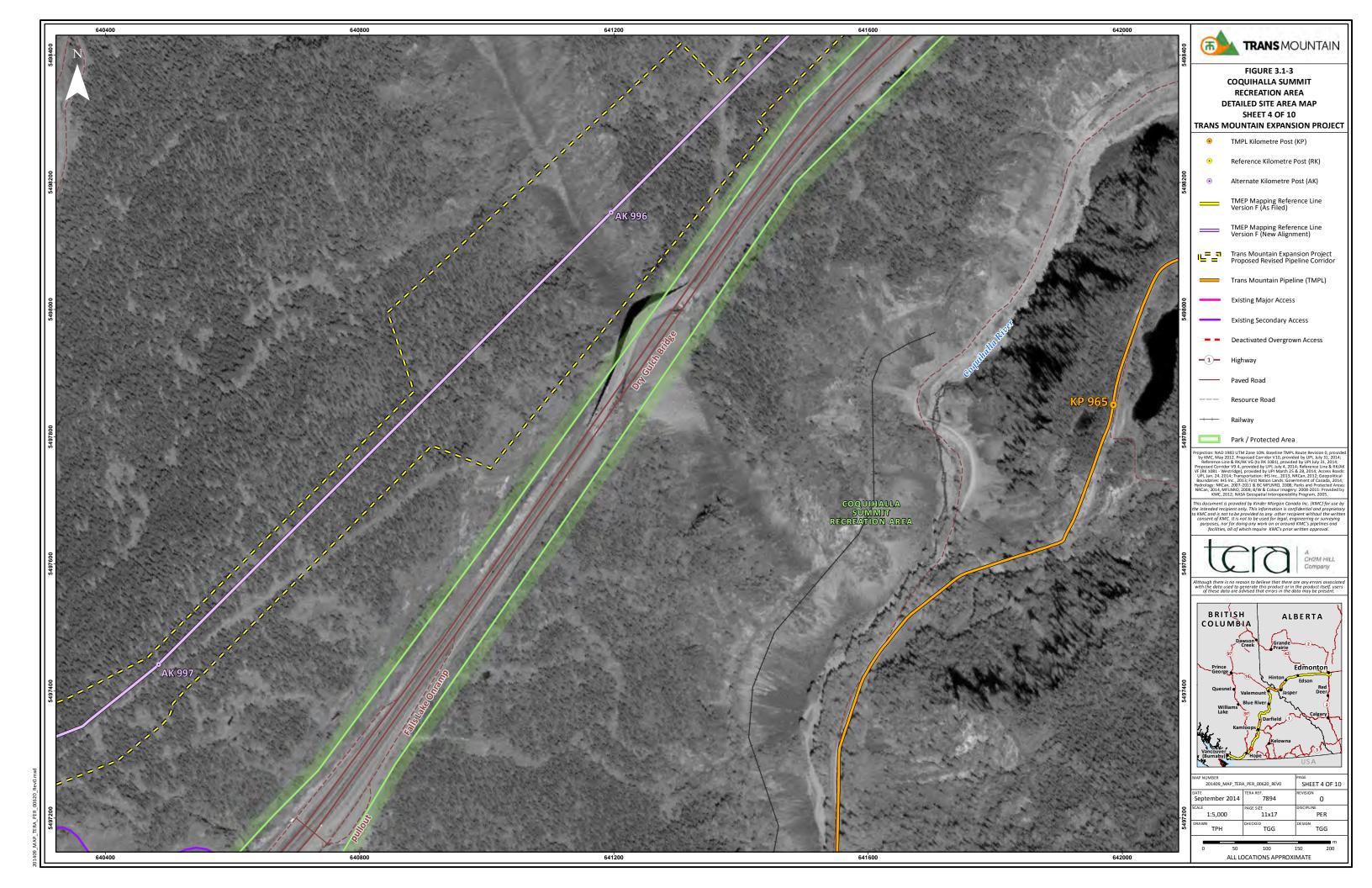


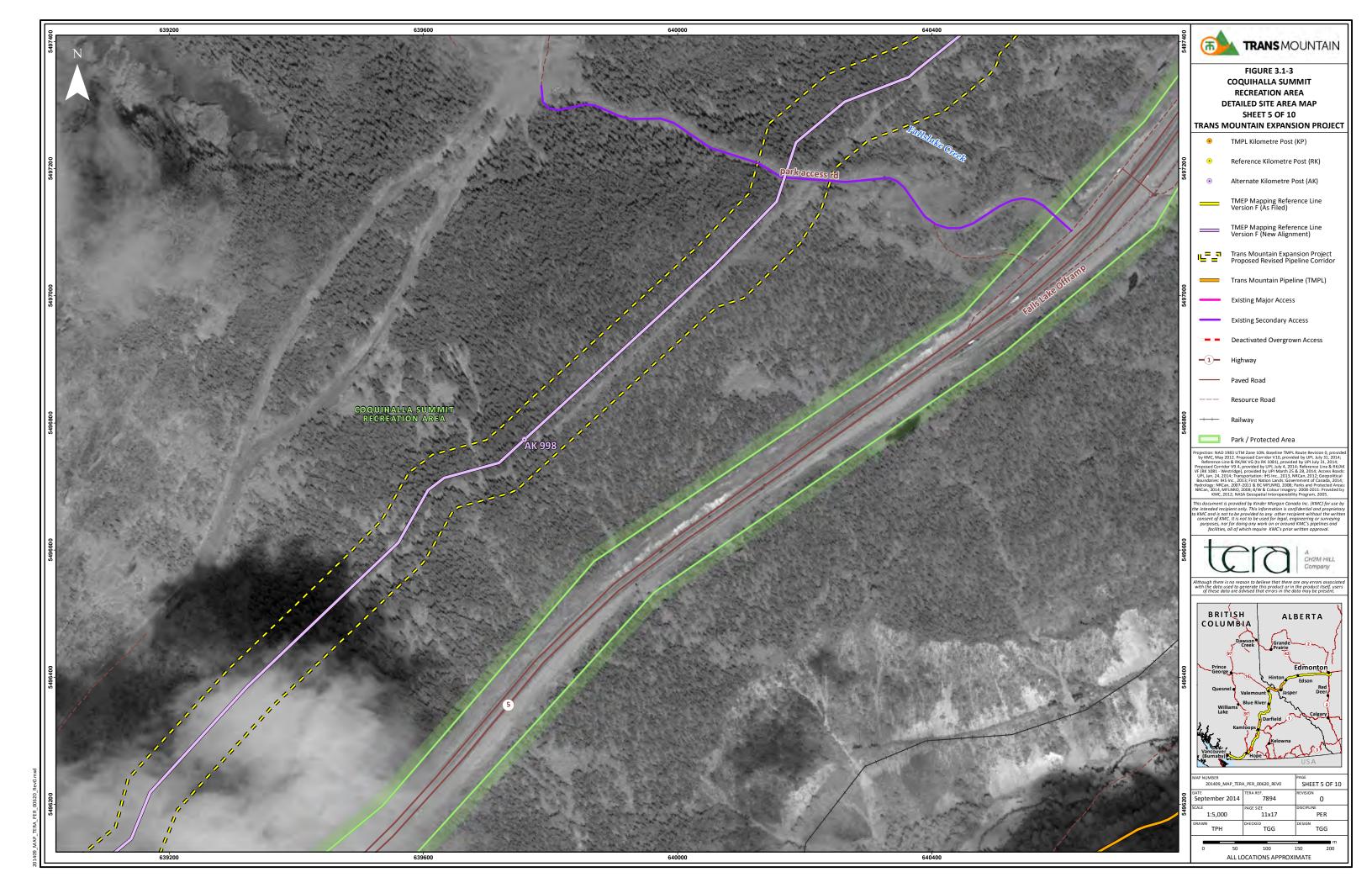


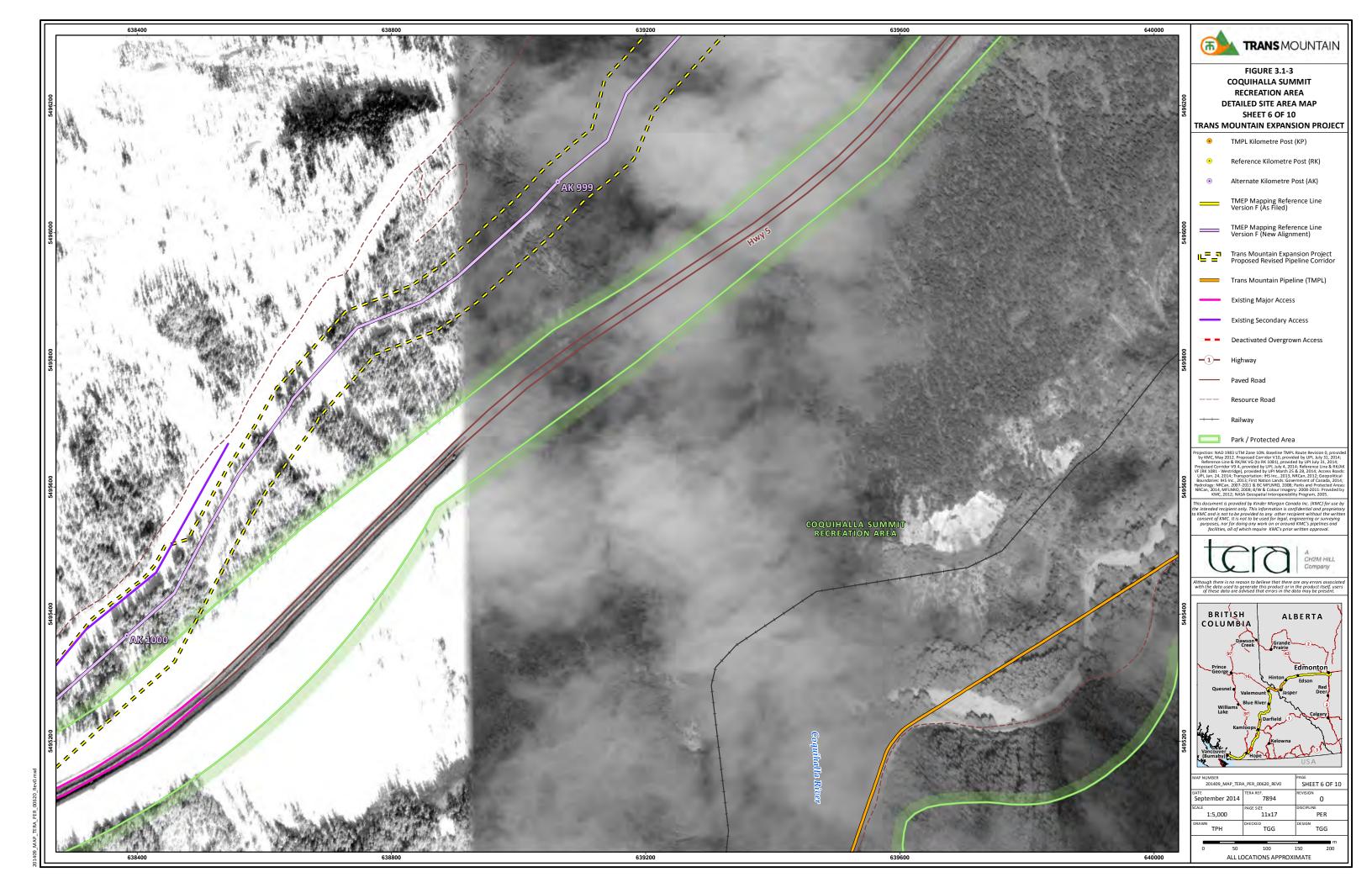


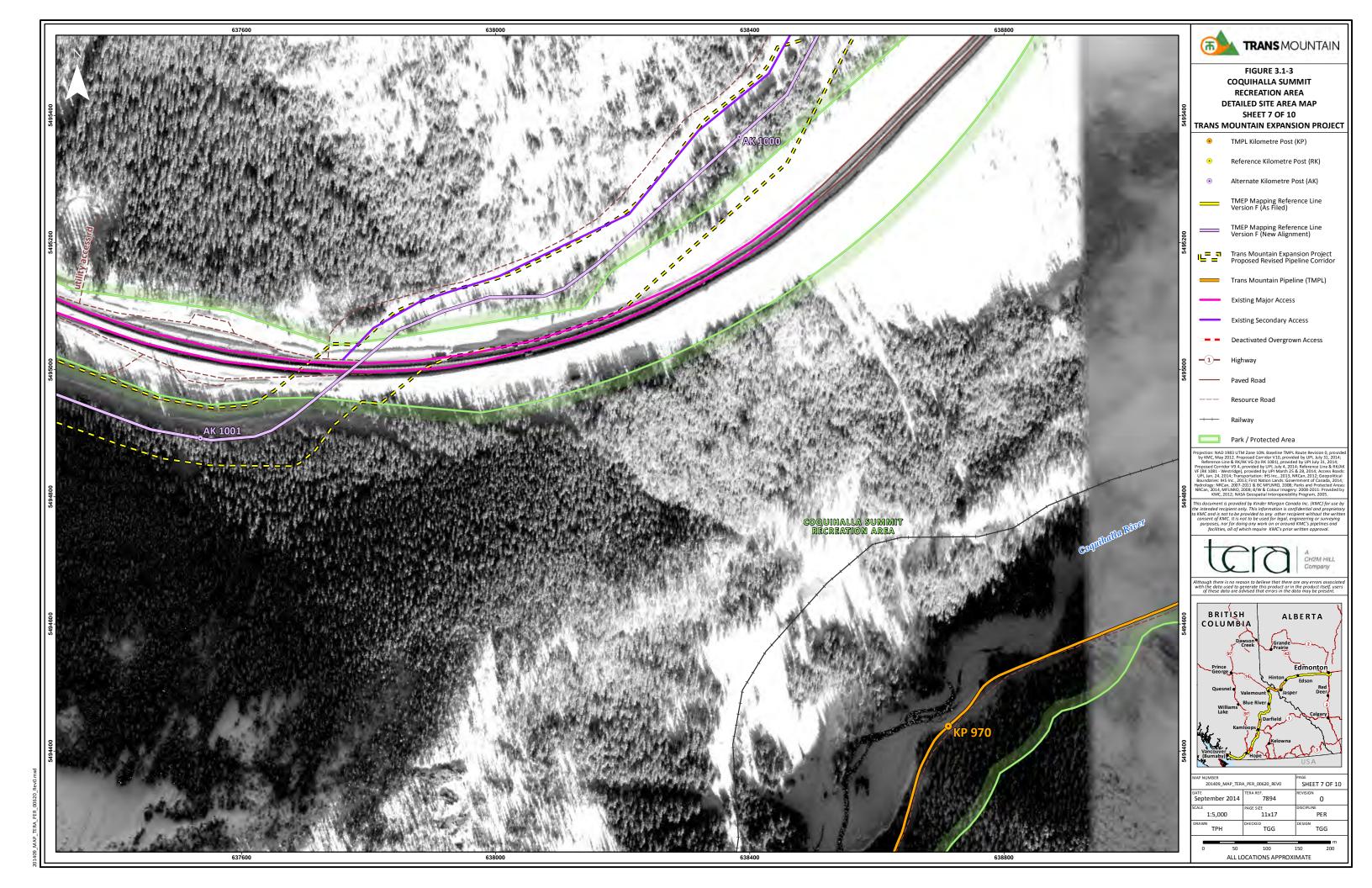


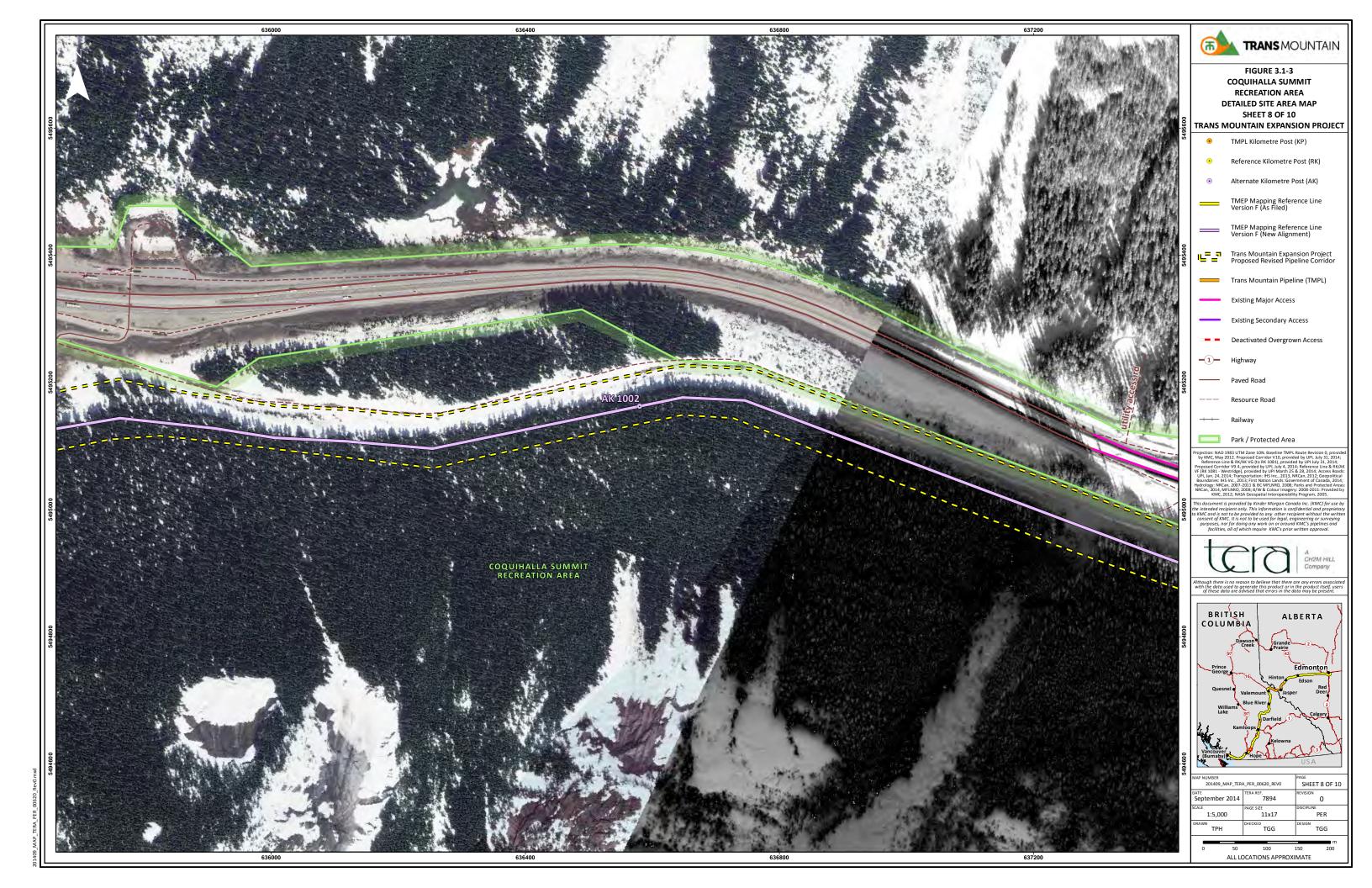


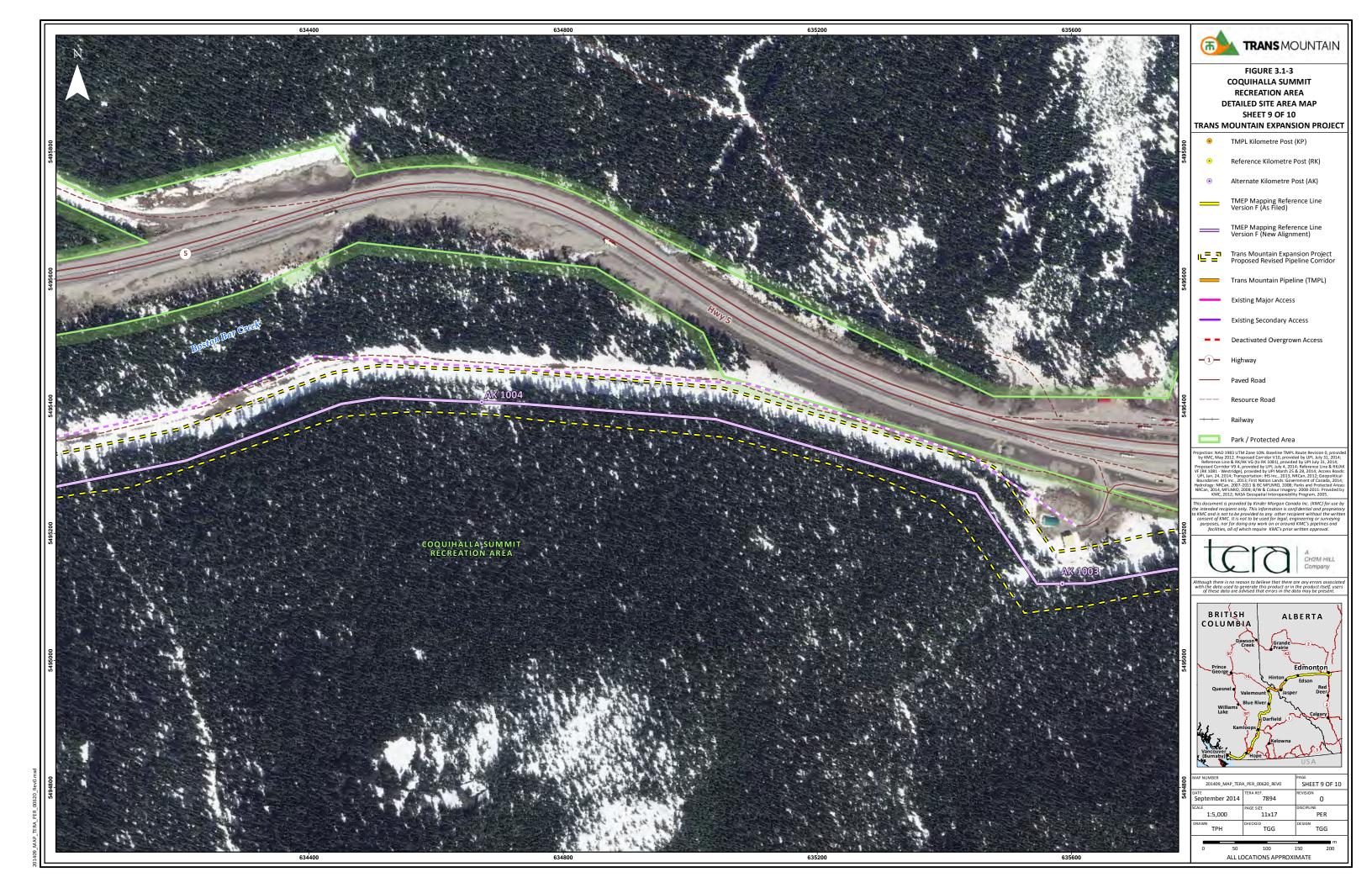


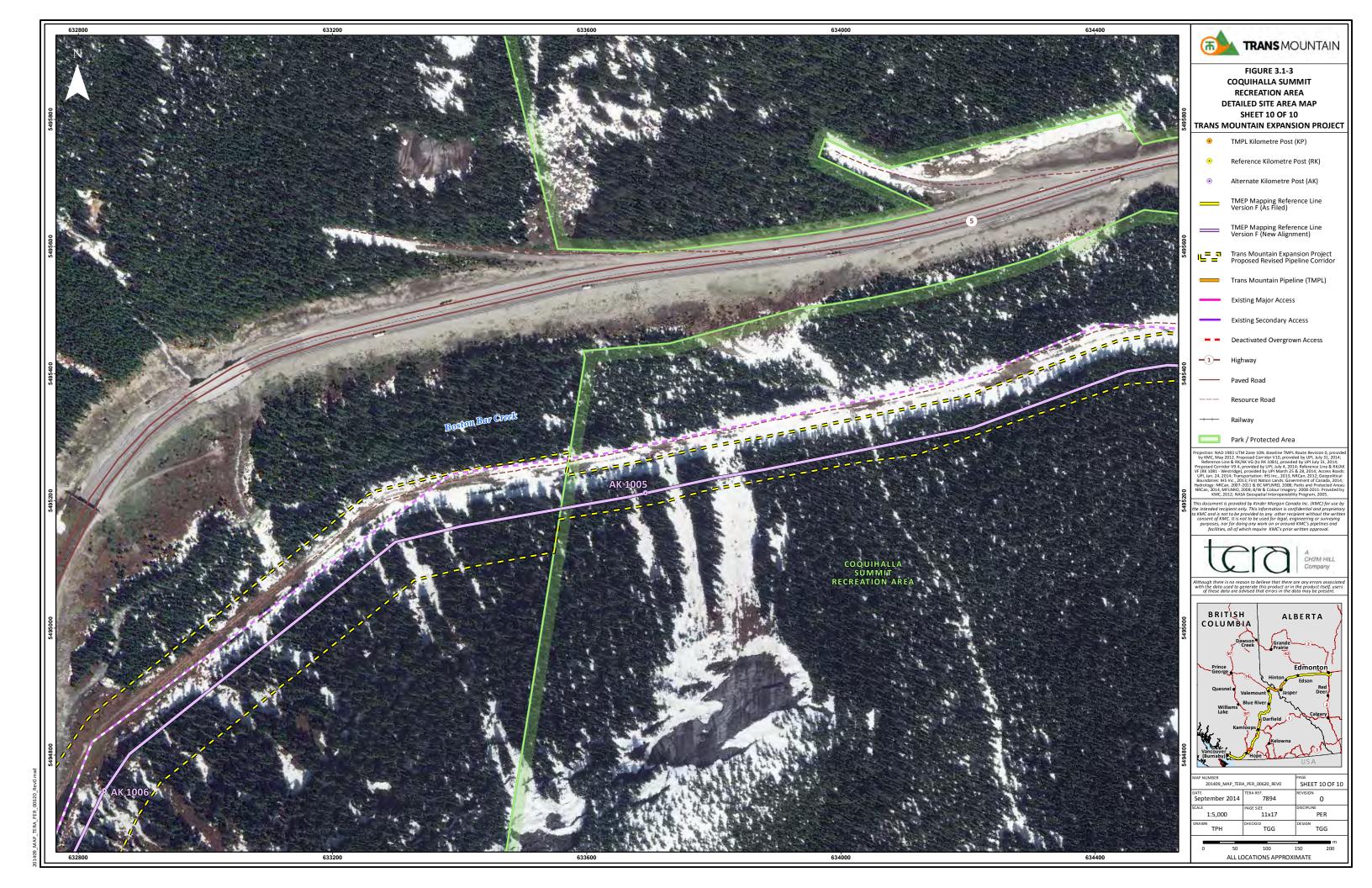












#### 3.2.1 Proposed Pipeline Corridor through the Recreation Area

The purpose of the preliminary route assessment was to avoid environmentally sensitive areas, avoid geotechnical hazards, improve constructability and ensure long-term pipeline integrity and safety, to the extent feasible. Route changes also resulted from feedback received from First Nations, stakeholders and the public during various Trans Mountain-led engagement programs, such as the Community and Parks Workshops described in Section 5.1 and 5.2, respectively. Following a review and comparison of the various utility transportation corridors through the area, Trans Mountain identified the preferred alternative which:

- parallels existing linear disturbances (Spectra right-of-way and the Telus Fibre Optic Transmission System [FOTS] right-of-way) for the entire length through the recreation area;
- reduces the routing through the recreation area by approximately 0.6 km;
- avoids wetland crossings;
- · avoids very steep slopes; and
- reduces the number of watercourse crossing.

The proposed pipeline will be located in an 18 m permanent right-of-way. The site-specific topography will determine where the pipeline is located in the 18 m permanent right-of-way.

During construction, additional workspace is required to accommodate trench material, pipe and construction equipment and difficult terrain (e.g., sloped terrain). While workspace requirements will vary, a total of 38 m is typically required for pipeline construction. Temporary workspace will be located on both sides of the permanent 18 m pipeline right-of-way.

#### 3.3 Transportation and Access Routes

Construction equipment and crews will access the proposed construction right-of-way via existing access roads and will travel along the construction right-of-way to the site. No new access will be required. Design, construction and operations of the pipeline will be in compliance with all applicable codes, standards and regulations.

#### 3.4 Construction Schedule in Coguihalla Summit Recreation Area

Pending regulatory approval, construction of the Project is scheduled to commence during the first half of 2016 with an estimated 2-year construction period and an in-service date in 2018 following the completion of construction. Pipeline construction activities are progressive, commencing with survey and proposed right-of-way preparation and continuing through pipe stringing, welding, pipe inspection, trenching, lowering-in, backfilling and reclamation. These activities are performed sequentially and move along the construction right-of-way. Final clean-up and reclamation may be postponed until suitable weather and soil conditions occur.

Mainline construction in Coquihalla Summit Recreation Area is tentatively scheduled for the summer seasons of 2017 and 2018, with clearing activities scheduled for fall 2016, outside of the migratory birds breeding and nesting period. A timber cruise will be conducted prior to construction. Proposed construction activities in Coquihalla Summit Recreation Area are expected to take place over a 8 month period spanning two years (3 months of activity in the first summer, followed by 5 months of activity the following summer).

#### 3.4.1 Inspection

The involvement of full-time, qualified and trained Environmental Inspector(s) is a key component of Trans Mountain's environmental compliance strategy. The Environmental Compliance Manager, Supervisor of Environmental Inspection, Lead Activity Inspector(s) and the Environmental Inspector(s) will enforce continuous and consistent compliance with this application, all permit/approval conditions, environmental laws and guidelines, and other environmental commitments.

#### 3.5 Five-Year Operational Plan

KMC has a fully developed preventative maintenance program in place for the existing TMPL system pipelines and right-of-way, pump stations, terminals and ancillary facilities. The program will be enhanced to fully integrate the TMEP pipelines and facilities sufficiently in advance of the start-up of the expanded TMPL system to allow for implementation and appropriate training to take place.

Preventative maintenance will be managed in accordance with the existing KMC Maintenance Management Program. The existing KMC Pipeline Integrity Management Program will be enhanced and applied to all reactivated and new pipeline segments.

KMC is committed to operating in a manner which minimizes environmental impacts and ensures that the operation of the TMPL system complies with all environmental regulations, applicable permit conditions and the requirements of the appropriate regulatory authorities. Environmental requirements are incorporated into all business decisions and operational activities. KMC has fully implemented the KMC *Environment, Health and Safety Policy* and will amend the policy as necessary to include all assets, personnel and processes, constructed, added or developed as part of TMEP. After all the construction and reclamation phases are completed, limited activity and access to the proposed pipeline right-of-way is expected in the recreation area.

Trans Mountain will develop a Post-Construction Environmental Monitoring (PCEM) Program for the Project to assess the effectiveness of mitigation and reclamation measures on the topographic condition, soils, vegetation, riparian areas, instream habitat, air, noise, wildlife habitat, human access and water wells (if warranted) along the construction right-of-way, temporary access areas and other areas disturbed during construction. Trans Mountain will conduct monitoring and prepare maintenance plans and quality assurance/control plans to address any potential adverse environmental effects.

Monitoring during operations and maintenance activities will be composed of regular aerial patrols with ground reconnaissance to assess any issues raised during the aerial patrols, issues raised by Aboriginal communities, BC Parks, leaseholders or regulatory authorities. Operational and environment personnel will ensure that any mitigation measures that are warranted are implemented in a timely basis. In-line investigation tools will be run at regular intervals in order to monitor the pipeline. Investigative and/or integrity digs will be conducted as warranted. Monitoring will be conducted at facilities pursuant to permitting conditions. Upon completion of the PCEM Program, monitoring by Trans Mountain personnel will occur regularly throughout the life of the pipeline.

Trans Mountain will conduct the PCEM Program during a period up to the first five complete growing seasons (or during years one, three and five) following commissioning of the Project as per NEB certificate conditions. The PCEM Program will be initiated following clean-up, in order to identify any unresolved issues upon the completion of construction. The first PCEM report will be the Environmental As-Built Report.

#### 4.0 ABORIGINAL ENGAGEMENT

Trans Mountain is committed to establishing and maintaining effective relationships with Aboriginal communities in proximity to new or existing operations. Establishing mutually beneficial working relationships with Aboriginal communities and Aboriginal groups is key to successfully maintaining Trans Mountain's existing operations and the expansion.

#### 4.1 Engagement Summaries

The Trans Mountain Aboriginal Engagement Program is designed to allow for meaningful engagement with Aboriginal communities and Aboriginal groups using multiple forms of engagement including Project letters, meetings, phone conversations, email dialogue, community workshops and the Project website. The following subsections provide summaries of engagement activities conducted from January 2014 to mid-June 2014 relating to the Land Use / Occupancy Resource Use Permit. Updates to engagement initiatives are ongoing and continue to occur.

#### 4.1.1 Coldwater Indian Band

Coldwater Indian Band was identified by Trans Mountain and BC Parks as a community that will have interests in the proposed pipeline corridor through Coquihalla Summit Recreation Area or have interests potentially affected by the proposed pipeline corridor in Coquihalla Summit Recreation Area. Coldwater Indian Band has a long history of engagement with Trans Mountain via KMC as the TMPL system runs through the Coldwater Reserve No. 1 in which members of the Coldwater Band reside.

On March 7, 2014, Coldwater Indian Band received a letter explaining the purpose of the Land Use / Occupancy Resource Use Permit, timelines to submission to BC Parks and a proposed schedule of field activities that would occur in the recreation area in order to form the basis of the environmental and socioeconomic assessment for the Land Use / Occupancy Resource Use Permit. On March 16 and 19, 2014, Trans Mountain extended an invitation to Coldwater Indian Band to attend a Parks Workshop in Hope, BC, on March 26, 2014. Information gathered in this workshop would be included into the Land Use / Occupancy Resource Use Permit Application and would also be used in Trans Mountain's continued engineering, construction and reclamation planning. The workshop occurred on March 26, 2014, however the Coldwater Indian Band was not able to attend. On April 22, 2014, Trans Mountain extended an invitation to Coldwater Indian Band to revisit the Land Use / Occupancy Resource Use Permit process and also note any issues and concerns that Coldwater Indian Band may have with the proposed pipeline corridor through Coquihalla Summit Recreation Area.

To date, Coldwater Indian Band has not provided a response to the invitation to meet specifically to discuss the Land Use / Occupancy Resource Use Permit or to provide information to Trans Mountain. Trans Mountain remains open to continuing to meet and discuss the Land Use / Occupancy Resource Use Permit and Aboriginal interests potentially affected by the proposed pipeline corridor.

#### 4.1.2 Siska Indian Band

Siska Indian Band was identified by Trans Mountain and BC Parks as a community that will have an interest in the proposed pipeline corridor through Coquihalla Summit Recreation Area or have Aboriginal interests potentially affected by the proposed pipeline corridor in Coquihalla Summit Recreation Area.

On March 7, 2014, Siska Indian Band received a letter explaining the purpose of the Land Use / Occupancy Resource Use Permit, timelines for submission to BC Parks, and a proposed schedule of field studies that would occur in the recreation area in order to form the basis of the environmental and socio-economic assessment for the Land Use / Occupancy Resource Use Permit. On April 28, 2014, Trans Mountain extended an invitation to Siska Indian Band to revisit the Land Use / Occupancy Resource Use Permit process and also note any issues and concerns that Siska Indian Band may have with the proposed pipeline corridor through Coquihalla Summit Recreation Area.

To date, Siska Indian Band has not provided a response to the invitation to meet specifically to discuss the Land Use / Occupancy Resource Use Permit or to provide information to Trans Mountain. Trans Mountain

REV 0 Land Use / Occupancy Resource Use Permit

remains open to continuing to meet and discuss the Land Use / Occupancy Resource Use Permit and Aboriginal interests potentially affected by the proposed pipeline corridor.

#### 4.1.3 Cook's Ferry Indian Band

Cook's Ferry Indian Band was identified by Trans Mountain and BC Parks as a community that will have an interest in the proposed pipeline corridor through Coquihalla Summit Recreation Area or have Aboriginal interests potentially affected by the proposed pipeline corridor through Coquihalla Summit Recreation Area.

On March 13, 2014, Cook's Ferry Indian Band received a letter explaining the purpose of the Land Use / Occupancy Resource Use Permit, timelines for submission to BC Parks, and a proposed schedule of field studies that would occur in the recreation area in order to form the basis of the environmental and socio-economic assessment for the Land Use / Occupancy Resource Use Permit. On March 19, 2014, Trans Mountain extended an invitation to Cook's Ferry Indian Band to attend a Parks Workshop in Hope, BC, on March 26, 2014. Cook's Ferry Indian Band was unable to attend. On April 28, 2014, Trans Mountain extended an invitation to Cook's Ferry Indian Band to revisit the Land Use / Occupancy Resource Use Permit process and also to note any issues and concerns that Cook's Ferry Indian Band may have with the proposed pipeline corridor through Coquihalla Summit Recreation Area. Information gathered in this meeting would be included into the Land Use / Occupancy Resource Use Permit and would also be used in Trans Mountain's continued engineering, construction and reclamation planning.

To date, Cook's Ferry Indian Band has not provided a response to the invitation to meet specifically to discuss the Land Use / Occupancy Resource Use Permit or to provide information to Trans Mountain. Trans Mountain remains open to continuing to meet and discuss the Land Use / Occupancy Resource Use Permit and Aboriginal interests potentially affected by the proposed pipeline corridor.

#### 4.1.4 Ashcroft Indian Band

The Ashcroft Indian Band was identified by Trans Mountain and BC Parks as a community that might have an interest in the proposed pipeline corridor through Coquihalla Summit Recreation Area or have Aboriginal interests potentially affected by the proposed pipeline corridor in Coquihalla Summit Recreation Area.

On March 13, 2014, Ashcroft Indian Band received a letter explaining the purpose of the Land Use / Occupancy Resource Use Permit, timelines for submission to BC Parks, and a proposed schedule of field studies that would occur in the recreation area in order to form the basis of the environmental and socioeconomic assessment for the Land Use / Occupancy Resource Use Permit.

To date, Ashcroft Indian Band has not provided a response to the invitation to meet specifically to discuss the Land Use / Occupancy Resource Use Permit or to provide information to Trans Mountain. Trans Mountain remains open to continuing to meet and discuss the Land Use / Occupancy Resource Use Permit and Aboriginal interests potentially affected by the proposed pipeline corridor.

### 4.1.5 Boston Bar Band

The Boston Bar Band was identified by Trans Mountain and BC Parks as a community that might have an interest in the proposed pipeline corridor through Coquihalla Summit Recreation Area or have Aboriginal interests potentially affected by the proposed pipeline corridor in Coquihalla Summit Recreation Area.

On March 13, 2014, Boston Bar Indian Band received a letter explaining the purpose of the Land Use / Occupancy Resource Use Permit, timelines for submission to BC Parks, and a proposed schedule of field studies that would occur in the recreation area in order to form the basis of the environmental and socioeconomic assessment for the Land Use / Occupancy Resource Use Permit.

To date, Boston Bar Indian Band has not provided a response to the invitation to meet specifically to discuss the Land Use / Occupancy Resource Use Permit or to provide information to Trans Mountain. Trans Mountain remains open to continuing to meet and discuss the Land Use / Occupancy Resource Use Permit and Aboriginal interests potentially affected by the proposed pipeline corridor.

#### 4.1.6 Lower Nicola Indian Band

Lower Nicola Indian Band was identified by Trans Mountain and BC Parks as a community that will have an interest in the proposed pipeline corridor through Coquihalla Summit Recreation Area or have Aboriginal interests potentially affected by the proposed pipeline corridor in Coquihalla Summit Recreation Area. Lower Nicola Indian Band has a long standing relationship with KMC as the existing TMPL system runs through the Joeyaska Reserve No. 2, in which members of the Lower Nicola Indian Band reside.

On March 13, 2014, Lower Nicola Indian Band received a letter explaining the purpose of the Land Use / Occupancy Resource Use Permit, timelines for submission to BC Parks, and a proposed schedule of field studies that would occur in the recreation area in order to form the basis of the environmental and socioeconomic assessment for the Land Use / Occupancy Resource Use Permit. On March 18, 2014, Trans Mountain extended an invitation to Lower Nicola Indian Band to attend a Parks Workshop in Hope, BC, on March 26, 2014, in which Lower Nicola Band was in attendance. Information gathered in this workshop would be included into the Land Use / Occupancy Resource Use Permit and would also be used in Trans Mountain's continued engineering, construction and reclamation planning. Trans Mountain extended an invitation to Lower Nicola Indian Band on April 28, 2014, to revisit the Land Use / Occupancy Resource Use Permit process and also to note any issues and concerns that Lower Nicola Indian Band may have with the proposed pipeline corridor through Coquihalla Summit Recreation Area.

To date, Lower Nicola Indian Band has not expressed interest to discuss the Land Use / Occupancy Resource Use Permit or to provide information to Trans Mountain. Trans Mountain remains open to continuing to meet and discuss the Land Use / Occupancy Resource Use Permit and Aboriginal interests potentially affected by the proposed pipeline corridor.

#### 4.1.7 Lower Similkameen Indian Band

Lower Similkameen Indian Band was identified by Trans Mountain and BC Parks as a community that will have an interest in the proposed pipeline corridor through Coquihalla Summit Recreation Area or have Aboriginal interests potentially affected by the proposed pipeline corridor in Coquihalla Summit Recreation Area.

On March 18, 2014, Lower Similkameen Indian Band received a letter explaining the purpose of the Land Use / Occupancy Resource Use Permit, timeline for submission to BC Parks, and a proposed schedule of field studies that would occur in the recreation area in order to form the basis of the environmental and socio-economic assessment for the Land Use / Occupancy Resource Use Permit. Lower Similkameen Indian Band emailed Trans Mountain on March 18, 2014 and requested to that a meeting be held between Lower Similkameen Indian Band and Trans Mountain on April 14, 2014. A meeting was held on April 14, 2014 and Lower Similkameen Indian Band were interested in the reclamation efforts and offsets planned for the Coquihalla Summit Recreation Area. Discussion also focused on the types of field studies that have taken place in the recreation area; concerns were raised over the impact of the proposed activity in the recreation area on the traditional use of lands (e.g., medicinal plants, berries and sacred sites). Lower Similkameen Indian Band also voiced desire to participate in the field program and Tradtional Land Use (TLU) studies. Lower Similkameen Indian Band indicated that they will be responding to referrals formally and the response will state that the Lower Similkameen Indian band is against the twinning of the pipeline. the shipping of oil and gas products offshore to foreign markets and is concerned for future generations. Lower Similkameen Indian Band also noted that invitations to open houses need to come in a more timely manner.

#### 4.1.8 Penticton Indian Band

Penticton Indian Band was identified by Trans Mountain and BC Parks as a community that will have an interest in the proposed pipeline corridor through Coquihalla Summit Recreation Area or have Aboriginal interests potentially affected by the proposed pipeline corridor in Coquihalla Summit Recreation Area.

On March 14, 2014, Penticton Indian Band received a letter explaining the purpose of the Land Use / Occupancy Resource Use Permit, timelines for submission to BC Parks, and a proposed schedule of field studies that would occur in the recreation area in order to form the basis of the environmental and socioeconomic assessment for the Land Use / Occupancy Resource Use Permit. On March 18, 2014, Trans

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Mountain extended an invitation to Penticton Indian Band to attend a Parks Workshop in Hope, BC, on March 26, 2014. Information gathered in this workshop would be included into the Land Use / Occupancy Resource Use Permit and would also be used in Trans Mountain's continued engineering, construction and reclamation planning. Penticton Indian Band was not in attendance.

To date, Penticton Indian Band has not expressed interest to discuss the Land Use / Occupancy Resource Use Permit or to provide information to Trans Mountain. Trans Mountain remains open to continuing to meet and discuss the Land Use / Occupancy Resource Use Permit and Aboriginal interests potentially affected by the proposed pipeline corridor.

#### 4.1.9 Lytton First Nation

Lytton First Nation was identified by Trans Mountain and BC Parks as a community that will have an interest in the proposed pipeline corridor through Coquihalla Summit Recreation Area or have Aboriginal interests potentially affected by the proposed pipeline corridor in Coquihalla Summit Recreation Area.

On March 14, 2014, Lytton First Nation received a letter explaining the purpose of the Land Use / Occupancy Resource Use Permit, timelines for submission to BC Parks, and a proposed schedule of field studies that would occur in the recreation area to form the basis of the environmental and socio-economic assessment for the Land Use / Occupancy Resource Use Permit.

To date, Lytton First Nation has not expressed interest to discuss the Land Use / Occupancy Resource Use Permit or to provide information to Trans Mountain. Trans Mountain remains open to continuing to meet and discuss the Land Use / Occupancy Resource Use Permit and Aboriginal interests potentially affected by the proposed pipeline corridor.

#### 4.1.10 Nicola Tribal Association

The Nicola Tribal Association is an organization identified by Trans Mountain and BC Parks as an entity that will have an interest in the proposed pipeline corridor in Coquihalla Summit Recreation Area and may have Aboriginal interests potentially affected by the proposed pipeline corridor in Coquihalla Summit Recreation Area. Made up of seven member nations, for the purposes of the Land Use / Occupancy Resource Use Permit, Trans Mountain is engaging with the following Nicola Tribal Association member communities:

- Nooaitch Indian Band;
- Shackan Indian Band; and
- Nicomen Indian Band.

On March 13, 2014, Nicola Tribal Association received a letter explaining the purpose of the Land Use / Occupancy Resource Use Permit, timelines for submission to BC Parks, and a proposed schedule of field studies that would occur in the recreation area in order to form the basis of the environmental and socioeconomic assessment for the Land Use / Occupancy Resource Use Permit. On March 17, 2014, Trans Mountain extended an invitation to Nicola Tribal Association to attend the Parks Workshop in Hope, BC, on March 26, 2014. Information gathered in this workshop will be included in the Land Use / Occupancy Resource Use Permit and will also be used in Trans Mountain's continued engineering, construction and reclamation planning. The workshop occurred on April 2, 2014, however, Nicola Tribal Association was not in attendance. A meeting was held on May 21, 2014, in which Nicola Tribal Association raised concerns regarding pipeline vibrations and the effects of this on wildlife. As well, concerns were raised regarding the elevational change along the pipeline route. These concerns were addressed within the meeting, as normal operation of any buried pipeline does not create sound or vibration levels that are dectectable. Trans Mountain also provided detailed on construction techniques along elevational changes along the pipeline route at the meeting.

Trans Mountain remains open to continuing to meet and discuss the Land Use / Occupancy Resource Use Permit and Aboriginal interests potentially affected by the proposed activity in the proposed pipeline corridor.

#### 4.1.11 Oregon Jack Creek Band

The Oregon Jack Creek Band was identified by Trans Mountain and BC Parks as a community that will have an interest in the proposed pipeline corridor through Coquihalla Summit Recreation Area or have Aboriginal interest potentially affected by the proposed pipeline corridor in Coquihalla Summit Recreation Area.

On March 13, 2014, Oregon Jack Creek Band received a letter explaining the purpose of the Land Use / Occupancy Resource Use Permit, timelines for submission to BC Parks, and a proposed schedule of field activities that would occur in the recreation area in order to form the basis of the environmental and socioeconomic assessment for the Land Use / Occupancy Resource Use Permit.

To date, Oregon Jack Creek Band has not expressed interest to discuss the Land Use / Occupancy Resource Use Permit or to provide information to Trans Mountain. Trans Mountain remains open to continuing to meet and discuss the Land Use / Occupancy Resource Use Permit and Aboriginal interests potentially affected by the proposed activity in the proposed pipeline corridor.

#### 4.1.12 Spuzzum First Nation

Spuzzum First Nation was identified by Trans Mountain and BC Parks as a community that will have an interest in the proposed pipeline corridor through Coquihalla Summit Recreation Area or have Aboriginal interests potentially affected by the proposed pipeline corridor in Coquihalla Summit Recreation Area.

On March 13, 2014, Spuzzum First Nation received a letter explaining the purpose of the Land Use / Occupancy Resource Use Permit, timelines for submission to BC Parks, and a proposed schedule of field activities that would occur in the recreation area in order to form the basis of the environmental and socioeconomic assessment for the Land Use / Occupancy Resource Use Permit.

To date, Spuzzum First Nation has not expressed interest to discuss the Land Use / Occupancy Resource Use Permit or to provide information to Trans Mountain. Trans Mountain remains open to continuing to meet and discuss the Land Use / Occupancy Resource Use Permit and Aboriginal interests potentially affected by the proposed activity in the proposed pipeline corridor.

#### 4.1.13 Peters Band

Peters Band was identified by Trans Mountain and BC Parks as a community that will have an interest in the proposed pipeline corridor within Coquihalla Summit Recreation Area or have Aboriginal interests potentially affected by the proposed pipeline corridor in the recreation area. Peters Band is a member of the Stó:lō Nation and is a member of the Tit Tribe and has a long-standing relationship with KMC as the existing TMPL system runs through the Peters Reserve #1 and Peters Reserve #1a, two reserves in which the members of the Peters Band reside.

On March 13, 2014, Peters Band received a letter from Trans Mountain explaining the purpose of the Land Use / Occupancy Resource Use Permit, timelines for submission to BC Parks, and a proposed schedule of field studies that would occur in the recreation area in order to form the basis of the environmental and socio-economic assessment for the Land Use / Occupancy Resource Use Permit. On March 17, 2014, Trans Mountain extended an invitation to Peters Band to attend a Parks Workshop in Hope, BC (described in Section 4.2), which occurred on March 27, 2014. Information gathered in this workshop would be included into the Land Use / Occupancy Resource Use Permit and would also be used in Trans Mountain's continued engineering, construction and reclamation planning. However, Peters Band was unable to attend.

To date, Peters Band has not expressed interest to discuss the Land Use / Occupancy Resource Use Permit or to provide information to Trans Mountain. Trans Mountain remains open to continuing to meet and discuss the Land Use / Occupancy Resource Use Permit and Aboriginal interests potentially affected by the proposed activity in the proposed pipeline corridor.

#### 4.1.14 Popkum First Nation

Popkum First Nation was identified by Trans Mountain and BC Parks as a community that will have an interest in the proposed pipeline corridor through Coquihalla Summit Recreation Area or have Aboriginal

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interests potentially affected by the proposed pipeline corridor in the recreation area. Popkum First Nation is a member of the Stó:lō Nation and is a member of the Tit Tribe. Popkum First Nation has a long standing relationship with KMC as the existing TMPL system runs through the Popkum Reserve #1 and Popkum Reserve #2, in which members of Popkum First Nation have an interest.

On March 13, 2014, Popkum First Nation received a letter from Trans Mountain explaining the purpose of the Land Use / Occupancy Resource Use Permit, timelines for submission to BC Parks, and a proposed schedule to field studies that will occur in the recreation area in order to form the basis of the environmental and socio-economic assessment for the Land Use / Occupancy Resource Use Permit. On March 17, 2014, Trans Mountain extended an invitation to Popkum First Nation to attend a Parks Workshop in Hope, BC, which occurred on March 26, 2014. Information gathered in this workshop would be included into the Land Use / Occupancy Resource Use Permit and would also be used in Trans Mountain's continued engineering, construction and reclamation planning. A representative from Popkum First Nation was in attendance and expressed no concerns.

Trans Mountain remains open to continuing to meet and discuss the Land Use / Occupancy Resource Use Permit and Aboriginal interests potentially affected by the proposed activity in the proposed pipeline corridor.

#### 4.1.15 Seabird Island Nation

Seabird Island Nation was identified by Trans Mountain as a community that will have an interest in in the proposed pipeline corridor through Coquihalla Summit Recreation Area or have Aboriginal interests potentially affected by the proposed pipeline corridor in the recreation area.

On March 13, 2014, Seabird Island Nation received a letter from Trans Mountain explaining the purpose of the Land Use / Occupancy Resource Use Permit, timelines for submission to BC Parks, and a proposed schedule of field studies that would occur in the recreation area in order to form the basis of the environmental and socio-economic assessment for the Land Use / Occupancy Resource Use Permit. On March 17, 2014, Trans Mountain extended an invitation to Seabird Island Nation to attend a Parks Workshop in Hope, BC, which occurred on March 26, 2014. Information gathered in this workshop would be included into the Land Use / Occupancy Resource Use Permit and would be used in Trans Mountain's continued engineering, construction and reclamation planning. However, Seabird Island Nation was unable to attend. On April 28, 2014, Trans Mountain extended an invitation to Seabird Island Nation to revisit the Land Use / Occupancy Resource Use Permit process and also note any issues and concerns that Seabird Island Nation may have with the proposed pipeline corridor through Coguihalla Summit Recreation Area.

To date, Seabird Island Nation has not expressed interest to discuss the Land Use / Occupancy Resource Use Permit or to provide information to Trans Mountain. Trans Mountain remains open to continuing to meet and discuss the Land Use / Occupancy Resource Use Permit and Aboriginal interests potentially affected by the proposed activity in the proposed pipeline corridor.

#### 4.1.16 Shxw'ow'hamel First Nation

Shxw'ow'hamel First Nation was identified by Trans Mountain as a community that will have an interest in the proposed pipeline corridor through Coquihalla Summit Recreation Area or Aboriginal interests potentially affected by the proposed pipeline corridor in the recreation area. Shxw'ow'hamel First Nation is a member of the Stó:lō Tribal Council and is also an entity within the Tit Tribe. Shxw'ow'hamel First Nation has a long-standing relationship with KMC as the existing TMPL system runs through the Ohamil Reserve #1, in which members of the Shxw'ow'hamel First Nation reside.

On March 13, 2014, Shxw'ow'hamel First Nation received a letter explaining the purpose of the Land Use / Occupancy Resource Use Permit, timelines for submission to BC Parks, and a proposed schedule of field studies that would occur in the recreation area in order to form the basis of the environmental and socioeconomic assessment for the Land Use / Occupancy Resource Use Permit. On March 17, 2014, Trans Mountain extended an invitation to Shxw'ow'hamel First Nation to attend a Parks Workshop in Hope, BC, which occurred on March 26, 2014 in which Shxw'ow'hamel First Nation was in attendance. Information gathered in this workshop would be included into the Land Use / Occupancy Resource Use Permit and would also be used in Trans Mountain's continued engineering, construction and reclamation planning. On

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April 28, 2014, Trans Mountain extended an invitation to Shxw'ow'hamel First Nation to revisit the Land Use / Occupancy Resource Use Permit and also to note any issues and concerns that Shxw'ow'hamel First Nation may have with the proposed pipeline corridor through Coquihalla Summit Recreation Area.

To date, Shw'ow'hamel First Nation has not provided a response to the invitation to meet specifically to discuss the Land Use / Occupancy Resource Use Permit or to provide information to Trans Mountain. Trans Mountain remains open to continuing to meet and discuss the Land Use / Occupancy Resource Use Permit and Aboriginal interests potentially affected by the proposed activity in the proposed pipeline corridor.

#### 4.1.17 Skawahlook First Nation

Skawahlook First Nation was identified by Trans Mountain as a community that will have an interest in the proposed pipeline corridor through Coquihalla Summit Recreation Area or have Aboriginal interests potentially affected by the proposed pipeline corridor in the recreation area.

On March 13, 2014, Skawahlook First Nation received a letter from Trans Mountain explaining the purpose of the Land Use / Occupancy Resource Use Permit, timelines for submission to BC Parks and a proposed schedule of field studies that would occur in the recreation area in order to form the basis of the environmental and socio-economic assessment for the Land Use / Occupancy Resource Use Permit. On March 17, 2014, Trans Mountain extended an invitation to Skawahlook First Nation to attend a Parks Workshop in Hope, BC. Information gathered in this workshop would be included into the Land Use / Occupancy Resource Use Permit and would also be used in Trans Mountain's continued engineering, construction and reclamation planning. The workshop occurred on March 26, 2014; however, Skawahlook First Nation was not in attendance. On May 9, 2014, Trans Mountain extended an invitation to a meeting regarding the Land Use / Occupancy Resource Use Permit for Coquihalla Summit Recreation Area, if Skawahlook First Nation desired further information.

To date, Skawahlook First Nation has not provided a response to the invitation to meet specifically to discuss the Land Use / Occupancy Resource Use Permit or to provide information to Trans Mountain. Trans Mountain remains open to continuing to meet and discuss the Land Use / Occupancy Resource Use Permit and Aboriginal interests potentially affected by the proposed activity in the proposed pipeline corridor.

#### 4.1.18 Soowahlie First Nation

Soowahlie First Nation was identified by Trans Mountain and BC Parks as a community that will have potential interests in the proposed pipeline corridor through Coquihalla Summit Recreation Area or have Aboriginal interests potentially affected by the proposed pipeline corridor in the recreation area. Soowahlie Indian Band is a member of the Stó:lō Nation and is a First Nation with the Ts'elxweyeqw Tribe. Soowahlie Indian Band has a long-standing relationship with KMC as the existing TMPL system runs through the Grass Reserve #1, in which members of the Soowahlie Indian Band have an interest.

On March 13, 2014, Soowahlie Indian Band received a letter from Trans Mountain explaining the purpose of the Land Use / Occupancy Resource Use Permit, timelines for submission to BC Parks and a proposed schedule of field studies that would occur in the recreation area in order to form the basis of the environmental and socio-economic assessment of the Land Use / Occupancy Resource Use Permit. On May 9, 2014, Trans Mountain extended an invitation to a meeting regarding the Land Use / Occupancy Resource Use Permit for in Coquihalla Summit Recreation Area, if Soowahlie Indian Band desired further information.

To date, Soowahlie Indian Band has not provided a response to the invitation to meet specifically to discuss the Land Use / Occupancy Resource Use Permit or to provide information to Trans Mountain. Trans Mountain remains open to continuing to meet and discuss the Land Use / Occupancy Resource Use Permit and Aboriginal interests potentially affected by the proposed activity in the proposed pipeline corridor.

#### 4.1.19 Nooaitch Indian Band

Nooaitch Indian Band was identified by Trans Mountain and BC Parks as a community that will have an interest in the proposed pipeline corridor through Coquihalla Summit Recreation Area or have Aboriginal interests potentially affected by the proposed pipeline corridor in the recreation area.

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On March 13, 2014, Nooaitch Indian Band received a letter from Trans Mountain explaining the purpose of the Land Use / Occupancy Resource Use Permit, timelines for submission to BC Parks and a proposed schedule of field studies that would occur in the recreation area in order to form the basis of the environmental and socio-economic assessment of the Land Use / Occupancy Resource Use Permit. On March 19, 2014, Trans Mountain extended an invitation to Nooaitch Indian Band to attend a Parks Workshop in Hope, BC, on March 26, 2014. Information gathered in this workshop would be included into the Land Use / Occupancy Resource Use Permit and would also be used in Trans Mountain's continued engineering, construction and reclamation planning. On March 20, 2014, Nooaitch Indian Band expressed discontent regarding the inadequate notice for the workshop and also noted that there was no workshop planned in Merritt. Trans Mountain indicated that the locations of workshops were chosen for their proximity to parks and offered to meet with Nooaitch Indian Band at their convenience and provide a technical briefing of the Land Use / Occupancy Resource Use Permit. On May 1, 2014, Trans Mountain extended an invitation to meet regarding the Land Use / Occupancy Resource Use Permit for Coquihalla Summit Recreation Area, if Nooaitch Indian Band desired further information. On May 21, 2014, a meeting was held with Nooaitch First Nation to discuss the Land Use / Occupancy Resource Use Permit and address any concerns or issues. Nooaitch Indian Band representatives had concerns regarding why the proposed routing through Coquihalla Summit Recreation Area does not following the existing TMPL alignment. At the meeting, Trans Mountain provided details on why the proposed routing does not follow the TMPL, mostly to reduce environmental impacts such as reducing the number of watercourse crossings and riparian areas crossed. avoiding unstable and hazardous terrain and better year-round access to the recreation area.

Trans Mountain remains open to continuing to meet and discuss the Land Use / Occupancy Resource Use Permit and Aboriginal interests potentially affected by the proposed activity in the proposed pipeline corridor.

#### 4.1.20 Boothroyd Band

Boothroyd Band was identified by Trans Mountain and BC Parks as a community that will have an interest in the proposed pipeline corridor through Coquihalla Summit Recreation Area or have Aboriginal interests potentially affected by the proposed pipeline corridor in the recreation area.

On March 13, 2014, Boothroyd Band received a letter from Trans Mountain explaining the purpose of the Land Use / Occupancy Resource Use Permit, timelines for submission to BC Parks and a proposed schedule of field studies that would occur in the recreation area in order to form the basis of the environmental and socio-economic assessment of the Land Use / Occupancy Resource Use Permit.

To date, Boothroyd Band has not provided a response to the invitation to meet specifically to discuss the Land Use / Occupancy Resource Use Permit or to provide information to Trans Mountain. Trans Mountain remains open to continuing to meet and discuss the Land Use / Occupancy Resource Use Permit and Aboriginal interests potentially affected by the proposed activity in the proposed pipeline corridor.

#### 4.1.21 Upper Similkameen Indian Band

Upper Similkameen Indian Band was identified by Trans Mountain and BC Parks as a community that will have an interest in the proposed pipeline corridor through Coquihalla Summit Recreation Area or have Aboriginal interests potentially affected by the proposed pipeline corridor in the recreation area.

On March 13, 2014, Upper Similkameen Indian Band received a letter from Trans Mountain explaining the purpose of the Land Use / Occupancy Resource Use Permit, timelines for submission to BC Parks and a proposed schedule of field studies that would occur in the recreation area in order to form the basis of the environmental and socio-economic assessment of the Land Use / Occupancy Resource Use Permit. On March 17, 2014, Trans Mountain extended an invitation to Upper Similkameen Indian Band to attend a Parks Workshop in Hope, BC, on March 26, 2014. Information gathered in this workshop would be included into the Land Use / Occupancy Resource Use Permit and would also be used in Trans Mountain's continued engineering, construction and reclamation planning. On April 30, 2014, Trans Mountain extended an invitation to meet regarding the Land Use / Occupancy Resource Use Permit for Coquihalla Summit Recreation Area, if Upper Similkameen Indian Band desired further information.

To date, Upper Similkameen Indian Band has not provided a response to the invitation to meet specifically to discuss the Land Use / Occupancy Resource Use Permit or to provide information to Trans Mountain.

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Trans Mountain remains open to continuing to meet and discuss the Land Use / Occupancy Resource Use Permit and Aboriginal interests potentially affected by the proposed activity in the proposed pipeline corridor.

#### 4.1.22 Shackan Indian Band

Shackan Indian Band was identified by Trans Mountain as a community that will have an interest in the proposed pipeline corridor through Coquihalla Summit Recreation Area or have Aboriginal interests potentially affected by the proposed pipeline corridor in the recreation area.

On April 30, 2014, Trans Mountain extended an invitation to meet regarding the Land Use / Occupancy Resource Use Permit for Coquihalla Summit Recreation Area, if Shackan Indian Band desired further information. On May 21, 2014, a meeting was held with Shackan Indian Band representatives to discuss the Land Use / Occupancy Resource Use Permit and address any concerns or issues. Shackan Indian Band representatives expressed concerns regarding the new route and explained that they would prefer the route follow the existing line where possible so that new area is not disturbed. As well, concerns were raised regarding the timelines and intervention that will occur to ensure that vegetation will be monitored post-construction. Shackan Indian Band also explained that due to the volume of projects moving through traditional territory, that there will be ongoing resistance from First Nations.

Trans Mountain remains open to continuing to meet and discuss the Land Use / Occupancy Resource Use Permit and Aboriginal interests potentially affected by the proposed activity in the proposed pipeline corridor.

#### 4.1.23 Chawathil First Nation

Chawathil First Nation was identified by Trans Mountain as a community that will have an interest in the proposed pipeline corridor through Chawathil First Nation or have Aboriginal interests potentially affected by the proposed pipeline corridor in the recreation area. Chawathil First Nation is a member of the Stó:lō Tribal Council.

On March 13, 2014, Chawathil First Nation received a letter from Trans Mountain explaining the purpose of the Land Use / Occupancy Resource Use Permit, timelines for submission to BC Parks and a proposed schedule of field studies that would occur in the recreation area in order to form the basis of the environmental and socio-economic assessment of the Land Use / Occupancy Resource Use Permit. On March 19, 2014, Trans Mountain extended an invitation to Chawathil First Nation to attend a Parks Workshop in Hope, BC, which occurred on March 26, 2014, in which Chawathil First Nation was in attendance. Information gathered in this workshop would be included into the Land Use / Occupancy Resource Use Permit and would also be used in Trans Mountain's continued engineering, construction and reclamation planning. At the workshop, Chawathil First Nation requested maps of Coquihalla Summit Recreation Area. On May 8, 2014, Trans Mountain extended an invitation to Chawathil First Nation to revisit the Land Use / Occupancy Resource Use Permit and also to note any issues and concerns that Chawathil First Nation may have with the proposed pipeline corridor through Coquihalla Summit Recreation Area.

To date, Chawathil First Nation has not provided a response to the invitation to meet specifically to discuss the Land Use / Occupancy Resource Use Permit or to provide information to Trans Mountain. Trans Mountain remains open to continuing to meet and discuss the Land Use / Occupancy Resource Use Permit and Aboriginal interests potentially affected by the proposed activity in the proposed pipeline corridor.

#### 4.1.24 Union Bar First Nations

Union Bar First Nations was identified by Trans Mountain as a community that will have an interest in the proposed pipeline corridor through Coquihalla Summit Recreation Area and may have Aboriginal interests potentially affected by proposed pipeline corridor in the recreation area. Union Bar First Nations has a long history of engagement with Trans Mountain via KMC as the existing TMPL system runs through the Kawakawa Lake Reserve #16, in which members of Union Bar First Nations reside.

On March 17, 2014, Trans Mountain extended an invitation to Union Bar First Nations to attend a Parks Workshop in Hope, BC which occurred on March 26, 2014. Information gathered in this workshop would

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be included in the Land Use / Occupancy Resource Use Permit and will also be used in Trans Mountain's continued engineering, construction and reclamation planning. Union Bar First Nations was in attendance.

Trans Mountain remains open to continuing to meet and discuss the Land Use and Occupancy Resource Use Permit and Aboriginal interests in the future impacts associated with activity in the proposed corridor.

#### 4.1.25 Yale First Nation

Yale First Nation that was identified by Trans Mountain as a community that will have an interest in the proposed pipeline corridor through Coquihalla Summit Recreation Area or have Aboriginal interests potentially affected by the proposed pipeline corridor in the park.

On March 17, 2014, Trans Mountain extended an invitation to Yale First Nation to attend a Parks Workshop in Hope, BC. Information gathered in this workshop would be included in the Land Use / Occupancy Resource Use Permit and will also be used in Trans Mountain's continued engineering, construction and reclamation planning. A meeting was held on May 14 2014 to discuss the Land Use / Occupancy Resource Use Permit. Yale First Nation expressed concern regarding the Cheam wetlands and archaeological studies that have occurred along the route. Yale First Nation representatives also expressed interest in participating in Traditional Ecological Knowledge Studies.

Trans Mountain remains open to continuing to meet and discuss the Land Use and Occupancy Resource Use Permit and Aboriginal interests in the future impacts associated with activity in the proposed corridor.

#### 5.0 PUBLIC CONSULTATION

Trans Mountain is committed to providing opportunities for stakeholders to become informed and provide input into projects which have potential to affect them. The policy is based on a belief that consultation builds trust and relationships between the company and its external stakeholder communities and improves Project decisions.

#### 5.1 Community Workshops

From February to July 2013, Trans Mountain conducted a series of community workshops and routing open houses to share information on the proposed pipeline corridor along the Trans Mountain study corridor, to provide information on the proposed pipeline corridor alternatives where it is likely that the route will deviate from the existing TMPL right-of-way and to discuss preliminary community benefits. The discussions also focused on the proposed pipeline corriodor in the recreation area.

#### 5.1.1 Hope, BC

On June 11, 2013, Trans Mountain held a Community Workshop for selected participants in Hope, BC. The workshop was designed to discuss the proposed pipeline corridor for the Project, including the proposed pipeline corridor through the Coquihalla Summit Recreation Area. Potentially interested stakeholders were contacted by phone and email and invited to participate. A number of follow-up phone calls were conducted to encourage invitees to participate. Of the 19 community representatives that were invited, 9 attended. Table 5.1.1-1 provides information on attendees at the Hope Community Workshop.

TABLE 5.1.1-1

PARTICIPANTS IN THE COMMUNITY WORKSHOP – HOPE, BC

Group Type	Group
Local Government	Chamber of Commerce
Local Business	Coquihalla Lakes Lodge
Local Government	District of Hope – Chief Administrative Officer and Mayor
Local Business	Faller – Independent
Academic Organization	Fraser Cascade Mountain School
Local Government	Fraser Valley Regional District
Local Charity	Hope Mountain Centre for Outdoor Living
Local Business	Nestlé Waters

Interested stakeholders that were invited but did not attend the event include:

- Coquihalla Snowmobilers;
- Climbers Access Society of BC Coquihalla;
- Advantage Hope;
- BC Mountaineering Club Coquihalla;
- Fire Chief;
- Hope Tourism; and
- Trails BC South Coquihalla Division.

#### 5.1.1.1 Summary of Consultation Outcomes at Community Workshop in Hope, BC

Table 5.1-1-2 provides information on key topics, interests and concerns raised relating to Coquihalla Summit Recreation Area at the Hope Community Workshop.

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#### **TABLE 5.1.1-2**

#### HOPE COMMUNITY WORKSHOP - COQUIHALLA SUMMIT RECREATION AREA KEY TOPICS

Topic	Summary of Concern	Coquihalla Summit Recreation Area Land Use / Occupancy Resource Use Permit Application Section	
Air	Concerns about dust impacts on mountain terrain and wetlands.	Section 8.1.4	
Land	The Coquihalla canyon is identified as having a high recreation value and is perceived to be a difficult place to construct and protect a pipeline. Although the Project's proposed routing bypasses the canyon, it continues to be raised as a topic of concern.	Section 8.1.13	
	Protection of native plant species to avoid the spread of invasive species.	Section 8.1.8	
	Impact of land disturbance and the ecosystem's ability to cope.	Section 8.0	
	Concerns about impacts on wildlife habitat.	Section 8.1.9	
Human Activity and Land Use	Request to minimize disruption to tourists and local recreation areas. Hope is defined by its outdoor recreation opportunities – Falls Lake (ski touring and snowmobiling).	Section 8.1.13	
Water	None.	N/A	

#### 5.1.2 Merritt, BC

On June 12, 2013, Trans Mountain held a Community Workshop for selected participants in Merritt, BC. Potentially interested stakeholders were contacted by phone and email and invited to participate. A number of follow-up phone calls were conducted to encourage invitees to participate. Of the 25 community representatives that were invited, 19 attended. In some cases, organizations were represented by more than one attendee. Table 5.1.2-1 provides information on the attendees at the Merritt Community Workshop.

**TABLE 5.1.2-1** PARTICIPANTS IN THE COMMUNITY WORKSHOP - MERRITT, BC

Group Type	Group
Local Business	Black Diamond Ranch
Local Business	Merritt Chamber of Commerce
Local Government	City of Merritt
Local Business	Coquihalla Snowmobile Club
First Nation	Lower Nicola Indian Band
Provincial Government	Work BC
Community Recreational Group	Merritt Mountain Biking Association
Provincial Government	Ministry of Forests, Lands and Natural Resource Operations
Community Recreational Group	Merritt Snowmobile Club
Environmental Non-Governmental Organization	Nicola Naturalist Society
First Nation	Nicola Tribal Council
Community Recreational Group	Nicola Valley ATV Club
Community Association	Nicola Watershed Community Roundtable
Community Recreational Group	Trails BC

Interested stakeholders that were invited but did not attend the event include:

- Merritt Rotary Club;
- Grasslands Conservation Council; and
- Nicola Fish and Game Club.

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#### 5.1.2.1 Summary of Consultation Outcomes at Community Workshop in Merritt, BC

Table 5.1.2-2 provides information on key topics, interests and concerns raised relating to Coquihalla Summit Recreation Area at the Hope Community Workshop.

TABLE 5.1.2-2

MERRITT COMMUNITY WORKSHOP – COQUIHALLA SUMMIT RECREATION AREA KEY TOPICS

Торіс	Summary of Concern	Coquihalla Summit Recreation Area Land Use / Occupancy Resource Use Permit Application Section
Air	Not concerned about construction noise – highway noise and impact on air quality maybe greater than construction. Request to respect noise bylaws.	Section 8.1.5
Land	Concern about protection of berry gathering area at area west side of Coquihalla – Juliette Creek, July Creek and trees north of Coquihalla Lake.	Section 8.1.12
	Concerns about potential effects on migratory patterns of wildlife.	Section 8.1.9
	Concerns about increased erosion after clearing for construction.	Section 8.1.2
	Note the presence of beavers and mountain beaver west side of Coquihalla near the summit.	Section 8.1.9
Human Activity and Land Use	High recreational use of right-of-way for ATVs, biking, motorbikes, geocaching, cross-country skiing, sleds and hunting. Request to provide alternate access and notification during construction.	Section 8.1.13
	Consider corrective measures to address existing invasive weed spread before creating an additional weed control issue.	Section 8.1.8
Water	Construction impacts on fish habitat – coho, bull trout and rainbow trout. Note rearing ponds for steelhead and summer run for steelhead near Coquihalla.	Section 8.1.6

#### 5.2 Parks Workshops

On March 26, 2014, Trans Mountain conducted a Parks Workshops in Hope, BC. The Coquihalla Summitt Recreation Area is located within the Fraser Valley Regional District. Stakeholders and local governments in the Hope region are most likely to be impacted by the proposed pipeline corridor.

The workshop was designed to reach out to the public and:

- share information on the proposed approach for undertaking the Land Use / Occupancy Resource Use Permit Application in Coquihalla Summit Recreation Area;
- share information on the proposed pipeline corridor;
- identify local environmental and socio-economic topics of concern; and
- discuss preliminary community benefits.

Potentially interested stakeholders were contacted by phone and email and invited to participate. An introductory email was sent to all selected participants on March 14, 2014, and a reminder to RSVP email was sent on March 20, 2014. An agenda was distributed to all attendees on March 25, 2014. At the workshops, the Project team provided attendees with a proposed overview of the proposed pipeline corridor in the recreation area, sought feedback of attendees on particular concerns relating to human activity and environment in the recreation area as well as discussed community benefits, in break-out groups.

Attendees consisted of representatives from key First Nations, community groups, local government and park users that may have an interest in the potential impacts of the proposed development in the recreation area. Of the 26 stakeholders invited, 15 attended, with some organizations having more than one attendee. The list of attendees is provided in Table 5.2-1.

#### **TABLE 5.2-1**

#### PARTICIPANTS IN THE PARKS WORKSHOP - HOPE, BC

Group Type	Group
First Nation	Cheam First Nation
First Nation	Shxw'owhamel First Nation
First Nation	Chawathil First Nation
First Nation	Union Bar First Nation
First Nation	Lower Nicola Indian Band
Local Business	Spectra Energy
Community Recreational Group	Backcountry Horsemen of BC
Local Business	Coquihalla Lakes Lodge
Community Recreational Group	Coquihalla Summit Snowmobile Club
Local Government	District of Hope
Local Government	Fraser Valley Regional District
Community Recreational Group	Hope Pathways
Community Recreational Group	Trails BC

Interested stakeholders who were invited but did not attend the event include:

- Ministry of Transportation Avalanche Forecasters;
- BC Mountaineering Club;
- Trails BC South Coquihalla Division;
- · Climbers Access Society of BC;
- Newsomesnow Quest Inc. Backcountry Ski Guide;
- Ministry of Forests, Lands and Natural Resource Operations Chilliwack Recreation Officer;
- Fraser Cascade Mountain School; and
- Federation of Mountain Clubs of BC.

#### 5.2.1 Concerns Raised

Table 5.2.1-1 provides information on key topics and concerns raised at the Parks Workshop in Hope, BC, regarding the Coquihalla Summit Recreation Area.

#### **TABLE 5.2.1-1**

#### PARKS WORKSHOP - HOPE, BC

Topic	Summary of Interest or Concern	Coquihalla Summit Recreation Area Land Use / Occupancy Resource Use Permit Application Section
Air	None.	N/A
Land	Impact on landscape of using herbicides for invasive species.	Section 8.1.8
	Concern with the extent of tree clearing along the right-of-way considering the proximity of other companies rights-of-way.	Section 3.0
	Impact on species at risk within Coquihalla Summit Recreation Area.	Section 8.1.10
	Risk of slope stability and landslides.	Section 8.1.1
Human Activity and Land Use	Spill impact to Coquihalla River summer run, steelhead habitat, Dolly Varden Char and salmon spawning downstream.	Secton 8.1.6

### TABLE 5.2.1-1 Cont'd

Topic	Summary of Interest or Concern	Coquihalla Summit Recreation Area Land Use / Occupancy Resource Use Permit Application Section
Human Activity and Land Use (cont'd)	Construction impacts to overall beauty of Coquihalla River and Coquihalla Lakes fishing.	Section 8.1.13
	Scenic overflow from area near hiking path trail head that is used by wildlife.	Section 8.1.9
	Blocking trail access to Kettle Valley Railway. Blocking Coquihalla Summit Recreation Area access points could negatively impact Hope tourism especially ski touring and snowshoeing. The Recreation Area is the single biggest expansion opportunity for Hope tourism. Clearing of vegetation may result in avalanche hazard on steep slopes if the route traverses popular ski routes. Adjustments to routes and signage as required.	Section 8.1.13
	Benefit to recreation by being able to use new route corridor to access other and connect trail areas.	Section 8.1.13
	Precedence of industrial use in Coquihalla Summit Recreation Area.	Section 8.1.13
	Commercial recreation and permitted users summer and winter may be affected. Conversations with permitted users, volunteer user groups and land managers are needed prior to construction.	Section 8.1.13
	Hunting of deer and mountain sheep in park. Collection off stinging nettles, devils club and ice cream berries for medicinal purposes. Medicinal plants are found mostly in gullies.	Section 8.1.12
Water	Impact to fish and fish habitat at waterway crossing in Coquihalla Summit Recreation Area and the ability to use horizontal directional drilling (HDD) techniques.	Section 8.1.6
	Sensitive overflow and visible construction from Trans Canada Trail and Kettle Valley Railway.	Section 8.1.13

#### **Community Benefits** 5.2.2

Table 5.2.2-1 provides key ideas raised by stakeholders for benefits and offset candidates.

#### **TABLE 5.2.2-1**

## PARKS WORKSHOP - HOPE, BC

Summary of Potential Park Benefit	Priority
Restoration of existing right-of-way.	Medium
Replanting in disturbed areas.	Medium
Wildlife inventories and migration studies for wolverine and grizzly bears.	High
Study road kill data to determine opportunities to create wildlife corridors or additional wildlife fencing south of Falls Lake.	Medium
Out of Coquihalla Summit boundaries along the highway bank stabilization.	Low
Out of Coquihalla Summit boundaries steelhead habitat or population enhancement.	Low
Interpretive history and recreational signage, kiosks and maps.	High
Improve the Trans Canada Trail from Coquihalla Lakes to Othello Road (e.g., bridge over Coquihalla, clear sections of the Kettle Valley Railway, create better non-highway tail access and facilities) to enhance tourism.	High
Infrastructure for avalanche tech (e.g., snowmobiles and backcountry huts).	Low
Assist in updating the Coquihalla Summit Recreation Area Management Plan by providing the results of TMEP studies and funds.	High
Consider the right-of-way could provide space for non-motorized trails (e.g., cycling, walking, cross country skiing).	High
Consider the right-of-way for equestrian trails.	High
Safety seminars for volunteer and users including how to identify pipeline issues.	High
Donate funds from merchantable timber collected from clearing right-of-way to trail projects and park infrastructure.	High
Parking for winter and summer recreation users (e.g., parking areas for trucks at Juliet exit of near Mine Creek exit).	High
Coquihalla Lake Picnic Site.	High
Protect areas where there is medicinal plant use and archaeological sites.	High

#### 5.3 Local Government

Trans Mountain Expansion Project

Trans Mountain shared Project updates and proposed routing with the Chief Administrative Officers of the District of Hope and City of Merritt on numerous occasions during project and routing briefings. The Chief Administrative Officers of the District of Hope and City of Merritt as well as other staff members attended, and provided input to the Parks Workshop in Hope as well as other project briefing meetings.

While the City of Merritt and the District of Hope representatives did not take a position in relation to the proposed pipeline corridor through Coquihalla Summit Recreation Area, no concerns were raised.

Table 5.3-1 outlines the Trans Mountain's public consultation activities with the City of Merritt and the District of Hope.

TABLE 5.3-1

KEY CONSULTATION ACTIVITES WITH LOCAL GOVERNMENT STAKEHOLDERS FROM THE CITY

OF MERRITT AND DISTRICT OF HOPE

Stakeholder Group /	Method of Engagement	Number of		Date of Consultation	
Agency Name	Activity	Attendees	Point of Contact	Activity	Reason for Engagement
City of Merritt	In-person	4	Chief Administrative Officer	October 30, 2012	Provide information about the Project at a public information session.
District of Hope	In-person	-	Chief Administrative Officer	November 28, 2012	Provide information about the Project. Interest in economic benefits.
District of Hope	In-person	12	Chief Administrative Officer	February 12, 2013	Provide overview about the Project, routing, engagement and economic benefits. Questions were raised by Councillors addressed to the Senior Project Director regarding employment plans, tax rates and exemptions.
District of Hope	In-person	2	Chief Administrative Officer	June 11, 2013	Community Workshop (Refer to Section 5.1.1 for comments provided from stakeholders during this event).
District of Hope	In-person	1	Chief Administrative Officer	October 21, 2013	Meeting to discuss community park plans and the opportunities for providing in-kind equipment support.
City of Merritt	In-person	1	Chief Administrative Officer	November 22, 2013	Meeting to discuss economic opportunities and local economic opportunities.
District of Hope	In-person	4	Chief Administrative Officer	January 29, 2014	Meeting to provide update on routing, landowner discussions and next steps for routing consultation in Hope.
District of Hope	In-person	3	Chief Administrative Officer	March 26, 2014	Parks Workshop (Refer to Section 5.2 for comments provided by stakeholders during this event).

#### 6.0 ECONOMIC BENEFITS

In May 2013, pursuant to the NEB Reasons for Decision RH-001-2012, the Project received approval pursuant to Part IV of the *NEB Act* for the toll methodology, terms and conditions that would apply to the Project. This approval reinforces market support for the Project and provided Trans Mountain with the necessary economic incentive to proceed with design, consultation and regulatory applications.

The economic benefits to the province of BC that result from the Project include both short and long-term benefits to both the region surrounding Coquihalla Summit Recreation Area and the province as a whole.

#### 6.1 Description of Economic Impact Analysis

Trans Mountain conducted an economic impact analysis of the Project as part of its application to the NEB, the details of which are summarized in part below. In conducting the economic impact analysis, Trans Mountain considered various aspects of metrics, both direct and indirect, including the:

- estimated total expenditures attributable to construction of the Project;
- value added (i.e., revenue less the value of purchased inputs) to the economy attributable to construction of the Project (the GDP);
- employment that would result from the Project, measures in "full-time equivalent" (FTE);
- labour income being the amount of income that would accrue to households because of employment generated by construction of the Project;
- revenues that would accrue to the federal government (*i.e.*, personal and goods and service taxes and excise duty) as a result of the Project;
- revenues that would accrue to both the AB and BC governments (*i.e.*, personal, corporate, commodity and provincial taxes) as a result of the Project; and
- revenues that would accrue to municipal governments (*i.e.*, licenses, fees, permits and business taxes) as a result of the Project.

#### 6.2 Overall Estimated Economic Impact to BC

Overall, the proposed expansion will enhance Canada's ability to reach diversified markets with its oil, while also increasing tax revenues that can be used to fund government projects and services that Canadians depend on such as health care, education, roads and infrastructure.

Trans Mountain plans to spend \$5.4 billion by the end of 2017 to construct the pipeline and associated facilities, and a further \$2.4 billion to operate it for the first 20 years. BC's economy is forecast to grow by \$2.8 billion (GDP) through construction-related spending, and up to \$11.3 billion including Project operations through 2037.

The Project is anticipated to generate substantial provincial and municipal tax revenue. Provincial governments' revenues associated with the Project are anticipated to be in the order of \$1.7 billion, with BC government receiving \$1 billion in provincial taxes. Municipal tax revenues that can support community services and infrastructure are estimated to increase approximately \$23 million annually or \$460 million over 20 years of operations.

The estimated tax revenues to the Government of Canada are \$2.1 billion over the life of the Project. Construction is scheduled in 2016 and 2017 with an estimated 4,500 workers at peak manpower. Trans Mountain expects to create 108,000 person-years of employment from construction and the first 20 years of operations across Canada; of this, at least 66,000 person years of employment will be in BC.

The proposed expanded operations are anticipated to create 50 new full time permanent positions in BC.

The economic impact to BC that is estimated to result from the Project is summarized in Table 6.2-1. Once operational, the Project is also expected to generate substantial economic and fiscal impacts. Operational impacts of the Project are assessed over its first 20 years of service under two scenarios. Economic modeling focused on a 20 year operating period given certainty of shipper contracts during this period, and thus should be considered conservative given that the operating life of the Project is anticipated to be over 50 years or more. The first scenario considers the impacts of only the long-term contracts that have been signed and can be considered the minimum impact (minimum scenario). The second considers the scenario where the spot capacity in the pipeline is fully utilized and can be considered the maximum impact (maximum scenario).

TABLE 6.2-1

PROJECT CONTRIBUTIONS TO BRITISH COLUMBIA OUTPUT, GDP, AND PROJECT RELATED EMPLOYMENT, LABOUR INCOME AND TAX REVENUES

Area	Direct Effects	Indirect Effects	Induced Effects	Total Effects
Construction Phase				
Gross Output Generated (\$2012 – thousands)	3,206,359	902,379	1,165,250	5,273,988
GDP Generated (\$2012 – thousands)	1,518,005	514,761	765,298	2,789,063
Employment (Person-Years)	20,675	6,599	8,590	35,864
Labour Income (\$2012 – thousands)	1,226,085	358,745	323,496	1,908,327
Federal Taxes (\$2012 – millions)		-		85.6
Provincial Taxes (\$2012 – millions)				308.7
Operations Phase – Minimum Scenario				
Gross Output Generated (\$2012 – thousands)	8,938,720	2,637,387	936,178	12,512,285
GDP Generated (\$2012 – thousands)	6,427,793	1,505,554	606,810	8,540,156
Employment (Person-Years)	4,837	18,558	6,868	30,263
Labour Income (\$2012 – thousands)	400,036	1,013,940	259,493	1,673,019
Federal Taxes (\$2012 – millions)			191.8	
Provincial Taxes (\$2012 – millions)	Provincial Taxes (\$2012 – millions)			727.0
Operations Phase – Maximum Scenario				
Gross Output Generated (\$2012 – thousands)	11,589,801	3,419,594	1,213,833	16,223,229
GDP Generated (\$2012 – thousands)	8,334,173	1,952,077	786,780	11,073,030
Employment (Person-Years)	6,271	24,062	8,905	39,238
Labour Income (\$2012 – thousands)	518,681	1,314,075	336,454	2,169,210
Federal Taxes (\$2012 – millions)			248.7	

#### 6.3 Conservation Offsets

#### 6.3.1 Design of the Valuation Model

A TMEP goal is that the Project produces no net loss of native biodiversity and the integrity of ecosystems in the regions of the four protected areas and one recreation area through which the Trans Mountain pipeline corridor passes. Further, where practical the Project shall strive to produce a net benefit to native biodiversity and ecological integrity in those regions. This goal demonstrates Trans Mountain's commitment to exceed minimum standards in areas with acknowledged biodiversity values.

The Project has pursued its goal by employing a three step strategy, conventionally known as "the mitigation hierarchy":

#### 6.3.1.1 Avoidance

Through route selection and Project design, TMEP has consulted with potentially affected individuals and groups and selected a corridor that avoids environmental and socio-economic effects, to the extent feasible, including unnecessary disturbance and negative impacts to ecosystems in the recreational area through which the proposed pipeline corridor passes.

#### 6.3.1.2 Mitigation

Industry-leading mitigation techniques, including on-site reclamation and restoration, has been proposed for those disturbances and negative impacts which cannot be avoided in the BC provincial parks and recreation area. These measures are described in Section 8.0.

#### 6.3.1.3 Offsetting

Disturbances and negative impacts that can neither be avoided nor mitigated are identified in Section 8.0 as potential adverse residual effects. TMEP proposes to adopt the Business and Biodiversity Offsets Programme [BBOP] (BBOP 2012a) to identify and undertake an offset project, or suite of projects, in order to produce a measurable ecological benefit of a comparable nature and extent, so as to result in no net loss of native biodiversity and ecological integrity on a regional basis. TMEP will work with land managers, stakeholders and Aboriginal groups, with the advice of internationally-recognized experts to identify and select the most appropriate project(s). Where possible, the offset project will be designed to result in a net benefit to the recreational values of the park.

The third step of the mitigation hierarchy provides independent recommendations for an approach that TMEP could apply to achieve no net loss of native biodiversity and ecological integrity in the recreation area. This biodiversity offset program assumes that irreplaceable habitat has been avoided.

### 6.3.2 BBOP Offset Design Process

The BBOP process for designing biodiversity offsets includes the following steps (BBOP 2012b,c,d).

- 1. Review Project scope and activities.
- 2. Review the legal framework and/or policy context for a biodiversity offset.
- 3. Initiate a stakeholder participation process.
- 4. Determine the need for an offset based on residual adverse effects.
- 5. Choose methods to calculate loss/gain and quantify residual losses.
- Review potential offset locations and activities and assess the biodiversity gains which could be achieved at each.
- 7. Calculate offset gains and select appropriate offset locations and activities.
- 8. Record the offset design and enter the offset implementation process.

Trans Mountain conducted a Parks Workshops (as described in Section 5.2) in which stakeholder participation was encouraged to determine potential community benefits to BC Parks for consideration against park management and benefit priorities. Many of these priorities included a recreational focus. The process and results of this part of the workshop is currently being reviewed by BC Parks.

#### 7.0 SETTING OF COQUIHALLA SUMMIT RECREATION AREA

The environmental and socio-economic setting along the proposed pipeline corridor within Coquihalla Summit Recreation Area is described in Table 7.0-1. Information collected for the setting was obtained both from desktop overviews and field assessments. Desktop information was obtained using existing literature, and internet searches, all of which are cited in Section 10.0 of this report.

#### **TABLE 7.0-1**

## SUMMARY OF BIOPHYSICAL AND SOCIO-ECONOMIC ELEMENTS AND CONSIDERATIONS IN COQUIHALLA SUMMIT RECREATION AREA

Biophysical and Socio-Economic Element	Summary of Considerations
Physical and Meteorological Environment	<ul> <li>The proposed pipeline corridor lies in the Cascade Mountains and Coast Mountains Physiographic regions (Holland 1976).</li> </ul>
	<ul> <li>Bedrock types are dominated by strongly folded and metamorphized sedimentary and volcanic rocks that have been intruded by granitic batholiths. The rock formations have been sheared due to the high mica content in the rocks (BC Parks 1990).</li> </ul>
Soil and Soil Productivity	<ul> <li>Soils in along the proposed pipeline corridor in Coquihalla Summit Recreation Area have not previously been mapped by the Canada Land Inventory Index (CLI 2013).</li> </ul>
	<ul> <li>A soils survey was undertaken in August 2014 by Mentiga Pedology Consultants Ltd; soils along the proposed pipeline corridor in Coquihalla Summit Recreation Area are mostly humo-ferric podzols with no topsoil. These soils are susceptible to wind and water erosion. The parent material of the humo-ferric podzols are gravelly and coarse textured.</li> </ul>
	Bedrock is encountered along the proposed pipeline corridor.
Water Quality and Quantity	<ul> <li>The proposed pipeline corridor through the recreation area is located in the Fraser Canyon Watershed of the Fraser River Basin.</li> </ul>
	<ul> <li>The proposed pipeline corridor crosses Falls Lake and Boston Bar Creek, several unnamed channels and one non- classified drainage (Dry Gulch).</li> </ul>
	<ul> <li>Falls Lake Creek is provincially rated as an S3 perennial watercourse. During fisheries field studies conducted in July 2013, streamflow at Falls Lake Creek was measured at 0.39 m³/s and mean channel width and mean bank height was measured at 4.43 m and 0.68 m, respectively.</li> </ul>
	<ul> <li>Boston Bar Creek is provincially rated as an S5 perennial watercourse. During fisheries field studies conducted in October 2013, streamflow at Boston Bar Creek was measured at 0.07 m³/s and mean channel width and mean bank height was measured at 5.80 m and 0.82 m, respectively.</li> </ul>
	<ul> <li>Several of the unnamed channels were determined to be flowing during fisheries field studies conducted in July and October 2013.</li> </ul>
	<ul> <li>The provincial instream work window for Falls Lake Creek is August 1 to October 31 and Boston Bar Creek is August 1 to August 31. There are no provincial instream work windows for the unnamed channels.</li> </ul>
	<ul> <li>No provincial or federal surficial geology mapping is available within the Coquihalla Summit Recreation Area. However mapping completed by BGC Engineering (2013) indicates that surficial materials identified from RK 991 to RK 992 consists of fluvial sediments; RK 992 to RK 993.5 consists of glacial till; RK993.5 to RK995.5 consists of colluvium; RK995.5 to RK998 consists of glacial till; RK998 to RK999.5 consists of colluvium; RK999.5 to RK1000 consists of glacial till; RK 1000 to RK 1001 consists of colluvium; and RK 1001 to RK 1004.5 consists of glacial till.</li> </ul>
	<ul> <li>The bedrock exposed in the proposed pipeline corridor at RK 996.5, RK 1000 to RK 1001 consists of granodioritic intrusive rocks.</li> </ul>
	No aquifers were mapped by the BC MOE within the Coquihalla Summit Recreation Area boundaries.
	<ul> <li>Groundwater flows generally follow local topography with recharge occurring either directly over the unmapped aquifers or from the valley walls (mountain sides), with groundwater discharge feeding the local river systems or flowing within fluvial sediments subparallel to the valley axis. Sections of the proposed pipeline corridor along the Coquihalla Highway are heavily confined by steep mountain approaches on both sides of the pass.</li> </ul>
	<ul> <li>Four water wells are noted in the BC WELLs database, three in the vicinity of the toll booths near RK993.7; the nearest is offset 180 m from the proposed pipeline corridor. One of these wells is listed as a drinking water supply well the other has a depth to water of 5 m. The fourth well, a domestic well with a 38 m depth to water, is situated near RK992.5, approximately 300 m from the proposed pipeline corridor.</li> </ul>
	<ul> <li>The area is susceptible to changes in shallow groundwater flow patterns (i.e., areas where the pipeline cuts across a slope).</li> </ul>
Air Emissions	There are no known permanent residences within 250 m of the proposed pipeline corridor in Coquihalla Summit Recreation Area.
	• Existing factors affecting air quality in Coquihalla Summit Recreation Area include emissions from intermittent vehicle traffic exhaust from Highway 5, nearby forestry road.
	<ul> <li>The primary source of air emissions (criteria air contaminants [CACs]) during construction will be from fuel combustion related to the use of transportation vehicles and heavy equipment. During operation, emissions will be limited to transportation and equipment use during maintenance activities. CACs expected to be emitted from Project-related activities include sulphur oxides, volatile compounds, carbon monoxide and particulate matter.</li> </ul>

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### TABLE 7.0-1 Cont'd

Biophysical and Socio- Economic Element	Summary of Considerations
Air Emissions (cont'd)	A temporary increase in airborne emissions is anticipated during pipeline construction but will not result in an increase in airborne emissions during operations and maintenance. Therefore, a detailed assessment of air and GHG emissions is not warranted.
Acoustic Environment	Sources of existing sound in the Acoustic Environment LSA are traffic travelling along Highway 5 and natural sound (e.g., wind, wildlife).
	<ul> <li>No receptors were identified within the Acoustic Environment LSA. The 1.5 km LSA boundary will be used for compliance assessment.</li> </ul>
	The Ambient Sound Level (ASL) in the absence of regulated energy facilities is approximately 35 dBA at night and 45 dBA during the day based on BC OGC Guidelines (BC OGC 2009).  A second of the control of the co
	<ul> <li>A measurement program to define sound emissions from the existing pipeline was not conducted. The normal operation of any buried pipeline does not create sound or vibration levels that are detectable. Therefore the BC OGC ASL is considered valid.</li> </ul>
	<ul> <li>Public recreational use in the recreation area may result in some human sourced sound, however, the BC OGC ambient is expected to represent normal ambient in undeveloped and sparsely occupied spaces.</li> </ul>
Fish and Fish Habitat	The proposed pipeline corridor crosses two fish-bearing watercourses (Falls Lake Creek and Boston Bar Creek) in Coquihalla Summit Recreation Area. Falls Lake Creek has been rated as having high levels of fish habitat potential for rearing, overwintering and migration, spawning habitat for salmonids at the crossing location while Boston Bar Creek has low levels of fish habitat potential due to a permanent waterfall barrier downstream of the crossing. Previously documented fish species at Falls Lake Creek and Boston Bar Creek include: bull trout/Dolly Varden and rainbow trout/steelhead.
	<ul> <li>Falls Lake Creek and Boston Bar Creek are provincially rated as S3 and S5 perennial watercourses, respectively.</li> <li>During fisheries field studies conducted in October 2013, streamflow at Falls Lake Creek was measured at 0.39 m³/s and mean channel width and mean bank height were measured at 4.4 m and 0.68 m, respectively. Streamflow at Boston Bar Creek was measured at 0.07 m³/s and mean channel width and mean bank height were measured at 5.8 m and 0.82 m, respectively.</li> </ul>
Wetlands Loss and Alteration	<ul> <li>The Coquihalla Summit Recreation Area is located within the Okanagan Range Ecoregion, a component of the Montane Cordillera Ecozone of Canada. The dominant ecosystem of this ecoregion is subalpine forest and is characterised by Engelmann spruce, subalpine fir and lodgepole pine (Ecological Stratification Working Group 1995).</li> </ul>
	The Coquihalla Summit Recreation Area is located on the border between two Wetland Regions, the Intermountain Prairie Wetland Region and the South Coastal Mountain Wetland Region. Wetlands characteristic of the Intermountain Prairie Wetland Region include marshes bordering fresh to saline ephemeral or semi-permanent shallow waters. Wetlands characteristic of the South Coastal Mountain Wetland Region include fens and marshes (Government of Canada 1986).
	• The Coquihalla Summit Recreation Area is situated within six Biogeoclimatic (BGC) zones, these include: the Coastal Western Hemlock (CWH); the Coastal Mountain-heather Alpine (CMHA); the Interior Mountain-heather Alpine (IMHA); the Mountain Hemlock (MH); the Engelmann Spruce - Subalpine Fir (ESSF) and the Montane Spruce (MS). Wetlands characteristic of the CWH BGC Zone include forested, shrubby and non-woody bogs (BC MOF 1999a, Meidinger and Pojar 1991). Wetlands within the MH BGC Zone occur along streams and in parkland areas, forested bogs inhabit very wet sites at lower elevations (BC MOF 1997, Meidinger and Pojar 1991). Within the ESSF BGC Zone, fens and marshes exist, although these wetlands are not as productive as equivalent areas in adjacent lower elevation BGC zones (BC Ministry of Forests (BC MOF) 1998, Meidinger and Pojar 1991). Wetlands common to the MS BGC Zone include fens vegetated by willows, sedges and glow moss (BC MOF 1999b, Meidinger and Pojar 1991). Wetlands are not typically found within the CMHA and IMHA BGC zones (BC MOF 2006, Meidinger and Pojar 1991).
	<ul> <li>Wetlands provide habitat for native plants and wildlife species, including nesting and foraging habitat for a variety of bird species, forage and cover for ungulates and fur-bearers and breeding habitat for amphibians. Wetlands provide water storage, groundwater recharge and natural filtering of sediments.</li> </ul>
	<ul> <li>There are no Ramsar Wetlands of International Importance (Bureau of the Convention on Wetlands 2014), Important Bird Areas (IBAs) (Bird Studies Canada and Nature Canada 2012), Western Hemisphere Shorebird Reserves (WSHRN 2014), Migratory Bird Sanctuaries (Environmental Canada 2013) or Ducks Unlimited Canada (DUC) Priority Areas (DUC 2014) located within the Coquihalla Summit Recreation Area. The proposed pipeline corridor does not cross any DUC projects within the Coquihalla Summit Recreation Area (Harrison pers. comm) therefore no additional mitigation or consultation is recommended.</li> </ul>
	<ul> <li>No wetlands were identified as being crossed by the proposed pipeline corridor within the Coquihalla Summit Recreation Area during the ground-based wetland surveys. Ground-based wetland surveys were conducted on June 17, 2014 within the Coquihalla Summit Recreation Area.</li> </ul>
Vegetation	The primary role of the Coquihalla Summit Recreation Area is to protect the Coast-Cascade dry belt landscape and provide rest break opportunities for travellers along the Coquihalla Highway.
	The proposed pipeline corridor within the Coquihalla Summit Recreation Area is located entirely on Crown-owned land in the Engelmann Spruce Subalpine Fir (ESSF), Coastal Western Hemlock (CWH), Mountain Hemlock (MH) and Montane Spruce (MS) BGC zones.

Coquihalla Summit Recreation Area
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### TABLE 7.0-1 Cont'd

REV 0

Biophysical and Socio- Economic Element	Summary of Considerations
Vegetation (cont'd)	The ESSF BGC Zone is the uppermost (highest elevation) zone in southern interior BC and is characterized by mountainous terrain. The climate is generally cool with a short growing season and a long winter. As a result most of the precipitation (50-70%) is in the form of snow. Engelmann spruce and subalpine fir are the dominant climax tree species. Engelmann spruce typically dominates the canopy of mature stands with subalpine fir being more common in the understory. In drier areas or areas affected by fire, lodgepole pine may be dominant (Meidinger and Pojar 1991). One variant of the ESSF, the Moist Warm Engelmann Spruce Subalpine Fir variant (ESSFmw), occurs in the recreation area.
	The landscape of the CWH BGC zone consists largely of western hemlock, western red cedar, and Douglas-fir forests. The understory of zonal ecosystems consists of a variable herb layer and a high proportion of feathermosses. A mixture of other evergreen and deciduous trees are also common in the CWH zone, including amabilis fir, yellow-cedar, Sitka spruce, shore pine, red alder and bigleaf maple. Drier portions are found in the central and southern parts of the CWH zone. Shore pine can be found in very dry, well-drained sites, and very dry sites, such as in bogs. Black cottonwood, red alder, and Sitka spruce occur along river floodplains and riparian areas (Meidinger and Pojar 1991). One variant of the CWH, the Coastal Western Hemlock variant (CWHms1), occurs in the recreation area.
	• The MH BGC Zone occurs at relatively high elevations (400-1,000 m) and is characterized by short, cool summers and long, cool, wet winters, with heavy snow cover for several months (Meidinger and Pojar 1991). The most common tree species in the zone are mountain hemlock, amabilis fir and yellow-cedar, although they do not grow in continuous stands and are largely confined to lower elevations. Other characteristics of the MH Zone are: the high occurrence of shrubs such as blueberries and copperbush; the relatively low occurrence of herbs; the dominance of bryophytes and the high significance of advance regeneration of amablis fir and mountain hemlock (Meidinger and Pojar 1991). Subalpine heath areas located at higher elevations are dominated by heathers, partridge-foot, alpine club-moss and crowberry. One variant of the MH, the Leeward Moist Maratime Mountain Hemlock variant (MHmm2), occurs in the recreation area.
	The MS BGC Zone is characterized by climax stands of hybrid white spruce and subalpine fir. Common understory species include black huckleberry, pinegrass, falsebox, Utah honeysuckle and grouseberry. Extensive, young and maturing seral stands of lodgepole pine are common in areas following wildfires. Douglas-fir is a climax species on slopes with south aspect. Western red cedar occurs in wetter areas that are transitional to the ICH zone. Trembling aspen occurs throughout the zone. Wetlands area are uncommon due to mountainous topography but where they do occur they are usually shrub fens (Meidinger and Pojar 1991). One variant of the MS, the Cascade Moist Warm Montane Spruce variant (MSmw1), occurs in the recreation area.
	There are no vegetation species designated under the BC Wildlife Act that are known to occur in the CWH, ESSF, MH or MS BGC zones. No vegetation species listed as Provincial Identified Wildlife have the potential to occur in the variants crossed by the corridor within the recreation area (BC CDC 2014). A total of 19 vascular plant species and 9 non-vascular species are listed under Schedule 1 of the Species at Risk Act (SARA) have the potential to occur in the CWH, ESSF, MH or MS BGC zones (BC Conservation Data Centre [CDC] 2014). There are three vascular plant species and six non-vascular species listed under Schedule 1 of SARA that have the potential to occur in the variants (CWHms1, ESSFmw, MHmm2, MSmw1) crossed by the corridor within the recreation area (BC CDC 2014). No previously recorded Element Occurrences of plant species listed pursuant to the British Columbia Wildlife Act or SARA are known to occur within the RSA (BC CDC 2012) within the recreation area boundaries.
	There is one blue-listed rare ecological community identified as potentially occurring in the variants crossed by the corridor within the recreation area (i.e. ESSFmw, CWHms1, MHmm2 and MSmw1). No rare ecological communities in the variants crossed by the corridor within the recreation area have been listed on the BC Identified Wildlife Management Strategy.
	A search of the BC CDC database identified no previous observations of rare plants or rare ecological communities within the Vegetation RSA (BC CDC 2012).
	<ul> <li>There were no rare plant species or rare ecological communities observed during the biophysical field surveys in 2013 within the Coquihalla Summit Recreation Area. One rare ecological community was observed during surveys in 2014, but it is outside of the proposed pipeline corridor.</li> </ul>
	In June 2014, whitebark pine was observed more than 500 m from the proposed pipeline corridor. The whitebark pine observed can be classified as survival critical habitat due to the observed stand basal density of less than 2m2/ha (Environment Canada 2014). Survival critical habitat includes the habitat supporting whitebark pine occurrences and a 30 m critical function zone surrounding the occurrences (Environment Canada 2014). The location of the observed whitebark pine occurrence and an additional 30 m critical function zone (i.e., the survival critical habitat) will not be directly impacted by the Project. TERA, on behalf of KMC is currently in consultation with Environment Canada to ensure the observed whitebark pine occurrence classification as survival critical habitat is correct.
	The Coquihalla Summit Recreation Area is located within the Salvage/Limited Action Emergency Bark Beetle     Management Area (EBBMA) for Mountain Pine Beetle and within the Aggressive management areas for Douglas-Fir     Beetle and Spruce Beetle (FLNRO 2010).
	The route parallels existing disturbance for its entire length within the recreation area.
	Weed species identified within the recreation area boundaries in 2013 and 2014 include: one provincially noxious species, Canada thistle; three species designated as Noxious in other regions, Oxeye daisy, orange-red king devil (orange hawkweed) and common tansy; and three species of nuisance weeds, alsike clover, common dandelion, common timothy, creeping buttercup, great mullein and sheep sorrel. Garden escapees and introduced pasture species were also present. Canada thistle was recorded in this park in only one location.

### TABLE 7.0-1 Cont'd

Biophysical and Socio- Economic Element	Summary of Considerations
Wildlife and Wildlife Habitat	Summary of Considerations  The Coquihalla Summit Recreation Area contains a diversity of habitat types and supports a wide variety of wildlife
Wilding and Wilding Habitat	species (BC MOE 2013).
	<ul> <li>The following wildlife species with special conservation status were identified in Coquihalla Summit Recreation Area during Project-specific surveys in 2013: horned grebe, sooty grouse and coastal tailed frog.</li> </ul>
	<ul> <li>The Fish and Wildlife management objective for the Coquihalla Summit Recreation Area is to 'to maintain existing wildlife resources and enhance fish resources while honouring prior rights for guided hunting' (BC MELP 1999).</li> </ul>
	• The proposed pipeline corridor is generally within the Intensive Recreation Zone of the Coquihalla Summit Recreation Area. Management objectives for the Intensive Recreation Zone focus on maintaining a high quality recreation experience (BC MELP 1999). The proposed pipeline corridor may also traverse portions of the Natural Environment Zone. The focus of management objectives for the Natural Environment Zone is 'to provide for a variety of easily accessible nonmechanized outdoor recreational opportunities in a largely undisturbed natural environment' (BC MELP 1999). The proposed pipeline corridor does not cross the Special Feature Subzone or the Development Subzone (BC MELP 1999).
	Coastal tailed frog was identified in Coquihalla Summit Recreation Area during Project-specific field surveys in 2013.
Species at Risk	<ul> <li>The following wildlife species at risk have the potential to occur in the Coquihalla Summit Recreation Area based on range and habitat availability (BC CDC 2014, COSEWIC 2014, Environment Canada 2014). Species at risk is defined here to include those species listed federally under Schedule 1 of SARA and/or by COSEWIC. Species of concern that are listed provincially are provided at the end of the list.</li> <li>Barn swallow: Threatened by COSEWIC; Blue-listed;</li> <li>Common nighthawk: Threatened by SARA and COSEWIC;</li> <li>Horned grebe: Special Concern by COSEWIC;</li> <li>Sooty grouse: Blue-listed;</li> <li>Olive-sided flycatcher: Threatened by SARA and COSEWIC, Blue-listed;</li> <li>American badger, jeffersonli ssp.: Endangered by SARA and COSEWIC, Red-listed;</li> <li>Grizzly bear, western population: Special Concern by COSEWIC, Blue-listed;</li> <li>Little brown myotis: Endangered by COSEWIC;</li> <li>Mountain beaver: Special Concern by SARA and COSEWIC, Blue-listed;</li> <li>Western toad: Special Concern by SARA and COSEWIC, Blue-listed;</li> <li>Western toad: Special Concern by SARA and COSEWIC, Blue-listed.</li> <li>Provincially listed species: American bittern (Blue-listed); Brewer's sparrow, breweri ssp. (Red-listed); California gull (Blue-listed); Swainson's hawk (Red-listed); long-tailed duck (Blue-listed); prairie falcon (Red-listed); and western small-footed myotis (Blue-listed).</li> <li>There are three vascular plant species and six non-vascular species listed under Schedule 1 of the Species at Risk Act (SARA) that have the potential to occur in the variants crossed by the corridor within the recreation area (BC CDC 2014). The vegetation species include:</li> <li>banded cord-moss: Special Concern by SARA and COSEWIC, Blue-listed;</li> <li>columbian carpet moss: Special Concern by SARA and COSEWIC, Blue-listed;</li> <li>mountain holly fern: Threatened by SARA and COSEWIC, Blue-listed;</li> <li>oldgrowth specklebelly: Special Concern by SARA and COSEWIC, Blue-listed;</li> <li>oldgrowth</li></ul>
	<ul> <li>poor pocket moss: Endangered by SARA and COSEWIC, Red-listed;</li> <li>rigid apple moss: Endangered by SARA and COSEWIC, Red-listed;</li> </ul>
	<ul> <li>Vancouver Island beggarticks: Special Concern by SARA and COSEWIC, Blue-listed;</li> <li>whitebark pine: Endangered by SARA and COSEWIC, blue-listed;</li> </ul>
	No previously recorded Element Occurrences of plant species listed pursuant to the British Columbia Wildlife Act or SARA are known to occur within the RSA (BC CDC 2012) within the recreation area boundaries.
	<ul> <li>Early Candidate Critical Habitat has been developed by Environment Canada for whitebark pine and this early candidate critical habitat overlaps with the proposed corridor between RK 1001-1005.15 (Environment Canada 2014). Whitebark pine is listed as Endangered by SARA.</li> </ul>
	<ul> <li>There were no SARA listed or BC Wildlife Act listed rare plant species observed during the biophysical field surveys in 2013 within the Coquihalla Summit Recreation Area. Whitebark pine was observed in 2014 outside of the proposed pipeline corridor.</li> </ul>
Heritage Resources	<ul> <li>There is potential for archaeological resources throughout the proposed pipeline corridor in Coquihalla Summit Recreation Area due to proximity to Falls Lake Creek, Boston Bar Creek and Cultural Modified Trees (CMT) potential.</li> </ul>
	<ul> <li>There are 3 previously recorded sites within Coquihalla Summit Recreation Area, which fall outside the proposed pipeline corridor and one previously recorded site that is within the proposed pipeline corridor.</li> </ul>
	<ul> <li>In accordance with provincial legislation, in the event that any historical, archaeological or palaeontological resources are discovered during construction, construction activity in the vicinity of the discovery will be suspended until provincial authorities allow work to resume.</li> </ul>
	Approval under the BC Heritage Act will be acquired prior to the commencement of construction.

### TABLE 7.0-1 Cont'd

Biophysical and Socio- Economic Element	Summary of Considerations
Traditional Land Use	To date TLRU studies have been completed for the Project for the Shackan Indian Band, Nicomen Indian Band, Nooaitch Indian Band, Soowahalie First Nation and Popkum First Nation with asserted traditional territory within the Coquihalla Summit Recreational Area. Independent third-party TLRU studies are underway for Upper Nicola Indian Band, Lower Nicola Indian Band, Chawathil First Nation, Yale First Nation, Shxw'ow'hamel First Nation, Peters Indian Band, and Seabird Island Band. To date no traditional land use sites have been identified within the Coquihalla Summit Recreational Area. During engagement the collection of information on historical and contemporary First Nations cultural values and use of the Coquihalla Summit Recreational Area was requested, however, no specific uses were identified.
Visitor Enjoyment and Safety	<ul> <li>The Coquihalla Summit Recreation Area provides viewing and picnicking opportunities for traveling visitors and opportunities such as hiking, rock climbing, camping, swimming and backcountry ski touring for destination visitors (BC Ministry of Parks 1990).</li> <li>Primary recreational opportunities include Falls Lake, Zopkios Ridge, Needle Peak and the Coquihalla Lakes (BC Ministry of Parks 1990).</li> <li>The recreation area is accessed by various roads off either side of Highway 5 (Coquihalla Highway).</li> <li>As of 1990, there are approximately 60,000 annual visitors to the recreation area (BC Ministry of Parks 1990).</li> </ul>

#### 8.0 ENVIRONMENTAL AND SOCIO-ECONOMIC ASSESSMENT

#### 8.1 Effects Assessment

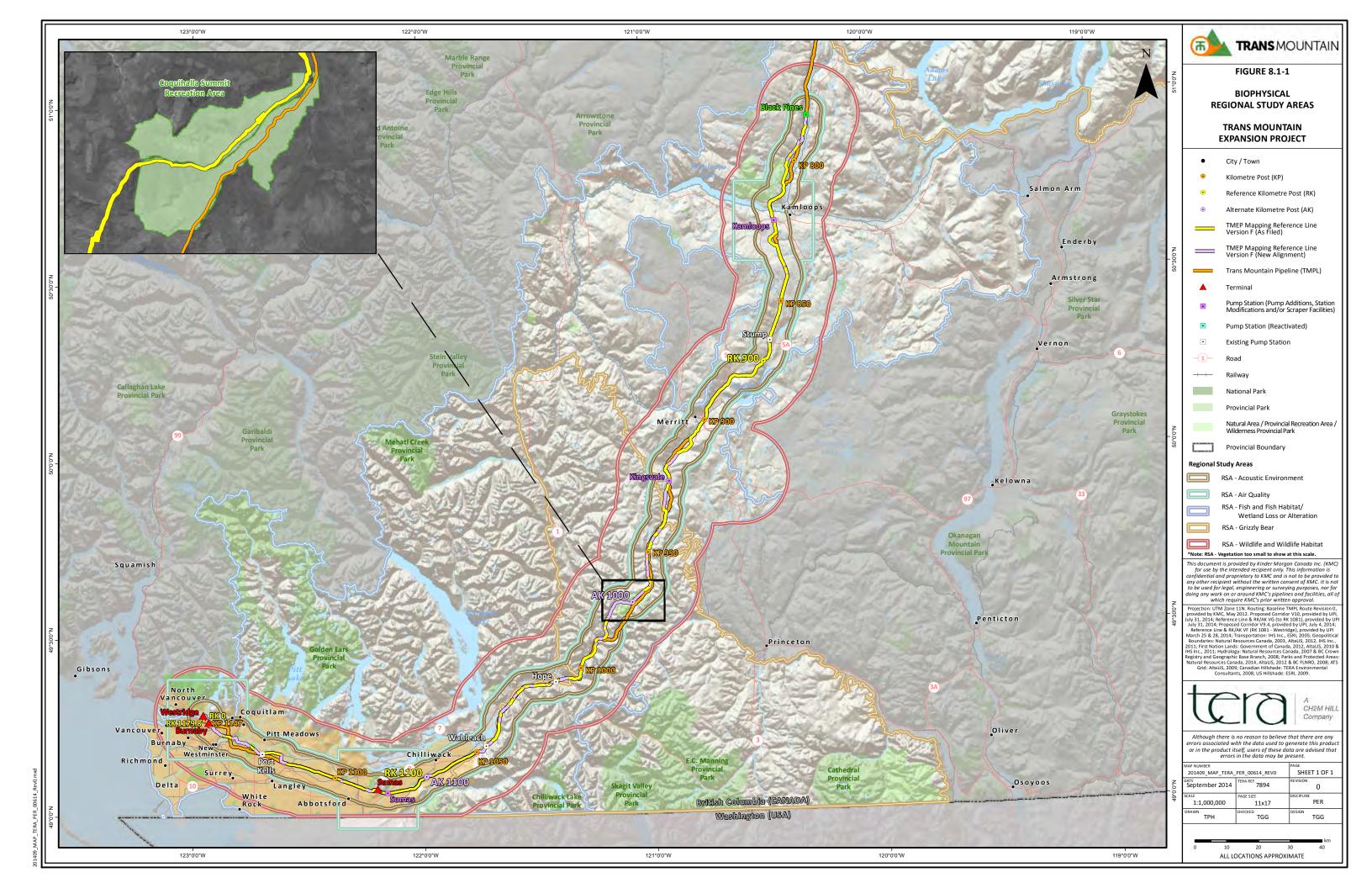
The following subsections evaluate the potential environmental and socio-economic effects associated with construction and operation of the pipeline. Environmental and socio-economic elements potentially interacting with the construction and operation of the pipeline in Coquihalla Summit Recreation Area are identified in Table 8.1-1.

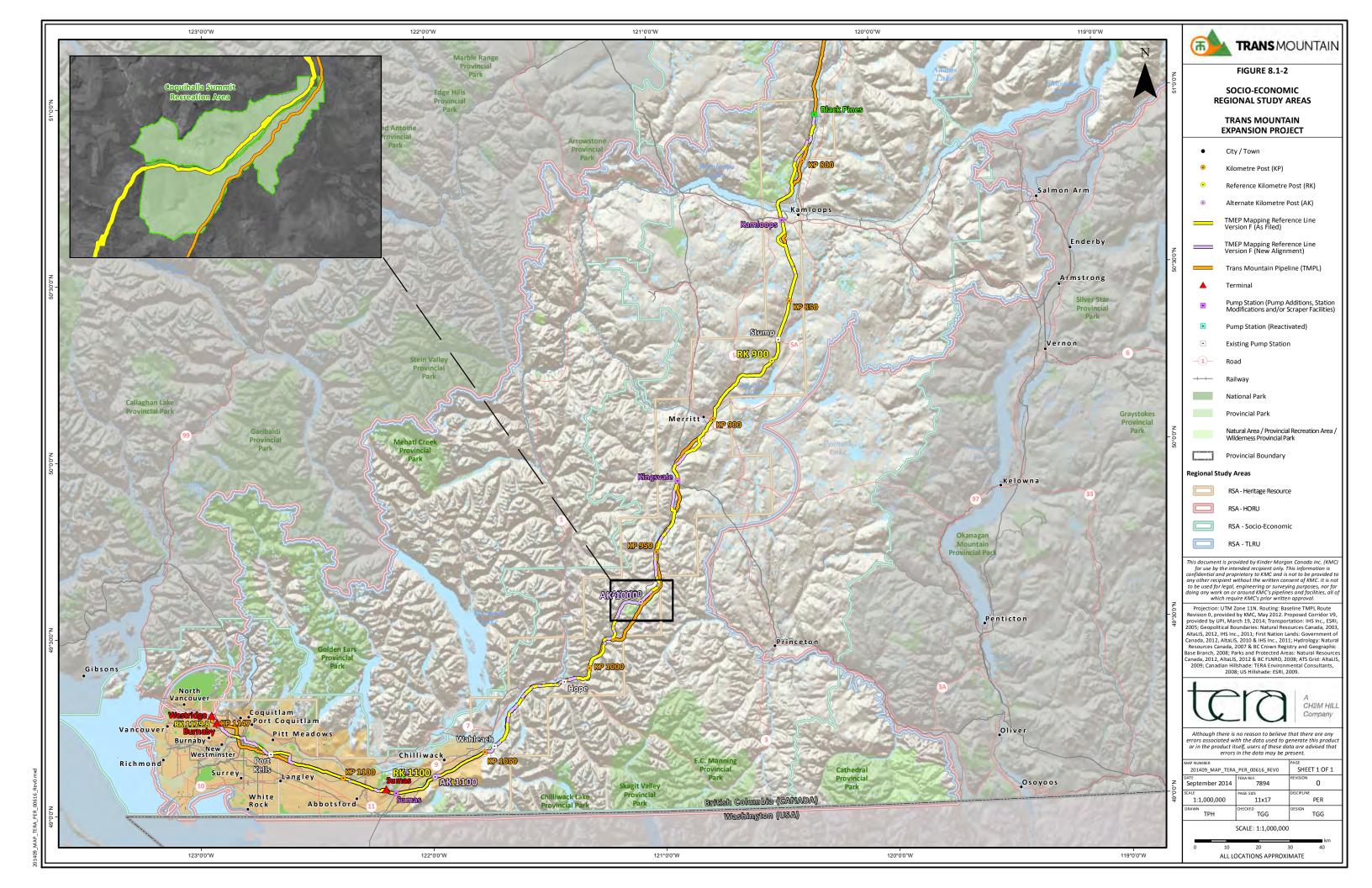
TABLE 8.1-1

# ELEMENT INTERACTION WITH PROPOSED PIPELINE COMPONENT IN COQUIHALLA SUMMIT RECREATION AREA

	Interaction with Pipeline Component		
Element	Construction	Operation	
Physical Environment	Yes	Yes	
Soil and Soil Productivity	Yes	Yes	
Water Quality and Quantity	Yes	Yes	
Air Emissions	Yes	Yes	
Acoustic Environment	Yes	Yes	
Fish and Fish Habitat	Yes	Yes	
Wetlands	No – wetlands are not anticipated to be disturbed during Project construction within the Coquihalla Summit Recreation Area.	No - wetlands are not anticipated to be disturbed during Project operations within the Coquihalla Summit Recreation Area.	
Vegetation	Yes	Yes	
Wildlife and Wildlife Habitat	Yes	Yes	
Species at Risk	Yes	Yes	
Heritage Resources	Yes	No – since surface or buried heritage resource sites, if present, would have been disturbed as a result of construction activities during operation of the pipeline in Coquihalla Summit Recreation Area.	
Traditional Land and Resource Use	Yes	Yes	
Visitor Enjoyment and Safety	Yes	Yes	

The potential environmental and socio-economic effects associated with the pipeline, as well as the accompanying proposed mitigation and resulting residual effects are presented for each environmental and socio-economic element. The evaluation of significance is provided for each potential residual effect associated with the applicable environmental and socio-economic element in the subsections below. The spatial boundaries considered for the Coquihalla Summit Recreation Area can be found in Figures 8.1-1, 8.1-2 and 8.1-3.





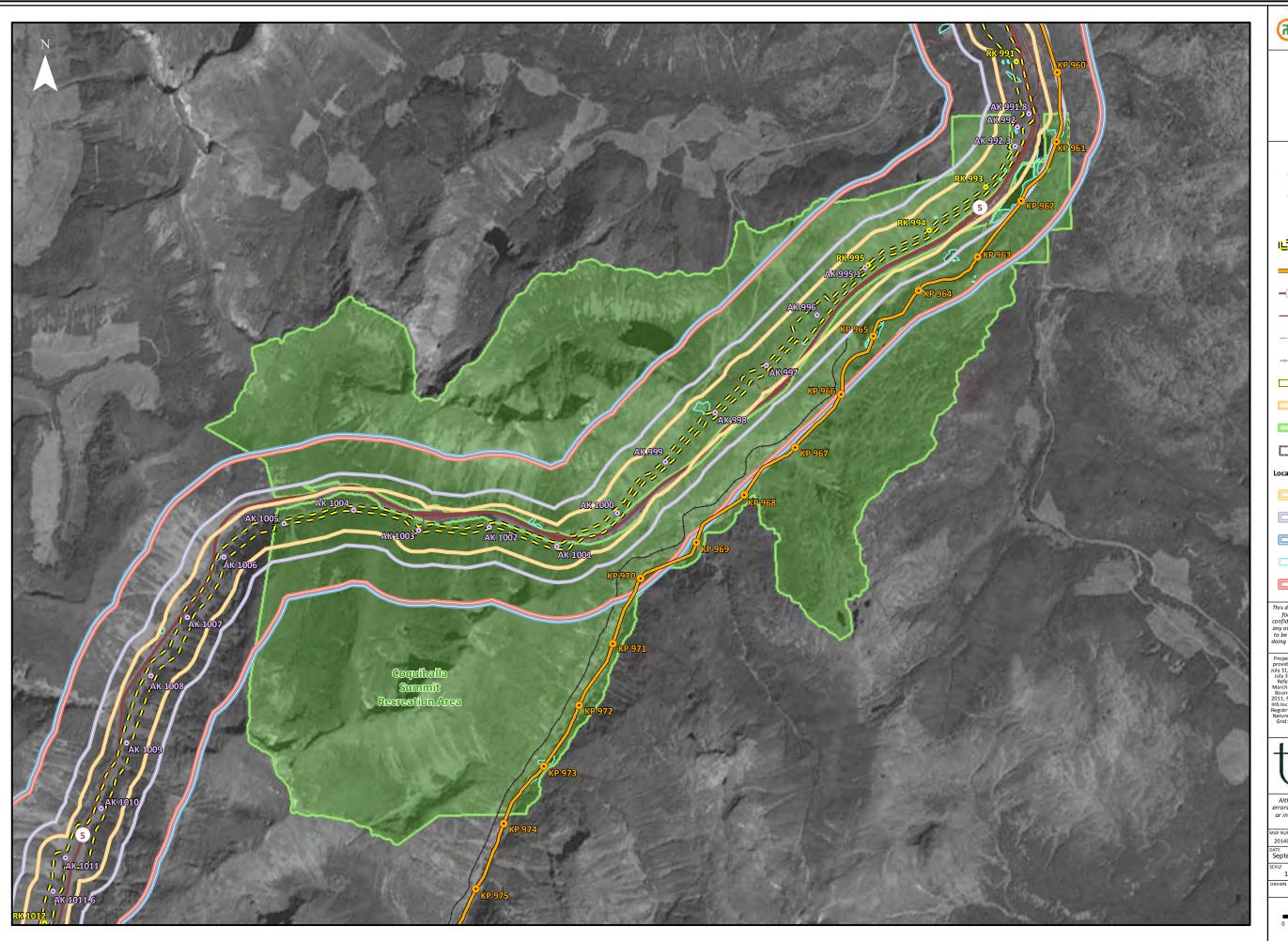




FIGURE 8.1-3

COQUIHALLA SUMMIT RECREATION AREA AND LOCAL STUDY AREAS

## TRANS MOUNTAIN EXPANSION PROJECT

City / Town

Reference Kilometre Post (RK)

Alternate Kilometre Post (AK)

Kilometre Post (KP)

Trans Mountain Expansion Project Proposed Pipeline Corridor

Trans Mountain Pipeline (TMPL)

**—**1 — Highway

— Paved Road

-- Resource Road

----- Railway

City / Town / District Municipality

Indian Reserve / Métis Settlement

Park / Protected Area

Provincial Boundary

#### Local Study Areas

LSA - Groundwater

LSA - Soil

LSA - TLU

LSA - Wetland

LSA - Wildlife

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which require KMC.5 pnor written approval.

Projection: UTM Zone 11N. Routing: Baseline TMPL Route Revision 0, provided by KMC, May 2012. Proposed Corridor V10, provided by UPI, July 31, 2014. Reference Line & RK/AK VG (to RK 1081), provided by UPI July 31, 2014. Proposed Corridor V9.4, provided by UPI, July 4, 2014. Reference Line & RK/AK VG (to RK 1081.) Westridge), provided by UPI March 25 & 28, 2014; Transportation: IHS Inc., ESRI, 2005; Geopolitide by UPI March 25 & 28, 2014; Transportation: IHS Inc., ESRI, 2005; Geopolitide Soundaries: Natural Resources Canada, 2013, Attall.5, 2012; IHS Inc., 2014; Control Co



CH2M HILL Company

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	PAGE	
201409_MAP_TERA_PER_00615_REV0		SHEET 5 OF 6
September 2014	TERA REF. 7894	REVISION 0
SCALE	PAGE SIZE	DISCIPLINE
1:50,000	11x17	PER
DRAWN	CHECKED	DESIGN
TPH	TGG	TGG

SCALE: 1:50,000

0 500 1,000 1,500 2,0
ALL LOCATIONS APPROXIMATE

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Many of the mitigation measures recommended in Section 8.0 and 9.0 are considered industry accepted best practices in pipeline construction, reclamation and operations. However, a number of enhanced measures are also recommended specific for Coquihalla Summit Recreation Area. The measures are discussed further in Section 8.0 and 9.0 and are summarized in Table 8.1.2. The entirety of the wildlife mitigation presented in Table 8.1.9-2 is intended to be specific to Coquihalla Summit Recreation Area and, therefore has not been repeated in Table 8.1.2.

#### **TABLE 8.1-2**

## ENHANCED MITIGATION MEASURES RECOMMENDED IN COQUIHALLA SUMMIT RECREATION AREA

Element/Topic	Recommendations	Section Discussed
Reclamation	Park Trails	Section 9.0
	Re-establish park trails following the replacement of soil and/or aggregate surface material as well as the replacement of park/trail signage removed during construction.  Natural Regeneration	
	<ul> <li>Allow for natural regeneration in areas where potential soil erosion and non-native invasive species infestation is low, and where it is anticipated that the topsoil or root zone material contains a propagule bank (e.g., seed, stem or root pieces) of suitable species.</li> </ul>	
	<ul> <li>Apply a native perennial or non-native annual grass cover crop species in areas with potential erosion and weed concerns.</li> </ul>	
	Habitat Enhancement	
	<ul> <li>Avoid the use of Douglas-fir and spruce logs, brush and mulch for habitat enhancement within Coquihalla Summit Recreation Area.</li> </ul>	
	<ul> <li>Establish mounds to create microsites on steep, wind exposed slopes where woody vegetation establishment is desirable to retain moisture and enhance vegetation establishment success.</li> </ul>	
	Woody Species Revegetation	
	Installation of Nursery-Grown Plant Plugs	
	<ul> <li>Install nursery-grown plant plugs (e.g., rooted stock plugs) in TWS, riparian and special reclamation areas, where suitable levels of naturally regenerating (from seed or vegetative propagules) deciduous or coniferous trees are not observed.</li> </ul>	
	Secure native seed and collect dormant woody species cuttings, as warranted.	
	<ul> <li>Install deciduous and coniferous rooted plugs at pre-selected sites (e.g., TWS, riparian areas or for line-of-sight breaks) as determined in consultation with BC Parks Conservation Specialists.</li> </ul>	
	Installation of Locally Sourced Dormant Woody Species Transplants	
	Use plant transplants at pre-determined locations where vegetation is disturbed by construction.	
	Nutrient Management on Disturbed Forested Areas	
	<ul> <li>Apply a slow-release nitrogen fertilizer on lands that contain woody debris and/or wood chips mixed into the salvaged and replaced root zone material or that have been placed on cleared and ungrubbed portions of the construction right-of-way.</li> </ul>	
	Seeding of Native Grass Species	
	<ul> <li>Develop seed mixes in consultation with BC Parks and consist of species native to the park or within the vicinity of the park.</li> </ul>	
	<ul> <li>Drill or broadcast seed native seed mixes or grass cover crop species on most of the construction right-of-way or at locations indicated on the Environmental Alignment Sheets, unless otherwise requested by BC Parks Area Supervisor or Conservation Specialist.</li> </ul>	
	Specific Erosion and Sediment Control	
	<ul> <li>Install coir logs, erosion control blankets and sediment fences following clearing. Monitor and maintain following construction until vegetation establishment occurs.</li> </ul>	
	<ul> <li>Install diversion berms to reduce slope length and runoff velocities, and divert runoff away from watercourses/waterbodies and into well-vegetated areas.</li> </ul>	
	<ul> <li>Implement rollback using select tree species (e.g., pine) felled during construction (avoid the use of Douglas-fir, grand fir and spruce) within riparian zones and TWS areas to provide erosion control and habitat enhancement.</li> </ul>	
	<ul> <li>Seed (drill or broadcast seeded) using an appropriate native grass seed mix, native perennial or annual non-native cover crop, along the disturbed areas following root zone material replacement at an appropriate prescribed rate.</li> </ul>	
	Protect Rare Plants and Communities	
	Leave gaps in the root zone material piles or subsoil piles to avoid the site	
	<ul> <li>Use protective matting and/or snow during the winter (mark the area in case snow melts) to mat over the population or community where it occurs on the Project area, and other areas where root zone material removal is not required, to protect vegetation from scraping and compacting.</li> </ul>	
	Monitor the effectiveness of implemented mitigation measures during rare plant PCEM.	
	Avoid blanket use of herbicides within 30 m of, or between the range of, the provided UTM coordinates.	

### TABLE 8.1-2 Cont'd

Element/Topic	Recommendations	Section Discussed
Reclamation (cont'd)	Weed Management	See above
	<ul> <li>Utilize Trans Mountain's integrated vegetation management (IVM) approach to manage weeds and problem vegetation.</li> </ul>	
	<ul> <li>Develop detailed weed and problem vegetation reports for site-specific locations, as required, following a pre-construction weed survey (scheduled for spring 2015) and consultation with BC Parks Conservation Specialists. Weed and problem vegetation infestations and recommended mitigation measures will be incorporated into the Environmental Alignment Sheets.</li> </ul>	
	<u>Watercourses</u>	
	Stabilize banks and slopes of watercourse and riparian areas prior to and immediately following construction (crib structures, erosion control matting, revegetation grass rolls, sediment fences, biodegradable coir geotextile wraps, coniferous tree revetments, cobble or riprap armouring).  Wildlife Movement, Mortality and Human Encounters	
	Seed using native grass species with reduced palatability in areas where potential wildlife vehicle collisions and human encounters may be higher.	
	<ul> <li>Install visual barriers along the right-of-way and salvaged wildlife habitat trees to restore the effectiveness of wildlife movement corridors.</li> </ul>	

#### 8.1.1 Physical Environment

This subsection describes the potential Project effects on the physical environment indicators in Coquihalla Summit Recreation Area. The Physical Environment LSA consists of a 1 km wide band generally extending from the centre of the proposed pipeline corridor and facilities (*i.e.*, 500 m on both sides of the proposed pipeline corridor.

All physical environment indicators (e.g., terrain instability, topography change and acid rock drainage) were considered in this evaluation, however, only terrain instability and topography were determined to interact with pipeline construction and operations in Coquihalla Summit Recreation Area. There are no sites in Coquihalla Summit Recreation Area with the potential for acid rock drainage. The topography within Coquihalla Summit Recreation Area contains steep sloping terrain along the proposed pipeline corridor.

#### 8.1.1.1 Identified Potential Effects

The potential effects associated with the construction and operations of the proposed pipeline on the physical environment indicators are listed in Table 8.1.1-1.

A summary of mitigation measures provided in Table 8.1.1-1 was principally developed in accordance with industry accepted best practices as well as industry and provincial regulatory guidelines including BC OGC (2013) and BC Ministry of Energy and Mines (Price and Errington 1998).

#### **TABLE 8.1.1-1**

# POTENTIAL EFFECTS, MITIGATION MEASURES AND RESIDUAL EFFECTS OF PIPELINE CONSTRUCTION AND OPERATIONS ON THE PHYSICAL ENVIRONMENT FOR COQUIHALLA SUMMIT RECREATION AREA

		Spatial	Key Recommendations/Mitigation Measures	
	Potential Effect	Boundary <sup>1</sup>	[EPP Reference] <sup>2</sup>	Potential Residual Effect(s)
1.	I. Physical Environment Indicator – Terrain Instability			
1.1	General Measures	LSA	Blast bedrock encountered within trench depth only if ripping or typical trenching methods are not feasible [Section 8.3]. See additional blasting measures in Section 8.3 of the Pipeline EPP.  Assess the need for special trench compaction measures or equipment prior to commencement of backfilling [Section 8.4]. See additional backfilling measures in Section 8.4 of the Pipeline EPP.	Areas of terrain instability may occur as a result of construction activities.
			<ul> <li>Install subsoil cross ditches and berms on steep and moderate slopes on treed lands in order to prevent runoff along the construction right- of-way and subsequent erosion [Section 8.6].</li> </ul>	
			<ul> <li>Recontour the construction right-of-way, including the removal of temporary subsoil berms and re-establish the pre-construction grades and drainage channels [Section 8.6].</li> </ul>	
			<ul> <li>Confirm, prior to seeding/planting, that surface texturing is present on steep slopes. If warranted, establish mounds to create microsites on steep, wind exposed slopes where woody vegetation establishment is desirable to retain moisture and enhance vegetation establishment success by creating mounds on steep slopes or, where grass vegetation establishment is desirable, implement track cleat imprinting by aligning the final pass of bulldozers parallel to the slope during the final pass [Section 8.6].</li> </ul>	
			<ul> <li>Revegetate as soon as feasible to reduce or avoid soil erosion and establish long-term cover. Seed immediately following root zone material replacement [Section 8.6]. See additional erosion control and revegetation measures in Section 8.6 of the Pipeline EPP.</li> </ul>	
1.2	Areas of instability due to sidehill terrain	LSA	Replace grade material to a stable contour that will approximate the pre-construction contour, except where it is not practical or safe to do so.	Areas of terrain instability may occur as a result of construction activities.

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#### **TABLE 8.1.1-1 Cont'd**

	Potential Effect	Spatial Boundary <sup>1</sup>	Key Recommendations/Mitigation Measures [EPP Reference] <sup>2</sup>	Potential Residual Effect(s)
2.	Physical Environment I	ndicator - Topog	raphy	
2.1	Alteration of topography along steep slopes	LSA	<ul> <li>Minimize grading on steep slopes, unless safety concerns are identified [Section 8.2].</li> <li>Install subsoil cross ditches and berms on steep and moderate slopes on treed lands in order to prevent runoff along the construction right-of-way and subsequent erosion [Section 8.6].</li> <li>Recontour the construction right-of-way, including the removal of temporary subsoil berms and re-establish the pre-construction grades and drainage channels [Section 8.6].</li> <li>Regrade areas with vehicle ruts, erosion gullies or where the trench has settled [Section 8.6].</li> <li>Rollback slash and small diameter, salvageable timber on steep slopes [Section 8.6].</li> <li>Apply hydromulch/hydroseed at a rate recommended by the supplier on steep recontoured slopes [Section 8.6].</li> <li>Confirm, prior to seeding/planting, that surface texturing is present on steep slopes. If warranted, establish mounds to create microsites on steep, wind exposed slopes where woody vegetation establishment is desirable to retain moisture and enhance vegetation establishment success by creating mounds on steep slopes or, where grass vegetation establishment is desirable, implement track cleat imprinting by aligning the final pass of bulldozers parallel to the slope during the final pass [Section 8.6].</li> </ul>	Topography may be altered at locations where cut slopes are too steep to be replaced to the preconstruction profile without creating areas of instability.
2.2	Alteration of topography due to sidehill terrain	LSA	Replace grade material to a stable contour that will approximate the pre-construction contour, except where it is not practical or safe to do so.	Topography may be altered at locations where cut slopes are too steep to be replaced to the pre- construction profile without creating areas of instability.
2.3	Alteration of topography at areas of blasting	LSA	Blast bedrock encountered within trench depth only if ripping or typical trenching methods are not feasible [Section 8.3].  Dispose of excess blast rock and excavated rock at approved locations [Section 8.3].  Dispose of excess rock displaced from the trench or from blasting in discrete piles, windrows or scattered along the construction right-ofway, or as directed by BC Parks or appropriate regulatory authority [Section 8.6].	Topography may be altered at locations where blasting occurs.

Notes:

- 1 LSA = Physical Environment LSA.
- 2 Detailed mitigation measures are outlined in the Pipeline EPP (Volume 6B of the Facilities Application).

#### 8.1.1.2 Significance Evaluation of Potential Residual Effects

Table 8.1.1-2 provides a summary of the significance evaluation of the potential residual environmental effects of the construction and operations of the proposed pipeline in Coquihalla Summit Recreation Area on the physical environment. The rationale used to evaluate the significance of each of the residual environmental effects is provided below.

#### **TABLE 8.1.1-2**

## SIGNIFICANCE EVALUATION OF POTENTIAL RESIDUAL EFFECTS OF PIPELINE CONSTRUCTION AND OPERATIONS ON PHYSICAL ENVIRONMENT FOR COQUIHALLA SUMMIT RECREATION AREA

			_	٦	emporal	Context				
	Potential Residual Effects	Impact Balance	Spatial Boundary¹	Duration	Frequency	Reversibility	Magnitude	Probability	Confidence	Significance <sup>2</sup>
1.	Physical Environment Indicator – Terrain Instability			•		•	•			
1(a)	Areas of terrain instability may occur as a result of construction activities.	Negative	LSA	Short- term	Isolated	Short to medium-term	Low	High	High	Not significant
2.	Physical Environment Indicator – Topography									
2(a)	Topography may be altered at locations where cut slopes are too steep to be replaced to the pre-construction profile without creating areas of instability.	Negative	LSA	Short- term	Isolated	Permanent	Low to medium	High	High	Not significant
2(b)	Topography may be altered at locations where blasting occurs.	Negative	LSA	Short- term	Isolated	Permanent	Low	High	High	Not significant

Notes:

1

- LSA = Physical Environment LSA.
- Significant Residual Environmental Effect: A high probability of occurrence of a permanent or long-term residual effect of high magnitude that cannot be technically or economically mitigated.

#### Physical Environment Indicator - Terrain Instability

#### Terrain Instability

Minor areas of terrain instability may occur along areas of the proposed pipeline corridor as a result of the proposed construction activities (e.g., grading, trenching and backfilling). The impact balance of this residual effect is considered negative since terrain instability could affect the safety of the pipe and result in surface erosion. Terrain along most of the proposed pipeline corridor in Coquihalla Summit Recreation Area is considered to be moderate or steep sloping terrain based the results of the Terrain Mapping and Geohazard Inventory (Volume 4A of the Facilities Application) and the soil survey conducted in August 2014.

During construction of the pipeline, removal of vegetation and root mass, grading, cut and fills and runoff controls could lead to localized areas of potential instability. Monitoring during construction will ensure any observed instability issues will be resolved early before potentially severe instability problems arise. Grade material will be replaced to a stable contour that will approximate the pre-construction contour, except where it is not practical or safe from a pipe integrity perspective or for public safety.

Regular aerial and ground patrols will be conducted to examine vegetation establishment and confirm mitigation measures are functioning as intended, as well as identify any new areas of potential instability. At any areas where erosion is observed, appropriate measures will be implemented to clean-up and stabilize the site. Monitoring of the reclaimed sites will continue until the site is determined to be in a stable condition.

The residual effect of terrain instability occurring as a result of planned construction activity is reversible in the short to medium-term and of low magnitude (Table 8.1.1-2, point 1[a]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Physical Environment LSA terrain instability as a result of construction activities may extend beyond the construction workspace.
- Duration: short-term the event causing potential terrain instability is construction of the pipeline (e.g., grading and rough clean-up).

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- Frequency: isolated the event causing potential terrain instability (i.e., construction of the pipeline) is confined to a specific period.
- Reversibility: short to medium-term most areas of terrain instability will be remediated within a year, however, some areas may require a second or third year of remedial effort to fully stabilize.
- Magnitude: low the implementation of the proposed mitigation measures, in addition to detailed engineering design is expected to effectively reduce the severity and extent of potential effects on terrain instability in Coquihalla Summit Recreation Area.
- Probability: high terrain instability is likely to result from pipeline construction at localized areas.
- Confidence: high based on data pertinent to the Project area and the experience of the assessment team.

#### Physical Environment Indicator – Topography

#### Alteration of Topography at Cut Slopes

As a result of construction, topography along the proposed pipeline corridor may be altered at locations where cut slopes are too steep to be returned to the pre-construction profile.

Grading of the construction right-of-way must be sufficient to accommodate pipe stringing, welding, field bending, lowering-in and safe movement of pipe, equipment and personnel along the construction right-of-way. Grading along the construction right-of-way will vary from only root zone material salvaging in some areas to extensive cuts and fills in other areas. The grade and trench rock along the construction right-of-way will be ripped mechanically using bulldozers and excavators, where practical. Following construction, Trans Mountain's objective will be to return slopes to their pre-construction profile along the construction right-of-way, including approach slopes at watercourse crossings.

Alteration of topography will be reduced by installing the pipeline adjacent to the existing TMPL right-of-way and other linear infrastructure (e.g., Telus FOTS right-of-way and Spectra right-of-way). In Coquihalla Summit Recreation Area, the proposed pipeline corridor will parallel the existing Telus FOTS right-of-way and Spectra right-of-way for the entire length. The impact balance of this residual effect is considered negative since local topographic alteration is considered a detriment to the environment. Although this unavoidable consequence will be permanent in localized areas and of high probability, the magnitude is considered to be low to medium depending on the extent of topographic alteration, type of vegetative cover and sensitivity of nearby receptors (Table 8.1.1-2, point 2[a]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Physical Environment LSA alteration of topography may extend beyond the construction workspace.
- Duration: short-term the event causing the potential alteration of topography is construction of the pipeline.
- Frequency: isolated the event causing the potential alteration of topography (*i.e.*, construction of the pipeline) is confined to a specific period.
- Reversibility: permanent alteration of topography resulting from slopes that are too steep to be restored to the pre-construction profile cannot be reversed.
- Magnitude: low to medium the implementation of the proposed mitigation measures is expected to
  effectively reduce the potential effect of alteration of local topography, however, areas where bedrock
  is likely to be encountered are particularly susceptible to visible alterations in topography.
- Probability: high Trans Mountain's objective will be to return slopes to their pre-construction profile
  along the construction right-of-way, including approach slopes at watercourse crossings.

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 Confidence: high – based on data pertinent to the Project area and the professional experience of the assessment team.

#### Alteration of Topography from Blasting

Blasting of the trench and grade rock is expected to be required only after all reasonable means of excavation by mechanical equipment (e.g., bulldozers, excavators) have been used and are unsuccessful in achieving the required results, and where deemed absolutely necessary by construction and blasting experts after detailed site examination. The impact balance of this residual effect is considered negative since local topographic alteration is considered a detriment to the environment. This unavoidable consequence will be permanent and of high probability. However, efforts will be made to reduce the area of permanent disturbance by ensuring blasting will only be conducted by licensed blasters and implementing controlled blasting techniques in accordance with Trans Mountain's Blasting Specification for grade and trench rock excavation. The Blasting Specification will be developed during detailed engineering design for the Project.

Detonation methods and procedures will be dependent on, among other factors, associated rock type and geological structure (solid, layered, or fractured). On occasion, control over the volume and extent of material removed may be limited due to difficulties in predicting extent and accuracy of blast parameters, indeterminate geologic structures and nearby terrain instabilities. Test blasting will be conducted at locations where blasting is required to evaluate ground damage and vibration and establish site-specific blasting parameters and procedures to reduce unintentional disturbances and potential instabilities.

To limit any unintended alterations in topography, a Blasting Management Plan will be prepared prior to construction to ensure blasting is performed in a manner that safeguards the public and environment, and alterations of terrain are controlled and limited to the required site dimensions for safe construction and pipeline installation. Given the anticipated limited extent of blasting along the construction right-of-way (*i.e.*, only in areas where excavation by mechanical equipment is unsuccessful), implementation of mitigation measures, and since most blasting will be conducted in remote areas well away from receptors and/or adjacent to terrain previously altered from existing linear infrastructure, magnitude is considered to be low (Table 8.1.1-2, point [2b]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Physical Environment LSA alteration of topography from blasting may extend beyond the construction workspace.
- Duration: short-term the event causing the potential alteration of topography from blasting is construction of the pipeline.
- Frequency: isolated the event causing the potential alteration of topography from blasting (*i.e.*, construction of the pipeline) is confined to a specific period.
- Reversibility: permanent topography altered from blasting activities is unlikely to be restored to the pre-construction profile and cannot be reversed.
- Magnitude: low the implementation of the proposed mitigation measures is expected to effectively reduce the potential effect of alteration of topography from blasting.
- Probability: high there are localized areas along the proposed pipeline corridor Coquihalla Summit Recreation Area where blasting activities will likely be necessary.
- Confidence: high based on data pertinent to the Project area and the professional experience of the assessment team.

#### 8.1.1.3 Summary

As identified in Table 8.1.1-2, there are no situations where there is a high probability of occurrence of a permanent or long-term residual environmental effect on the physical environment indicators of high magnitude that cannot be technically or economically mitigated. Consequently, it is concluded that the residual environmental effects of pipeline construction and operations on conservational values of Coquihalla Summit Recreation Area related to physical environment will be not significant.

#### 8.1.2 Soil and Soil Productivity

This subsection describes the potential Project effects on soil and soil productivity indicators in Coquihalla Summit Recreation Area. The Soil LSA consists of a 1 km wide band from the centre of the proposed pipeline corridor and facilities (*i.e.*, 500 m on both sides of the proposed pipeline corridor centre); shown in. Figure 8-1-3.

All soil and soil productivity indicators (e.g., soil productivity, soil degradation soil contamination and bedrock and stone disposal) were considered in this evaluation; all indicators were determined to interact with pipeline construction and operations in Coquihalla Summit Recreation Area.

#### 8.1.2.1 Identified Potential Effects

The potential effects associated with the construction and operations of the proposed pipeline on soil and soil productivity indicators are listed in Table 8.1.2-1.

A summary of mitigation measures provided in Table 8.1.2-1 was principally developed in accordance with industry accepted best practices as well as industry and provincial regulatory guidelines including BC Oil and Gas Commission (OGC) (2010) and Canadian Association of Petroleum Producers (CAPP) (1996, 1999, 2008).

#### **TABLE 8.1.2-1**

## POTENTIAL EFFECTS, MITIGATION MEASURES AND RESIDUAL EFFECTS OF PIPELINE CONSTRUCTION AND OPERATIONS ON SOIL AND SOIL PRODUCTIVITY FOR COQUIHALLA SUMMIT RECREATION AREA

	Potential Effect	Spatial Boundary <sup>1</sup>	Key Recommendations/Mitigation Measures [EPP Reference] <sup>2</sup>	Potential Residual Effect(s)				
1.	Soil Indicator – S	Soil Productiv	ity					
1.1	Decreased root zone material productivity during root zone material salvaging	Footprint	<ul> <li>Root Zone Material Depth</li> <li>Soils in Coquihalla Summit are predominately humo-ferric podzols with no topsoil.</li> <li>Salvage all available root zone material (min. 15-20 cm or 50% organic material and 50% mineral soil).</li> <li>Salvage very shallow surface soils (<i>i.e.</i>, organic and mineral soils) to at least a 60-80 cm depth, unless the material is unsuitable (<i>e.g.</i>, bedrock, gravel, rock) [Section 8.2].</li> <li>See additional measures in Section 8.2 of the Pipeline EPP.</li> <li>Root Zone Material Salvage (General)</li> </ul>	Mixing of root zone material and subsoil.				
		during wet/thawed soil or	<ul> <li>Implement the Wet/Thawed Soils Contingency Plan (see Appendix B of the Pipeline EPP) during wet/thawed soil conditions in the event wet or thawed soils are encountered during construction [Section 8.2].</li> </ul>					
			Accommodate BC Parks root zone material salvage requests.					
		the construction right-of-way. Avoid the area to be graded [Section 8.2]. Pipeline EPP.  Store root zone material prior to graway boundary taking into considerate existing nearby Telus FOTS line and [Section 8.2].  Keep trench spoil pile separate from Root Zone Material Salvage (Non-frozer Salvage root zone material from the necessary) [Section 8.2].  See additional root zone material sales Salvage root zone material from an acentred over the trench (see Drawin Width] provided in Appendix R of the conditions unless otherwise indicate	the construction right-of-way. Avoid overstripping. The area salvaged is to correspond to the area to be graded [Section 8.2]. See additional grading measures in Section 8.2 of the					
						<ul> <li>Store root zone material prior to grading along the nearest pipeline construction right-of- way boundary taking into consideration space requirements for grade and trench spoil, existing nearby Telus FOTS line and the Spectra line, local topography and drainage [Section 8.2].</li> </ul>		
			- Carrago root zono material nom tro critico conocidente ingrit or way (whole grading to					
			See additional root zone material salvage measures in Section 8.2 of the Pipeline EPP.					
			<ul> <li>Salvage root zone material from an area approximately 1 m wider than the trench and centred over the trench (see Drawing [Topsoil or Root Zone Material Salvage – Trench Width] provided in Appendix R of the Pipeline EPP) at all locations during non-frozen soil conditions unless otherwise indicated on the Environmental Alignment Sheets [Section 8.2]. See additional measures in Section 8.2 of Pipeline EPP.</li> </ul>					

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#### TABLE 8.1.2-1 Cont'd

F	Potential Effect	Spatial Boundary <sup>1</sup>	Key Recommendations/Mitigation Measures [EPP Reference] <sup>2</sup>	P	Potential Residual Effect(s)		
1.1	Decreased root zone material productivity during root zone material salvaging (cont'd)	See above	<ul> <li>Root Zone Material Replacement</li> <li>Follow mitigation measures for backfilling as outlined in Section 8.4 of the Pipeline EPP.</li> <li>Postpone replacement during wet conditions or high winds to prevent damage to soil structure or erosion of root zone material [Section 8.6].</li> <li>Replace root zone material evenly over all portions of the construction right-of-way that have been stripped.</li> <li>Revegetate as soon as feasible to reduce or avoid soil erosion and establish long-term cover. Seed immediately following root zone material replacement [Section 8.6].</li> <li>See additional root zone material replacement mitigation measures in Section 8.6 of the Pipeline EPP.</li> </ul>	•	See above.		
1.2	Decreased soil productivity from disturbance (e.g., maintenance dig activities) during operations	Footprint	<ul> <li>Implement the recommended soil handling procedures outlined in the Pipeline EPP to reduce the potential for a reduction in soil productivity when construction activities involving soil disturbance are necessary during operations of the pipeline.</li> <li>Monitor areas along the construction right-of-way that are disturbed during operations and maintenance activities. Implement remedial measures, where warranted.</li> </ul>	•	Mixing of root zone material and subsoil.		
2.	Soil Indicator – So	oil Degradation	on				
2.1	Loss of root zone material through wind erosion	Footprint	<ul> <li>General</li> <li>Tackify or apply water or pack the root zone material windrow with a sheep foot packer or other approved equipment, if the assessment by the Environmental Inspector(s) indicates that soils are likely to be prone to erosion by wind (see Soil Erosion and Sediment Control Contingency Plan in Appendix B of the Pipeline EPP) [Section 8.2].</li> <li>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 impact of soil pulverization and wind erosion (see Soil/Sod Pulverization Contingency Plan in Appendix B of the Pipeline EPP) [Section 8.2].</li> <li>Apply water or approved tackifier to exposed soil piles if wind erosion occurs in Coquihalla Summit Recreation Area [Section 8.2].</li> <li>Monitor soils windrows during the growing season for wind and water erosion, and weed growth until the soils are replaced. Implement additional mitigation measures to control erosion (see Soil Erosion and Sediment Control Contingency Plan in Appendix B of the Pipeline EPP) and weed growth when warranted (see Weed and Vegetation Management Plan in Appendix C of Pipeline EPP) [Section 8.2].</li> <li>Avoid removing excess small diameter slash in wooded areas with erodible soils [Section 8.6].</li> <li>Seed disturbed erodible soils with a mixture of native seed and cover crop seed such as fall rye if seeding in late summer or annual oats if seeding in the winter, spring or early summer [Section 8.6].</li> <li>See additional measures in the Soil Erosion and Sediment Control Contingency Plan and Soil/Sod Pulverization Contingency Plan in Appendix B of the Pipeline EPP.</li> <li>Apply hydromulch/hydroseed at a rate recommended by the supplier on steep recontoured slopes and/or where soil wind erosion may be problematic (see Environmental Alignment Sheets) [Section 8.6].</li> <li>Highly Erodible Soils</li> <li>Install erosion control blank</li></ul>	•	Surface erosion of root zone material can be expected until a vegetative cover is established.		
2.2	Loss of root zone material through water erosion	Footprint	<ul> <li>Postpone root grubbing until immediately prior to grading along segments of the construction right-of-way where pre-clearing occurred and where there is a potential for soil erosion to occur, due to sloping terrain and erodible soils [Section 8.1]. See additional grubbing measures in Section 8.1 of the Pipeline EPP.</li> <li>Leave breaks in the trench crown at obvious drainages and wherever seepage occurs to reduce or avoid interference with natural drainage. Leave breaks in the crown at frequent intervals where sidehill is encountered. Compact backfill where breaks have been left [Section 8.4].</li> <li>Install temporary sediment fences, where warranted, to control sedimentation prior to final clean-up and the establishment of permanent erosion and sediment control measures (see Drawing [Sediment Fence] provided in Appendix R of the Pipeline EPP) [Section 8.6.2].</li> </ul>	•	Surface erosion of root zone material can be expected until a vegetative cover is established.		

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#### TABLE 8.1.2-1 Cont'd

F	Potential Effect	Spatial Boundary <sup>1</sup>	Key Recommendations/Mitigation Measures [EPP Reference] <sup>2</sup>	Р	otential Residual Effect(s)
2.2	Loss of root zone material through water erosion (cont'd)	See above	<ul> <li>Implement the Soil Erosion and Sediment Control Contingency Plan [Section 8.0 of Appendix B of the Pipeline EPP].</li> <li>Replace grade material to a stable contour that will approximate the pre-construction contour, except where it is not practical or safe to do so. When replacing sidehill or other graded areas is not practical due to the risk of slope failure, the Lead Activity Inspector, the Lead Environmental Inspector, the Inspector(s), the Construction Manager and a Geotechnical Engineer will discuss to determine an appropriate grade [Section 8.4].</li> <li>Recontour the construction right-of-way and re-establish the pre-construction grades and drainage channels [Section 8.6].</li> <li>Regrade areas with vehicle ruts, erosion gullies or where the trench has settled [Section 8.6].</li> </ul>	•	See above
2.3	Loss of root zone material from disturbance (e.g., maintenance dig activities) during operations	Footprint	Implement the recommended soil handling procedures outlined in the Pipeline EPP to reduce the potential for soil degradation when maintenance activities involving soil disturbance are necessary during operations of the pipeline.     Monitor areas along the right-of-way that are disturbed during operations and maintenance activities. Implement remedial measures, where warranted.	•	Surface erosion of root zone material can be expected until a vegetative cover is established.
3.	Soil Indicator – B	edrock and S	tone Disposal		
3.1.	Bedrock or large rocks within trench depth	LSA	<ul> <li>Rip bedrock in trench, if encountered. Ripping is preferred over blasting [Section 8.3].</li> <li>Blast bedrock encountered within trench depth only if ripping or typical trenching methods are not feasible [Section 8.3]. See additional measures for blasting in Section 8.3 of the Pipeline EPP.</li> <li>Haul excavated trench spoil that is not suitable for use as backfill (e.g., excess bedrock) and dispose of at locations approved by the Lead Environmental Inspector and the Inspector(s) [Section 8.3].</li> <li>Ensure that bedrock excavated from the trench is not backfilled into the upper 50 cm of the trench if the potential exists for a reduction in land capability. Dispose of excess bedrock at locations approved BC Parks, where warranted, and the Lead Environmental</li> </ul>	•	Removal of bedrock or large rocks from trench depth may result in disposal issues.
			Inspector and the Inspector(s). See additional measures for bedrock in Section 8.4 of the Pipeline EPP.		
4.	Soil Indicator – S	oil Contamin			
4.1.	Soil contamination due to spot spills during construction	LSA	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/lakes. In the event of a spill, implement the Spill Contingency Plan (see Appendix B of the Pipeline EPP) [Section 7.0].      Place to the content of the properties of the ground to eat the driving from social and the ground to eat the driving from social and the ground to eat the driving from social and the ground to eat the driving from social and the ground to eat the driving from social and the ground to eat the driving from social and the ground to eat the driving from social and the ground to eat the driving from social and the ground to eat the driving from social and the ground to eat the driving from social and the ground to eat the driving from social and the ground to eat the driving from the ground to eat t	•	No residual effect identified.
	SSTIGUION		<ul> <li>Place tarps or other impermeable material on the ground to catch drippings from coating application at weld joints and areas where repairs to the coating are made. Dispose of spilled coating at approved locations [Section 8.3].</li> <li>Isolate test pumps, generators and fuel storage tanks with an impermeable lined dike or depression to capture and retain any spills of fuels or lubricants [Section 8.5].</li> </ul>		

Notes:

- 1 LSA = Soil LSA.
- 2 Detailed mitigation measures are outlined in the Pipeline EPP (Volume 6B of the Facilities Application).

#### 8.1.2.2 Significance Evaluation of Potential Residual Effects

Table 8.1.2-2 provides a summary of the significance evaluation of the potential residual environmental effects of the construction and operations of the proposed pipeline in Coquihalla Summit Recreation Area on the soil and soil productivity. The rationale used to evaluate the significance of each of the residual environmental effects is provided below.

#### **TABLE 8.1.2-2**

## SIGNIFICANCE EVALUATION OF POTENTIAL RESIDUAL EFFECTS OF PIPELINE CONSTRUCTION AND OPERATIONS ON SOIL AND SOIL PRODUCTIVITY FOR COQUIHALLA SUMMIT RECREATION AREA

			-		Temporal C	ontext				
	Potential Residual Effects	Impact Balance	Spatial Boundary¹	Duration	Frequency	Reversibility	Magnitude	Probability	Confidence	Significance <sup>2</sup>
1.	Soil Indicator – Soil Productivity									
1(a)	Mixing of root zone material and subsoil.	Negative	Footprint	Short- term	Periodic	Medium- term	Low	High	High	Not significant
1(b)	Reduction in soil productivity on grassland areas from changes in evaporation and transpiration rates.	Negative	Footprint	Short- term	Periodic	Short to medium- term	Low	High	Moderate	Not significant
1(c)	Excessive trench subsidence or a remnant crown.	Negative	Footprint	Short- term	Isolated	Short to medium- term	Low	High	High	Not significant
2.	Soil Indicator – Soil Degradation									
2(a)	Surface erosion of root zone material can be expected until a vegetation cover is established.	Negative	Footprint	Short- term	Periodic	Medium- term	Low	High	High	Not significant
2(b)	Pulverization resulting in fugitive dust and loss of soil structure can be expected during dry conditions.	Negative	Footprint	Short- term	Isolated	Short to medium-term	Low	Low to high	High	Not significant
3.	Soil Indicator – Bedrock and Stone Disposal									
3(a)	Bedrock or large rock removal may result in disposal issues.	Negative	LSA	Short- term	Isolated	Short to medium- term	Low	High	High	Not significant
4.	Soil Indicator – Soil Contamination									
No re	esidual effects identified.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

- 1 LSA = Soil LSA.
- Significant Residual Environmental Effect: A high probability of occurrence of a permanent or long-term residual effect of high magnitude that cannot be technically or economically mitigated.

#### Soil Indicator - Soil Productivity

#### Root Zone Material and Subsoil Mixing

During the construction of the pipeline and, to a lesser extent, during maintenance activities, it is likely that a minor amount of root zone material and subsoil mixing will occur along the proposed construction right-of-way. The impact balance of this residual effect is considered negative since admixing could decrease soil productivity. A summary of the rationale for all of the significance criteria is provided in Table 8.1.2-2 (point 1[a]) and below.

- Spatial Boundary: Footprint admixing is confined to the area of disturbance along the construction right-of-way.
- Duration: short-term the events causing potential admixing are construction of the pipeline and maintenance-related activities, the latter of which are limited to any one year during the operations phase.
- Frequency: periodic the events causing potential admixing (*i.e.*, construction and maintenance-related activities) occur intermittently but repeatedly over the assessment period.
- Reversibility: medium-term loss of soil productivity due to minor root zone material and subsoil mixing
  is expected to be reversed within 10 years given the implementation of mitigation measures during
  construction and, if necessary, the application of soil amendments post-construction. The results of of

rograms in mountainous areas demonstrate that

- recent post-construction environmental monitoring programs in mountainous areas demonstrate that root-zone material mixing with subsoil is generally alleviated within a few years post-construction.
- Magnitude: low given the implementation of industry-standard and provincial regulatory mitigation measures outlined in Table 8.1.2-1 and, if necessary, soil amendments applied post-construction. The results of recent PCEM programs in forested areas demonstrate that root zone material mixing with subsoil is generally minor in severity and limited in extent.
- Probability: high admixing is a common residual effect of pipeline construction and may also occur during maintenance activities.
- Confidence: high there is a good understanding by the assessment team of cause-effect relationships between pipeline construction and soil productivity.

#### Soil Indicator – Soil Degradation

#### Surface Erosion of Root Zone Material

Construction and maintenance activities which disturb the soil will likely result in some surface erosion of root zone material until a stable vegetative cover can be established, particularly on slopes which are more susceptible to water erosion. The impact balance of this residual effect is considered negative since erosion could decrease soil productivity. Based on the results of PCEM programs for pipeline projects in forested and mountainous areas, issues related to erosion can generally be resolved within 2 to 3 years following final clean-up (TERA 2009a,b, 2011a,b,c, 2012a, 2013a,b). Similar measures are planned for the construction of the proposed pipeline. Consequently, minor surface erosion of root zone material is considered to be reversible in the medium-term.

- Spatial Boundary: Footprint surface erosion is confined to the area of disturbance along the construction right-of-way.
- Duration: short-term the events causing surface erosion are construction of the pipeline and maintenance-related activities, the latter of which are limited to any one year during the operations phase.
- Frequency: periodic the events causing surface erosion (i.e., construction and maintenance-related activities) occur intermittently but repeatedly over the assessment period.
- Reversibility: medium-term surface erosion is generally expected to be reversed within 2 to 3 years given the implementation of mitigation measures during construction and, if necessary, the application of soil amendments post-construction.
- Magnitude: low given the implementation of industry-standard and provincial regulatory mitigation measures outlined in Table 8.1.2-1 and, if necessary, soil amendments applied post-construction.
- Probability: high surface erosion is a common residual effect of pipeline construction which can be addressed during PCEM and may also occur during maintenance activities.
- Confidence: high there is a good understanding by the assessment team of cause-effect relationships between pipeline construction and soil degradation.

#### Degradation of Soil Structure from Pulverization

Construction activities during dry conditions may result in pulverization of soil and sod along the proposed pipeline corridor in Coquihalla Summit Recreation Area. The impact balance of this residual effect is negative since pulverization of soil and sod could lead to increased fugitive dust and loss of soil structure. Given the mitigation measures in Table 8.1.2-1 to reduce soil/sod pulverization, including the Soil/Sod Pulverization Contingency Plan, degradation of soil structure from pulverization is considered to be reversible in the short to medium-term (Table 8.1.2-2, point 2[b]). A summary of the rationale for all of the significance criteria is provided below.

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- Spatial Boundary: Footprint degradation of soil structure from pulverization is confined to the area of disturbance along the construction right-of-way.
- Duration: short-term the event causing degradation of soil structure from pulverization is construction of the pipeline.
- Frequency: isolated the event causing degradation of soil structure from pulverization (*i.e.*, construction of the pipeline) is confined to a specified phase of the assessment period.
- Reversibility: short to medium-term effects related to dust are reversible in less than one year (short-term); while the effects related to loss of soil structure is expected to take more than one year but less than 10 years to reverse the effect (medium-term).
- Magnitude: low given the implementation of mitigation measures outlined in Table 8.1.2-1 and, if necessary, soil amendments applied post-construction.
- Probability: low to high degradation of soil structure from pulverization is a common residual effect of
  pipeline construction but only in dry conditions so the likelihood varies by location along the construction
  right-of-way and weather conditions.
- Confidence: high based on data pertinent to the Project area and the professional experience of the assessment team.

#### Soil Indicator - Bedrock and Stone Disposal

Disposal Issues Resulting from Removal of Bedrock from the Trench

Bedrock or large rock removed from the trench by ripping or blasting may result in disposal issues depending on the volume accumulated.

Although there is potential to encounter bedrock within trench depth along the proposed pipeline corridor, conventional trenching methods are anticipated to be successful; however, localized blasting is anticipated along the proposed pipeline corridor in Coquihalla Summit Recreation Area. The impact balance of this effect is considered to be negative since removal of bedrock can impact the management of soils in Coquihalla Summit Recreation Area. The magnitude of this residual effect is considered to be low (Table 8.1.2-2, point 3[a]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Soil LSA bedrock originating from disturbed portions of the construction right-ofway in Coquihalla Summit Recreation Area may result in disposal off right-of-way to an approved location, including areas within the Soil LSA.
- Duration: short-term the event causing disposal issues resulting from removal of bedrock from the trench is construction of the pipeline.
- Frequency: isolated the event causing disposal issues resulting from removal of bedrock from the trench (i.e., construction activities) is confined to a specified phase of the assessment period.
- Reversibility: short to medium-term excess bedrock is typically disposed of within a year of construction.
- Magnitude: low given the implementation of mitigation measures outlined in Table 8.1.2-1 and through PCEM which will address any issues of excess bedrock after construction.
- Probability: high based on similar projects, disposal issues resulting from removal of bedrock from the trench are a common residual effect of pipeline construction.
- Confidence: high there is a good understanding by the assessment team of cause-effect relationships between pipeline construction and bedrock disposal.

#### Soil Indicator - Soil Contamination

No residual effects of the construction and operations of the proposed pipeline were identified for the soil contamination indicator (Table 8.1.2-2). Consequently, no further assessment is warranted.

#### 8.1.2.3 Summary

As identified in Table 8.1.2-2, there are no situations where there is a high probability of occurrence of a permanent or long-term residual environmental effect on soil and soil productivity indicators of high magnitude that cannot be technically or economically mitigated. Consequently, it is concluded that the residual environmental effects of pipeline construction and operations on the conservational values of Coquihalla Summit Recreation Area related to soil and soil productivity will be not significant.

#### 8.1.3 Water Quality and Quantity

This subsection describes the potential Project effects on water quality and quantity indicators in Coquihalla Summit Recreation Area. The Water Quality and Quantity LSA is the area generally extending 100 m upstream of the centre of the proposed pipeline corridor to a minimum of 300 m downstream of the centre of the proposed pipeline corridor, as well as within 300 m of the proposed pipeline corridor, in potentially vulnerable groundwater areas in hydraulic connection with the Footprint and in consideration of surface water drainage patterns along the proposed pipeline corridor. The Aquatics RSA includes all watersheds directly affected by the proposed pipeline corridor and applies to surface water; shown in Figure 8.1-1.

#### 8.1.3.1 Identified Potential Effects

Potential effects associated with the construction and operation of the proposed pipeline on water quality and quantity indicators are listed in Table 8.1.3-1.

A summary of mitigation measures provided in Table 8.1.3-1 was principally developed in accordance with Trans Mountain Standards as well as industry and provincial and federal regulatory guidelines including BC MOE (2010), BC MOF (1995), BC MWLAP (2004), BC OGC (2013), CAPP et al. (2005) and DFO (1995, 1999, 2013), as well as groundwater legislation under the *Oil and Gas Activities Act (Environmental Protection and Management Regulation*) and the *BC Environmental Assessment Act.* Table 8.1.3-2 provides the pipeline and vehicle crossing methods for watercourses encountered within Coquihalla Summit Recreation Area.

#### **TABLE 8.1.3-1**

## POTENTIAL EFFECTS, MITIGATION MEASURES AND RESIDUAL EFFECTS OF PIPELINE CONSTRUCTION AND OPERATION ON WATER QUALITY AND QUANTITY FOR COQUIHALLA SUMMIT RECREATION AREA

	Potential Effect	Spatial Boundary <sup>1</sup>		Key Recommendations/Mitigation Measures [EPP Reference] <sup>2</sup>	Potential Residual Effect(s)		
1.	Water Quality and Q						
1.1	Suspended sediment concentrations in the water column during instream activities	LSA	•	Pipeline Crossing An isolated watercourse crossing method ( <i>i.e.</i> , if water is present) and contingency open cut method ( <i>i.e.</i> , if dry or frozen to bottom) have been selected in consideration of the size, environmental sensitivities of watercourses (Falls Lake Creek, Boston Bar Creek and 12 unnamed drainages) in Coquihalla Summit Recreation Area and the period of construction (Refer to Table 8.1.3-2) Confirm with the Inspector(s) that all notifications and approvals and/or letters of advice are in place prior to commencing instream construction [Section 8.7]. Grade away from watercourses to reduce the risk of introduction of soil and organic debris. Do not place windrowed or fill material in the watercourses during grading [Section 8.2].  Install a temporary sediment barrier ( <i>e.g.</i> , sediment fences), where warranted, to eliminate the flow of sediment from spoil piles and disturbed areas into the watercourse [Section 8.7].	•	Reduction in surface water quality due to suspended sediment during instream activities during construction and site-specific maintenance activities.	
		•	•	Inspect temporary sediment control structures ( <i>e.g.</i> , sediment fences, subsoil berms) installed on approach slopes, on a daily basis throughout crossing construction. Repair the structures, if warranted, before the end of the working day [Section 8.7].			

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#### TABLE 8.1.3-1 Cont'd

	Potential Effect	Spatial Boundary <sup>1</sup>	Key Recommendations/Mitigation Measures [EPP Reference] <sup>2</sup>		Potential Residual Effect(s)
1.1	Suspended sediment concentrations in	See above	Dewater the segment of the watercourse between the dams, if feasible and safe to do so. Pump any silt-laden water out between the dams to well-vegetated lands, away from the watercourse or to settling ponds [Section 8.7].	•	See above
	the water column during instream activities (cont'd)		<ul> <li>Remove any accumulations of sediment within the isolation areas that resulted from crossing construction. Spread all sediment and unused trench spoil removed from the watercourse at a location above the high water mark where the materials will not directly re-enter the watercourse [Section 8.7].</li> </ul>		
			<ul> <li>Install sack trench breakers back from the edge of watercourses where the banks consist of organic material to prevent sloughing of backfill into the channel.</li> </ul>		
			<ul> <li>Ensure that water from flumes, dam and pumps, diversion or other methods does not cause erosion or introduce sediment into the channel. If warranted, place rock rip rap, tarpaulins, plywood sheeting or other materials to control erosion at the outlet of pump hoses and flumes. Supplement the erosion control materials, if warranted, to control any erosion [Section 8.7].</li> </ul>		
			<u>Vehicle Crossing</u>		
			<ul> <li>Falls Lake Creek, Boston Bar Creek and two unnamed drainages will be crossed using a clear-span bridge. The unnamed drainages that are flowing at the time of construction will be crossed using a ramp and culvert method. During dry/frozen conditions, the unnamed drainages will be crossed using either a snow/icefill, a ramp and culvert or other regulatory approved crossing method (Refer to Table 8.1.3-2). All non-visible drainages will be forded.</li> </ul>		
			Temporary Bridges		
			Ensure bridges are clean prior to installation [Section 8.7].		
			<ul> <li>Implement erosion control measures as soon as disturbance of the vegetation mat occurs [Section 8.7].</li> </ul>		
			<ul> <li>Ensure stormwater from the bridge deck, side slopes and bridge approaches is directed away from the Falls Lake Creek, Boston Bar Creek and the two unnamed drainages onto a well vegetated area [Section 8.7].</li> </ul>		
			<ul> <li>Stabilize and revegetate areas disturbed during installation and removal of the bridge; install erosion control measures, where warranted, to control surface erosion until vegetation is established [Section 8.7].</li> </ul>		
			Temporary Fords		
			<ul> <li>Ensure the use of a ford is a one-time crossing (over and back) or limit ford to a seasonally dry streambed [Section 8.7].</li> </ul>		
			<ul> <li>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 and bedrock. Trans Mountain will not grade the banks to create a ford [Section 8.7].</li> </ul>		
			<ul> <li>Install matting, where warranted, to protect the bed and banks of a watercourse to be forded [Section 8.7].</li> </ul>		
			<u>Operations</u>		
			<ul> <li>Implement measures similar to construction under direction of Trans Mountain's Environmental, Health and Safety Management System to reduce suspended sediment released during integrity digs conducted instream.</li> </ul>		
1.2	Erosion from	LSA	<u>Pipeline Crossing</u>	•	Reduction in surface
	approach slopes		<ul> <li>Prohibit clearing of extra temporary workspace within the riparian buffer; only the trench and temporary workspace areas will be cleared. Ensure staging areas for watercourse crossing construction and spoil storage areas are located a minimum of 10 m from the banks of the watercourse boundaries. This distance may be reduced by the Lead Environmental Inspector and the Inspector(s) where appropriate controls are in place [Section 8.1].</li> </ul>		water quality due to erosion from banks and approach slopes.
			<ul> <li>Restrict root grubbing to the area outside of the vegetated riparian buffer adjacent to the watercourse [Section 8.1].</li> </ul>		
			<ul> <li>Install erosion control measures, where warranted, prior to commencing grading in the vicinity of the watercourse crossing [Section 8.2].</li> </ul>		
			<ul> <li>Grade away from the watercourse to reduce the risk of introduction of soil and organic debris. Do not place windrowed or fill material in the watercourse during grading [Section 8.2].</li> </ul>		
			<ul> <li>Install temporary berms on approach slopes to the watercourse and erect sediment fence(s) near the base of approach slopes following grading, where warranted. Inspect the temporary sediment control structures on a daily basis and repair, if warranted, before the end of each working day [Section 8.2].</li> </ul>		

#### TABLE 8.1.3-1 Cont'd

	Potential Effect	Spatial Boundary <sup>1</sup>	Key Recommendations/Mitigation Measures [EPP Reference] <sup>2</sup>	Potential Residual Effect(s)
_	Erosion from approach slopes (cont'd)	See above	<ul> <li>Install temporary erosion and sediment control structures (e.g., sediment fences, coir logs) immediately following the completion of backfilling lands adjacent to the watercourse crossing where the potential for sedimentation of the watercourse exists [Section 8.4].</li> </ul>	See above
			<ul> <li>Seed riparian areas with an approved annual or perennial grass cover crop or native grass mix as soon as is feasible after construction. See additional measures outlined in the Reclamation Management Plan of the Pipeline EPP [Appendix C].</li> </ul>	
			<ul> <li>Transplant dormant shrubs, or install dormant willow stakes or commercially grown rooted stock plants (plugs), where warranted, during reclamation of streambanks where riparian vegetation is present prior to construction. See Table 8.1.3-2.</li> </ul>	
			Install permanent erosion control measures, as outlined in the Reclamation Management Plan of the Pipeline EPP unless otherwise approved by Trans Mountain to adjust for site conditions and suitability [Section 8.6].	
			<ul> <li>Install temporary fencing, if warranted, to allow the revegetation treatments to become established and avoid damage to the banks and riparian area by wildlife [Section 8.7].</li> </ul>	
			<ul> <li>Monitor watercourse after construction to assess the success of construction and reclamation mitigation measures following the temporary disturbance. Implement remedial measures, where warranted.</li> <li>Vehicle Crossings</li> </ul>	
			Ensure that equipment used during construction of the vehicle crossing is used in a manner that reduces disturbance of the bed and banks and ensure bridge installation does not alter the stream bed or banks or require infilling of the channel [Section 8.7].	
			<ul> <li>Seed disturbed areas on the banks and approaches as soon as practical with an approved grass cover crop species or native grass seed mix and implement sediment control measures to stabilize watercourse banks and prevent sedimentation of the watercourse, respectively. Follow measures provided in the Reclamation Management Plan of the Pipeline EPP [Section 8.7].</li> </ul>	
			Operations     Implement measures similar to construction under direction of Trans Mountain's Environmental, Health and Safety Management System for controlling erosion from banks and approach slopes during integrity digs conducted instream or in vicinity to the watercourse.	
1.3	Reduction of surface water quality due to small spill during construction or site- specific maintenance activities	LSA	Ensure the following separation distances are maintained between the watercourse when planning and constructing the pipeline, unless otherwise approved:     fuel or hazardous material storage site - 300 m;     burning site - 100 m; and     oil change area - 100 m [Section 7.0].  Refer to the Pipeline EPP for additional measures for hazardous materials storage,	Contamination of surface water due to a small spill during construction or site- specific maintenance activities.
			<ul> <li>servicing vehicles and spill equipment needs as well as cleaning of equipment.</li> <li>Ensure that during construction no fuel, lubricating fluids, hydraulic fluids, methanol, antifreeze, herbicides, biocides, or other chemicals are dumped on the ground or into waterbodies. In the event of a spill, implement the Spill Contingency Plan in the Pipeline EPP [Section 7.0].</li> </ul>	
			<ul> <li>Conduct refuelling a minimum of 100 m from the watercourse unless otherwise approved by the appropriate regulatory authority. Refer to the Pipeline EPP for additional measures for refuelling near waterbodies [Section 7.0].</li> </ul>	
2.	Water Quality and Q	uantity Indicat	or – Surface Water Quantity	
2.1	Alteration of natural surface drainage	LSA	<ul> <li>Maintain drainage across the construction right-of-way during all phases of construction [Section 7.0].</li> </ul>	Localized alteration of natural surface
	patterns		<ul> <li>Ensure the potential for soil erosion by water is reduced during construction activities by avoiding ponding of water or the unintentional channelization of surface water flow [Section 7.0].</li> </ul>	drainage patterns until trench settlement is
			<ul> <li>Provide surface drainage of adequate capacity across the construction right-of-way [Section 7.0].</li> </ul>	complete.
			<ul> <li>Reduce grading along the construction right-of-way, especially within watercourse/wetland vegetated buffers [Section 8.2].</li> </ul>	
			<ul> <li>Leave hard plugs or install soft plugs at locations where the open trench could dewater a wetland or flood other areas [Section 8.3].</li> </ul>	
			<ul> <li>Leave breaks in the trench crown at obvious drainages and wherever seepage occurs to reduce or avoid interference with natural drainage [Section 8.4].</li> </ul>	

#### TABLE 8.1.3-1 Cont'd

	Potential Effect	Spatial Boundary <sup>1</sup>	Key Recommendations/Mitigation Measures [EPP Reference] <sup>2</sup>	Potential Residual Effect(s)
2.1	Alteration of natural surface drainage patterns (cont'd)	See above	Recontour the construction right-of-way and stabilize approach slopes at watercourse crossings. Where reclamation of the pre-construction grade is not feasible due to risk of failure of fill on slopes or maintenance of an access trail, recontour to grades as directed by the Geotechnical Engineer in consultation with BC Parks [Section 8.6].      Regrade areas with vehicle ruts, erosion gullies or where the trench has settled	See above
			[Section 8.6].      Implement similar mitigation measures during site-specific maintenance activities during operations.	
2.2	Disruption or alteration of	LSA	Adhere to clearing guidelines for protection of streams provided in the Riparian Management Area Guidebook [Section 8.1].	Disruption and alteration of natural
	streamflow		Fell trees away from the watercourse and away from limits of the construction right-of-way to reduce damage to the streambanks, bed and adjacent trees. Hand clear the area, if necessary, to reduce disturbance. Any trees, debris and soil inadvertently deposited within the ordinary high watermark will be promptly removed in a manner that avoids or reduces disturbance of the bed and banks. Trees will not be stood or hauled across the watercourse [Section 8.1].	streamflow from instream activities.
			Do not place windrowed or fill material in the watercourse during grading [Section 8.2].	
			Ensure streamflow, if present, is maintained under ice bridge and snow fill vehicle crossings [Section 8.7].	
			Ensure streamflow, if present, is maintained at all times when trenching through a watercourse [Section 8.7].	
			<ul> <li>Ensure that new vehicle crossing structures are appropriate for the watercourse approaches, channel width and configuration, anticipated streamflow during the period of use, planned vehicle loads, and overall period/duration of use [Section 8.7].</li> </ul>	
			<ul> <li>Re-establish streambanks and approaches immediately following construction of the watercourse crossing as outlined in the Reclamation Management Plan of the Pipeline EPP [Appendix R].</li> </ul>	
3.	Water Quality and Q	uantity Indicat	or – Groundwater Quality	
3.1	Groundwater or wells vulnerable to	LSA	<ul> <li>Use Best Management Practices for spill prevention outlined in the Pipeline EPP including in areas where higher vulnerability wells and groundwater are identified.</li> </ul>	<ul> <li>Contamination of groundwater as a</li> </ul>
	possible future contamination from a small spill during construction		<ul> <li>Ensure that during construction no fuel, lubricating fluids, hydraulic fluids, methanol, antifreeze, herbicides, biocides, or other chemicals are dumped on the ground or into waterbodies. In the event of a spill, implement the Spill Contingency Plan (see Appendix B of Pipeline EPP) [Section 7.0].</li> </ul>	result of a small spill during construction.
			<ul> <li>Re-establish or replace a potable water supply as required should a registered or known water well located within 30 m of the construction right-of-way be damaged (i.e., diminishment in quantity and/or quality) during pipeline installation [Section 7.0].</li> </ul>	
3.2	Areas susceptible to blasting effects	LSA	Notify BC Parks of water supply wells within the Water Quality and Quantity LSA before blasting is carried out and conduct investigations, where warranted, to assess groundwater conditions and risks [Section 6.0].      Initiate pre-construction monitoring, where warranted, prior to the commencement.	Elevated turbidity in groundwater as a result of silt release during blasting.
			of a specific activity during construction (e.g., blasting). Monitoring may be necessary prior to, during and following construction or a specific construction activity in the vicinity of water wells or springs [Section 6.0].	during bladding.
			<ul> <li>During Project field studies, the Hydrogeological Engineer in consultation with BC Parks will determine if springs and wells located in the immediate vicinity of the construction right-of-way will be sampled for water quality and flow rate prior to the start of construction. Locate and flag or fence registered or known water wells in the immediate vicinity of the construction right-of-way [Section 6.0].</li> </ul>	
			<ul> <li>Monitor all registered or known potable water wells located within 200 m of any blasting prior to and following blasting. Monitoring will include measurement of well yields, static and pumping water levels as well as water sampling in accordance with Canadian Guidelines for Drinking Water Quality (Health Canada 2012) [Section 8.3].</li> </ul>	
			<ul> <li>Re-establish or replace a potable water supply as required should a registered or known water well located within 30 m of the construction right-of-way be damaged (i.e., diminishment in quantity and/or quality) during pipeline installation [Section 7.0].</li> </ul>	

#### TABLE 8.1.3-1 Cont'd

	Potential Effect	Spatial Boundary <sup>1</sup>	Key Recommendations/Mitigation Measures [EPP Reference] <sup>2</sup>	Potential Residual Effect(s)		
4.	Water Quality and Q	uantity Indicat	or – Groundwater Quantity			
4.1	Areas susceptible to changes in groundwater flow patterns	LSA	<ul> <li>Monitor water encountered in the trench during trenching to determine if groundwater flow is being intercepted. If spring flow has been disrupted, seek and follow the advice of the Hydrogeological or Geotechnical Resource Specialist to maintain cross drainage within the trench (e.g., installation of subdrains, trench breakers, etc.) [Section 8.3].</li> <li>Assess the need for well points or other dewatering methods, prior to commencing trenching, to intercept groundwater at site-specific locations before it enters the trench [Section 8.3].</li> <li>Prevent the pipeline trench and bedding from becoming a conduit for increased groundwater flow.</li> <li>Install trench breakers to force groundwater seepage along the pipeline trench to the surface, if springs are encountered along the route. Install subdrains to divert shallow groundwater flow from the right-of-way [Section 8.4].</li> <li>Install subdrains in association with trench breakers as directed by Trans Mountain's Engineer where there is evidence of seepage or a flowing spring on a slope once the trench is excavated (see Subdrains Drawing in Appendix R of the Pipeline EPP) [Section 8.4].</li> <li>Backfill clay/mineral soil first, if salvaged separately from organic material in shallow peatland areas, to ensure that cross drainage is maintained [Section 8.4].</li> </ul>	•	Natural groundwater pathways may be bisected and create a sink (drain) for shallow groundwater. Flooding on the upgradient side of the pipeline may result in creation of wet zones on ground surface. Reduction of baseflow to local streams.	
4.2	Areas of shallow groundwater susceptible to blasting effects	LSA	See recommended mitigation measures for blasting outlined in potential effect 3.2 of this table.	•	Reduction in water quantity if blasting damages the well or surrounding formation.  Enhancement of water quantity if blasting opens or unclogs fractures supplying existing water well.	

Notes:

- LSA = Water Quality and Quantity LSA. 1
- Detailed mitigation measures are outlined in the Pipeline EPP (Volume 6B of the Facilities Application).

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#### **TABLE 8.1.3-2**

#### PROPOSED PIPELINE AND VEHICLE WATERCOURSE CROSSING METHODS ALONG THE PROPOSED PIPELINE CORRIDOR THROUGH **COQUIHALLA SUMMIT RECREATION AREA**

Watercourse						Pipeline Cro	ssing Method	Vehicle Cro	ssing Method	Reclamation
Name (Watercourse ID)	AK	Fish Presence Captured or Observed (Previously Documented)	Sensitivity Rating	Provincial Instream Work Window	Least Biological Risk Window Proposed	Recommended Primary	Recommended Contingency	Recommended Crossing Method (Flowing)	Recommended Crossing Method (Dry/Frozen)	
Unnamed Channel (BC 583)	992.9	None (None)	Low	None	Open	Isolation if water present	Open-cut if dry frozen to bottom	Ramp and Culvert	Snow/Icefill or other regulatory approved crossing method	<ul> <li>Salvage dormant riparian vegetation along the trench line (and vehicle crossing locations, where grading is required), keeping roots intact (i.e., with sufficient soil root ball). Store salvaged dormant plants and plant material away from construction activities for replacement or installation during reclamation. Replace salvaged dormant riparian plants and plant material (stakes and brush) during reclamation (see Drawing [Shrub Staking and Transplanting] provided in Appendix R of the Pipeline EPP).</li> <li>Install rooted stock shrubs/trees and/or dormant tree/shrub stakes/brush in disturbed riparian areas to stabilize the soils, reduce sedimentation and accelerate vegetation recovery (see Drawing [Shrub Staking and Transplanting] and [Rooted Stock Selection and</li> </ul>
										Installation] provided in Appendix R of the Pipeline EPP).  Recontour banks using salvaged bank material and install erosion control blanket and/or coir logs as required (see Drawing [Erosion Control Matting/Blanket] and [Coir/Straw Log Installation] provided in Appendix R of the Pipeline EPP).
										Coir soil wrap(s) with dormant brush/stake layering may be used for added bank integrity and to create overhanging vegetation (see Drawing [Streambank Protection – Hedge/Brush Layering] provided in Appendix R of the Pipeline EPP).
										<ul> <li>If required, install riprap base below OHWL, keyed into bed and underlain with filter cloth or gravel layer.</li> <li>Install coir soil wrap(s) above the OHWL (see Drawing [Streambank Protection – Hedge/Brush Layering] provided in Appendix R of the Pipeline EPP).</li> </ul>
										Log crib structure made from natural logs may be used at the base of the bank (below the OHWL) if appropriate (may be a single log in height, typically a minimum of two logs are used) (see Drawing [Staked Logs/Log Cribwall for Erosion Control] provided in Appendix R of the Pipeline EPP).
Unnamed Channel (BC 584)	994.2	None (None)	Low	None	Open	Isolation if water present	Open-cut if dry or frozen to bottom	Ramp and Culvert	Snow/Icefill or other regulatory approved crossing method	Salvage dormant riparian vegetation along the trench line (and vehicle crossing locations, where grading is required), keeping roots intact (i.e., with sufficient soil root ball). Store salvaged dormant plants and plant material away from construction activities for replacement or installation during reclamation. Replace salvaged dormant riparian plants and plant material (stakes and brush) during reclamation (see Drawing [Shrub Staking and Transplanting] provided in Appendix R of the Pipeline EPP).
										<ul> <li>Install rooted stock shrubs/trees and/or dormant tree/shrub stakes/brush in disturbed riparian areas to stabilize the soils, reduce sedimentation and accelerate vegetation recovery (see Drawing [Shrub Staking and Transplanting] and [Rooted Stock Selection and Installation] provided in Appendix R of the Pipeline EPP).</li> </ul>
										Recontour banks using salvaged bank material and install erosion control blanket and/or coir logs as required (see Drawing [Erosion Control Matting/Blanket] and [Coir/Straw Log Installation] provided in Appendix R of the Pipeline EPP).
										<ul> <li>Coir soil wrap(s) with dormant brush/stake layering may be used for added bank integrity and to create overhanging vegetation (see Drawing [Streambank Protection – Hedge/Brush Layering] provided in Appendix R of the Pipeline EPP).</li> <li>If required, install riprap base below OHWL, keyed into bed and underlain with filter cloth or gravel layer.</li> </ul>
										<ul> <li>Install coir soil wrap(s) above the OHWL (see Drawing [Streambank Protection – Hedge/Brush Layering] provided in Appendix R of the Pipeline EPP).</li> </ul>
										<ul> <li>Log crib structure made from natural logs may be used at the base of the bank (below the OHWL) if appropriate (may be a single log in height, typically a minimum of two logs are used) (see Drawing [Staked Logs/Log Cribwall for Erosion Control] provided in Appendix R of the Pipeline EPP).</li> </ul>
Unnamed Channel (BC 585)	994.7	None (None)	Low	None	Open	Isolation if water present	Open-cut if dry or frozen to bottom	Ramp and Culvert	Snow/Icefill or other regulatory approved crossing method	• Salvage dormant riparian vegetation along the trench line (and vehicle crossing locations, where grading is required), keeping roots intact ( <i>i.e.</i> , with sufficient soil root ball). Store salvaged dormant plants and plant material away from construction activities for replacement or installation during reclamation. Replace salvaged dormant riparian plants and plant material (stakes and brush) during reclamation (see Drawing [Shrub Staking and Transplanting] provided in Appendix R of the Pipeline EPP).
										Install rooted stock shrubs/trees and/or dormant tree/shrub stakes/brush in disturbed riparian areas to stabilize the soils, reduce sedimentation and accelerate vegetation recovery (see Drawing [Shrub Staking and Transplanting] and [Rooted Stock Selection and Installation] provided in Appendix R of the Pipeline EPP).
										Recontour banks using salvaged bank material and install erosion control blanket and/or coir logs as required (see Drawing [Erosion Control Matting/Blanket] and [Coir/Straw Log Installation] provided in Appendix R of the Pipeline EPP).
										Coir soil wrap(s) with dormant brush/stake layering may be used for added bank integrity and to create overhanging vegetation (see Drawing [Streambank Protection – Hedge/Brush Layering] provided in Appendix R of the Pipeline EPP).
Unnamed Channel (BC 585a)	995.0	None (None)	Low	None	Open	Isolation if water present	Open-cut if dry or frozen to bottom	Ramp and Culvert	Snow/Icefill or other regulatory approved crossing method	Salvage dormant riparian vegetation along the trench line (and vehicle crossing locations, where grading is required), keeping roots intact (i.e., with sufficient soil root ball). Store salvaged dormant plants and plant material away from construction activities for replacement or installation during reclamation. Replace salvaged dormant riparian plants and plant material (stakes and brush) during reclamation (see Drawing [Shrub Staking and Transplanting] provided in Appendix R of the Pipeline EPP).
										<ul> <li>Install rooted stock shrubs/trees and/or dormant tree/shrub stakes/brush in disturbed riparian areas to stabilize the soils, reduce sedimentation and accelerate vegetation recovery (see Drawing [Shrub Staking and Transplanting] and [Rooted Stock Selection and Installation] provided in Appendix R of the Pipeline EPP).</li> </ul>
										Recontour banks using salvaged bank material and install erosion control blanket and/or coir logs as required (see Drawing [Erosion Control Matting/Blanket] and [Coir/Straw Log Installation] provided in Appendix R of the Pipeline EPP).
										Coir soil wrap(s) with dormant brush/stake layering may be used for added bank integrity and to create overhanging vegetation (see Drawing [Streambank Protection – Hedge/Brush Layering] provided in Appendix R of the Pipeline EPP).

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#### TABLE 8.1.3-2 Cont'd

		Fish Presence Captured		Provincial	Least Biological	Pipeline Cro	ssing Method	Vehicle Crossing Method		
Watercourse Name	AK	or Observed (Previously Documented)	Sensitivity Rating	Instream Work Window	Risk Window Proposed	Recommended Primary	Recommended Contingency	Recommended Crossing Method (Flowing)	Recommended Crossing Method (Dry/Frozen)	Reclamation
Unnamed Channel (BC 585b)	995.3	None (None)	Low	None	Open	Isolation if water present	Open-cut if dry or frozen to bottom	Ramp and Culvert	Snow/Icefill or other regulatory approved crossing method	Salvage dormant riparian vegetation along the trench line (and vehicle crossing locations, where grading is required), keeping roots intact (i.e., with sufficient soil root ball). Store salvaged dormant plants and plant material away from construction activities for replacement or installation during reclamation. Replace salvaged dormant riparian plants and plant material (stakes and brush) during reclamation (see Drawing [Shrub Staking and Transplanting] provided in Appendix R of the Pipeline EPP).
										<ul> <li>Install rooted stock shrubs/trees and/or dormant tree/shrub stakes/brush in disturbed riparian areas to stabilize the soils, reduce sedimentation and accelerate vegetation recovery (see Drawing [Shrub Staking and Transplanting] and [Rooted Stock Selection and Installation] provided in Appendix R of the Pipeline EPP).</li> </ul>
										Recontour banks using salvaged bank material and install erosion control blanket and/or coir logs as required (see Drawing [Erosion Control Matting/Blanket] and [Coir/Straw Log Installation] provided in Appendix R of the Pipeline EPP).
										Coir soil wrap(s) with dormant brush/stake layering may be used for added bank integrity and to create overhanging vegetation (see Drawing [Streambank Protection – Hedge/Brush Layering] provided in Appendix R of the Pipeline EPP).
										<ul> <li>If required, install riprap base below OHWL, keyed into bed and underlain with filter cloth or gravel layer.</li> <li>Install coir soil wrap(s) above the OHWL (see Drawing [Streambank Protection – Hedge/Brush Layering] provided in Appendix R of the</li> </ul>
										<ul> <li>Pipeline EPP).</li> <li>Log crib structure made from natural logs may be used at the base of the bank (below the OHWL) if appropriate (may be a single log in height, typically a minimum of two logs are used) (see Drawing [Staked Logs/Log Cribwall for Erosion Control] provided in Appendix R of the Pipeline EPP).</li> </ul>
Unnamed Channel (BC 586)	995.4	None (None)	Low	None	Open	Isolation if water present	Open-cut if dry or frozen to bottom	Ramp and Culvert	Snow/Icefill or other regulatory approved crossing method	Salvage dormant riparian vegetation along the trench line (and vehicle crossing locations, where grading is required), keeping roots intact (i.e., with sufficient soil root ball). Store salvaged dormant plants and plant material away from construction activities for replacement or installation during reclamation. Replace salvaged dormant riparian plants and plant material (stakes and brush) during reclamation (see Drawing [Shrub Staking and Transplanting] provided in Appendix R of the Pipeline EPP).
										<ul> <li>Install rooted stock shrubs/trees and/or dormant tree/shrub stakes/brush in disturbed riparian areas to stabilize the soils, reduce sedimentation and accelerate vegetation recovery (see Drawing [Shrub Staking and Transplanting] and [Rooted Stock Selection and Installation] provided in Appendix R of the Pipeline EPP).</li> </ul>
Dry Gulch (BC 587)	996.1	None (None)	Low	None	Open	Isolation if water present	Open-cut if dry or frozen to bottom	Existing or other regulatory approved crossing method	Ford	Recontour bed and banks/approach slopes to pre-construction profiles and grades.
Falls Lake Creek	997.3	None (RB)	High	August 1 to October 31	August 1 to October 31	Isolation with fish salvage and	Isolation with fish salvage and	Clear-span bridge	Clear-span bridge	Recreate banks using log crib structures made of natural logs (typically a minimum of two logs is used) (see Drawing [Staked Logs/Log Cribwall for Erosion Control] provided in Appendix R of the Pipeline EPP)
(BC 588)						water quality monitoring	water quality monitoring during low flow			<ul> <li>Install riprap keyed in to bed and underlain with filter cloth or gravel layer (see Drawing [Streambank Protection – Hedge/Brush Layering] provided in Appendix R of the Pipeline EPP).</li> </ul>
							low now			<ul> <li>Supplement with salvaged bank material as required.</li> <li>Install coir soil wrap(s) with dormant brush/stake layering above crib or riprap (see Drawing [Streambank Protection – Hedge/Brush Layering] provided in Appendix R of the Pipeline EPP).</li> </ul>
										<ul> <li>Install rooted stock shrubs/trees and/or dormant tree/shrub stakes/brush in disturbed riparian areas to stabilize the soils, reduce sedimentation and accelerate vegetation recovery (see Drawing [Shrub Staking and Transplanting] and [Rooted Stock Selection and Installation] provided in Appendix R of the Pipeline EPP).</li> </ul>
Unnamed Channel (BC 589)	998.1	None (None)	Low	None	Open	Isolation if water present	Open-cut if dry or frozen to bottom	Ramp and Culvert	Ramp and Culvert or other regulatory approved crossing method	Install rooted stock shrubs/trees and/or dormant tree/shrub stakes/brush in disturbed riparian areas to stabilize the soils, reduce sedimentation and accelerate vegetation recovery (see Drawing [Shrub Staking and Transplanting] and [Rooted Stock Selection and Installation] provided in Appendix R of the Pipeline EPP).
										Recontour banks using salvaged bank material and install erosion control blanket and/or coir logs as required (see Drawing [Erosion Control Matting/Blanket] and [Coir/Straw Log Installation] provided in Appendix R of the Pipeline EPP).
										Coir soil wrap(s) with dormant brush/stake layering may be used for added bank integrity and to create overhanging vegetation (see Drawing [Streambank Protection – Hedge/Brush Layering] provided in Appendix R of the Pipeline EPP).
Unnamed Channel (BC 589a)	998.9	None (None)	Low	None	Open	Isolation if water present	Open-cut if dry or frozen to bottom	Ramp and Culvert	Ramp and Culvert or other regulatory approved crossing method	<ul> <li>Install rooted stock shrubs/trees and/or dormant tree/shrub stakes/brush in disturbed riparian areas to stabilize the soils, reduce sedimentation and accelerate vegetation recovery (see Drawing [Shrub Staking and Transplanting] and [Rooted Stock Selection and Installation] provided in Appendix R of the Pipeline EPP).</li> </ul>
(20 0000)									3	Recontour banks using salvaged bank material and install erosion control blanket and/or coir logs as required (see Drawing [Erosion Control Matting/Blanket] and [Coir/Straw Log Installation] provided in Appendix R of the Pipeline EPP).
										Coir soil wrap(s) with dormant brush/stake layering may be used for added bank integrity and to create overhanging vegetation (see Drawing [Streambank Protection – Hedge/Brush Layering] provided in Appendix R of the Pipeline EPP).
Unnamed Channel (BC 590)	999.0	None (None)	Low	None	Open	Isolation if water present	Open-cut if dry or frozen to bottom	Clear-span bridge or other regulatory approved crossing method	Clear-span bridge or other regulatory approved crossing method	<ul> <li>Install rooted stock shrubs/trees and/or dormant tree/shrub stakes/brush in disturbed riparian areas to stabilize the soils, reduce sedimentation and accelerate vegetation recovery (see Drawing [Shrub Staking and Transplanting] and [Rooted Stock Selection and Installation] provided in Appendix R of the Pipeline EPP).</li> </ul>
										Recontour banks using salvaged bank material and install erosion control blanket and/or coir logs as required (see Drawing [Erosion Control Matting/Blanket] and [Coir/Straw Log Installation] provided in Appendix R of the Pipeline EPP).
										Coir soil wrap(s) with dormant brush/stake layering may be used for added bank integrity and to create overhanging vegetation (see Drawing [Streambank Protection – Hedge/Brush Layering] provided in Appendix R of the Pipeline EPP).

#### TABLE 8.1.3-2 Cont'd

		Fish Presence Captured		Provincial	Least Biological	Pipeline Cro	ssing Method	Vehicle Crossing Method		
Watercourse Name	AK	or Observed (Previously Documented)	Sensitivity Rating	Instream Work Window	Risk Window Proposed	Recommended Primary	Recommended Contingency	Recommended Crossing Method (Flowing)	Recommended Crossing Method (Dry/Frozen)	Reclamation
Unnamed Channel (BC 590a)	1001.8	None (None)	Low	None	Open	Isolation if water present	Open-cut if dry or frozen to bottom	Ramp and Culvert	Ramp and Culvert or other regulatory approved crossing method	<ul> <li>Install rooted stock shrubs/trees and/or dormant tree/shrub stakes/brush in disturbed riparian areas to stabilize the soils, reduce sedimentation and accelerate vegetation recovery (see Drawing [Shrub Staking and Transplanting] and [Rooted Stock Selection and Installation] provided in Appendix R of the Pipeline EPP).</li> </ul>
										Recontour banks using salvaged bank material and install erosion control blanket and/or coir logs as required (see Drawing [Erosion Control Matting/Blanket] and [Coir/Straw Log Installation] provided in Appendix R of the Pipeline EPP).
										Coir soil wrap(s) with dormant brush/stake layering may be used for added bank integrity and to create overhanging vegetation (see Drawing [Streambank Protection – Hedge/Brush Layering] provided in Appendix R of the Pipeline EPP).
Boston Bar Creek	1003.1	None (DV/BT, RB and SST)	Low	August 1 to August 31	Open	Isolation during low flow	Open-cut inside timing window	Clear-span bridge	Clear-span bridge	Recontour banks using salvaged bank material, and install erosion control blanket and/or coir logs as required (see Drawing [Erosion Control Matting/Blanket] and [Coir/Straw Log Installation] provided in Appendix R of the Pipeline EPP).
(BC 591)			If required, install riprap base below OHWL, keyed in to bed and underlain with filter cloth or gravel layer.							
										Install coir soil wrap(s) above the OHWL (see Drawing [Streambank Protection – Hedge/Brush Layering] provided in Appendix R of the Pipeline EPP).
										Log crib structure made from natural logs may be used at the base of the bank (below the OHWL) if appropriate (may be single log in height, typically a minimum of two logs are used) (see Drawing [Stake Logs/Log Cribwall for Erosion Control] provided in Appendix R of the Pipeline EPP.
										<ul> <li>Install rooted stock shrubs/trees and/or dormant shrub/tree stakes in disturbed riparian areas to stabilize soils, reduce sedimentation and accelerated woody vegetation (see Drawing [Shrub Staking and Transplanting and [Rooted Stock Selection and Installation] provided in Appendix R of the Pipeline EPP).</li> </ul>
Unnamed Channel	1004.7	None (None)	Low	None	Open	Isolation during low flow	Open-cut inside timing window	Clear-span bridge or other regulatory approved	Clear-span bridge or other regulatory approved	Recontour banks using salvaged bank material, and install erosion control blanket and/or coir logs as required (see Drawing [Erosion Control Matting/Blanket] and [Coir/Straw Log Installation] provided in Appendix R of the Pipeline EPP).
(BC 592)								crossing method	crossing method	If required, install riprap base below OHWL, keyed in to bed and underlain with filter cloth or gravel layer.
										Install coir soil wrap(s) above the OHWL (see Drawing [Streambank Protection – Hedge/Brush Layering] provided in Appendix R of the Pipeline EPP).
										Log crib structure made from natural logs may be used at the base of the bank (below the OHWL) if appropriate (may be single log in height, typically a minimum of two logs are used) (see Drawing [Stake Logs/Log Cribwall for Erosion Control] provided in Appendix R of the Pipeline EPP).
										<ul> <li>Install rooted stock shrubs/trees and/or dormant shrub/tree stakes in disturbed riparian areas to stabilize soils, reduce sedimentation and accelerated woody vegetation (see Drawing [Shrub Staking and Transplanting and [Rooted Stock Selection and Installation] provided in Appendix R of the Pipeline EPP).</li> </ul>

#### 8.1.3.2 Significance Evaluation of Potential Residual Effects

Table 8.1.3-3 provides a summary of the significance evaluation of the potential residual environmental effects of the construction and operation of the proposed pipeline in Coquihalla Summit Recreation Area on water quality and quantity. The rationale used to evaluate the significance of each of the residual environmental effects is provided below.

#### **TABLE 8.1.3-3**

# SIGNIFICANCE EVALUATION OF POTENTIAL RESIDUAL EFFECTS OF PIPELINE CONSTRUCTION AND OPERATIONS ON WATER QUALITY AND QUANTITY FOR COQUIHALLA SUMMIT RECREATION AREA

			-	Te	emporal Conte	ext				
	Potential Residual Effects	Impact Balance	Spatial Boundary¹	Duration	Frequency	Reversibility	Magnitude	Probability	Confidence	Significance <sup>2</sup>
1	Water Quality and Quantity Indicator - Surf	ace Water	Quali	ty						
1(a)	Reduction in surface water quality due to suspended sediment during instream activities during construction and sitespecific maintenance activities.	Negative	LSA	Immediate to short-term	Isolated to occasional	Immediate to short-term	Low	High	High	Not significant
1(b)	Reduction in surface water quality due to erosion from banks and approach slopes.	Negative	LSA	Immediate to short-term	Isolated to occasional	Short to medium-term	Low to medium	High	High	Not significant
1(c)	Contamination of surface water due to a small spill during construction or site-specific maintenance activities.	Negative	LSA	Immediate	Accidental	Short to medium-term	Low to high	Low	Moderate	Not significant
2	Water Quality and Quantity Indicator - Surf	ace Water	Quan	tity						
2(a)	Localized alteration of natural surface drainage patterns until trench settlement is complete.	Negative	LSA	Short-term	Isolated to occasional	Short to medium-term	Low	High	High	Not significant
2(b)	Disruption and alteration of natural streamflow from instream activities.	Negative	LSA	Immediate to short-term	Isolated to occasional	Short to medium-term	Low to medium	High	High	Not significant
3	Water Quality and Quantity Indicator - Grou	undwater (	Quality	У						
3(a)	Elevated turbidity in groundwater as a result of silt release during blasting.	Negative	LSA	Immediate	Accidental	Short-term	Medium	Low	Moderate	Not significant
3(b)	Contamination of groundwater as a result of a small spill during construction.	Negative	LSA	Immediate	Accidental	Short to medium-term	Low to high	Low	Moderate	Not significant
4	Water Quality and Quantity Indicator - Grou	undwater (	Quanti	ity						
4(a)	Natural groundwater pathways may be bisected and create a sink (drain) for shallow groundwater.	Negative	LSA	Short-term	Periodic	Short to medium-term	Low	Low	Moderate	Not significant
4(b)	Flooding on the up-gradient side of the pipeline may result in the creation of wet zones on ground surface.	Negative	LSA	Short-term	Periodic	Short-term	Low	Low	Moderate	Not significant
4(c)	Reduction of base flow to local streams.	Negative	LSA	Short-term	Periodic	Short-term	Low	Low	Moderate	Not significant
4(d)	Reduction of water quantity if blasting damages the well or the surrounding formation.	Negative	LSA	Immediate	Accidental	Short-term	Low to medium	Low	Moderate	Not significant
4(e)	Enhancement of water quantity if blasting opens or unclogs fractures supplying existing water well.	Negative	LSA	Immediate	Accidental	Short-term	Negligible	Low	Moderate	Not significant

Notes: 1 LSA = Water Quality and Quantity LSA.

Significant Residual Environmental Effect: A high probability of occurrence of a permanent or long-term residual effect of high magnitude that cannot be technically or economically mitigated.

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#### Water Quality and Quantity Indicator - Surface Water Quality

#### Instream Construction

The selection of appropriate watercourse crossing techniques designed to meet federal and provincial regulatory requirements, as well as implementation of erosion controls on the approaches to the watercourse crossings and riparian revegetation, are likely to substantially reduce the potential for adverse effects on surface water quality. During construction of trenched crossings, or where an instream vehicle crossing is necessary, a minor and short-term sediment release is expected during installation and removal of the vehicle or pipeline crossing structures. Trenched crossings are considered to have a negative impact balance since sediment input can temporarily decrease surface water quality.

Turbidity/total suspended solids (TSS) guidelines have been established for instream activities. At the federal level, DFO (2000) discusses 'levels of risk' associated with increases in TSS concentration in watercourses and indicates increases of <100 mg/L above background present low risk to fish and their habitat, while an increase of 100-200 mg/L presents a moderate risk. An excess of 400 mg/L was an unacceptable risk, but duration of exposure also needs to be taken into account (also see Birdwell 1999). The CCME guideline value for protection of aquatic life from short-term (24 hour) exposure is no more than 25 mg/L above existing levels (CCME 2007). Aquatic resources are protected by ensuring that concentration of TSS does not exceed CCME (2007) guidelines. BC guidelines specify that induced turbidity may not exceed background by more than 8 nephelometric turbidity units (NTU) during any 24 hour period or by more than 2 NTU when the duration of sediment input is between 24 hours and 30 days. Where flow is naturally turbid, induced turbidity may not exceed background by more than 8 NTU at any time when background is between 8 and 80 NTU, or by 10% at any time when background is greater than 80 NTU (BC MWLAP 2004).

The results of PCEM for the TMX Anchor Loop Project demonstrate that the water crossing methods and mitigation measures implemented were effective in avoiding or reducing sediment input during construction (TERA 2009a). When compared to the open cut technique, isolated crossing techniques reduce the amount of sediment introduced to flowing watercourses. During a completely isolated crossing by dam and pump or flume, a minor sediment release is expected during installation of the dams prior to the isolation and during removal of the downstream dam at the conclusion of the isolation. Recent evidence demonstrates that smaller watercourses that lack substantial subsurface flow can be readily isolated with minimal sediment introduction when proper design, construction and mitigation measures are applied (CAPP *et al.* 2005, Reid *et al.* 2002). Consequently, it is anticipated that average TSS levels during isolated crossings at Falls Lake and Boston Bar Creek, and any unnamed channels where water is present, will be below turbidity/TSS guidelines.

Open cut crossings are typically only utilized when a watercourse is dry or frozen to the bottom at the time of construction. Some of the unnamed channels crossed by the proposed pipeline corridor in Coquihalla Summit Recreation Area are expected to be dry or frozen to the bottom during construction. Under these conditions, sediment release is not expected to occur.

Minor releases of sediment may be associated with use of temporary vehicle crossings (e.g., clear-span bridge, ice bridge/snow fill), if required. However, given the recommended mitigation measures, elevated suspended sediment concentrations will be minimal and pulses of suspended solids are generally expected to settle out of the water column within the zone of influence (ZOI) in a timeframe measuring from minutes to a few hours (i.e., less than CCME's short-term guideline of 24 hours). Water quality monitoring will be used when activities occur that have the potential to cause events that may exceed the guidelines. Any exceedances of the relevant guidelines will be reported to the appropriate regulatory authorities.

Given that suspended sediments are expected to settle out of the water column within the ZOI in a timeframe measuring from minutes to a few hours (*i.e.*, less than CCME's short-term guideline of 24 hours), residual effects on the surface water quality indicator during trenched and temporary vehicle crossings, if required, are reversible in the immediate to short-term and of low magnitude (Table 8.1.3-3, point 1[a]). A summary of the rationale for all of the significance criteria is provided below.

Spatial Boundary: Water Quality and Quantity LSA – suspended sediments released during construction
activities will be carried downstream until they disperse and/or naturally settle out within the predicted
ZOI.

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- Duration: immediate to short-term the events causing the release of suspended sediments into surface
  water are instream construction or maintenance activities (e.g., integrity digs), the latter of which are
  limited to any 1 year during the operations phase.
- Frequency: isolated to occasional the events causing the release of suspended sediments into the creeks and unnamed channels (*i.e.*, pipeline construction and maintenance activities) occur during construction and, for operations activities, intermittently and sporadically over the assessment period.
- Reversibility: immediate to short-term an increase in suspended sediments is confined to a specific period not exceeding 24 hours after construction in flowing watercourses (*i.e.*, immediate) or the event when open cut crossings first become inundated with water (*i.e.*, short-term).
- Magnitude: low an increase in suspended sediments is anticipated for a short timeframe and anticipated to be within CCME guidelines given the implementation of mitigation measures to reduce sedimentation.
- Probability: high a trenched crossing method is recommended during potentially flowing conditions at the time of pipeline construction through Falls Lake and Boston Bar creek and unnamed channels.
- Confidence: high based on available research literature, data pertinent to similar previous crossings along the existing TMPL right-of-way and the professional experience of the assessment team.

#### Erosion from Approach Slopes and Banks

Following grading, it is possible for some erosion to occur on approach slopes and banks and cause sediment to enter the watercourse. The impact balance of this potential residual effect is considered negative since sediment input could decrease surface water quality.

The long-term objective of maintaining the recreation area's watersheds in their natural condition will be supported through proper reclamation and PCEM. Mitigation measures will be identified on a site-specific basis and may include, for example: installation of temporary erosion control structures (e.g., sediment fences); restoration to stabilize the banks (e.g., soil wraps, brush layers, willow plantings and matting); seeding the disturbed banks and approaches with the appropriate cover crop species and native grass mix; installation of coir or other biodegradable erosion control fabric on the banks of the watercourse; installation of live dormant willow stakes or salvaged willow/shrub transplants or commercially grown rooted stock plugs in the banks of the watercourse; and monitoring to assess the success of construction and reclamation mitigation measures and implementation remedial measures, where warranted.

Proposed mitigation measures are expected to reduce the magnitude of erosion from approach slopes and banks on the surface water quality indicator to low to medium levels. This residual effect is reversible in the short to medium-term (Table 8.1.3-3, point 1[b]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Water Quality and Quantity LSA any sedimentation caused by erosion will be carried downstream until it disperses and/or naturally settles out within the predicted ZOI.
- Duration: immediate to short-term the events causing the erosion and sedimentation of surface water are instream construction or maintenance activities (e.g., integrity digs), the latter of which are limited any 1 year during the operations phase.
- Frequency: isolated to occasional the events resulting in sedimentation caused by erosion of approach slopes and banks (*i.e.*, pipeline construction and operations activities [*e.g.*, integrity digs]) occur intermittently and sporadically in the event the crossing is unstable until mitigated.
- Reversibility: short to medium-term vegetation may be re-established within 1 year of construction on gentle banks and approach slopes while revegetation of steeper approach slopes and banks may take longer than one growing season.
- Magnitude: low to medium depending upon the amount of erosion that occurs.

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- Probability: high although there are proven and effective industry standard mitigation measures used to control erosion on slopes and banks, erosion at some sites is likely to occur.
- Confidence: high based on data pertinent to the proposed crossings through Coquihalla Summit Recreation Area and the professional experience of the assessment team.

### Contamination of Surface Water Due to Small Spills During Construction or Site-specific Maintainence Activites

A spill during construction or site-specific maintenance activities could cause contamination of the surface water and would be considered to have a negative impact balance; however, with proper implementation of industry and government recommended mitigation measures, the effects can be limited. For example, during the construction of the TMX Anchor Loop Project, all fuel trucks, service trucks and pick-ups with box-mounted fuel tanks were required to carry spill prevention, containment and clean up materials. Furthermore, all hazardous material storage and oil changes, refuelling, and lubrication of industrial equipment were required to occur more than 100 m from a waterbody or watercourse except where secondary containment was provided. Spills or accidental release of potentially harmful materials (*i.e.*, oil or diesel fuel) were recorded. The Spill Contingency Plan was implemented on each spot spill and all spills were cleaned up as soon as they were discovered. During the TMX Anchor Loop Project, all spills were terrestrial, and no spills or leaks occurred in, or reached, a waterbody or watercourse (TERA 2009a).

Similar spill prevention mitigation is planned for the Project and spill prevention measures outlined in Table 8.1.3-1 and 8.1.3-2 and the Pipeline EPP (Volume 6B of the Facilities Application) will be followed. Fuel storage and handling practices will be monitored throughout construction of the Project to reduce spill risk. Should a leak be spotted or detected during construction of the pipeline, Trans Mountain will implement the Spill Contingency Plan. Depending on the nature and volume of a spill, the magnitude of change to water quality could vary from low to high. This residual effect is reversible in the short to medium-term and is of low probability (Table 8.1.3-3, point 1[c]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Water Quality and Quantity LSA a spill during construction or site-specific
  maintenance activities may extend beyond the proposed pipeline corridor and evidence suggests that
  effect of most minor spills is localized.
- Duration: immediate the event causing a potential reduction in surface water quality is a spill, the period of which is less than or equal to two days.
- Frequency: accidental a spill into surface water occurs rarely over the assessment period.
- Reversibility: short to medium-term the effects of a spill are not expected to last beyond 1 year, but may last longer depending on seasonal conditions and the extent and source of the spill.
- Magnitude: low to high depending upon the volume, location and contaminant released.
- Probability: low due to mitigation measures in place to reduce the potential for spills reaching any watercourses and affecting surface water quality.
- Confidence: moderate spill location and effects of accidental spills cannot be accurately predicted.

#### Water Quality and Quantity Indicator – Surface Water Quantity

#### Alteration of Natural Drainage Patterns

With proper implementation of the industry-accepted standard mitigation practices that are proposed, disruption of surface flow patterns following construction or maintenance activities is expected to be minor through Coquihalla Summit Recreation Area. By paralleling the existing linear infrastructure (e.g., Telus FOTS right-of-way, Spectra gas pipeline right-of-way) and narrowing the construction right-of-way to the extent feasible through the recreation area, effects to natural drainage patterns will be further reduced. Nevertheless, construction activities may contribute to some localized alteration of natural surface drainage patterns until trench settlement is complete. The impact balance of this potential residual effect is

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considered negative since it could alter or disrupt natural above ground hydrologic conditions within the recreation area.

In the event that construction or maintenance activities result in changes in surface water regimes, corrective action, in consultation with the appropriate regulatory authorities, will be implemented to resolve the issue. The PCEM program will identify any locations in the recreation area with altered drainage patterns (e.g., ponded water) and remedial work will be conducted, where warranted. Consequently, the residual effect is reversible in the short to medium-term. Some minor incidents (e.g., ponding, minor flooding, erosion) are expected following construction and are considered to be within environmental standards, and therefore, of low magnitude (Table 8.1.3-3, point 2[a]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Water Quality and Quantity LSA although alteration of natural drainage patterns is generally confined to the disturbed portion of the construction right-of-way, potential changes in hydrology may extend beyond the pipeline right-of-way.
- Duration: short-term the events causing alteration of natural drainage are pipeline construction or maintenance activities (e.g., integrity digs), the latter of which are limited to any 1 year of the operations phase.
- Frequency: isolated to occasional the events causing alteration of natural drainage (*i.e.*, pipeline construction and maintenance activities) occur during construction and, for operations activities, intermittently and sporadically over the assessment period.
- Reversibility: short to medium-term it may take more than 1 year plus adequate precipitation levels in order for the trench crown to settle and natural drainage patterns to be restored.
- Magnitude: low the potential for minor ponding, flooding or erosion exists until the natural drainage patterns are restored.
- Probability: high minor trench settlement or a remnant crown are likely to occur as a result of pipeline
  construction or site-specific maintenance activities and, consequently, are likely to affect natural
  drainage patterns in localized areas.
- Confidence: high based on data pertinent to the Project area and the professional experience of the assessment team.

#### Alteration of Streamflow

Trenched pipeline crossing methods (*i.e.*, isolated or open cut) have the potential to result in alterations of natural streamflow. During the first year of PCEM for the TMX Anchor Loop Project in 2009, all watercourse crossings were observed to be properly restored following pipeline installation (TERA 2009b). However, in August 2010, during the second year of PCEM, intermittent flow at a watercourse at KL 409.1 was again identified, after previously being identified immediately following construction and restoration of the restored channel (October 2008). To improve channel flow, channel enhancement was conducted in 2010 within certain sections of the right-of-way where the channel contour was observed as flat, without a defined channel thalweg. This activity, along with additional enhancement work carried out in late September 2010, appeared to improve flow (TERA 2011a). Channel enhancements were determined to be functioning as intended during PCEM in 2011 and the alteration of surface flow pattern was resolved (TERA 2011a).

In the event that construction or maintenance activities result in alterations to watercourse hydrology, corrective action, in consultation with the appropriate regulatory authorities, will be conducted to resolve the issue. The PCEM program will identify locations of altered streamflow (e.g., damaged bed and banks) and remedial work will be conducted. Consequently, the residual effect is reversible in the short to medium-term. Generally, the residual effect of altered bed and banks is considered to be within environmental standards for pipeline construction and, therefore, is of low to medium magnitude (Table 8.1.3-3, point 2[b]). A summary of the rationale for all of the significance criteria is provided below.

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- Spatial Boundary: Water Quality and Quantity LSA although alteration of natural streamflow is generally confined to the disturbed portion of watercourse bed and banks, potential changes in watercourse hydrology may extend beyond the pipeline right-of-way.
- Duration: immediate to short-term the events causing alteration of natural streamflow are pipeline construction or maintenance activities (e.g., integrity digs), the latter of which are limited to any 1 year of the operations phase.
- Frequency: isolated to occasional the events causing alteration of natural streamflow (*i.e.*, pipeline construction and maintenance activities) occur during construction and, for operations activities, intermittently and sporadically over the assessment period.
- Reversibility: short to medium-term it may take more than 1 year to fully restore and stabilize watercourse channel and associated flow conditions.
- Magnitude: low to medium the potential for changes to streamflow exists but experience with past projects demonstrates that proper design and remedial work will reduce effect magnitude.
- Probability: high alteration of bed and banks from isolated or open cut crossings will result from pipeline construction or site-specific maintenance activities and, consequently, alteration of natural streamflow is likely to occur.
- Confidence: high based on data pertinent to the Project area and the professional experience of the assessment team.

#### Water Quality and Quantity Indicator - Groundwater Quality

#### Elevated Turbidity in Groundwater due to Effects from Sediment Release from Blasting

Increased turbidity in groundwater may be the result of the effects from sediment release during blasting. When blasting, the turbidity results from a release of sediment particles in the formation. The turbidity will decrease as the groundwater flows through the formation. Interconnected pores through which the groundwater flows are generally smaller than silt size particles causing the silt particles to be retained in the formation close to their source. This residual effect is considered to have a negative impact balance since elevated turbidity can affect groundwater quality. The residual effect of an elevated turbidity on groundwater quality is considered to be reversible in immediately based on previous experience; particles either settle out or cannot pass through the pore space of the sediment (Table 8.1.3-3, point 3[a]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Water Quality and Quantity LSA particles in the groundwater naturally settle out within the LSA.
- Duration: immediate the event causing the potential increase in turbidity of groundwater is blasting during construction.
- Frequency: accidental the event causing the potential increase in turbidity occurs rarely over the assessment period.
- Reversibility: short-term turbidity of groundwater is expected to decrease in the vicinity of the blasting.
- Magnitude: medium depending upon the volume of sediment/silt introduced during blasting and the permeability of the formation.
- Probability: low it is unlikely that blasting will release sediment or silt.
- Confidence: moderate based on previous experience of the assessment team.

#### Contamination of Groundwater as a Result of a Small Spill During Construction

Contamination of groundwater may result if the spilled material migrates through the developed soil near the surface through the surficial materials into the first water-bearing unit. The rate of migration is dependent

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upon the permeability of the materials, presence or absence of fractures, the properties of the spilled contaminant (density, viscosity) and the vertical hydraulic gradients. A spill during the construction phase of the Project is likely to be noted quickly and be of small volume, and evidence suggests that the effects of most minor spills are localized.

The impact balance of this residual effect is considered negative since this could potentially affect groundwater quality. This residual effect is unlikely to extend beyond the Water Quality and Quantity LSA; it is considered to represent a short to medium-term influence on the natural groundwater and surface water systems depending upon the volume of the spill, groundwater properties and overlying material. Spills where the spilled material contaminates groundwater within the Water Quality and Quantity LSA may occur accidentally over the construction phase of the Project (Table 8.1.3-3, point 3[b]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Water Quality and Quantity LSA a spill during construction activities may extend
  beyond the proposed pipeline corridor but based on professional experience the effects of most minor
  spills are localized.
- Duration: immediate the event causing potential contamination of groundwater is a spill, the period of which is less than one day.
- Frequency: accidental a spill into groundwater during construction is rare.
- Reversibility: short to medium-term the effects of a spill are not expected to last beyond one year, but
  may last longer depending upon the extent and source of the spill.
- Magnitude: low to high depending upon the volume, location and contaminant released.
- Probability: low due to mitigation measures in place to reduce the potential for spills migrating into the subsurface and affecting groundwater quality.
- Confidence: moderate spill location and effects of accidental spills cannot be accurately predicted.

#### Water Quality and Quantity Indicator - Groundwater Quantity

Natural Groundwater Pathways May Be Bisected and Create a Sink (Drain) for Shallow Groundwater

Excavation of the trench in areas of shallow groundwater or springs, during pipeline construction, can alter groundwater and surface water flow patterns. This may result in the trench becoming a sink. That is, both groundwater and surface water intersecting the trench will flow into the trench resulting in changed flow patterns.

The backfill of the trench around the pipeline will consist of native backfill as much as practical in order to maintain the soil/formation permeability similar to the pre-construction permeability. For example, if the trench was backfilled with a higher permeability material, the filled trench could become a preferred pathway for groundwater flow and, consequently, permanently change the natural flow pattern. Where there is concern for increased permeability, a trench breaker would be installed.

Upon backfilling the trench with native backfill, groundwater flow patterns will typically revert to their preconstruction state. Where springs are encountered, advice will be sought for the Hydrogeological or Geotechnical Resource Specialist so that cross drainage within the trench can be maintained. The impact balance of this residual effect is considered negative since groundwater flow down-gradient could temporarily decrease because flow is directed along the pipeline (Table 8.1.3-3, point 4[a]). A summary of the rationale for all of the significance criteria is provided below.

 Spatial Boundary: Water Quality and Quantity LSA – depending upon the site-specific conditions, dewatering activities and groundwater discharge could extend beyond the Footprint and into the LSA.

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- Duration: short-term the events causing the potential alteration of groundwater flow are construction
  of the pipeline and maintenance activities, the latter of which are limited to any one year during
  operations.
- Frequency: periodic the events causing alteration of natural groundwater flow (*i.e.*, pipeline construction and maintenance activities) occur intermittently but repeatedly over the assessment period.
- Reversibility: short to medium-term residual effects are expected to reverse within one year.
- Magnitude: low the potential for changes to groundwater flow exists but experience with past projects demonstrates that proper design and remedial work will reduce the severity of the effects.
- Probability: low although the proposed pipeline corridor crosses areas of shallow groundwater, areas
  with highly permeable materials near watercourses and at crossings with fluvial or colluviums
  substrates and known springs, alteration of groundwater flow as a result of pipeline construction is
  unlikely with the implementation of the mitigation measures outlined in Table 8.1.3-1.
- Confidence: moderate based on previous experience of the assessment team and shallow groundwater mapping that has been completed using available provincial mapping and existing well log reports.

### Flooding on the Up-Gradient Side of the Pipeline May Result in Creation of Wet Zones on Ground Surface

A reduction in the permeability of materials along the groundwater flow path may result in a rise in the groundwater table to the extent that ground to surface flooding occurs. This may occur if the trench spoil is not backfilled in the correct order or soils are not properly salvaged resulting in a change in permeability of the upper trench materials and blocking of near surface groundwater flows. The impact balance of this residual effect is considered negative since this could potentially affect recharge to local streams and create permanently wet areas. This residual effect is considered to have a short-term influence on the natural groundwater and surface water systems as long as mitigation measures are applied (Table 8.1.3-3, point 4[b]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Water Quality and Quantity LSA depending upon the site-specific conditions, dewatering activities and groundwater discharge away from the Footprint could affect an area within the LSA.
- Duration: short-term the events causing the potential alteration of groundwater flow are construction
  of the pipeline and maintenance activities, the latter of which are limited to any one year during
  operations.
- Frequency: periodic the events causing alteration of natural groundwater flow (*i.e.*, pipeline construction and maintenance activities) occur intermittently but repeatedly over the assessment period.
- Reversibility: short-term the effects of pipeline trench construction are not expected to last beyond
  one year once the trench has been backfilled and as long as mitigation measures are applied.
- Magnitude: low the potential for changes to groundwater flow exists but professional experience demonstrates that proper design and remedial work will reduce the effect.
- Probability: low the proper construction of the pipeline trench and native backfill will reduce the
  occurrence of this effect.
- Confidence: moderate based on previous experience and on data pertinent to the Project area.

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#### Reduction of Base Flow to Local Streams

Dewatering of the pipeline trench during construction may result in lowering of the local water table which in the case of local streams may reduce the groundwater inflow (base flow) to streams. As indicated in Table 8.1.3-3 (point 4[c]), the extracted groundwater may be released to the ground or directly into a nearby stream in which case there would be minimal disruption of flow in the stream. The impact balance of this residual effect is considered negative due to the potential decrease of groundwater flow into local streams. This residual effect likely will not extend beyond the Water Quality and Quantity LSA to the watershed level, and, it is considered to represent a short-term influence on the natural groundwater and surface water systems (Table 8.1.3-3, point 4[c]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Water Quality and Quantity LSA depending upon the site-specific conditions, dewatering activities and groundwater discharge away from the Footprint could affect an area within the LSA.
- Duration: short-term the events causing the reduction in baseflow are the result of discharge during dewatering and occur while the trench is being constructed (either for pipeline installation or for pipeline daylighting during integrity digs).
- Frequency: periodic the events causing alteration of natural groundwater flow (*i.e.*, pipeline construction and maintenance activities) occur intermittently but repeatedly over the assessment period.
- Reversibility: short-term the effects of pipeline trench construction are not expected to last beyond one year once the trench has been backfilled.
- Magnitude: low the potential for changes to groundwater flow exists but professional experience demonstrates that proper design and remedial work will reduce effect magnitude.
- Probability: low the proper construction of the pipeline trench and the use of native backfill will reduce the occurrence of this effect.
- Confidence: moderate based on previous experience and on data pertinent to the Project area.

#### Reduction of Water Quantity if Blasting Damages the Well or the Surrounding Formation

A reduction in water quantity may occur if blasting closes or clogs fractures supplying an existing water well. Based on previous experience, this condition is unlikely to occur, although blasting or the movement of heavy equipment in the vicinity of a well may damage a well casing or cause collapse of a borehole.

The impact balance of this residual effect is considered negative since this could potentially affect the water supply to the wellbore. This residual effect is unlikely to extend beyond the Water Quality and Quantity LSA to the watershed level. It is considered to represent a short-term influence on the natural groundwater and surface water systems. In the case of a water supply well, should a well be damaged as a result of construction activities, Trans Mountain will re-establish or replace the potable water supply. Blasting activities where the integrity of the water well is affected within the Water Quality and Quantity LSA would accidentally occur over the construction phase of the Project (Table 8.1.3-3, point 4[d]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Water Quality and Quantity LSA depending upon the site-specific conditions, it is unlikely that blasting activities would affect an area extending more than 300 m from the corridor.
- Duration: immediate the event causing this effect is blasting which occurs over a period of less than
  or equal to two days.
- Frequency: accidental a reduction in well water quantity as a result of blasting occurs rarely over the assessment period.

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- Reversibility: short-term once either the well has been damaged or the formation fractures have been
  closed or clogged, it is unlikely that they will re-open without outside influence. However, repair or
  replacement of the water supply well will ensure this effect is reversible.
- Magnitude: low to medium the potential for well damage or changes to fracture systems as a result
  of blasting exists but experience with past projects demonstrates that proper design will reduce the
  magnitude of the effect.
- Probability: low past experience indicates that this effect, although possible, occurs relatively rarely.
- Confidence: moderate based on previous experience.

### Enhancement of Water Quantity if Blasting Opens or Unclogs Fractures Supplying Existing Water Well

An increase in water quantity may occur if blasting opens or unclogs fractures supplying an existing water well. The blasting, if in proximity to a water well, may further prop open fractures increasing the amount of groundwater flow through the fractures. Blasting, if it occurs sufficiently close to the water well, may also loosen formation particles and scale (from well infrastructure) in the wellbore resulting in temporary increased turbidity of the water. In addition, damage to the well screen and casing may occur as a result of the blasting.

The impact balance of this residual effect may be considered negative since this could potentially increase the water supply or yield of the well at the expense of well integrity and well water quality. This residual effect is unlikely to extend beyond the Water Quality and Quantity LSA. It is considered to represent a short-term influence on the natural groundwater and surface water systems. Blasting activities resulting in enhanced water quantity within the Water Quality and Quantity LSA may occur accidentally during the construction phase of the Project. Blasting as well as the movement of heavy equipment should be conducted 100 m (non-explosives) to 200 m (explosives) away from existing water wells (Table 8.1.3-3, point 4[e]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Water Quality and Quantity LSA depending on the site-specific conditions, it is unlikely that blasting activities would affect an area extending more than 300 m from the proposed pipeline corridor.
- Duration: immediate the event causing this effect is blasting which lasts less than one day.
- Frequency: accidental an increase in water quantity as a result of blasting occurs rarely over the assessment period.
- Reversibility: short-term once fractures have been opened or unclogged they may remain open; however, the groundwater flow in a large scale will be unaffected and the well water supply may return to the pre-blasting balance.
- Magnitude: negligible the potential for changes to fracture systems as a result of blasting exists but experience with past projects demonstrates that proper design will reduce effect magnitude as mentioned above.
- Probability: low this is unlikely to occur if proper precautions are taken during blasting operations.
- Confidence: moderate based on previous experience.

#### 8.1.3.3 Summary

As identified in Table 8.1.3-3, there are no situations where there is a high probability of occurrence of a permanent or long-term residual environmental effect on water quality and quantity indicators of high magnitude that cannot be technically or economically mitigated. Consequently, it is concluded that the residual environmental effects of pipeline construction and operations on conservational values of Coquihalla Summit Recreation Area related to water quality and quantity will be not significant.

#### 8.1.4 Air Emissions

Trans Mountain Expansion Project

This subsection describes the potential Project effects on air emissions indicators in Coquihalla Summit Recreation Area. The Air Quality RSA consists of a 5 km wide band generally extending from the Footprint (e.g., 2.5 km on both sides of the Footprint); shown on Figure 8.1-1.

All air quality indicators were considered in this evaluation; however, only primary emissions of CACs was determined to interact with pipeline construction and operations in Coquihalla Summit Recreation Area. Formation of secondary ozone and emissions which have the potential to cause nuisance odours are associated with facilities, and since there are no Project facilities in Coquihalla Summit Recreation Area, these indicators do not interact with pipeline construction and operations.

#### 8.1.4.1 Identified Potential Effects

The potential effects associated with the construction and operations of the proposed pipeline on air emissions indicators are listed in Table 8.1.4-1.

A summary of mitigation measures provided in Table 8.1.4-1 was principally developed in accordance with industry accepted best practices and accepted pipeline construction methods for construction-related activities.

**TABLE 8.1.4-1** 

**AREA** 

POTENTIAL EFFECTS, MITIGATION MEASURES AND RESIDUAL EFFECTS OF PIPELINE CONSTRUCTION AND OPERATION ON AIR EMISSIONS FOR COQUIHALLA SUMMIT RECREATION

#### Spatial Key Recommendations/Mitigation Measures Potential Residual Potential Effect Boundary<sup>1</sup> [EPP Reference]<sup>2</sup> Effect(s) Air Emissions Indicator - Primary Emissions of Criteria Air Contaminants and Volatile Organic Compounds Project **RSA** Restrict the duration that vehicles and equipment are allowed to sit and Increase in air contribution to idle to less than one hour, unless air temperatures are less than 0°C emissions during emissions construction. Ensure equipment is well-maintained during construction to minimize air Increase in air emissions [Section 7.0]. emissions during Use multi-passenger vehicles for the transportation of crews to and from site-specific maintenance and the job sites, where feasible [Section 7.0]. inspection activities. 1.2 Dust and smoke RSA Water down construction sites and access roads, when warranted, as Increase in fugitive during directed by Trans Mountain, to reduce or avoid the potential for dust dust and smoke construction emissions [Section 8.2]. during construction. Conduct burning in accordance with burning permit requirements and A Smoke Management Framework for British Columbia, as applicable. Comply with local government bylaws, the Open Burning Smoke Control Regulation (BC) and the Forest Fire Prevention and Suppression Regulation (BC) when burning slash [Section 7.0]. Limit smoke production during slash disposal by limiting pile size, reducing fuel moisture content, maintenance of loose burning piles free of soil and by using burning sloops or large capacity shredders Permit burning only when conditions exist that allow for adequate dispersion of smoke so that high concentrations of smoke do not locally affect human health or wildlife. Avoid burning when temperature inversions are present or predicted [Section 8.1].

Notes:

1

- RSA = Air Quality RSA.
- 2 Detailed mitigation measures are outlined in the Pipeline EPP (Volume 6B of the Facilities Application).

#### 8.1.4.2 Significance Evaluation of Potential Residual Effects

Table 8.1.4-2 provides a summary of the significance evaluation of the potential residual environmental effects of the construction and operations of the proposed pipeline in Coquihalla Summit Recreation Area

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on air emissions. The rationale used to evaluate the significance of each of the residual environmental effects is provided below.

#### **TABLE 8.1.4-2**

## SIGNIFICANCE EVALUATION OF POTENTIAL RESIDUAL EFFECTS OF PIPELINE CONSTRUCTION AND OPERATIONS ON AIR EMISSIONS FOR COQUIHALLA SUMMIT RECREATION AREA

		y¹	Ter	mporal Con	text				
Potential Residual Effects	Impact Balance	Spatial Boundary	Duration	Frequency	Reversibility	Magnitude	Probability	Confidence	Significance <sup>2</sup>
1 Air Emission Indicator – Primary Emissions	of Criteria	Air Contami	nants and \	/olatile Orga	anic Compo	unds			
1(a) Increase in air emissions during construction.	Negative	RSA	Short- term	Isolated	Short- term	Medium	High	Moderate	Not significant
1(b) Increase in air emissions during site-specific inspection and maintenance activities.	Negative	RSA	Short- term	Periodic	Short- term	Low	High	Moderate	Not significant
1(c) Increase in fugitive dust and smoke during construction.	Negative	RSA	Short- term	Isolated	Short- term	Medium	High	Moderate	Not significant

Notes:

1

- RSA = Air Quality RSA.
- 2 <u>Significant Residual Environmental Effect</u>: A high probability of occurrence of a permanent or long-term residual effect of high magnitude that cannot be technically or economically mitigated.

### <u>Air Emissions Indicator – Primary Emissions of Criteria Air Contaminants (CACs) and Volatile Organic Compounds (VOCs)</u>

#### Increase in Air Emissions During Construction

The primary sources of air emissions during construction will be from fuel combustion while transporting crews to and from the work site and along the proposed pipeline corridor, as well as from the operation of heavy equipment required for construction. Implementation of accepted pipeline construction methods as outlined in Table 8.1.4-1 is the preferred approach to reducing air emissions from pipeline construction.

The amount of CAC and VOC emissions associated with construction activities will be reduced by using multi-passenger vehicles for the transportation of crews to and from the job sites, to the extent feasible, as well as using well-maintained equipment. The residual effects of increased air emissions during construction are considered to have a negative impact balance, but they are expected to dissipate within the Air Quality LSA. Air emissions resulting from construction activities are considered to be of short-term duration and reversibility and occur with isolated frequency. Ambient concentrations of CAC and VOC are expected to be within provincial objectives and standards (BC MOE 2013b) most of the time and, therefore, of medium magnitude (Table 8.1.4-2, point 1[a]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Air Quality RSA potential increases in air emissions resulting from construction activities will dissipate within the Air Quality RSA.
- Duration: short-term the event resulting in increased air emissions is construction of the pipeline.
- Frequency: isolated the event resulting in increases in air emissions (*i.e.*, construction of the pipeline) is confined to a specific period.
- Reversibility: short-term the residual effects are expected to reverse within less than one year for all contaminants after completion of construction.
- Magnitude: medium an increase in air emissions will occur and may approach but are not expected
  to exceed environmental or regulatory standards, the increase will be short-lived and localized to the
  construction area.

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- Probability: high the equipment and vehicles used for construction will emit air contaminants.
- Confidence: moderate based on a good understanding of the cause-effect relationship but reliant on vehicle and equipment estimates from previous projects.

#### Increase in Air Emissions During Site-Specific Inspection and Maintenance Activities

The primary sources of air emissions during operations will be from fuel combustion while transporting crews to and from the proposed pipeline corridor during site-specific maintenance activities. Aerial patrols along the pipeline segments are unlikely to cause measurable increases of near-surface ambient CAC concentrations above background levels. Furthermore, in the absence of more detailed information, it was assumed that the current frequency and duration of aerial patrols will be sufficient to serve the pipeline expansion associated with the Project.

The amount of air emissions associated with site-specific maintenance activities will be reduced by using multi-passenger vehicles for the transportation of crews to and from the job sites, to the extent feasible, as well as using well-maintained equipment. The residual effect of increased air emissions during site-specific maintenance activities is considered to have a negative impact balance. However, emissions are expected to dissipate within the Air Quality RSA and be well within provincial objectives and standards (BC MOE 2013b) and, therefore, will be of low magnitude. Air emissions resulting from site-specific inspections and maintenance activities are considered to be of short-term duration and reversibility and occur periodically (Table 8.1.4-2, point 1[b]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Air Quality RSA potential increases in air emissions resulting from site-specific maintenance activities (e.g., vegetation management, integrity digs) will dissipate within the Air Quality RSA.
- Duration: short-term the events resulting in increases in air emissions are individual maintenance activities (e.g., vegetation management, integrity digs) and each maintenance event will be completed within one year.
- Frequency: periodic maintenance and operations-related activities (e.g., vegetation management, integrity digs) will occur intermittently but repeatedly over the assessment period.
- Reversibility: short-term the residual effects are expected to reverse within less than one year for all contaminants after completion of individual maintenance activities.
- Magnitude: low periodic increases in air emissions during site-specific maintenance will be detectable
  but within normal variability of existing conditions with the implementation of proposed mitigation
  measures.
- Probability: high the equipment and vehicles used for site-specific activities (e.g., vegetation management, integrity digs) will emit air contaminants.
- Confidence: moderate based on a good understanding of the cause-effect relationship and reliable
  data from current pipeline operations in the same regions; however, detailed information on equipment
  and vehicle usage for site-specific activities and the duration and frequency of future aerial patrol are
  not available.

#### Increase in Fugitive Dust and Smoke During Construction

Emissions of particulate matter related to earth moving activities and use of heavy equipment during pipeline construction are expected to be greater than particulate matter emissions during pipeline operation. Fugitive dust from equipment travelling on disturbed soil can be a major dust contributor during dry summer periods. An increase in dust on unpaved access roads will be confined to construction and reclamation activities completed during relatively dry, non-frozen conditions. Implementing accepted pipeline construction methods as outlined in Table 8.1.4-1 is the preferred approach to reducing air emissions from pipeline construction.

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The impact balance of this potential residual effect is considered to be negative since dust and smoke could reduce air quality. Larger particles of fugitive dust and smoke will settle out via gravitational settling within a relatively short timeframe at any given location. The amount of finer particles that might remain suspended for more than two days is expected to be negligible. Therefore, this residual effect is reversible immediately. With the implementation of the recommended mitigation measures provided in Table 8.1.4-2, the severity of fugitive dust and smoke during construction will be reduced. However, under some environmental conditions, the residual effect may still approach or briefly exceed provincial objectives and standards (BC MOE 2013s); therefore, its magnitude is rated as medium. A summary of the rationale for all of the significance criteria is provided below.

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Smoke will be associated with the burning of slash along discrete segments of the proposed pipeline corridor. In accordance with applicable provincial legislation pertaining to mulching depth requirements, not all non-merchantable timber can be disposed of by mechanical means; therefore, slash burning is required. Since the maximum depth of mulch will not exceed 5 cm or will be in accordance with the applicable provincial legislation, whichever is less, any remaining vegetation and non-salvageable timber not retained for rollback will be burned. The impact balance of this potential residual effect is considered to be negative since smoke could reduce local air quality. This residual effect is of reversible immediately or in the short-term after cessation of burning, depending on the size of the slash piles and conditions during burning, and of medium magnitude given the anticipated volume of slash along the narrowed pipeline corridor.

Larger particles of smoke will settle out via gravitational settling within a relatively short timeframe at any given location, while finer particles might remain suspended for more than 2 days. Therefore, this residual effect is reversible in the short-term. With the implementation of the recommended mitigation measures provided in Table 8.1.4-1, smoke during construction will be reduced and, therefore, the magnitude is rated as low (Table 8.1.4-2, point 1[c]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Air Quality LSA potential increases in dust and smoke resulting from construction may extend beyond the Footprint and into the Air Quality LSA.
- Duration: short-term the event resulting in increases in dust and smoke is construction of the pipeline.
- Frequency: isolated the event resulting in increases in dust and smoke (*i.e.*, construction of the pipeline) is confined to a specific period.
- Reversibility: immediate the effects are expected to reverse within two days once construction is complete.
- Magnitude: medium a small volume of slash along the proposed pipeline corridor is expected, and the mitigation measures provided in Table 8.1.4-2 will reduce the severity of fugitive dust and smoke during construction.
- Probability: high disposal of slash by burning is planned.
- Confidence: moderate based on a the professional experience of the assessment team.

#### 8.1.4.3 Summary

As identified in Table 8.1.4-2, there are no situations where there is a high probability of occurrence of a permanent or long-term residual environmental effect on air emissions indicators of high magnitude that cannot be technically or economically mitigated. Consequently, it is concluded that the residual environmental effects of pipeline construction and operations on the conservational values of Coquihalla Summit Recreation Area related to air emissions will be not significant.

#### 8.1.5 Acoustic Environment

This subsection describes the potential Project effects on the acoustic environment indicators in Coquihalla Summit Recreation Area. The Acoustic Environment LSA consists of a 1.5 km band on both sides of the proposed pipeline corridor (*i.e.*, for a total width of 3.15 km).

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Both the sound levels and vibrations acoustic environment indicators were considered in this evaluation and all indicators were determined to interact with pipeline construction and operations in Coquihalla Summit Recreation Area. The vibrations indicator is anticipated to interact with pipeline construction, since blasting is proposed for Coquihalla Summit Recreation Area.

#### 8.1.5.1 Identified Potential Effects

The potential effects associated with the construction and operations of the proposed pipeline on the acoustic environment indicators are listed in Table 8.1.5-1.

A summary of mitigation measures provided in Table 8.1.5-1 was principally developed in accordance with industry accepted best practices as well as provincial regulatory guidelines including BC MOE (2012a).

#### **TABLE 8.1.5-1**

## POTENTIAL EFFECTS, MITIGATION MEASURES AND RESIDUAL EFFECTS OF PIPELINE CONSTRUCTION AND OPERATION ON ACOUSTIC ENVIRONMENT FOR COQUIHALLA SUMMIT RECREATION AREA

ı	Potential Effect	Spatial Boundary <sup>1</sup>	Key Recommendations/Mitigation Measures [EPP Reference] <sup>2</sup>	Potential Residual Effect(s)
1.	Acoustic Environn	nental Indicato	or – Sound Levels	
1.1	Changes in sound level during construction	LSA	<ul> <li>Adhere to all federal (i.e., Environment Canada, Motor Vehicle Safety Act, Oil and Gas Occupational Safety and Health Regulations, Health Canada) and provincial (i.e., Directive 038: Noise Control, BC Noise Control Guideline Best Practices Guideline, Worker's Compensation Act, section 7.2 of the Occupational Health and Safety Regulations [BC Reg 296/97 as amended] Section 7.2 [BC Reg. 382/2004, s.1]) guidelines and regulations and legislation for noise management [Section 7.0].</li> <li>Noise abatement and construction scheduling will be considered at noise sensitive locations and during noise sensitive periods [Section 7.0].</li> <li>Schedule intermittent noise producing events to avoid, where feasible, important habitat of wildlife species at risk/sensitive species/livestock during sensitive</li> </ul>	Increase in sound levels during construction
			<ul> <li>periods, where feasible [Section 7.0].</li> <li>Enforce vehicle speed limits and inform contractor truck drivers and equipment operators that engine retarder braking in urban areas is prohibited [Section 7.0].</li> <li>Maintain equipment in good working condition and in accordance with manufacturer guidelines [Section 7.0].</li> <li>Maintain noise suppression equipment on all construction machinery and vehicles in good order [Section 7.0].</li> </ul>	
			<ul> <li>Enclose noisy equipment and use baffles, where and when feasible, to limit the transmission of noise beyond the construction site [Section 7.0].</li> <li>Use only the size and power of tools necessary limit noise from power tool operations. Locate stationary equipment, such as compressors and generators located away from noise receptors, to the extent feasible, and follow applicable municipal, provincial and federal guidelines [Section 7.0].</li> </ul>	
1.2	Changes in sound level during operation	LSA	Limit helicopter inspections to weekdays only to the extent practical.  Use of off-road vehicles for inspection should be limited to weekdays if feasible.  Maintain equipment in good working condition and in accordance with manufacturer guidelines.  Maintain noise suppression equipment on all construction machinery and vehicles in good order.	Periodic noise events due to maintenance and inspections.
2.	Acoustic Environn	nent Indicator	- Vibrations	
2.1	Changes in vibrations during construction	LSA	Noise Management Plan will limit vibrations to acceptable levels.	Increase in airborne/ground- borne vibrations during blasting aspects of construction period.

Notes:

- 1 LSA = Acoustic Environment LSA.
- 2 Detailed mitigation measures are outlined in the Pipeline EPP (Volume 6B of the Facilities Application).

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#### 8.1.5.1 Significance Evaluation of Potential Residual Effects

Table 8.1.5-2 provides a summary of the significance evaluation of the potential residual environmental effects of the construction and operations of the proposed pipeline on the acoustic environment. The rationale used to evaluate the significance of each of the residual environmental effects is provided below.

#### **TABLE 8.1.5-2**

## SIGNIFICANCE EVALUATION OF POTENTIAL RESIDUAL EFFECTS OF PIPELINE CONSTRUCTION AND OPERATIONS ON ACOUSTIC ENVIRONMENT FOR COQUIHALLA SUMMIT RECREATION AREA

			y.	Ter	mporal Cor	ntext				
	Potential Residual Effects	Impact Balance	Spatial Boundary¹	Duration	Frequency	Reversibility	Magnitude	Probability	Confidence	Significance <sup>2</sup>
1	Acoustic Environment Indicator – Sound Levels									
1.1	Increase in sound levels during construction period	Negative	LSA	Short- term	Isolated	Short-term	Low to medium	High	Moderate	Not significant
1.2	Periodic noise events due to maintenance and inspections.	Negative	LSA	Short- term	Periodic	Immediate to Short- term	Negligible to medium	High	Moderate	Not significant
2	Acoustic Environment Indicator – Vibration									
2(a)	Increase in airborne/ground-borne vibrations during blasting aspects of construction period	Negative	LSA	Short- term	Isolated	Short-term	Low to medium	High	Moderate	Not significant

Notes:

- 1 LSA = Acoustic Environment LSA; RSA = Acoustic Environment RSA.
- 2 <u>Significant Residual Environmental Effect</u>: A high probability of occurrence of a permanent or long-term residual effect of high magnitude that cannot be technically or economically mitigated.

#### Sound Levels

#### Increase in Sound Levels During Construction Period

The potential for the increase in daytime or night time sound levels for human receptors associated with pipeline construction is considered to have a negative impact balance. Participants of several of the Community Workshops (e.g., Merritt, Hope) noted that construction was a concern for local residents and could potentially affect other users in the area (e.g., recreational users in protected areas, campers, hunters) if construction were to coincide with summer months. Noise arising from construction and clearing activities will occur along the proposed pipeline corridor in Couqihalla Summit Recreation Area and this residual effect is considered to have a negative impact balance. Construction is scheduled for the summer seasons of 2017 and 2018. Clearing activities scheduled for fall 2016 will also avoid the migratory bird breeding and nesting period.

The duration of the sounds experienced is dependent on the activity; each type of sound will last only for the particular phase of construction (e.g., clearing, trenching, welding, and reclamation). As described in Section 3.0, construction is expected to last for up to 8 months along the propose pipeline corridor, over two summers, within the Coquihalla Summit Recreation Area. However, within that period, the various phases of construction will occur consecutively. Given the need to transition each phase, the time for maximum activity during each phase is limited. Maximum activity from each construction phase may occur within the closest proximity of a particular residential receptor for up to two weeks. Sounds may be noticeable to transient park users near the construction activities due to their intermittence and depending on the stage of construction that would be occurring. This may have the potential to cause some annoyance to users due to the sensory disturbance. Mitigation measures will be developed and implemented to limit such events or occurrences depending on the time of day, time of year and stage of construction that will be occurring.

The frequency of sound emissions during each construction phase will be isolated, as construction is cyclic and involves use of mobile equipment and intermittent use of tools. The period over which the change in

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noise extends is the construction period and, therefore, the residual effect is conservatively considered to be of short-term reversibility. However, as soon as construction activity stops, the sound level changes are reversed.

The results of predictive modelling for construction of the pipeline indicates the magnitude of changes in sound levels that will be experienced by people living within 1.5 km of the proposed pipeline corridor for a variety of construction activities. Noise controls that will be in use during the construction phase, particularly the use of silencers on mobile equipment and executing a communications plan with receptors are expected to control the amount of sound to within acceptable levels. Controlling the magnitude of sound level changes also limits the spatial extent of the potential change.

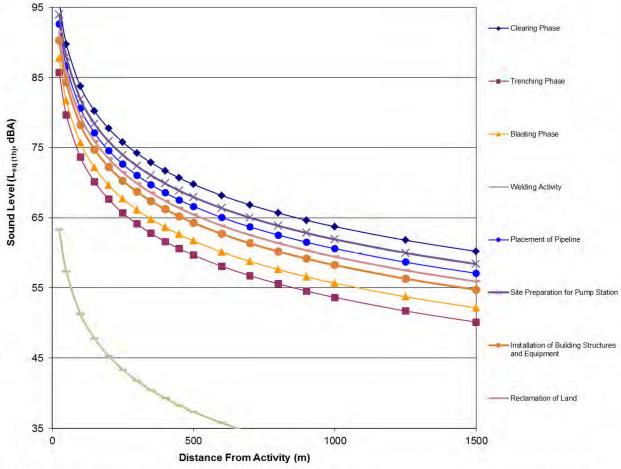
A generic model for various types of construction activities was developed, which indicates the maximum expected sound levels from an activity at various distances from that activity on an hourly basis. Given the normal variation in activity during the day for construction, actual sound levels over the full day are expected to be less, although planning for activity cycles is not conducted until later in the Project development process. The maximum hour is being compared to longer term (15 hour day) criteria as an indication of the potential for effect. The summary of results for construction activity is shown in Figure 8.1.5-1.

As shown in Figure 8.1.5-1, the magnitude of effect due to sound from Project construction varies depending on the distance between the construction activities and the surrounding receptors. As such, the evaluation of magnitude has been rated as low to medium to account for the variation in sound level between construction activities.. Sounds would be noticeable to park users near construction activities, so annoyance regarding disturbance of the expected environment would occur when construction activities are occurring.

The types of equipment used and in turn, the sound emissions used for the assessment are similar to those used for construction of other developments such as highways or industrial parks. Day-long sound levels and the degree of variation in sound levels experienced from pipeline construction are expected to be similar to sounds perceived near these types of activities.

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Figure 8.1.5-1 Predicted Construction Sound Level Estimates



Notes:

The quantity and type of each equipment used in each activity phase is presented in the Terrestrial Noise and Vibration Technical Report (Volume 5C)

The significance evaluation of the potential residual effects of the proposed pipeline in Coquihalla Summit Recreation Area on the sound levels indicator. A summary of rationale for all of the significance criteria is provided below (Table 8.1.5-2, point 1[a]).

- Spatial Boundary: Acoustic Environment LSA compliance with the BC OGC Noise Control Best Practices Guideline are achieved within the Acoustic Environment LSA.
- Duration: short-term the events causing changes in sound levels occur only during the construction phase.
- Frequency: isolated the events causing changes in sound level will occur during the construction phase.
- Reversibility: short-term the period over which the change in sound level extends is the construction period (*i.e.*, over two summers). However, all sound level changes will cease when construction activities have finished.
- Magnitude: low to medium with the implementation of mitigation measures from Table 8.1.5-1, , the changes in sound level are considered to be low to medium depending on the distance from construction activity.
- Probability: high based on the occurrences of recreation users and park visitors to the proposed pipeline corridor.

<sup>-</sup> Predicted noise levels account for distance attenuation (geometric spreading) only. Actual sound levels at distances greater than 300 m would be expected to be much less than those shown.

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Confidence: moderate – based on the nature of data inputs.

#### Periodic Noise Events Due to Maintenance and Inspections

Noise from pipeline operations is limited to regular aerial and ground patrols vegetation management and integrity digs. Sounds would be similar to those already heard in areas where the proposed pipeline corridor is adjacent to the existing TMPL right-of-way. Similar to noise during construction, noise resulting from periodic site-specific maintenance will be limited to the same receptors in close proximity to the proposed pipeline corridor.

The spatial extent of the change sound level is limited to the Acoustic Environment LSA. Since maintenance activities are typically completed at any given location within a few minutes to hours (aerial patrols, vegetation management) or within several weeks (e.g., integrity digs), the duration of the maintenance and inspection activities is short-term. The frequency of maintenance activities occur intermittently but repeatedly over the assessment period and, therefore, are considered to be periodic. The effect is reversible in the immediate to short-term as sound level changes due to maintenance activity will cease as soon as the maintenance activity stops.

While aerial patrols or vegetation management during operations may cause momentary sound levels to increase, the day and night average levels are not expected to change due to such short duration events. Although integrity digs may extend over several weeks, the amount and size of the equipment used during this activity is generally smaller than that used during pipeline construction. Nevertheless, the magnitude of the change in sound level during operations of the pipeline is considered to be of negligible magnitude for most operational activities and of medium magnitude for integrity digs where there are nearby human receptors. Sounds would be noticeable to park users near the activities, however, these would be transient sounds and annoyance is expected to be minimal for maintenance inspections. Some disturbance may occur if park users were near an integrity dig and the degree of annoyance would depend on the location and duration of the dig.

The inspections and maintenance are essential to safe pipeline operations so the probability of occurrence is rated as high. A summary of the rationale for all of the significance criteria is provided below (Table 8.1.5-2, point 1[b]).

- Spatial Boundary: Acoustic Environment LSA the change in sound level during operations is confined to the Acoustic Environment LSA.
- Duration: short-term the events causing changes in sound levels during operations (*i.e.*, maintenance activities) are completed within any 1 year during operations.
- Frequency: periodic the events causing changes in sound levels during operations (*i.e.*, aerial patrols, vegetation management, integrity digs) occur intermittently but repeatedly over the assessment period.
- Reversibility: immediate to short-term the changes in sound level associated with maintenance
  activities at any given location range from a few minutes to hours for aerial patrols and vegetation
  management (immediate) to a few weeks for integrity digs (short-term). All sound level changes are
  reversible as the sound will cease when the inspection/maintenance is finished.
- Magnitude: negligible to medium the sound level events associated with aerial patrols and vegetation
  management will have a short timeline, so changes to the day or night average levels are not expected.
  However, integrity digs that occur near residents may result in sound level changes that could affect
  day or night average levels.
- Probability: high changes to sound levels will occur since inspections and maintenance are essential to safe pipeline operation.
- Confidence: moderate based on the uncertainty in the data used for the evaluation of fly-by noise.

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### Acoustic Environment Indicator – Vibration Levels

Increase in Airborne/Ground-Borne Vibrations During Blasting Aspects of Construction Period

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The potential for the increase in vibration (airborne and ground-borne) levels for human receptors associated with increased Project construction is considered to have a negative impact balance. Based on the results of the analysis in the Terrestrial Noise and Vibration Technical Report of Volume 5C, the spatial extent of changes to vibration levels from pipeline construction are limited to a blast design specification of 50 mm/sec peak particle velocity (PPV) at the nearest structure or infrastructure within or near the proposed pipeline corridor. The duration of the vibration levels experienced at receptors is very short (dependent on size and formation of blasting pattern). The frequency of vibration emissions during construction will be limited, since it should only be used in areas that are needed and where ripping is not feasible (heavy equipment limitations, bedrock). All changes in vibration levels are immediately reversible. As soon as blasting construction activity stops, the vibration level changes are reversed.

Vibration controls that will be in use during the construction phase, limit blasting to daytime hours, vary shape and charge with respect to proximity to local receptors and executing a noise management plan are expected to limit vibration levels to within acceptable levels. Controlling the magnitude of vibration level also limits the spatial extent of the potential change.

The only variation in residual effects along the pipeline corridor is the magnitude of potential effects. The magnitude of the effect will vary depending on the distance between the blasting zone and the surrounding receptors. As the exact blasting zones have not been determined, the magnitude has been limited to a maximum of medium. This is due to the minimum setback distances required between the blast area and the general public of residences for safety and best blasting practise. Blast vibration would be noticeable to protected area users near the activities, however, annoyance is expected to be minimal for blasts due to the short duration.

Depending on the setback distances from blast to receptor the probability of occurrence may be high.

The predictive modelling used in the assessment of the acoustic environment has a level of uncertainty that is dependent on three main factors: the blasting source data; the precision of the vibration propagation model; and the accuracy of locations of blasting locations. Blasting configuration and design data were not available at this stage of the Project. Modelling was completed that uses key international standards for outdoor vibration propagation with a known uncertainty. Therefore, the confidence in the results was considered moderate. A summary of the rationale for all of the significance criteria is provided below (Table 8.1.5-2, point 2[a]).

- Spatial Boundary: Acoustic Environment LSA effects associated with changes to vibration level extend to less than 100 m from the right-of-way in most areas, but are dependent on the location of the activity.
- Duration: short-term the changes to vibration levels occur only during the construction phase.
- Frequency: isolated the event causing changes to vibration levels occur only during the construction phase in which the activity is planned.
- Reversibility: immediate the changes to vibration levels are associated with blasting activities which
  are anticipated to take 3 days within Coquihalla Summit Recreation Area. All vibration level changes
  are reversible as the vibration will cease when construction is finished.
- Magnitude: low to medium based on the anticipated effects at receptors, PPV at residences is
  expected to be less than the 50 mm/s design specification due to the blasting limit for the existing
  pipeline corridor, Telus FOTS right-of-way and Spectra right-of-way.
- Probability: high based on the proximity of receptors to the proposed pipeline corridor.
- Confidence: moderate based on the nature of data inputs.

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# 8.1.5.2 Summary

As identified in Table 8.1.5-2, there are no situations where there is a high probability of occurrence of a permanent or long-term residual environmental effect on the acoustic environment indicators of high magnitude that cannot be technically or economically mitigated. Consequently, it is concluded that the residual environmental effects of pipeline construction and operations on the conservational values of Coquihalla Summit Recreation Area related to acoustic environment will be not significant.

#### 8.1.6 Fish and Fish Habitat

This subsection describes the potential Project effects on the fish and fish habitat indicators in Coquihalla Summit Recreation Area. The Fish and Fish Habitat LSA consists of the area extending 100 m upstream from the centre of the proposed pipeline corridor to a minimum of 300 m downstream from the centre of the proposed pipeline corridor at defined watercourses. The Fish and Fish Habitat LSA also includes the area of riparian vegetation to a width of 30 m back from each bank edge within the width of the construction right-of-way. The Aquatics RSA includes all watersheds directly affected by the Project; shown in Figure 8.1-3.

Fish and fish habitat indicators (*i.e.*, riparian habitat, instream habitat and fish mortality or injury) were considered in this evaluation; each of which were determined to interact with pipeline construction and operations in Coquihalla Summit Recreation Area. No fish and fish habitat species indicators were observed/captured at any of the proposed watercourse crossings within the Coquihalla Summit Recreation Area. However, fish and fish habitat indicator species (*i.e.*, bull trout/Dolly Varden, Chinook salmon, coastal cutthroat trout, coho salmon and rainbow trout/steelhead) with historical presence within the Coquihalla Summit Recreation Area Aquatics RSA (*i.e.*, Lower Nicola River and Fraser Canyon watersheds) were considered in this evaluation and are discussed in Section 8.1.6.2.

#### 8.1.6.1 Identified Potential Effects

The potential effects associated with the construction and operations of the proposed pipeline on fish and fish habitat indicators are listed in Table 8.1.6-1.

A summary of mitigation measures is provided in Table 8.1.6-1 which was principally developed in accordance with Trans Mountain Standards as well as industry and provincial regulatory guidelines including BC Ministry of Water, Land and Air Protection (MWLAP) (2004a), CAPP (2004), CAPP et al. (2012), and DFO (1995, 2013a, 2014).

#### **TABLE 8.1.6-1**

# POTENTIAL EFFECTS, MITIGATION MEASURES AND POTENTIAL RESIDUAL EFFECTS OF PIPELINE CONSTRUCTION AND OPERATIONS ON FISH AND FISH HABITAT FOR COQUIHALLA SUMMIT RECREATION AREA

	Potential Effect	Spatial Boundary <sup>1</sup>	Key Recommendations/Mitigation Measures [EPP Reference] <sup>2</sup>	Potential Residual Effect(s)
1.	Fish and Fish Habitat I	ndicator – Riparia	an Habitat	
1.1	Riparian habitat loss or alteration during construction	Footprint	Clearing and Grading Prohibit clearing of extra temporary workspace (TWS) within the riparian buffer, only the trench and TWS areas will be cleared [Section 8.1].  Clear vegetation located within the Falls Lake and Boston Bar Creek vegetation buffer area crossed by the pipeline right-of-way and TWS only if absolutely necessary [Section 8.1].  Fell trees away from Falls Lake and Boston Bar Creek, and away from limits of the construction right-of-way to reduce damage to streambanks, beds and adjacent trees. Hand clear the area, if necessary, to reduce disturbance [Section 8.1].  Adhere to clearing guidelines for protection of streams provided in the Forest Practices Code, and the Riparian Management Area Guidebook in BC, where riparian management zones (widths) are identified based on stream class [Section 8.1].	Riparian habitat loss or alteration due to construction.

# TABLE 8.1.6-1 Cont'd

	Potential Effect	Spatial Boundary <sup>1</sup>	Key Recommendations/Mitigation Measures [EPP Reference] <sup>2</sup>	Potential Residual Effect(s)
1.1	Riparian habitat loss or alteration during construction (cont'd)	See above	Bank and Riparian Restoration  Identify any instream site-specific features at the proposed crossing and record their location (e.g., root wad, large woody debris, large boulders). Salvage these for use later.  Salvage upper coarse-textured substrate material from the channel and banks, and stockpile separately from lower substrate.  Install the appropriate temporary erosion and sediment control measures, where warranted (e.g., sediment fence, erosion control blanket, coir logs, etc.).  Seed with an appropriate grass mix and/or cover crop species as	See above
1.2	Riparian habitat alteration during maintenance and operation	Footprint	directed in the Reclamation Management Plan in Section 9.0.  See recommended mitigation measures outlined in potential effect 1.1 of this table.	Clearing or disturbance of riparian habitat during maintenance and operation.
1.3	Contamination from spills during construction and maintenance	RSA	<ul> <li>Review and adhere to the general mitigation measures provided in Section 7.0 of the Pipeline 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 during water crossing construction [Section 8.7].</li> <li>Use non-toxic, biodegradable hydraulic fluids in all equipment that will work instream if/when flowing water will be encountered during construction if requested by the Inspector(s) [Section 8.7].</li> <li>Do not store fuel, oil or hazardous material within 300 m of a watercourse [Section 7.0].</li> <li>Ensure pump intakes are placed in a manner that reduces or avoids disturbance to the streambed and are screened in accordance with the DFO screening requirements, to prevent the entrapment of fish or wildlife (Freshwater Intake End-of-Pipe Fish Screen Guideline) [Section 8.5].</li> <li>Utilize screen pump intakes with a maximum mesh size of 2.54 mm and with a maximum approach velocity of 0.038 m/s, where fish habitat is present [Section 8.5].</li> </ul>	Contamination of riparian habitat from spills during construction and maintenance.
2.	Fish and Fish Habitat In	dicator – Instrear		
2.1	Instream habitat alteration	RSA	An isolated watercourse crossing method with water quality monitoring has been selected in consideration of the size, environmental sensitivities of fish-bearing watercourses (Falls Lake Creek, Boston Bar Creek) in Coquihalla Recreation Area and the period of construction (see Table 8.1.3-2).	Alteration of instream habitat within the ZOI.
			<ul> <li>Site-specific mitigation and reclamation procedures will be implemented if an open cut crossing inside the timing window is required at Boston Bar Creek.</li> <li>In the event that the provincial instream work windows and proposed least risk biological windows cannot be adhered to for the Falls Lake Creek and Boston Bar Creek crossings, applicable approvals will be required and additional mitigation will be applied in consultation with provincial and federal regulatory authorities.</li> <li>Trans Mountain will work with regulatory authorities to determine the necessary approvals, licenses and permits needed for construction of the pipeline or associated components prior to the commencement of the permitted activity in Coquihalla Summit Recreation Area. The contractor(s), subcontractors and the Inspector(s) will be provided with copies of all approvals/licenses and permits including the most recent updates and revisions, and will comply with all conditions presented to Trans Mountain. Trans Mountain will resolve any inconsistencies between approval/permit conditions and contract documents prior to commencement of the construction activity [Section 3.0].</li> <li>Follow applicable Measures to Avoid Causing Harm to Fish and Fish Habitat (DFO 2014) outlining conditions and measures to avoid serious harm to fish or any permanent alteration to, or destruction of, fish habitat when working in or near a watercourse that has been identified as providing fish habitat [Section 8.7].</li> </ul>	

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# TABLE 8.1.6-1 Cont'd

	Detential Effect	Spatial	Key Recommendations/Mitigation Measures	-	Octoptial Decidual Effect(s)
2.1	Potential Effect	Boundary <sup>1</sup>	[EPP Reference] <sup>2</sup>		Potential Residual Effect(s)
2.1	Instream habitat alteration (cont'd)	See above	<ul> <li>Ensure all necessary equipment, personnel and materials are on-site and ready for installation prior to commencing instream work. Complete all work as quickly as practical to limit the duration of disturbance [Section 8.7].</li> <li>Re-establish streambanks and approaches immediately following construction of watercourse crossings as outlined in the Reclamation Management Plan (see Appendix C of the Pipeline EPP) [Section 8.6].</li> <li>Dewater the segment of the watercourse between the dams/diversion channel, if feasible and safe to do so. Pump any sediment-laden water out between the dams to well-vegetated lands, away from the watercourse or to settling ponds [Section 8.7].</li> <li>Remove any accumulations of sediment within the isolation areas that resulted from crossing construction. Spread all sediment and unused trench spoil removed from the watercourse at a location above the high water mark where the materials will not directly re-enter the watercourse [Section 8.7].</li> <li>Ensure that water from flumes, dam and pumps, diversion or other methods does not cause erosion or introduce sediment into the channel. If warranted, place rock rip rap, tarpaulins, plywood sheeting or other materials to control erosion at the outlet of pump hoses and flumes. Supplement the erosion control materials, if warranted, to control any erosion [Section 8.7].</li> <li>Vehicle Crossings</li> <li>At Falls Lake and Boston Bar Creek, install a clear span bridge for vehicle and equipment crossing during construction. Install, use and remove bridges in accordance with the measures identified in the DFO Self-Assessment Process (DFO 2014) [Section 8.7].</li> <li>Ensure bridge is clean prior to installation and dispose of soil at an appropriate location [Section 8.7].</li> <li>Implement erosion control measures as soon as a disturbance of the vegetation mat occurs [Section 8.7].</li> <li>Stabilize and revegetate areas disturbed during installation and removal of a bridge; install er</li></ul>	•	See above
2.2	Contamination from spills during construction	RSA	<ul> <li>Review and adhere to the general mitigation measures in Section 7.0 of the Pipeline 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 during water crossing construction [Section 8.7].</li> <li>Do not store fuel, oil, or hazardous material within 300 m of a watercourse [Section 7.0].</li> <li>Use non-toxic, biodegradable hydraulic fluids in all equipment that will work instream if/when flowing water will be encountered during construction if requested by the Inspector(s) [Section 8.7].</li> <li>See recommended mitigation measures for potential effect 1.3 of this table.</li> </ul>	•	Contamination of instream habitat from spills during construction.
3.	Fish and Fish Habitat In	dicator - Fish Mo	rtality or Injury		
3.1	Fish mortality or injury during construction	RSA	If it is determined that serious harm to fish, or any permanent alteration to, or destruction of, fish habitat will occur, an offsetting plan and site-specific mitigation and/or reclamation plans will be implemented in conjunction with DFO Authorization.  Determine the presence of any aquatic or riparian plants and pests	•	Increased fish mortality or injury due to construction activities.
			<ul> <li>prior to the commencement of construction activities within the riparian buffer. Notify the contractor of any special measures to be implemented to prevent the transfer of these organisms from one watercourse to another [Section 8.7].</li> <li>Prohibit recreational fishing by Project personnel on or in the vicinity of the construction right-of-way. The use of the construction right-of-way to access fishing sites is prohibited [Section 7.0].</li> <li>Ensure all water intakes are screened in accordance with the DFO's Freshwater End-of-Pipe Fish Screen Guideline. Ensure the screens are free of debris during pumping [Section 8.7].</li> </ul>		

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# TABLE 8.1.6-1 Cont'd

	Potential Effect	Spatial Boundary <sup>1</sup>	Key Recommendations/Mitigation Measures [EPP Reference] <sup>2</sup>	P	otential Residual Effect(s)
3.1	Fish mortality or injury during construction (cont'd)	See above	<ul> <li>Monitor to assess the immediate effects of crossing construction, if warranted. Also monitor sediment release (<i>i.e.</i>, turbidity and total suspended solids) throughout the crossing construction period, if required [Section 8.7].</li> <li>Clean fish salvage equipment (<i>e.g.</i>, waders, boots, nets) of soil, and disinfect with 100 mg/L chlorine bleach before using in any watercourse to prevent the spread of pathogens and/or invasive plant species. Ensure that washed off soil is disposed of at a location that will prevent the reintroduction of these untreated materials into a watercourse [Section 8.7].</li> <li>Determine the presence of any aquatic or riparian plants and pests prior to the commencement of construction activities within the riparian buffer. Notify the contractor of any special measures to be implemented to prevent the transfer of these organisms from one watercourse to another [Section 8.7].</li> <li>Follow the DFO Self-Assessment Process and applicable DFO Measures to Avoid Causing Harm to Fish and Fish Habitat (DFO 2013a, 2014) and measures outlined Section 8.7 of Pipeline EPP, when working in or near Falls Lake and Boston Bar Creek.</li> <li>Assign a qualified environmental professional (QEP) to salvage fish with an electrofishing unit from the isolated area prior to and during dewatering and trenching at isolated water crossings in accordance the Fish Collection Permit (see Appendix D of Pipeline EPP) if those permits are determined to be necessary. Note that the application for a Fish Collection Permit is to be submitted 10 working days (minimum) prior to the scheduled isolation of the watercourse. Release all captured fish to areas downstream of the crossing that provide suitable habitat [Section 8.7].</li> <li>See recommended mitigation measures outlined in potential effects 1.3 and 2.2 of this table.</li> </ul>	•	See above
3.2	Fish mortality or injury from spills during construction	RSA	See recommended mitigation measures outlined in potential effect 3.1 of this table.	•	Increased fish mortality or injury from spills during construction activities.
3.3	Increased suspended sediment concentrations within the ZOI during instream construction	RSA	<ul> <li>Develop water quality monitoring plans, where required for watercourses with high sensitivity fish habitat (i.e., Falls Lake Creek). If monitoring reveals that sediment values are approaching threshold values, the water quality monitors will notify the Lead Environmental Inspector and Inspector(s) who, with the Construction Manager and contractor, will develop corrective actions [Section 8.7].</li> <li>Grade away from Falls Lake and Boston Bar Creek to reduce the risk of introduction of soil and organic debris. Do not place windrowed or fill material in watercourses during grading [Section 8.2].</li> <li>Ensure temporary berms and/or sediment fence installed following grading (see Section 8.2 of the Pipeline EPP) will adequately control runoff from entering the open trench in the vicinity of water crossings [Section 8.3].</li> <li>Install a temporary sediment barrier (e.g., sediment fences), where warranted, to eliminate the flow of sediment from spoil piles and disturbed areas into nearby watercourses (see Drawing [Sediment Fence] provided in Appendix R of the Pipeline EPP) [Section 8.7].</li> <li>Inspect temporary sediment control structures (e.g., sediment fences, subsoil berms) installed on approach slopes, on a daily basis throughout crossing construction. Repair the structures, if warranted, before the end of the working day [Section 8.7].</li> <li>Ensure all necessary equipment, personnel and materials are on-site and ready for installation prior to commencing instream work. Complete all work as quickly as practical to limit the duration of disturbance [Section 8.7].</li> <li>Monitor temporary vehicle crossings (i.e., clear span bridge) to ensure that erosion control measures are adequate and stream flow is not disrupted [Section 8.7].</li> </ul>	•	Increased fish mortality or injury due to increased suspended sediment concentrations within the ZOI during instream construction.

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# TABLE 8.1.6-1 Cont'd

		Spatial	Key Recommendations/Mitigation Measures		
	Potential Effect	Boundary <sup>1</sup>	[EPP Reference] <sup>2</sup>	P	otential Residual Effect(s)
3.3	Increased suspended sediment concentrations within the ZOI during instream construction (cont'd)	See above	<ul> <li>Dewater the segment of the watercourse between the dams, if feasible and safe to do so. Pump any sediment-laden water out between the dams to well-vegetated lands, away from the watercourse or to settling ponds [Section 8.7].</li> <li>Remove any accumulations of sediment within the isolation areas that resulted from crossing construction. Spread all sediment and unused trench spoil removed from the watercourse at a location above the high water mark where the materials will not directly re-enter the watercourse [Section 8.7].</li> <li>Ensure that water from flumes, dam and pumps, diversion or other methods does not cause erosion or introduce sediment into the channel. If warranted, place rock rip rap, tarpaulins, plywood sheeting or other materials to control erosion at the outlet of pump hoses and flumes. Supplement the erosion control materials, if warranted, to control any erosion [Section 8.7].</li> <li>See additional monitoring measures in Section 8.7 of the Pipeline EPP.</li> <li>Vehicle Crossings</li> <li>Implement erosion control measures as soon as a disturbance of the vegetation mat occurs [Section 8.7].</li> <li>Stabilize and revegetate areas disturbed during installation and removal of a bridge; install erosion control measures, where warranted, to control surface erosion until vegetation is established [Section 8.7].</li> <li>See recommended mitigation measures for potential effect 1.2 s well as measures outlined in Table 8.1.3-1. See additional monitoring measures in Section 8.7 of the Pipeline EPP.</li> <li>See additional monitoring measures in Section 8.7 of the Pipeline EPP.</li> <li>See additional monitoring measures in Section 8.7 of the Pipeline EPP.</li> <li>Open Cut Crossing</li> <li>Site-specific mitigation and reclamation procedures will be implemented if an open cut crossing is required for Boston Bar Creek.</li> </ul>		See above
3.4	Interbasin transfer of aquatic organisms	RSA	Determine the presence of any aquatic or riparian plants and pests prior to the commencement of construction activities within the riparian buffer. Notify the contractor of any special measures to be implemented to prevent the transfer of these organisms from one watercourse to another [Section 8.7].      Ensure that test water withdrawn from one drainage basin is not allowed to enter natural waters of another drainage basin [Section 8.5].	•	No residual effect identified.
3.5	Blockage of fish movements	LSA	Ensure maintenance of downstream flow conditions ( <i>i.e.</i> , quantity and quality) at all times when constructing an isolated crossing at watercourses. If a pump-around method is used to maintain downstream flow, back-up pumping capacity must be onsite and ready to take over pumping immediately if operating pumps fail. Pumps are to be continuously monitored to ensure flow is maintained at all times until the dam materials are removed and normal flow is restored to the channel [Section 8.7].  Vehicle Crossings  Ensure temporary vehicle crossing structures do not disrupt fish passage at fish-bearing watercourses and do not interfere with or impede flow or navigation at any location [Section 8.7].  Construct or install temporary vehicle access across Falls Lake and Boston Bar Creek in a manner that follows provincial and federal guidelines [Section 8.7].	•	Temporary blockage of fish movements.
3.6	Effects on fish species of concern	RSA	<ul> <li>Implement applicable measures from the Fish Species of Concern Contingency Plan (see Appendix B of the Pipeline EPP) should fish species of concern be discovered during construction [Section 8.7].</li> <li>See recommended mitigation measures outlined in potential effects 2.2 and 3.1 to 3.5 of this table.</li> </ul>	•	Fish species of concern may be affected by an increase in suspended sediment concentration, habitat alteration within the ZOI and increased potential for mortality or injury.

Notes:

- LSA = Fish and Fish Habitat LSA; RSA = Aquatics RSA. 1
- Detailed mitigation measures are outlined in the Pipeline EPP (Volume 6B of the Facilities Application).

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# 8.1.6.2 Significance Evaluation of Potential Residual Effects

Table 8.1.6-2 provides a summary of the significance evaluation of the potential residual environmental effects of the construction and operations of the pipeline on fish and fish habitat indicators. The rationale used in the evaluation of significance of each of the potential residual environmental effects is provided below. An evaluation of significance is not required for those potential effects where no residual effect is identified (*i.e.*, interbasin transfer of aquatic organisms).

#### **TABLE 8.1.6-2**

# SIGNIFICANCE EVALUATION OF POTENTIAL RESIDUAL EFFECTS OF PIPELINE CONSTRUCTION AND OPERATIONS ON FISH AND FISH HABITAT FOR COQUIHALLA SUMMIT RECREATION AREA

			-	Tei	mporal Conte	ext				
	Potential Residual Effects	Impact Balance	Spatial Boundary¹	Duration	Frequency	Reversibility	Magnitude	Probability	Confidence	Significance <sup>2</sup>
1	Fish and Fish Habitat Indicator – Riparian	Habitat			1				1	
1(a)	Riparian habitat loss or alteration due to construction activities.	Negative	Footprint	Short-term	Isolated	Medium to long-term	Low	High	High	Not significant
1(b)	Clearing or disturbance of riparian habitat during maintenance and operations.	Negative	Footprint	Immediate to short-term	Occasional	Medium to long-term	Low	Low	High	Not significant
1(c)	Contamination of riparian habitat from spills during construction and maintenance.	Negative	RSA	Immediate	Accidental	Short to long-term	Low to high	Low	Moderate	Not significant
2.	Fish and Fish Habitat Indicator – Instream	n Habitat							•	
2(a)	Alteration of instream habitat within the ZOI.	Negative	RSA	Short-term	Isolated	Short to medium-term	Low	High	High	Not significant
2(b)	Contamination of instream habitat from spills during construction.	Negative	RSA	Immediate	Accidental	Short to medium-term	Low to high	Low	High	Not significant
3.	Fish and Fish Habitat Indicator – Fish Mo	rtality and	Injury							
3(a)	Increased fish mortality or injury due to construction activities.	Negative	RSA	Short-term	Isolated	Medium-term	Low	Low	High	Not significant
3(b)	Increased fish mortality or injury from spills during construction activities.	Negative	RSA	Immediate	Accidental	Short to long-term	Low to high	Low	High	Not significant
3(c)	Increased fish mortality or injury due to increased suspended sediment concentrations within the ZOI during instream construction.	Negative	LSA	Short-term	Isolated	Medium-term	Low to medium	Low	High	Not significant
3(d)	Temporary blockage of fish movements.	Negative	LSA	Short-term	Isolated	Immediate to short-term	Low	Low	High	Not significant
3(e)	Fish species of concern may be affected by an increase in suspended sediment concentration, habitat alteration within the ZOI and increased potential for mortality or injury.	Negative	RSA	Short-term	Isolated	Short-term	Low	Low	Moderate	Not significant

Notes:

1

- LSA = Fish and Fish Habitat LSA; RSA = Aquatics RSA.
- 2 <u>Significant Residual Environmental Effect</u>: A high probability of occurrence of a permanent or long-term residual effect of high magnitude that cannot be technically or economically mitigated.

#### Fish and Fish Habitat Indicator - Riparian Habitat

#### Riparian Habitat Loss or Alteration Due to Construction Activities

Riparian vegetation within the construction right-of-way and TWS will be disturbed at all trenched (*i.e.*, isolated or open cut) watercourse crossings where a temporary vehicle crossing will be installed (*i.e.*, Falls Lake and Boston Bar Creek). The impact balance of this residual effect is considered to be negative. During construction, disturbance to riparian vegetation will be kept to a minimum, leaving as much existing riparian vegetation intact as practical and efforts to control erosion and sedimentation in disturbed areas

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will be implemented. Disturbed riparian areas will be seeded following construction with appropriate native seed mix along with a quick establishing cover crop. Riparian areas of both banks will be revegetated with woody plant material to match species found within the recreation area. Revegetation mitigation measures are presented in the Pipeline EPP.

The maximum potential disturbance at each watercourse crossing would be 2,700 m² as a result of pipeline construction if the entire riparian area, to the width of the construction right-of-way and 30 m from the top of the bank was removed at the fish-bearing watercourse crossings within Coquihalla Summit Recreation Area, however, the actual disturbance to riparian habitat is expected to be less. Clearing of riparian vegetation will only occur within the pipeline easement and TWS will not be cleared within the riparian buffer.

The residual effect of pipeline construction on clearing riparian vegetation, although negative, is considered to be of low magnitude given the implementation of industry standard and provincially and federally recommended mitigation measures and monitoring of revegetation success at watercourse crossings post-construction. The residual effect is considered to be reversible in the medium to long-term, depending on the pre-existing vegetation community (e.g., shrubs regenerate within several years, however, tree regrowth is expected to extend into the long-term) (Table 8.1.6-2, point 1[a]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Footprint clearing or disturbance of riparian vegetation is confined to the Footprint.
- Duration: short-term the event causing the alteration of riparian vegetation is construction of the pipeline crossings.
- Frequency: isolated the event causing clearing or disturbance of riparian vegetation (*i.e.*, construction of the pipeline crossings) is confined to a specific period.
- Reversibility: medium to long-term depending upon the pre-existing vegetation community (e.g., shrubs and/or trees).
- Magnitude: low based on implementation of mitigation measures, including revegetation, and the results of PCEM programs which demonstrate the effectiveness of the measures proposed.
- Probability: high alteration of riparian vegetation is expected to occur at the Falls Lake Creek and Boston Bar Creek watercourse crossings.
- Confidence: high based on a good understanding by the assessment team of trenched (*i.e.*, isolated or open cut) crossing methods and associated effects on riparian vegetation.

#### Clearing or Disturbance of Riparian Habitat During Maintenance and Operations

Routine vegetation control at the proposed crossings along the proposed pipeline right-of-way during operations will exclude riparian areas. However, a situation may occur during the life of the operating pipeline where riparian vegetation disturbance may be necessary to accommodate maintenance activities (e.g., in the event of a flood event that causes scouring over the pipeline trench that would require measures to restore depth of cover and pipe integrity). The residual effect of clearing riparian habitat during pipeline operations is of low magnitude and reversible in the medium to long-term (Table 8.1.6-2, point 1[b]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Footprint clearing or disturbance of riparian vegetation is confined to the Footprint.
- Duration: immediate to short-term the event causing alteration of riparian vegetation during operations is maintenance activities which may take less than two days (*i.e.*, immediate) or may take more than two days but less than one year (*i.e.*, short-term).
- Frequency: occasional any maintenance activities required at the watercourse crossings will occur
  intermittently and sporadically over the assessment period.

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- Reversibility: medium to long-term depending upon the pre-existing vegetation community (e.g., shrubs or trees) and the extent of clearing or alteration of riparian vegetation required for maintenance activities to take place.
- Magnitude: low based on the implementation of industry standard and provincially and federally recommended mitigation measures during operations phases of the Project and the results of PCEM programs which demonstrate the effectiveness of the measures proposed.
- Probability: low clearing within the riparian area is not expected to occur during operations.
- Confidence: high based on the professional experience of the assessment team.

### Contamination of Riparian Habitat from Spills During Construction and Maintenance

In the event of spot spills or a more serious fuel truck release, the adverse residual effects would, depending on the volume of the spill and the sensitivity of the receiving environment, range from low to high magnitude with potentially long lasting ramifications to riparian vegetation. However, spill contingency and clean up measures would reduce the magnitude and reversibility of the residual effects.

The probability of a significant adverse residual effect is low, since spills are cleaned up immediately within the construction right-of-way during construction activities. (Table 8.1.6-2, point 1[c]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Aquatics RSA spills resulting in the contamination of riparian habitat may extend beyond the construction right-of-way and, beyond the Fish and Fish Habitat LSA.
- Duration: immediate the event causing contamination is a spill, the period of which is less than or equal to two days.
- Frequency: accidental contamination from spills occurs rarely over the assessment period.
- Reversibility: short to long-term depending upon the nature and volume of the spill as well as the level of sensitivity of the receiving environment and the pre-existing vegetation community (e.g., grasses, shrubs and/or trees).
- Magnitude: low to high depending on the sensitivity of the receiving environment and volume of the spill.
- Probability: low based on established mitigation measures to prevent a spill.
- Confidence: moderate based on the professional experience of the assessment team.

#### Fish and Fish Habitat Indicator – Instream Habitat

#### Alteration of Instream Habitat within the ZOI

The pipeline corridor selection criteria included reducing the number of watercourse crossings to the extent practical and paralleling an existing right-of-way. The proposed crossing techniques and mitigation measures have taken into consideration the sensitivity of the watercourse, including habitat characteristics, fish species present, instream work windows, and least risk biological windowsas well as to the construction schedule, and technical and economic feasibility of the crossing. The introduction of fine sediment to watercourses from instream activities, right-of-way runoff and erosion can have sub-lethal (e.g., irritation of gill tissue) or lethal (e.g., suffocation of developing embryos) effects on fish, and can also cause downstream sediment deposition that alters substrate composition and modifies the availability and suitability of habitat for spawning, overwintering and/or rearing (Anderson et al. 1996, Newcombe and MacDonald 1991).

Bank stabilization through the application of native seed mixes with quick germinating cover crops, in addition to enhanced revegetation efforts including geotextiles or biostabilization, will be the preferred methods of stabilizing watercourse banks disturbed as a result of pipeline construction.

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The implementation of the proposed mitigation measures, in accordance with the DFO Self-Assessment Process and applicable DFO Measures to Avoid Causing Harm to Fish and Fish Habitat will reduce the potential for serious harm to fish or any permanent alteration to, or destruction of, fish habitat as a result of trenched pipeline crossings and temporary vehicle crossings. Nevertheless, a Section 35 Authorization from DFO will be applied for, and fish habitat compensation/offset will be implemented as defined in the Authorization, should serious harm to fish or any permanent alteration to, or destruction of, fish habitat be expected as a result of construction activities. In the event that serious harm to fish or any permanent alteration to, or destruction of, fish habitat is expected and a fish habitat compensation/offset plan is required, the fish habitat compensation/offset plan will be used to ensure compliance with DFO's Fisheries Protection Policy (DFO 2013a).

The maximum area of instream habitat that may be disturbed by construction of the proposed pipeline at Falls Lake and Boston Bar Creek is 0.20 and 0.26 ha, respectively, however, the actual disturbance to instream habitat is expected to be less. Instream habitat may also be disturbed during the construction of vehicle crossings (clear span bridge), however, the disturbed area is anticipated to be minor.

The residual effects of the Project on instream habitat are expected to be of low magnitude and reversible in the short to medium-term for the fish-bearing watercourse crossings in Coquihalla Summit Recreation Area. In addition, with the successful implementation of mitigation proposed the effects will be reduced to low magnitude (Table 8.1.6-2, point 2[a]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Aquatics RSA alteration of instream habitat may extend beyond the Fish and Fish Habitat LSA due to downstream sediment transport and deposition.
- Duration: short-term the event causing alteration of instream habitat is watercourse crossing construction which is expected to take more than two days.
- Frequency: isolated the event causing alteration of instream habitat is confined to the construction phase.
- Reversibility: short to medium-term any sediments that result in deposition on the substrate of a
  watercourse are expected to be flushed from the system following the first annual flushing event after
  construction and, if any fish habitat compensation/offset measures are implemented, they should be
  implemented during construction and/or within the first year following construction of the watercourse
  crossing.
- Magnitude: low based on the effectiveness of the proposed mitigation, the anticipated level of effects
  of the alteration of instream habitat and the implementation of a compensation/offset plan if serious
  harm to fish or any permanent alteration to, or destruction of, fish habitat is anticipated.
- Probability: high watercourses (*i.e.*, Falls Lake Creek and Boston Bar Creek) with historical fish presence will be crossed using trenched (*i.e.*, isolated or open cut) crossing methods.
- Confidence: high based on a good understanding by the assessment team of open cut crossing methods and associated effects on instream habitat.

#### Contamination of Instream Habitat from Spills During Construction

In the event of spot spills, or a more serious fuel truck release in or near a stream, the adverse residual effects could, depending on the volume of the spill and the sensitivity of the receiving environment, be of high magnitude with potentially long lasting ramifications to the health of the watercourse. Such an event has the potential to occur during any activities in or near a watercourse. Although spill contingency and clean up measures would reduce the magnitude and reversibility of the residual effects, such an incident could be considered of high magnitude due to adverse residual effects if it were to occur in a highly sensitive environment, such as Falls Lake Creek.

Spills are cleaned up immediately within the construction right-of-way during construction activities, and occur even more rarely instream, therefore, the probability of a significant adverse residual effect is low (Table 8.1.6-2 point 2[b]). A summary of the rationale for all of the significance criteria is provided below.

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- Spatial Boundary: Aquatic RSA spills resulting in the contamination of instream habitat may extend beyond the Footprint and the Fish and Fish Habitat LSA.
- Duration: immediate the event causing contamination is an accidental spill during construction, the period of which is less than or equal to two days.
- Frequency: accidental contamination from spills occurs rarely, if at all, during the assessment period.
- Reversibility: short to medium-term depending on the nature and volume of the spill as well as the level of sensitivity of Falls Lake and Boston Bar Creek to adverse residual effects resulting from contamination.
- Magnitude: low to high depending on the sensitivity of the receiving environment and the volume of the spill.
- Probability: low based on established mitigation measures to prevent a spill.
- Confidence: high based on the professional experience of the assessment team.

### Fish and Fish Habitat Indicator – Fish Mortality and Injury

### Increased Fish Mortality or Injury Due to Construction Activities

Some construction activities may lead to an increase in fish mortality or injury (e.g., trenching activities). Additionally, efforts to remove fish encountered from isolated areas prior to construction may contribute to fish injury and lead to increased fish mortality, however, no fish were observed or captured at either of the proposed fish-bearing watercourse crossings within Coquihalla Summit Recreation Area. Bull trout/Dolly Varden and rainbow trout/steelhead have been historically documented in Falls Lake and Boston Bar Creek but are not likely to be present due to migration barriers present within the Fish and Fish Habitat LSA at both proposed watercourse crossings. Increased sedimentation from construction activities may cause behavioural or sub-lethal/lethal effects to fish and is discussed below for the residual effect of Fish Mortality or Injury Due to Increased Suspended Sediment Concentration Within the ZOI During Instream Construction.

The magnitude of this potential residual effect is considered to be low (Table 8.1.6-2 point 3[a]) with the successful implementation of the recommended mitigation measures and if necessary, regulatory authorization for the destruction of fish (DFO 2009). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Aquatics RSA fish mortality or injury may result from watercourse crossing construction activities, fish rescue and from construction of temporary vehicle crossings, which may occur outside the Fish and Fish Habitat LSA.
- Duration: short-term the event causing fish mortality or injury is construction of the watercourse crossings which will take more than two days but less than one year.
- Frequency: isolated the event causing fish mortality or injury (*i.e.*, construction of the pipeline crossings) is confined to a specific period.
- Reversibility: medium-term loss of one or more individuals could affect population scale for several
  years, or until those individuals can be replaced.
- Magnitude: low based on the implementation of mitigation measures proven to be effective.
- Probability: low mitigation measures will be implemented to prevent fish mortality or injury.
- Confidence: high based on the professional experience of the assessment team.

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# Increased Fish Mortality or Injury from Spills During Construction Activities

A potential spot spill, or a more serious fuel truck release at Falls Lake and Boston Bar Creek during construction activities, could cause behavioural or sub-lethal/lethal effects on fish within the ZOI. A spill, such as a fuel truck rollover in or near a stream, during construction could cause increased fish mortality or injury and would be considered to have a negative impact balance, however, proper spill contingency and clean up measures would reduce the magnitude and increase the reversibility of the residual effects. Depending on the volume of the spill and the sensitivity of the receiving environment, the adverse residual effects could range from low to high magnitude with potentially increased fish mortality or injury.

Spills are cleaned up immediately within the construction right-of-way during construction activities that effect watercourses, and occur even more rarely instream, the probability of a significant adverse residual effect is low (Table 8.1.6-2 point 3[b]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Aquatics RSA spills resulting in fish mortality or injury may extend beyond the construction right-of-way and, consequently, beyond the Fish and Fish Habitat LSA.
- Duration: immediate the event causing increased fish mortality or injury is a spill, the period of which is less than or equal to two days.
- Frequency: accidental fish mortality of injury from spills occurs rarely over the assessment period.
- Reversibility: short to long-term depending upon the nature and volume of the spill as well as the level
  of sensitivity of the receiving population.
- Magnitude: low to high depending on the sensitivity of the receiving indicators and volume of the spill.
- Probability: low mitigation measures will be implemented to prevent fish mortality or injury.
- Confidence: high based on the professional experience of the assessment team.

# Increased Fish Mortality or Injury Due to Increased Suspended Sediment Concentration Within the ZOI During Instream Construction

Pipeline corridor selection criteria included reducing the number of waterbody crossings, and temporary vehicle crossings, to the extent practical. An evaluation of increased suspended sediment concentrations during instream construction is provided in Section 8.1.3 Water Quality and Quantity. Through the selection of appropriate watercourse crossing techniques, vehicle crossing methods and the implementation of surface erosion controls and riparian area revegetation as outlined in Tables 8.1.3-2, 8.1.6-1 and in the Pipeline EPP (Volume 6B of the Facilities Application), the potential for adverse effects on aquatic systems in Falls Lake and Boston Bar Creek due to suspended sediments concentrations in the water column is reduced.

Suspended sediment released at watercourse crossings during instream activities could cause behavioural, sub-lethal (e.g., irritation of gill tissue) or lethal (e.g., suffocation of developing embryos) effects on fish within the ZOI (Anderson et al. 1996, Newcombe and MacDonald 1991). Suspended sediment concentrations will be monitored during instream activity to confirm that TSS averages remain below the CCME standard of 25 mg/L above baseline (CCME 2007). This is the level, based on 24 hours exposure, when mortalities of the most sensitive life history stage can begin to occur (Newcombe 1994).

There is a level of risk to aquatic resources as a result of high levels of sediment discharge caused by instream construction activities. The Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCME 2002) are often used to ensure aquatic resources are protected during instream activities. These guidelines indicate that a biologically important average increase in TSS concentration over a short-term period (*i.e.*, 24 h) is 25 mg/L above the background level (CCME 2002). DFO (2000) has identified risk levels to protect aquatic resources. The risk levels are determined based on the relationship between increasing suspended sediment concentrations and the level of risk that increasing sediment concentrations can have on fish and fish habitat. DFO (2000) indicates that concentrations < 25 mg/L,

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25-100 mg/L, 100-200 mg/L, 200-400 mg/L and > 400 mg/L have very low, low, moderate, high and unacceptable risk, respectively. Additional background on these risk levels is discussed in Birtwell (1999).

Minor releases of sediment may be associated with the use of temporary vehicle crossings. Although elevated suspended sediment concentrations may result from instream construction and vehicle crossing use, pulses of suspended solids are generally expected to settle out of the water column within the ZOI in a timeframe measuring from minutes to a few hours.

With the implementation of mitigation measures outlined in Tables 8.1.3-2, 8.1.6-1 and the Pipeline EPP (Volume 6B of the Facilities Application), the likelihood of fish mortality or injury in Falls Lake and Boston Bar Creek arising from suspended sediment during instream construction is low (Table 8.1.6-2, point 3[c]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Fish and Fish Habitat LSA Project activities causing an increase in suspended sediment will be limited to the Fish and Fish Habitat LSA associated with the watercourse crossings.
- Duration: short-term the event causing fish mortality or injury due to suspended sediment is instream
  construction, the period of which is will be greater than two days but less than 1 year.
- Frequency: isolated the event causing fish mortality or injury is confined to a specific period.
- Reversibility: medium-term loss of one or more individuals could affect population scale for several years, or until those individuals can be replaced.
- Magnitude: low to medium based on the implementation of mitigation measures proven to be effective, regulatory authorizations and, where warranted, the implementation of fish habitat compensation/offset.
- Probability: low mitigation measures will be implemented to prevent fish mortality or injury and are anticipated to be effective.
- Confidence: high based on available research literature and the professional experience of the assessment team.

# Temporary Blockage of Fish Movements

As a result of construction activities using traditional methods to isolate sections of channel, localized blockage of fish movements may occur for the duration of instream construction. The impact balance of this potential residual effect is considered negative since it could affect the ability of fish species to migrate upstream or downstream of the crossings.

The mitigation measures outlined in Table 8.1.6-1 and the Pipeline EPP (Volume 6B of the Facilities Application) will reduce the potential for blockage of fish movements by instream construction. The residual effect of the blockage of fish movements is considered to be reversible in the immediate to short-term and well within environmental standards and, consequently, of low magnitude (Table 8.1-6.2, point 3[d]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Fish and Fish Habitat LSA blockage of fish movements may extend immediately
  upstream and downstream of the construction right-of-way during instream construction along the
  pipeline corridor.
- Duration: short-term the event causing blockage of fish movements is pipeline construction (*i.e.*, instream construction of the pipeline), the period of which is less than one year at the proposed watercourse crossings.
- Frequency: isolated the event causing blockage of fish movements (*i.e.*, construction of the watercourse crossing) is confined to a specific period at a given watercourse.

- Reversibility: immediate to short-term any blockage due to instream watercourse construction would be removed upon completion of construction of the Falls Lake and Boston Bar Creek, which may take less than or equal to two days (i.e., immediate) but may take longer (i.e., short-term).
- Magnitude: low the implementation of the proposed mitigation measures is expected to effectively reduce the potential effects on fish movements.
- Probability: low appropriate construction timing windows and mitigation measures will be implemented to prevent temporary fish mortality or injury.
- Confidence: high based on the professional experience of the assessment team.

#### Effects to Fish Species of Concern

Several fish species of concern (*i.e.*, federally and/or provincially listed or a fish and fish habitat indicator species) are known to occur in the Coquihalla Summit Recreation Area Aquatics RSA (*i.e.*, Lower Nicola River and Fraser Canyon watersheds). COSEWIC and/or provincially listed species within the Coquihalla Summit Recreation Area Aquatics RSA include, bull trout/Dolly Varden, coastal cutthroat trout, coho salmon and chiselmouth. Fish and fish habitat indicator species that may occur within the Coquihalla Summit Recreation Area Aquatics RSA include, bull trout/Dolly Varden, rainbow trout/steelhead, Chinook salmon, coho salmon and coastal cutthroat trout. Bull trout are provincially Blue-listed (BC CDC 2014) as well as listed as a species of Special Concern by COSEWIC (COSEWIC 2014). Coho salmon (*i.e.*, Interior Fraser River population) have been identified by COSEWIC as Endangered (COSEWIC 2014). Coastal cutthroat trout and chiselmouth are both provincially Blue-listed species (BC CDC 2014). Chinook salmon and rainbow trout are neither provincially nor federally listed.

Vehicle and pipeline crossing methods have been selected to reduce Project-specific effects in consideration of presence and use by fish species of concern within the Coquihalla Summit Recreation Area Aquatics RSA. The proposed crossing method for Falls Lake and Boston Bar Creek is an isolated crossing method. Boston Bar Creek has a proposed contingency crossing method to open cut if construction activities occur inside the timing window.

Bull trout and Dolly Varden coexist and hybridize in Coast Mountain Drainages. Where the two species overlap, they can be difficult to tell apart, although their morphology is different (McPhail 2007). Dolly Varden are a true coastal and anadromous species, which regularly enters the ocean. Its distribution does not typically extend far inland (McPhail 2007). Dolly Varden are generally smaller than bull trout, inhabiting the streams. Bull trout are typically larger and distributed in cool waters throughout the interior, but are absent from many coastal rivers (McPhail 2007). Bull trout, in particular, are susceptible to degraded water and habitat conditions from land disturbance (*i.e.*, roads, oil and gas developments, forest harvesting, mining developments) (ASRD 2012, Brewin *et al.* 2001, Hammond 2004). Hybridization and competitive interactions with other species (*e.g.*, non-native brook) can also cause declines in bull trout populations (McPhail 2007). Contamination, loss or alteration of instream habitat is the greatest contributor of effects to this indicator.

Coastal cutthroat trout are widely distributed throughout the coasts of BC (McPhail 2007). Declines in coastal cutthroat trout populations can be attributed to habitat loss and degradation (e.g., forestry and urbanization) and overharvesting (Costello 2008, McPhail 2007). Due to coastal cutthroat trout's susceptibility to anthropogenic habitat manipulation and degradation, contamination, loss or alteration of instream and riparian habitat are both equal contributors of effects to this indicator.

Coho salmon have an extensive distribution within BC. Coho salmon are susceptible to natural and anthropogenic habitat degradation (COSEWIC 2002a). However, according to TEK participants, coho are more durable than other salmon varieties and are best at adapting to changing conditions. Contamination, loss or alteration of instream habitat and riparian habitat are both equal contributors of effects to this indicator.

Chinook salmon are the largest anadromous species to complete life-history events (*i.e.*, spawning and rearing) in the Fraser River mainstem and associated tributaries. Chinook may migrate as far as 600 km inland (McPhail 2007). Chinook salmon are susceptible to direct and indirect habitat loss (COSEWIC 2006)

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which makes contamination, loss or alteration of instream habitat and riparian habitat both equal contributors of effects to this indicator.

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Chiselmouth have fragmented distribution with little to no migration between populations in BC (McPhail 2007). Northern cluster populations of chiselmouth can be found in the Nicola River Watershed. Due to the lack of migration between populations, Chiselmouth are vulnerable to fragmentation with low chances of repopulation through immigration (McPhail 2007).

Rainbow trout are a cool water salmonid species with widespread distribution throughout BC and may occur both as freshwater resident (rainbow trout) and anadromous (steelhead) populations. Rainbow trout/steelhead have not been considered a conservation concern (McPhail 2007), however, the species is representative of overall effects to fish and fish habitat. Rainbow trout/steelhead are migratory in nature and will swim to new areas should habitat conditions change (Natural Resources Conservation Service 2000); however, contamination, loss or alteration of instream habitat would still be the major contributors to effects on this species.

With the successful implementation of recommended mitigation strategies, the potential residual effect of the construction of the pipeline on fish species of concern in the Coquihalla Summit Recreation Area Aquatics RSA is considered to be reversible in the short-term and of low magnitude (Table 8.1.6-2, point 3[e]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Aquatics RSA fish species of concern may be affected by an increase in suspended sediment concentrations downstream of watercourse crossings or habitat alteration from trenched (i.e., isolated or open cut) crossing methods.
- Duration: short-term the event causing fish species of concern to be affected is instream construction of the pipeline.
- Frequency: isolated the event causing fish species of concern to be affected (*i.e.*, watercourse crossing construction) is confined to a specific period.
- Reversibility: short-term the residual effects of pipeline construction on fish species of concern is limited to the construction phase and a short time thereafter until habitat conditions are restored to their original state.
- Magnitude: low the implementation of the proposed mitigation and site-specific reclamation measures is expected to effectively reduce the potential effects on fish species of concern.
- Probability: low based on the presence of movement barriers within the Fish and Fish Habitat LSA, and implementation of the mitigation outlined in Table 8.1.6-1 and 8.1.3-2 which will reduce the probability of effects to fish species of concern.
- Confidence: moderate based on the professional experience of the assessment team.

# 8.1.6.3 Summary

As identified in Table 8.1.6-2, there are no situations where there is a high probability of occurrence of a permanent or long-term residual environmental effect on fish and fish habitat indicators of high magnitude that cannot be technically or economically mitigated. Consequently, it is concluded that the residual environmental effects on the conservational values of Coquihalla Summit Recreation Area related to fish and fish habitat will be not significant.

#### 8.1.7 Wetlands

There are no wetlands crossed by the proposed pipeline corridor in Coquihalla Summit Recreation Area and, consequently, an effects assessment was not conducted as there are no wetland interactions with the wetland indicator on the construction and operation of the proposed pipeline corridor.

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# 8.1.8 Vegetation

This subsection describes the potential Project effects on vegetation in Coquihalla Summit Recreation Area. The Vegetation LSA generally consists of a 300 m wide band from the centre of the proposed pipeline corridor (e.g., 150 m on both sides of the centre of the proposed pipeline corridor); shown in Figure 8.1-3. The Vegetation RSA consists of a 2 km wide band generally from the centre of the proposed pipeline corridor centre (e.g., 1,000 m on both sides of the centre of the proposed pipeline corridor) shown in Figure 8.1-3.

All vegetation indicators were considered in this evaluation were determined to interact with pipeline construction and operations in Coquihalla Summit Recreation Area.

#### 8.1.8.1 Identified Potential Effects

The potential effects associated with the construction and operations of the proposed pipeline on vegetation indicators are listed in Table 8.1.8-1.

A summary of mitigation measures provided in Table 8.1.8-1 was principally developed in accordance with industry accepted best practices as well as industry and provincial regulatory guidelines.

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# **TABLE 8.1.8-1**

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# POTENTIAL EFFECTS, MITIGATION MEASURES AND RESIDUAL EFFECTS OF PIPELINE CONSTRUCTION AND OPERATION ON VEGETATION FOR THE COQUIHALLA SUMMIT **RECREATION AREA**

Detential Effect	Spatial	Key Recommendations/Mitigation Measures	Potential Residual
Potential Effect  1 Vegetation Indicate	Boundary¹	[EPP Reference] <sup>2</sup>	Effect(s)
Vegetation Indicato     Loss or alteration of native vegetation	r – Vegetation C Footprint	<ul> <li>Confine all pre-clearing/mowing and general clearing activities within the staked/flagged construction right-of-way boundaries. Adhere to clearing/mowing restrictions associated with watercourses (Falls Lake Creek, Boston Bar Creek and 12 unnamed drainages) and sensitive environmental features and buffer areas (at watercourse crossings).</li> <li>Maintain low vegetation or vegetated ground mat within the riparian buffer zone of watercourses, to the extent practical, by clearing only trees, walking-down low vegetation so low-lying vegetation remains intact. Limit grubbing of cleared/mowed trees/shrubs only to the trench line and work side area needed for the vehicle crossing to protect riparian areas [Section 8.1].</li> <li>Use hand clearing methods where directed by Trans Mountain's Lead Environmental Inspector and Inspector(s) to avoid or reduce disturbance to the ground surface on sensitive terrain (Section 8.1].</li> <li>Restrict root grubbing to the trench line, if feasible, and restrict root grubbing in wet areas, where practical, to avoid creation of bog holes, minimize surface disturbance and encourage re-sprouting/natural regeneration of deciduous trees and shrubs. See additional clearing and grubbing measures in Section 8.1.</li> <li>Within the vicinity of the construction right-of-way, collect dormant woody plant material (deciduous trees/shrubs) from a suitable donor site following approval from the applicable land manager (Section 7.0 of Appendix C).</li> <li>Use a grass cover crop and/or native grass seed mix that has been developed for use at riparian areas to support the establishment of installed and naturally regenerating native woody plant material and plants and to provide erosion protection in the short-term (Section 7.0 of Appendix C).</li> <li>Seed disturbed lands with land uses that support native and non-native plant communities with native and non-native grass mixtures and rates, respectively, as identified in the Reclamation Plan (Appendix C Section</li></ul>	Alteration of the composition of up to 113 ha of native vegetation in Coquihalla Summit Recreation Area Provincial Park.

# TABLE 8.1.8-1 Cont'd

	Potential Effect	Spatial Boundary <sup>1</sup>	Key Recommendations/Mitigation Measures [EPP Reference] <sup>2</sup>	Potential Residual Effect(s)
1.2	Loss or alteration of rare ecological communities	LSA	<ul> <li>See potential effect 1.1 of this table for mitigation regarding alteration of native vegetation.</li> <li>Avoid environmentally sensitive areas, such as areas likely to have rare plant species or rare ecological communities. Where avoidance is impractical, implement site-specific mitigation measures in accordance with the Rare Ecological Community and Rare Plant Population Management Plan [Section 6.0 of Appendix B].</li> <li>Flag or fence-off resource-specific environmental features (e.g., rare plant species, rare ecological communities) prior to commencing construction in the vicinity of the resource site. See additional mitigation in Section 6.0 of the Pipeline EPP.</li> <li>Implement the resource-specific mitigation measures associated with vascular and non-vascular plant species of concern as well as rare and unique plant communities on or adjacent to the staked construction boundaries.</li> <li>Suspend activity if previously unidentified rare ecological communities are found on or adjacent to the construction right-of-way. Implement the Rare Ecological Communities or Rare Plant or Species Discovery Contingency Plan [Section 7.0 of Appendix B].</li> <li>Fence off the area where the rare plant community is traversed [Narrow Down Fencing Drawing in Appendix R] [Section 6.0 of Appendix C].</li> <li>Water down construction sites and access roads, when warranted, to reduce or avoid the potential for dust emissions. Increase the frequency of watering roads and sites during periods of high risk (e.g., high winds). Implement additional dust abatement measures (e.g., installing sediment fences, applying a tackifier) will be implemented, when warranted, during clearing and construction activities. See additional measures to control dust in Section 8.2 of the Pipeline EPP.</li> <li>Recontour the landscape to pre-construction conditions [Section 7.0 of Appendix C].</li> <li>Monitor the effectiveness of revegetation efforts during the PCEM of the construction rights-of-way.</li></ul>	If rare ecological communities are located adjacent to the construction right-of-way, they may be indirectly affected by changes in hydrology or light levels.
2.	Vegetation Indicat	or – Plant and Li	chen Species of Concern	
2.1	Loss or alteration of rare plant and/or lichen occurrences	LSA	<ul> <li>See potential effect 1.4 of this table for mitigation applicable to the loss or alteration of rare ecological communities.</li> <li>Flag or fence-off resource-specific environmental features (<i>e.g.</i>, rare plant species, rare ecological communities) prior to commencing construction in the vicinity of the resource site See additional measures in Section 6.0 of the Pipeline EPP.</li> <li>Apply only water or non-toxic and non-persistent chemical products as approved to access roads for dust control at park locations or sensitive areas [Section 9.0].</li> <li>Water down construction sites and access roads, when warranted, to reduce or avoid the potential for dust emissions. Increase the frequency of watering roads and sites during periods of high risk (<i>e.g.</i>, high winds). Implement additional dust abatement measures (<i>e.g.</i>, installing sediment fences, applying a tackifier) will be implemented, when warranted, during clearing and construction activities. See additional measures to control dust in Section 8.2 of the Pipeline EPP.</li> <li>Recontour the landscape to pre-construction conditions [Section 7.0 of Appendix C].</li> <li>Monitor the effectiveness of revegetation efforts during the PCEM of the construction rights-of-way. Conduct additional remedial work, where warranted.</li> </ul>	If rare plant or lichen sub-populations are located adjacent to the construction right-of-way they may be affected by changes in dust, hydrology or light levels.  If vegetation species at risk sub-populations are located adjacent to the construction right-of-way they may be affected by changes in dust, hydrology or light levels.
3.			Infestations of Provincial Weed Species and Other Invasive Non-Native Species Id	entified as a Concern
3.1	Weed introduction and spread	RSA	<ul> <li>Conduct a pre-construction weed survey and record problem vegetation (designated weeds) infestations on and immediately adjacent to the construction right-of-way [Section 6.0] [Section 14.0 of Appendix C].</li> <li>Implement weed management in consultation with BC Parks (<i>i.e.</i>, using proper application of chemical, mechanical or manual measures, or a combination of all) at locations identified within the pre-construction weed survey to a level that is consistent with weed management observed adjacent to the proposed construction right-of-way to reduce the potential for weed infestations following construction [Section 6.0]. Also refer to the Weed and Vegetation Management Plan [Section 14.0 of Appendix C].</li> </ul>	Weed introduction and spread.

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# TABLE 8.1.8-1 Cont'd

Potential Effect	Spatial Boundary <sup>1</sup>	Key Recommendations/Mitigation Measures [EPP Reference] <sup>2</sup>	Potential Residual Effect(s)
3.1 Weed introduction and spread (cont'c		Ensure equipment arrives at all construction sites clean and free of soil or vegetative debris. Do not allow any equipment arriving in a dirty condition on site until it has been cleaned [Section 7.0].	See above.
		Power wash and misting stations will be established, where required, to clean equipment used during clearing [Appendix F]. Basic shovel and sweep cleaning will be conducted on clearing [Appendix J] [Section 5.2].	
		Restrict all vehicular traffic to the approved and staked construction right-of-way, workspace and access roads [Section 6.0].	
		Monitor the soil piles for weed growth frequently during the growing season.  Direct the contractor when warranted to take proactive measures to control weed growth [Section 7.0].	
		<ul> <li>Consider placing mats (i.e., construction mats or swamp mats) over infested areas to reduce construction equipment transporting weed or plant material.</li> <li>Where mats are used, ensure they are free of soil, vegetation and debris prior to removing from the site [Section 7.0].</li> </ul>	
		<ul> <li>Clean equipment (i.e., shovel and sweep, pressurized water or compressed air) involved in root zone material handling at weed-infested sites prior to leaving the location unless full right-of-way root zone material salvage has been conducted. [Section 7.0].</li> </ul>	
		For native seed, the highest seed grade available will be obtained. Do not accept seed lots that contain any Prohibited Noxious or Noxious weeds as identified in the Certificate of Analysis. Retain the Certificates of Analysis obtained for future documentation. The Certificates of Analysis will be presented to the Crown land authority upon request [Section 8.6].	
		Limit vehicle travel through problem vegetation infested areas [Section 14.0 of Appendix C].	
		The Weed and Vegetation Management Plan consists of vegetation management measures to be implemented in the short-term, during the pre-construction, construction and PCEM phases of the Project construction and during the regular operations and maintenance phase of the Project. Vegetation management measures are to be implemented during both short-term and long-term periods in consultation with BC Parks [Section 14.0 of Appendix C].	
		The use of herbicides for problem vegetation management along the construction right-of-way during construction and operations in BC will be conducted in accordance with the Integrated Pest Management Regulation of BC as part of the BC Integrated Pest Management Act and in consultation with BC Parks [Section 14.0 of Appendix C].	
		Monitor the effectiveness of revegetation efforts during the PCEM program of the construction right-of-way. Conduct additional remedial work, where warranted.	
		During regular maintenance and operations activities, incidental ground inspections for problem vegetation along the construction right-of-way may be conducted to determine the extent (percent cover, composition, distribution, location of infestations) of problem vegetation (i.e., presence of mature brush and trees, and weeds).	
		<ul> <li>Areas of new infestations, recommended treatment sites and BC Parks concerns will also be identified and documented during monitoring. To assist monitoring efforts, the baseline data collected during the pre-construction weed survey and the results of the PCEM Program will assist in establishing thresholds and determining if objectives of the Weed and Vegetation Management Plan are being met [Section 14.0 of Appendix C].</li> </ul>	

Notes:

- 1 LSA = Vegetation LSA; RSA = Vegetation RSA.
- 2 Detailed mitigation measures are outlined in the Pipeline EPP (Volume 6B of the Facilities Application).

# 8.1.8.2 Significance Evaluation of Potential Residual Effects

Table 8.1.8-2 provides a summary of the significance evaluation of the potential residual environmental effects of the construction and operation of the proposed pipeline in the Coquihalla Summit Recreation Area on vegetation. The rationale used to evaluate the significance of each of the residual environmental effects is provided below.

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#### **TABLE 8.1.8-2**

# SIGNIFICANCE EVALUATION OF POTENTIAL RESIDUAL EFFECTS OF PIPELINE CONSTRUCTION AND OPERATIONS ON VEGETATION FOR THE COQUIHALLA SUMMIT RECREATION AREA

			<sub>L</sub> V	T	emporal C	ontext				
	Potential Residual Effects	Impact Balance	Spatial Boundary¹	Duration	Frequency	Reversibility	Magnitude	Probability	Confidence	Significance <sup>2</sup>
1	Vegetation Indicator – Vegetation Communities	of Concern		•		•				
1(a)	Alteration of the composition of approximately 113 ha of native vegetation.	Negative	Footprint	Short- term	Periodic	Medium to long-term	Low to medium	High	High	Not significant
1(b)	If rare ecological communities are located adjacent to the construction right-of-way they may be indirectly affected by changes in hydrology or light levels.	Negative	LSA	Short- term	Periodic	Medium-term	Low	High	Moderate	Not significant
2	Vegetation Indicator – Plant and Lichen Species	of Concerr	1							
2(a)	If rare plant or lichen sub-populations are located adjacent to the construction right-of-way, they may be affected by by changes in dust, hydrology or light levels.	Negative	LSA	Short- term	Periodic	Short to long-term	Low	High	High	Not significant
3	Vegetation Indicator – Presence of infestations	of Provincia	I Weed Spe	cies and C	Other Invas	sive Non-Native	Species I	dentified	d as a Conc	ern
3(a)	Weed introduction and spread.	Negative	RSA	Short- term	Periodic	Short to medium-term	Low to medium	High	High	Not significant

Notes:

- 1 LSA = Vegetation LSA; RSA = Vegetation RSA.
- 2 <u>Significant Residual Environmental Effect</u>: A high probability of occurrence of a permanent or long-term residual effect of high magnitude that cannot be technically or economically mitigated.

# <u>Vegetation Indicator – Alteration of Vegetation Communities of Concern</u>

# Alteration of Native Vegetation

The proposed pipeline corridor parallels existing disturbance for the whole of its length in the Coquihalla Summit Recreation Area. Using a TEM disturbance layer on GIS imagery to calculate undisturbed native vegetation, up to approximately 113 ha of vegetation may be disturbed or altered on the Footprint with the recreation area boundaries during construction and operations of the proposed pipeline. The alteration of native vegetation is considered to have a negative impact balance.

Disturbed areas through native vegetation in the recreation area will be seeded with the appropriate native seed mix. Cover crops will be used for initial soil stabilization and weed control. Although areas disturbed during construction and periodic maintenance activities will revegetate with the appropriate native species, species composition in the disturbed Footprint will be altered. Clearing of the right-of-way and temporary workspace and the maintenance of the right-of-way will result in the perpetuation of early seral vegetation. The extent of altered vegetation communities will be limited by the implementation of mitigation measures outlined in Table 8.1.8-1 and in the Pipeline EPP (Volume 6B of the Facilities Application) and reclamation measures will speed the recovery.

- Alteration of native vegetation due to competition for light, soil nutrients and moisture may occur while
  the Footprint is revegetating. However, the establishment of early successional communities during
  reclamation and operations will resemble revegetation following natural disturbance since the species
  composition will favor early successional/colonial species, which are adapted for greater competition
  pressure for light, nutrients and moisture (excepting the competition resulting from weedy non-native
  species).
- During construction, operations and reclamation of the Project, there will be a decrease in woody species richness and abundance due to site clearing within the Footprint, however due to edge effects there may be increases in woody species richness and abundance in areas adjacent to the Footprint. The extra temporary workspace will be allowed to revegetate after construction. Forb and graminoid

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species richness and abundance will increase over the operations phase of the Project as natural, low growing vegetation regenerates, the Footprint will be maintained free of higher growing vegetation. The Footprint will be returned to an equivalent land capability compared to the pre-construction conditions during abandonment.

No locally or regionally adopted threshold or standard exists against which the incremental change in vegetation composition can be assessed. This residual effect is limited to the Footprint, reversible in the medium to long-term and of low to medium magnitude (Table 8.1.8-2, point 1[a]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Footprint effects of pipeline construction and operations on the alteration of native vegetation is confined to the construction right-of-way.
- Duration: short-term the events contributing to the alteration of native vegetation are clearing during construction of the pipeline or maintenance activities (*e.g.*, integrity digs, vegetation management), the latter of which are limited to any one year during the operations phase.
- Frequency: periodic the events resulting alteration of native vegetation (*i.e.*, pipeline construction and maintenance activities) occur intermittently but repeatedly during the operations phase of the Project.
- Reversibility: medium to long-term depending on the associated land use and the growth time required for species in each affected area (e.g., forb versus tree), changes to native vegetation community composition are considered reversible in the medium to long-term. The effects of the proposed pipeline on forb species (e.g., grasses, bunchberry) is expected to be reversible in the medium-term, whereas the effects on tree species (e.g., western red cedar, black spruce) are expected to be reversible in the long-term (more than 10 years) because the full right-of-way will be maintained free of higher growing vegetation until abandonment. Therefore, the overall alteration of the composition of vegetation along the Footprint will persist in the medium to long-term.
- Magnitude: low to medium the proposed pipeline corridor is located adjacent to existing disturbances for its entire length within the recreation area and the construction of the pipeline will result in the clearing of up to approximately 113 ha of vegetation, which is considered to be within environmental standards given that best practices, objectives and provincial guidelines are being followed. Permanent loss of native vegetation is not anticipated to result from either the construction or operations of the proposed pipeline (low), however, returning the Footprint to an equivalent land capability during the abandonment phase could take years, as discussed under reversibility (medium). The indirect effects of Project construction and maintenance due to edge effects such as changes in light and moisture will be of low magnitude since they will not result in the loss of vegetation but only a localized change in vegetation community composition.
- Probability: high the Footprint will cross native vegetation.
- Confidence: high based on past pipeline projects and the professional experience of the assessment team.

#### Indirect Effects to Rare Ecological Communities

With proper implementation of the industry-accepted standard mitigation practices that are proposed, disruption of surface flow patterns and light levels following construction or maintenance activities are expected to be minor along the proposed pipeline corridor. However, construction and maintenance activities (e.g., integrity digs) may contribute to some localized alteration of light levels and natural surface drainage patterns until trench settlement is complete and seeded and/or naturally regenerated vegetation has matured. The impact balance of this potential residual effect is considered negative since it could alter the moisture regime and light levels.

Indirect alteration of rare ecological communities adjacent to the Footprint may occur due to soil erosion. Some rare ecological communities may be more susceptible to erosion than others. Since the areas with greatest erosion risk will be seeded with native species or an annual cover crop (or otherwise stabilized with erosion control blankets, coir matting, woody slash [Section 6.0 of Appendix C and Section 8.6.3 of the Pipeline EPP]) (Appendix B of this Proposal), the indirect alteration of native vegetation as a result of

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erosion will not measurably contribute to the overall effect of pipeline construction on the alteration of rare ecological communities.

Increased distance of light penetration due to clearing will result in an indirect alteration of native vegetation (*i.e.*, the native species making up the rare ecological community). For example, some forested communities are characterized by low light penetration due to dense tree canopy. If part of the community is cleared, the light penetrating to the understory will change the species composition along the edges of the community where clearing occurred. However, this effect will not substantially contribute to the alteration of native vegetation beyond the effects detailed in relation to the clearing of native vegetation. Additionally, as revegetation progresses over the course of reclamation, light penetration will generally decrease over time.

Given that indirect effects are, in part, caused by disturbance to vegetation structure associated with clearing activities, allowing disturbed areas to naturally revegetate may not alleviate indirect effects where vegetation management is conducted or long-term persistence of the disturbance exists. Consequently, indirect effects to vegetation are expected to persist until the pre-existing vegetation composition and structure is restored for the Footprint.

During the construction and operations of the pipeline, there will be a decrease in woody species richness and abundance due to clearing within the Footprint, however due to edge effects there may be increases in woody species richness and abundance in areas adjacent to the Footprint. Forb and graminoid species richness and abundance will increase following construction as natural vegetation regenerates.

Alteration of native vegetation due to competition for light, soil nutrients and moisture may occur while the Footprint is revegetating. However, the establishment of early successional communities following construction will resemble revegetation following natural disturbance since the species composition will favor early successional/colonial species, which are adapted for greater competition pressure for light, nutrients and moisture (excepting the competition resulting from weedy non-native species).

The PCEM program will identify any locations with altered drainage patterns (e.g., ponded water) and remedial work will be conducted. Once pre-construction hydrology regimes are returned to a site, regeneration or revegetation of rare ecological communities will be more likely.

The effect of construction on adjacent rare ecological communities is deemed to have a negative impact balance. This residual effect is limited to the Vegetation LSA, reversible in the medium-term and of low magnitude since the proposed pipeline corridor parallels other pipeline rights-of-way and disturbance for its entire length within the recreation area (Table 8.1.8-2, point 1[b]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Vegetation LSA although alteration of rare ecological communities is generally
  confined to the construction right-of-way, potential changes in hydrology, light levels and species
  composition may extend into the Vegetation LSA.
- Duration: short-term the events resulting in alteration of adjacent rare ecological communities are clearing during construction of the pipeline or maintenance activities (e.g., integrity digs, vegetation management), the latter of which are limited to any one year during the operations phase.
- Frequency: periodic the events resulting in alteration of adjacent rare ecological communities (*i.e.*, pipeline construction and maintenance activities) occur intermittently but repeatedly during the operations phase of the Project.
- Reversibility: medium-term it may take more than one year plus adequate precipitation levels in order
  for the trench crown to settle and natural drainage patterns to be restored, and it will take one to ten
  years for vegetation to grow back to former heights depending on the species, which will prevent
  increased light from reaching surrounding plants in the ecological community.
- Magnitude: low the proposed pipeline corridor is located adjacent to existing disturbances to the extent practical and the residual effects are detectable but are still considered to be within environmental standards given that best practices, objectives and provincial guidelines are being followed.

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- Probability: high the proposed pipeline corridor is adjacent to a rare ecological community and other
  native vegetation with high potential to support rare ecological communities, including forested areas
  that will be affected by clearing vegetation during construction.
- Confidence: moderate based on data pertinent to the Project area and the professional experience of the assessment team.

#### Vegetation Indicator – Plant and Lichen Species of Concern

#### Indirect Effects to Rare Plant and Lichen Sub-Populations

With proper implementation of the industry-accepted standard mitigation practices that are proposed, disruption of surface flow patterns and light levels following construction or maintenance activities is expected to be minor along the proposed pipeline corridor. However, construction activities may contribute to some localized alteration of light levels and natural surface drainage patterns until trench settlement is complete and vegetation has matured. The impact balance of this potential residual effect is considered negative since it could alter the moisture regime and light levels. In addition, dust deposition and the chemicals used to suppress dust have the potential to impact rare plants and lichens.

Increased distance of light penetration due to clearing will result in an indirect alteration of native vegetation (*i.e.*, the native species making up the habitat for rare plant populations). For example, some rare species are only found in forested communities characterized by low light penetration due to dense tree canopy and a specific amount of humidity. If part of the treed community is cleared, the light penetrating to the understory will change the species composition along the edges of the community where clearing occurred and the increased air flow will alter humidity within the area. However, this effect will not substantially contribute to the alteration of native vegetation beyond the effects detailed in relation to the clearing of native vegetation. Additionally, as revegetation progresses during the course of reclamation, light penetration and air flow will generally decrease over time.

Given that indirect effects are, in part, caused by disturbance to vegetation structure associated with clearing activities, allowing disturbed areas to naturally revegetate may not alleviate indirect effects where vegetation management is conducted or long-term persistence of the disturbance exists. Consequently, indirect effects to rare plant and lichen populations are expected to persist until the pre-existing vegetation composition and structure is restored for the Footprint.

During construction and operations of the pipeline, vehicle traffic will increase dust deposition onto native vegetation adjacent to the Footprint which could include rare lichen populations. Use of dust suppressants has the potential to affect both plant and lichen species. During reclamation, dust due to Project traffic could also result in minor effects to rare lichens located adjacent to the right-of-way.

Alteration of native vegetation due to competition for light, soil nutrients and moisture may occur while the Footprint is revegetating. However, the establishment of early successional communities following construction will resemble revegetation following natural disturbance since the species composition will favor early successional/colonial species, which are adapted for greater competition pressure for light, nutrients and moisture (excepting the competition resulting from weedy non-native species).

Many rare species inhabit areas with specific hydrology and light regimes. If hydrology of an area is altered, rare plant or lichen species located adjacent to the construction right-of-way may be affected. For example, golden saxifrage requires moist but not submerged substrate to grow on. The PCEM program will identify any locations with altered drainage patterns (e.g., ponded water) and remedial work will be conducted. Consequently, the residual effect is reversible in the short to long-term. This residual effect is of low magnitude since the proposed pipeline corridor parallels other existing rights-of-way and disturbance for its entire length within the recreation area (Table 8.1.8 -2, point 2[a]). A summary of the rationale for all of the significance criteria is provided below.

Spatial Boundary: Vegetation LSA – although alteration of rare plant and lichen populations is generally
confined to the disturbed portion of the construction right-of-way, potential changes in hydrology, dust
and light levels may extend into the Vegetation LSA.

- Duration: short-term the events resulting in alteration of rare plant and lichen populations are clearing during construction of the pipeline or maintenance activities (e.g., integrity digs, vegetation management), the latter of which are limited to any one year during the operations phase.
- Frequency: periodic the events resulting in alteration of rare plant and lichen populations via disruption of drainage patterns and altered light levels (*i.e.*, construction of the pipeline and maintenance activities) occur intermittently but repeatedly during the operations phase of the Project.
- Reversibility: short to long-term it may take more than one year plus adequate precipitation levels in order for the trench crown to settle and natural drainage patterns to be restored. Along extra temporary workspace it will take years for vegetation to grow back to former heights, which is what affects the light levels reaching surrounding plants. The full right-of-way will be maintained free of higher growing vegetation until abandonment (long-term). The potential for effects from dust and dust suppressants exist until construction activities are completed.
- Magnitude: low the proposed pipeline corridor is located adjacent to existing disturbances. Residual
  effects are detectable, but are still considered to be within environmental standards given that best
  practices, objectives and provincial guidelines are being followed.
- Probability: high the proposed pipeline corridor crosses forested vegetation communities that provide potential habitat for rare plant and lichen species and the forested vegetation will be affected by clearing activities during construction.
- Confidence: high based on past pipeline projects, the experience of the assessment team and the results of the rare plant surveys.

# <u>Vegetation Indicator – Presence of Infestations of Provincial Weed Species and Other Invasive</u> Non-Native Species Identified as a Concern

### Weed Introduction and Spread

Non-native and invasive species tend to be pioneer species with characteristics that can exploit recently disturbed ecosystems. Non-native and invasive species that occur at high densities on the landscape can exert competitive pressure on native vegetation and result in alteration of native vegetation. Weeds and non-native, invasive species were identified as a concern in the Community Workshops (i.e., Merritt and Hope). In general, invasive species are most prevalent where the ground has been disturbed by anthropogenic activity. During the 2013 and 2014 vegetation surveys, any weed species encountered were noted and their density/distribution was recorded. One provincially noxious species, Canada thistle, was recorded in this recreation area in one location, at unknown density. Three species designated as noxious in other regions were recorded. Oxeye daisy was recorded in three locations; one of a few patches, and two of several patches. Orange-red king devil (orange hawkweed) was recorded in two locations; one of a few patches and one of several patches. Common tansy was recorded in a single location as a few patches. Six species of nuisance weeds were recorded including alsike clover, common dandelion, common timothy, creeping buttercup, great mullein and sheep sorrel. Garden escapees and introduced pasture species were also present. The information collected during the vegetation surveys allows for an understanding of baseline weed conditions and the magnitude of weed infestations encountered in areas supporting native vegetation along the proposed pipeline corridor.

Mitigation measures outlined in Table 8.1.8-2 and in the Pipeline EPP (Volume 6B of the Facilities Application) are effective industry standard measures to reduce the potential for the introduction and spread of weeds. These measures will be implemented during both construction and maintenance of the Project. All problem vegetation along the construction right-of-way will be monitored during all pipeline construction phases (*i.e.*, pre-construction and construction) and the operations phase (*i.e.*, PCEM) (Section 12.0 of Appendix C of the Pipeline EPP).

Experience during past pipeline construction programs has shown that, while weed infestations were encountered, the implementation of appropriate mitigation measures during construction resulted in limited weed issues (Alliance 2002, IPL 1995, Enbridge 2000, 2002, TERA 2012a).

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The potential introduction or spread of Noxious weeds and invasive, non-native species may vary in the period required to reverse the effect depending on the land use affected and the species. Consequently, the residual effect is considered to be reversible in the short to medium-term and of low to medium magnitude (Table 8.1.8-2, point 3[a]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Vegetation RSA potential weed introduction and spread resulting from pipeline construction and maintenance activities may extend beyond the Footprint and Vegetation LSA to the Vegetation RSA.
- Duration: short-term the events resulting in potential weed introduction and spread are construction of the pipeline or site-specific maintenance activities (e.g., integrity digs), the latter of which are limited to any one year during the operations phase.
- Frequency: periodic the events resulting in potential weed introduction and spread (*i.e.*, pipeline construction, operations and maintenance activities) occur during construction and intermittently, but, repeatedly over the assessment period.
- Reversibility: short to medium-term depending on the weed species, the size/location of the weed occurrence and the associated land use.
- Magnitude: low to medium the proposed pipeline corridor parallels existing disturbances for its entire length within the recreation area boundaries weeds are known to be widespread throughout the recreation area. Magnitude varies from low to medium depending on the weed or invasive plant species, affected land use and density/distribution of associated weed occurrences.
- Probability: high pipeline construction is expected to cause some weed introduction and spread.
- Confidence: high based on past pipeline projects, the professional experience of the assessment team and PCEM results.

#### 8.1.8.3 Summary

As identified in Table 8.1.8-2, there are no situations where there is a high probability of occurrence of a permanent or long-term residual environmental effect on vegetation indicators of high magnitude that cannot be technically or economically mitigated. Consequently, it is concluded that the residual environmental effects of pipeline construction and operations on vegetation will be not significant.

#### 8.1.9 Wildlife and Wildlife Habitat

This subsection describes the potential Project effects on wildlife and wildlife habitat indicators in the Coquihalla Summit Recreation Area. The Wildlife LSA is defined as the area within a 1 km buffer of the centre of the proposed pipeline corridor shown in Figure 8.1-3. The Wildlife RSA is defined as the area within a 15 km buffer of the centre of the proposed pipeline corridor shown in Figure 8.1-1.

Wildlife and wildlife habitat indicators were considered in this evaluation and the following may occur in the Coquihalla Summit Recreation Area: grizzly bear; moose; forest furbearers; coastal riparian small mammals; bats; mature/old forest birds; early seral forest birds; riparian and wetland birds; bald eagle; common nighthawk; olive-sided flycatcher; pond-dwelling amphibians; and stream-dwelling amphibians.

### 8.1.9.1 Identified Potential Effects

Project construction and operational activities have the potential to affect wildlife and wildlife habitat through changes to habitat, movement and mortality risk. A summarized discussion of potential Project effects on wildlife and wildlife habitat specific to the Coquihalla Summit Recreation Area is provided below. The potential effects associated with the construction and operation of the proposed pipeline on wildlife and wildlife habitat specific to the Coquihalla Summit Recreation Area are listed in Table 8.1.-9-1.

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#### **TABLE 8.1.9-1**

# POTENTIAL EFFECTS, MITIGATION MEASURES AND RESIDUAL EFFECTS OF PIPELINE CONSTRUCTION AND OPERATION ON WILDLIFE AND WILDLIFE HABITAT FOR COQUIHALLA SUMMIT RECREATION AREA

Р	otential Effect	Spatial Boundary <sup>1</sup>	Key Recommendations/Mitigation Measures	Potential Residual Effect(s)
1	Change in habitat	LSA	<ul> <li>Refer to Table 8.1.9-2 below: habitat loss/alteration, wildlife disturbance and attraction of wildlife during construction, mammal dens, species with special conservation status, mineral licks, bats, migratory birds, raptor/owl nest, great blue heron nesting colony, reptiles, stream-dwelling amphibians, amphibian breeding pond, beaver dams/lodges.</li> </ul>	Combined Project effects on wildlife and wildlife habitat in the Coquihalla Summit Recreation Area.
2	Change in movement	LSA	<ul> <li>Refer to Table 8.1.9-2 below: habitat loss/alteration, access and line-of- sight management, barriers to wildlife movement, wildlife disturbance and attraction of wildlife during construction, mineral licks, mammal dens, bats, migratory birds, raptor/owl nest, great blue heron nesting colony, reptiles, stream-dwelling amphibians, amphibian breeding pond, beaver dams/lodges.</li> </ul>	
3	Increased mortality risk	LSA	<ul> <li>Refer to Table 8.1.9-2 below: habitat loss/alteration, access and line-of- sight management, disturbance and attraction of wildlife during construction, mammal dens, species with special conservation status, bats, migratory birds, raptor/owl nest, great blue heron nesting colony, reptiles, stream-dwelling amphibians, amphibian breeding pond, beaver dams/lodges.</li> </ul>	

Note: 1 LSA = Wildlife LSA.

Mitigation measures (as shown in the Pipeline EPP) that are particularly relevant to potential Project effects for wildlife and wildlife habitat in the Coquihalla Summit Recreation Area are provided in Table 8.1.9-1 below. The mitigation measures were principally developed in accordance with Trans Mountain Standards, as well as industry and provincial regulatory guidelines.

#### **TABLE 8.1.9-2**

# POTENTIAL EFFECTS, MITIGATION MEASURES OF PIPELINE CONSTRUCTION AND OPERATIONS ON WILDLIFE AND WILDLIFE HABITAT FOR COQUIHALLA SUMMIT RECREATION AREA

Concern	Recommended Mitigation <sup>1</sup>
Habitat Loss/Alteration	Avoid activity during sensitive time periods for wildlife species to the extent feasible.
	<ul> <li>Share workspace with the adjacent existing rights-of-way where practical to reduce the construction right-of-way-width.</li> </ul>
	Do not clear timber, stumps, brush or other vegetation beyond the marked construction right-of-way boundary.
	<ul> <li>Where grading is not required, cut/mow/walk down shrubs and small diameter deciduous trees at ground level to facilitate rapid regeneration.</li> </ul>
	<ul> <li>Plant native tree seedlings and/or shrubs at select locations to be determined in the field by the Environmental Inspector, in consultation with the Wildlife Resource Specialist.</li> </ul>
	<ul> <li>Avoid the use of pesticides (except for herbicides to control invasive plants or noxious weeds; only use as spot treatments and outside the migratory bird breeding season) (BC MOE 2012a).</li> </ul>
	<ul> <li>Reduce the width of grubbing near watercourses and through other wet areas to facilitate the restoration of shrub communities.</li> </ul>
	<ul> <li>Reduce disturbance at riparian areas, and where practical, extend the riparian buffer by implementing trenchless pipeline crossing techniques, or cut/mow/walk down shrubs and small diameter deciduous trees at ground level to facilitate rapid regeneration.</li> </ul>
	Limit vegetation control along the right-of-way and allow natural regeneration during the operations phase to the extent feasible.
	<ul> <li>Conduct pre-construction surveys to identify site-specific habitat features (e.g., mineral licks) and implement the appropriate setbacks and/or timing windows.</li> </ul>
Access and Line-of-Sight Management	<ul> <li>Implement the measures included in the Traffic and Access Control Management Plan prepared for the Project (Appendix C of the Pipeline EPP).</li> </ul>

# TABLE 8.1.9-2 Cont'd

Concern	Recommended Mitigation <sup>1</sup>
Access and Line-of-Sight Management (cont'd)	<ul> <li>Implement measures to reduce access (human and predator) along the right-of-way following construction. Measures may include but are not limited to planting tree seedlings and/or shrubs in select locations to facilitate rapid regeneration of natural vegetation, and blocking access entry points by mounding, rollback, boulder barriers, earth berms or locked gates. The locations of access control measures along the right-of-way will be determined in consideration of consultation with provincial regulatory authorities.</li> </ul>
	<ul> <li>Where rollback and coarse woody debris are needed for access management, erosion control and habitat enhancement, ensure that a sufficient supply is set aside for this purpose during final clean-up.</li> </ul>
	<ul> <li>Use existing roads to access the pipeline right-of-way.</li> <li>Install educational signs as needed at selected locations.</li> </ul>
Barriers to Wildlife Movement	Conduct work as expeditiously as practical (i.e., interval between front-end work activities such as grading and back-end activities such as clean-up) to reduce the length and duration of the open trench and to reduce potential barriers and hazards to wildlife.
	<ul> <li>Locate gaps in pipe to allow wildlife movement in places that also facilitate construction such as at slope changes, crossings (i.e., watercourse, road, pipeline right-of-way) and bends. The locations of the gaps should coincide with gaps in spoil, slash piles and snow windrows. The locations can be determined in the field by the Environmental Inspector.</li> </ul>
	<ul> <li>Restore habitat connectivity by redistributing large-diameter slash (rollback) over select locations on the pipeline right-of-way (e.g., where high levels of coarse woody debris occur prior to construction), to provide cover and facilitate movement of wildlife. Specific locations are to be determined in the field by the Environmental Inspector and Wildlife Resource Specialist in discussion with provincial regulatory authorities.</li> </ul>
Wildlife Disturbance and Attraction	Schedule clearing and construction activities to avoid sensitive wildlife timing windows wherever feasible.
of Wildlife During Construction	<ul> <li>Minimize traffic and prohibit recreational use of all-terrain vehicles or snowmobiles by construction personnel on the pipeline right-of-way and at facilities.</li> </ul>
	Prohibit personnel from having pets on the pipeline right-of-way and at facilities.
	Prohibit personnel from feeding or harassing wildlife.
	Obey speed limits along access roads and the right-of-way.  The state of the s
	<ul> <li>Ensure that food waste and industrial waste are disposed of properly.</li> <li>Report any issues related to wildlife encountered during construction and operations to the Environmental</li> </ul>
	Inspector, who will report it to the appropriate regulatory authorities.
	Implement the measures in the Wildlife Conflict Management Plan to prevent human/wildlife conflict and wildlife mortality (Appendix C of the Pipeline EPP).
Migratory Birds	The migratory bird nesting period within Coquihalla Summit Recreation Area is identified as mid-March to mid- August (Environment Canada 2014).
	• In the event that clearing or construction activities are scheduled during the migratory bird nesting period conduct nest sweeps within 7 days of activity. Use non-intrusive methods to conduct an area search for evidence of nesting (e.g., presence of singing birds, territorial males, alarm calls, distraction displays). In the event an active nest is found, it will be subject to site-specific mitigation measures (i.e., clearly marked protective buffer around the nest and/or non-intrusive monitoring).
Raptor Nest	<ul> <li>Schedule clearing and construction activities outside of sensitive time periods for raptors (generally March to August), to the extent feasible.</li> </ul>
	<ul> <li>In the event clearing is scheduled at a time when raptor nests will be active, in areas of suitable habitat conduct raptor nest searches prior to clearing to locate active raptor nests. In the event an active raptor nest is discovered, consult with the appropriate regulatory authorities to discuss practical options and mitigation measures.</li> </ul>
	<ul> <li>Eagle, peregrine falcon, gyrfalcon, osprey and burrowing owl nests are protected year-round by the BC Wildlife         Act and may not be cleared. The Guidelines for Raptor Conservation (BC MOE 2013e) provides information on         sensitive breeding and nesting time periods and buffers for raptor nests according to their tolerance to human         disturbance. These buffers range from 50 m to 500 m depending on the surrounding land use and species.         During the breeding season, an additional 100 m "quiet" buffer is recommended. Clearly mark the appropriate         buffers with fencing to prevent access to the nest.</li> </ul>
	<ul> <li>If construction is unavoidable within the recommended year-round and breeding buffers, a Nest Management Plan addressing various mitigation (including nest monitoring during the breeding period) is recommended.</li> </ul>
	<ul> <li>If construction activities require the removal of a raptor nest that is protected year-round under the BC Wildlife         Act (i.e., eagle, peregrine falcon, gyrfalcon, osprey and burrowing owl), Trans Mountain will work with the         appropriate regulatory authorities to develop a Nest Removal Management and Compensation Plan. Upon         confirmation the nest is inactive, nest removal should occur during the least risk window of August through         December. When a nest is removed the installation of a replacement structure (i.e., a platform on a pole or         transplanted tree) should be erected in nearby suitable habitat (BC MOE 2013e).</li> </ul>
Stream-Dwelling Amphibian – Coastal Tailed Frog	<ul> <li>Maintain a 30 m setback distance (core buffer) from streams identified as coastal tailed frog habitat, where disturbance is to be avoided, to the extent feasible. Minimize disturbance within an additional 20 m buffer extending beyond the core buffer (BC MOE 2012a), where feasible.</li> </ul>
	<ul> <li>Place large coarse woody debris on the pipeline right-of-way after construction, from either the 30 m setback boundary of the streambank to 100 m distance from suitable (<i>i.e.</i>, known or likely to be occupied) streams for coastal tailed frog (BC MWLAP 2004b).</li> </ul>

# TABLE 8.1.9-2 Cont'd

Concern	Recommended Mitigation <sup>1</sup>
Stream-Dwelling Amphibian – Coastal Tailed Frog (cont'd)	<ul> <li>If a trenched stream crossing method is necessary, implement the following measures:</li> <li>Use existing access to facilitate construction, where feasible. If no existing access is available, limit instream crossings to one vehicular/equipment crossing to install an appropriate temporary crossing to facilitate construction. Remove crossings following construction.</li> <li>Limit riparian disturbance to the maximum extent feasible within 50 m of coastal tailed frog streams. Clear only the minimum workspace necessary to facilitate construction. Use hand clearing methods within 50 m of the stream.</li> <li>Where slopes exceed 60%, riparian avoidance buffers should extend beyond the top of the ravine.</li> <li>Clearly mark and/or fence off riparian buffers prior to clearing and construction.</li> <li>Install and maintain appropriate erosion control measures to prevent sedimentation during and following construction.</li> <li>Maintain stream flows throughout construction.</li> <li>Following construction, reclaim disturbed riparian areas using best available techniques to encourage rapid</li> </ul>
	regeneration of native riparian vegetation. Monitor and implement remedial measures, if warranted, to ensure riparian restoration is adequate.  Conduct an amphibian salvage prior to clearing and construction activities at known coastal tailed frog breeding locations. Adhere to the Best Management Practices for Amphibian and Reptile Salvages in BC (Wind et al. 2013). Note that coastal tailed frog use the same stream year-round, therefore, this mitigation is applicable year-round. In the event that coastal tailed frogs are identified on the pipeline right-of-way during construction, the following mitigation is recommended:
	<ul> <li>remove the frogs to the closest suitable upstream habitat, if it is safe to do so;</li> <li>ensure frogs are not held for longer than necessary to move them to the closest suitable habitat;</li> <li>ensure frogs are not held for more than two to four hours under any circumstances; and</li> <li>frogs must be captured, held, transported and released humanely.</li> <li>Use sediment control measures from Standards and Best Practices for Instream Works (BC MWLAP 2004a).</li> <li>Review opportunities to enhance the habitat by planting/allowing native vegetation growth that provides a protective buffer along streams, and maintain stream habitat complexity (i.e., a natural meandering channel with stabilized banks, and step-pool morphologies) (BC MWLAP 2004b).</li> </ul>
Amphibian Breeding Pond	<ul> <li>Clearing and construction activities have been scheduled outside of the breeding and seasonal migration periods for amphibians (mid-April to mid-June).</li> <li>Protect identified amphibian breeding ponds by implementing appropriate buffers (150 m undeveloped; 100 m rural; 30 m urban) (BC MOE 2012a).</li> <li>If the proposed pipeline right-of-way is located within the recommended setback distance of an amphibian breeding pond, consult with the appropriate regulatory authorities to discuss practical options and mitigation measures.</li> <li>Use mats to avoid excessive soil compaction in the proximity of watercourses.</li> <li>Maintain natural hydrology of streams during clearing, construction and clean-up activities.</li> <li>Conduct an amphibian salvage prior to clearing and construction activities at known amphibian breeding pond locations. Ensure the appropriate permit is obtained. Apply measures identified in the Best Management Practices for Amphibian and Reptile Salvages in BC where feasible (in prep. Wind et al. 2013).</li> </ul>
Reptiles	In the event an active snake hibernacula is identified, implement a 150 m buffer (BC MOE 2012a), and avoid activity during the period of April 15 to September 30 (BC MWLAP 2004b), to the extent feasible.  Consult with BC MFLNRO to determine the location and need for additional site-specific mitigation measures (e.g., exclusion fencing for the open trench or along vehicle travel lanes) at identified locations.  All workers will receive education prior to commencing work, which will include best practices for avoiding snakes and appropriate protocols in the event a snake is detected at the work site. Refer to the Wildlife Conflict Management Plan in Appendix C of the Pipeline EPP.
Bats	Protect bat roosts from disturbance by humans and other sensory disturbances (BC MOE 2012a). Implement a 125 m buffer from bat hibernacula (from October 1 to April 30 or maternity roost (from May 1 to August 31) (BC MWLAP 2004b). Consult with BC MFLNRO where disturbance of a hibernacula or maternity roost is unavoidable to discuss practical options and mitigation measures.  Do not blast, remove rock or talus, or construct new roads in the area surrounding a hibernacula or maternity roost unless there is no other practical option. Consult with BC MFLNRO to discuss alternate mitigation (BC MWLAP 2004b).  Schedule blasting that may occur within 1 km of Keen's long-eared myotis maternity roosts and hibernacula, to occur outside the period from October 1 to May 31 (BC MWLAP 2004b). Consider applying this best practice to other bat species.
Mammal Dens	Contact provincial regulatory authorities to discuss the appropriate mitigation in the event an active den is discovered on the work site. Mitigation may include establishing protective buffers, monitoring the den and/or modifying the construction schedule to avoid activity until the den is inactive.

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#### TABLE 8.1.9-2 Cont'd

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Concern	Recommended Mitigation <sup>1</sup>
Mineral Licks	<ul> <li>Implement a 100 m setback in the event a mineral lick is identified (BC OGC 2013). In the event that shifting/narrowing the pipeline right-of-way is not feasible to maintain the minimum setback from a mineral lick, consult with BC MFLNRO to discuss practical options and mitigation measures.</li> <li>Do not block well-used game trails to/from a mineral lick.</li> </ul>
	<ul> <li>Avoid activities (i.e., clearing, construction, helicopter overflights) near mineral licks during critical periods (May to November) (BC MWLAP 2004b), to the extent feasible.</li> </ul>
	Leave a gap in set-up pipe within the area of the mineral lick to allow wildlife to access the mineral lick. The locations of the gaps in strung pipe should coincide with gaps in strippings, spoil and rollback windrows.
Beaver Dams/Lodges	<ul> <li>In the event that beaver dams or lodges will be disturbed, submit a notification to the appropriate regional Habitat Officer of the BC MFLNRO at least 45 days prior to beaver dam removal, as per Section 40 of the Water Regulation. Following this notification, obtain a Ministry of Natural Resource Operations Wildlife Sundry Permit to remove a beaver dam. Standards and best practices for beaver dam removal identified in the BC Standards and Best Practices for Instream Works (BC MWLAP 2004a) will be applied.</li> </ul>
Species with Special Conservation Status	<ul> <li>In the event that a species with special conservation status is observed during construction, the appropriate regulatory authorities will be contacted to determine if additional mitigation measures are warranted.</li> <li>Implement the Wildlife Species of Concern Discovery Contingency Plan in the event that wildlife species of concern are identified during construction.</li> </ul>

Note:

Detailed mitigation measures are outlined in Table L-2 of Appendix L in the Pipeline EPP (Volume 6B of the Facilities Application)

### 8.1.9.2 Significance Evaluation of Potential Residual Effects on Wildlife and Wildlife Habitat

The significance determinations incorporate professional judgment, which allows integration of all of the effects criteria ratings to provide relevant significance conclusions that are sensitive to context and facilitate decision-making (Lawrence 2007).

Table 8.1.9-3 provides a summary of the significance evaluation of the potential residual environmental effects of the construction and operation of the proposed pipeline in the Coquihalla Summit Recreation Area on wildlife and wildlife habitat. The rationale used to evaluate the significance of the residual effects on wildlife and wildlife habitat in the Coquihalla Summit Recreation Area is provided below.

#### **TABLE 8.1.9-3**

# SIGNIFICANCE EVALUATION OF POTENTIAL RESIDUAL EFFECTS OF PIPELINE CONSTRUCTION AND OPERATIONS ON MAMMAL INDICATORS FOR COQUIHALLA SUMMIT RECREATION AREA

		Ŋ	Temporal Context						
Potential Residual Effects	Impact Balance	Spatial Boundar	Duration	Frequency	Reversibility	Magnitude	Probability	Confidence	Significance <sup>2</sup>
(a) Combined Project effects on wildlife and wildlife habitat in the Coquihalla Summit Recreation Area.	Negative	LSA	Short- term	Periodic	Long-term	Medium	High	Moderate	Not Significant

Notes:

- 1 LSA = Wildlife LSA.
- 2 <u>Significant Residual Environmental Effect</u>: A high probability of occurrence of a permanent or long-term residual effect of high magnitude that cannot be technically or economically mitigated.

#### Change in Habitat

The Coquihalla Summit Recreation Area comprises various habitat types that many wildlife species and communities make use of, including four biogeoclimatic zones with Douglas-fir, coastal western hemlock, western mountain ash and mountain hemlock forests, and riparian areas associated with Coquihalla and Falls Lakes (BC MOE 2013). The Project will change the amount of available effective habitat for wildlife in the Coquihalla Summit Recreation Area. The likely mechanisms for changes in effective wildlife habitat include vegetation clearing, sensory disturbance (e.g., human activity and noise), watercourse crossings,

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and soil handling (including trenching). Pipeline vibrations are not expected to affect wildlife habitat since the normal operation of a buried pipeline does not create sound or vibration levels that are detectable (Table 7.0-1). The Project will increase the existing corridor width where it parallels existing linear disturbances (e.g., the Telus FOTS right-of-way, Spectra right-of-way) and require ongoing clearing as part of vegetation management during operations. Habitat loss and reduced habitat effectiveness can cause displacement of wildlife, and potentially result in the use of less suitable habitat, reduced foraging ability (Bird *et al.* 2004), increased energy expenditure (Jalkotzy *et al.* 1997) and lower reproductive success (Habib *et al.* 2007).

Clearing activities during construction of the Project will alter habitat structure, and result in direct habitat loss or alteration. Operations of the Project will also require ongoing vegetation management, resulting in the maintenance of forest habitat in earlier seral stages (herbaceous and shrub stages) until the pipeline is abandoned and the disturbed areas are reclaimed. Clearing of the construction right-of-way and temporary workspace will reduce cover habitat and temporarily reduce forage availability. As cleared areas regenerate with early seral vegetation, forage availability will increase for some species (e.g., browse for moose and deer; increased forage for bears and early seral habitat species). Vegetation clearing for the Project will decrease available habitat for forest and shrub-reliant species over the medium to long-term. The openings created by the Project may increase certain habitat types for species that use open areas and for habitat generalists (Jalkotzy et al. 1997). Vegetation clearing for the Project will disturb both wetland and terrestrial amphibian habitat. Possible mechanisms for changing effective amphibian habitat include site clearing (wetland and terrestrial habitats), watercourse crossings and soil handling (including trenching)

Indirect habitat loss or alteration occurs when habitat is available but the quality or effectiveness of the habitat is changed such that wildlife avoid the habitat or reduce their use of it. Reduced habitat effectiveness can occur as a result of fragmentation, creation of edges, or sensory disturbance (e.g., noise, artificial light, proximity to facilities and infrastructure, human activity and traffic). Habitat fragmentation can cause habitat to become unsuitable for species with large territories or home ranges, alter predator-prey dynamics and allow for increased invasive or parasitic species abundance (e.g., cowbird parasitism of songbird nests near forest edges). Changes in habitat suitability may also result from changes in vegetation communities due to increased light penetration at clearing edges that causes increased understory vegetation growth, or from changes in water quality (e.g., sedimentation, deposition of airborne contaminants).

To minimize vegetation clearing and reduce the fragmentation and isolation of habitat patches, the proposed pipeline corridor parallels existing linear disturbances (e.g., the Telus FOTS right-of-way and Spectra right-of-way) for most of the corridor within the Coquihalla Summit Recreation Area. The proposed mitigation measures in Table 8.1.9-2 and the Pipeline EPP (Volume 6B of the Facilities Application) are expected to reduce residual Project effects on wildlife habitat within the recreation area.

#### Change in Movement

Project construction and operations can alter wildlife movement by reducing habitat connectivity and creating barriers or filters to movement. A disturbance is considered a barrier when no movement occurs across it, or a filter if the rate of movement through the disturbance is less than it would be through intact habitat (Jalkotzy *et al.* 1997). Habitat fragmentation results when barriers to movement cause functional separation of habitats into smaller, isolated habitat patches (Andrén 1994, Jalkotzy *et al.* 1997). Species that have late age of first reproduction, low population densities, low reproductive rates, large home ranges, low fecundity, and move over large distances to disperse, find food and mate, display low resilience to habitat fragmentation (Dunne and Quinn 2009).

Application of the proposed mitigation measures in Table 8.1.9-2 and the Pipeline EPP (Volume 6B of the Facilities Application) is expected to reduce the magnitude of potential residual effects of Project construction and operations on wildlife movement.

Limiting the length of open trench, maintaining periodic gaps in soil, slash and pipe, where feasible, will limit barriers to wildlife movement during construction. Limiting the construction right-of-way by utilizing shared workspace on the existing linear disturbances will reduce the Project's potential for habitat fragmentation. Redistributing large-diameter slash (coarse woody debris) over select locations on the right-of-way and promoting regeneration of native vegetation, including shrubs and trees, will contribute to maintaining habitat connectivity by reducing limitations to movement of wildlife across the right-of-way. The Project is expected to result in a filter, but not complete barrier to movement for some wildlife species.

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#### <u>Increased Mortality Risk</u>

The Project has potential to increase wildlife mortality risk during construction as a result of loss or disruption of habitat (*e.g.*, nests, dens), wildlife collisions with vehicles or equipment, and sensory disturbance (*e.g.*, nest abandonment).

Project-related vegetation clearing may affect the mortality risk of some wildlife species. For example, bird mortality during construction may occur if nests are encountered during vegetation clearing for construction of the Project. Construction activities also have potential to increase bird mortality risk by disrupting bird nesting and breeding behaviour to an extent that causes nest failure or abandonment of the breeding area. The Project is not expected to disturb active hibernation habitat (e.g. bear dens or overwintering amphibians) since proposed construction activities in the Coquihalla Summit Recreation Area are scheduled for the summer.

Linear corridors can potentially affect wildlife mortality risk from trapping, hunting and poaching due to access development, since these activities are often associated with roads or other linear corridors that create access (Collister *et al.* 2003, Wiacek *et al.* 2002). The Project does not create a new linear corridor within the recreation area.

Vehicle traffic due to construction and operations of the pipeline may increase the risk of wildlife mortality due to vehicle collisions. With posting of low traffic speeds, signage and education of construction and operations contractors and employees, risk of wildlife injury or mortality associated with vehicle collisions is not expected to increase substantially as a result of the Project. Wildlife conflicts with personnel may occur during construction and operation of the Project, such as wildlife attraction to garbage and debris, and human encroachment. Trans Mountain will develop a Wildlife Conflict Management Plan to reduce and address the potential conflict between Project personnel and the wildlife species most likely to be encountered along the Project and associated facilities.

Artificial night-time light sources attract songbirds that migrate at night and can increase bird mortality risk from collisions, excessive energy expenditure and predation (Jones and Francis 2003, Poot *et al.* 2008). The possible use of artificial night-time light sources within the Coquihalla Summit Recreation Area will be short-term in duration and occur either during construction or during site-specific operations and maintenance activities. There are no permanent facilities planned within the Coquihalla Summit Recreation Area that would require lighting.

#### Summary of Effects Characterization Rationale for Wildlife and Wildlife Habitat

The following provides the evaluation of significance of potential residual effects on wildlife and wildlife habitat within the Coquihalla Summit Recreation Area (Table 8.1.9-3, point 1[a]).

- Spatial Boundary: Wildlife LSA habitat changes (e.g., clearing), alteration of movement (e.g., barriers during construction) and mortality risk (e.g., disturbance of occupied habitat feature) are primarily limited to the Wildlife LSA.
- Duration: short-term the events causing effects are construction and operational activities (e.g., monitoring, vegetation management and site-specific maintenance), the latter of which are limited to any 1 year during operations.
- Frequency: periodic the events causing effects (*i.e.*, clearing of the Footprint, traffic and activity) will occur during construction and intermittently during operations for monitoring, vegetation control and maintenance.
- Reversibility: long-term effects are reversible in the long-term following decommissioning and abandonment, once native vegetation regenerates over the Project Footprint. Herbaceous and shrubdominant habitats are expected to regenerate to similar ecological stages and habitat function in the medium-term following completion of reclamation. However, restoration of forested habitat will take longer than 10 years (i.e., long-term). Sensory disturbance and mortality risk associated with construction is reversible immediately upon completion of activities.

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- Magnitude: medium regulatory and ecological context are key considerations in the characterization of magnitude for residual effects of the Project on wildlife in Coquihalla Summit Recreation Area. The stated management objectives of the area relevant to wildlife include protection of the ecological integrity of riparian habitats, maintaining the diversity of wildlife species and habitats, and providing for recreational opportunities. Residual effects on ecological integrity (e.g., habitat intactness and connectivity) are reduced by paralleling the existing linear disturbances, minimizing the footprint, and reclamation of the footprint to native vegetation. The area provides habitat for wildlife species at risk, which, in general, often have low resilience to habitat disturbance. Through development of mitigation in consultation with regulatory authorities, and implementation of mitigation and monitoring, including adaptive measures where warranted, the residual Project effects on wildlife in Coquihalla Summit Recreation Area are expected to remain within regulatory and ecological tolerance. Therefore, the
- Probability: high the Project will affect wildlife in the recreation area through changes in habitat, movement and mortality risk.

magnitude of the residual effect is concluded to be medium.

• Confidence: moderate – the assessment is based on a good understanding of cause-effect relationships and relevant data. Limitations and uncertainty associated with available data pertinent to the Project area reduce the confidence level to moderate.

#### 8.1.9.3 Summary

As identified in Table 8.1.9-3, there are no situations where there is a high probability of occurrence of a permanent or long-term residual environmental effect on wildlife and wildlife habitat indicators of high magnitude that cannot be technically or economically mitigated. Consequently, it is concluded that the residual environmental effects of pipeline construction and operation on conservation values of the Coquihalla Summit Recreation Area related to wildlife and wildlife habitat will be not significant.

### 8.1.10 Species at Risk

For the purpose of the assessment, species at risk are considered to include all federally-listed species of conservation concern (*i.e.*, COSEWIC or SARA Schedule 1 designation) (COSEWIC 2013, Environment Canada 2014b). Species identified as having the potential to occur along the proposed pipeline corridor and in the element-specific RSA are based on previous field assessments and existing data.

This subsection discusses the species at risk that have been identified as likely to occur within each element-specific RSA. The list of federal species at risk in the vicinity of Coquihalla Summit Recreation Area includes one fish species within the Aquatics RSA, no vegetation species within the Vegetation RSA and eleven wildlife species within the Wildlife RSA.

The one fish species include:

• bull trout: Special Concern by COSEWIC (South Coast BC populations) (Blue-listed).

The eleven wildlife species include:

- Barn swallow: Threatened by COSEWIC; Blue-listed;
- Common nighthawk: Threatened by SARA and COSEWIC;
- Horned grebe: Special Concern by COSEWIC;
- Sooty grouse: Blue-listed;
- Olive-sided flycatcher: Threatened by SARA and COSEWIC, Blue-listed;
- American badger, jeffersonii ssp.: Endangered by SARA and COSEWIC, Red-listed;
- Grizzly bear, western population: Special Concern by COSEWIC, Blue-listed;

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- Little brown myotis: Endangered by COSEWIC;
- Mountain beaver: Special Concern by SARA and COSEWIC, Blue-listed;
- Western toad: Special Concern by SARA and COSEWIC, Blue-listed; and
- Coastal tailed frog: Special Concern by SARA and COSEWIC, Blue-listed.

Potential effects of the Project on these species are assessed through the use of indicators in Sections 8.1.6 and 8.1.9, respectively.

# 8.1.11 Heritage Resources

This subsection describes the potential Project effects on the heritage resources in Coquihalla Summit Recreation Area. The Heritage Resources RSA consists of the broader landscape context extending beyond the Project Footprint, defined as an area of intersecting Borden Blocks (Borden and Duff 1952); shown in Figure 8.1-2. A Borden Block measures 10 minutes of latitude by 10 minutes of longitude.

The potential for encountering heritage resources in Coquihalla Summit Recreation Area has been reduced by aligning the proposed pipeline corridor to parallel existing linear disturbances. Qualified archaeologists commenced an Archaeological Impact Assessment (AIA) for the BC portion of the proposed pipeline corridor in July 2013 under Archaeological Research Permit 2013-165. The AIA within Coquihalla Summit Recreation Area is expected to be conducted in October 2014. For the AIA, background data are reviewed and then complemented with ground reconnaissance with targeted areas for more intensive visual inspection, and where warranted, shovel testing. The ground reconnaissance and shovel testing programs focus on areas along the proposed pipeline corridor that are of moderate to high potential for archaeological, historic and palaeontological sites.

#### 8.1.11.1 Identified Potential Effects

The potential effects associated with pipeline construction and operations on heritage resources indicators are listed in Table 8.1.11-1. A summary of mitigation measures provided in Table 8.1.11-1 was principally developed in accordance with industry accepted best practices as well as industry and provincial regulatory quidelines including BC OGC (2010) and CAPP (1999, 2001).

#### **TABLE 8.1.11-1**

# POTENTIAL EFFECTS, MITIGATION MEASURES AND RESIDUAL EFFECTS OF PIPELINE CONSTRUCTION AND OPERATIONS ON HERITAGE RESOURCES FOR COQUIHALLA SUMMIT RECREATION AREA

Potential	Effect	Spatial Boundary		Key Recommendations/Mitigation Measures [EPP Reference] <sup>1</sup>		Potential Residual Effect(s)
<ol> <li>Heritage F</li> </ol>	Resources In	dicator - Arc	haeo	logical Sites		
1.1 Disruption unidentified archaeolog during AIA.	ical sites	Footprint	•	Follow any conditions or recommendations identified in the permits for the AIA for BC. Suspend work in proximity ( <i>i.e.</i> , within 30 m) to archaeological, palaeontological or historical sites ( <i>e.g.</i> , modified bone, pottery fragments, fossils) discovered during construction. No work at that particular location shall continue until permission is granted by the appropriate regulatory authority. Follow the contingency measures identified in the Heritage Discovery Contingency Plan [Appendix B of the Pipeline EPP].  Arrange for emergency archaeological excavation of previously unidentified sites endangered by pipeline construction wherever such sites warrant attention and can be excavated without interfering with the construction schedule. When for practical reasons, the sites cannot be investigated, map and suitably flag these sites for later investigation [Section 7.0].  Prohibit the collection of any historical, archaeological or palaeontological resources by Project personnel [Section 7.0].	•	No residual effect identified.

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#### **TABLE 8.1.11-1 Cont'd**

	Potential Effect	Spatial Boundary		Key Recommendations/Mitigation Measures [EPP Reference]1		Potential Residual Effect(s)			
1.1	Disruption to previously unidentified archaeological sites during AIA. (cont'd)	See above	•	Avoid, where possible, disturbance of geodetic or legal survey monuments, to the extent feasible during construction of the pipeline, Trans Mountain's Construction Manager will immediately report such disturbance to the appropriate regulatory authority. The contractor will restore or re-establish the monument, where feasible, in accordance with the instructions of the Dominion Geodesist [Section 7.0].	•	See above			
1.2	Disturbance to known archaeological sites during AIA.	Footprint	•	See recommended mitigation measures outlined in potential effect 1.1 of this table.	•	No residual effect identified.			
1.3	Disturbance of previously unidentified archaeological sites during construction.	Footprint	•	See recommended mitigation measures outlined in potential effect 1.1 of this table.	•	No residual effect identified.			
2.	Heritage Resources Ind	licator - Histo	oric :	Sites					
2.1	Disturbance to previously unidentified historic sites during AIA.	Footprint	•	See recommended mitigation measures outlined in potential effect 1.1 of this table.	•	No residual effect identified.			
2.2	Disturbance of previously unidentified historic sites during AIA.	Footprint	•	See recommended mitigation measures outlined in potential effect 1.1 of this table.	•	No residual effect identified.			
3.	Heritage Resources Indicator – Palaeontological Sites								
3.1	Disturbance of previously unidentified palaeontological sites during construction.	Footprint	•	See recommended mitigation measures outlined in potential effect 1.1 of this table.	•	No residual effect identified.			

Note:

Detailed mitigation measures are outlined in the Pipeline EPP (Volume 6B of the Facilities Application).

#### 8.1.11.2 Potential Residual Effects

Heritage resources provide a window into past human experiences and the geological record, and by their very nature, are non-renewable. Once disturbed, the resource may be altered or even lost. Consequently, the primary mitigation measure in protecting heritage resources is avoidance, and secondly, site-specific mitigation developed in consultation with appropriate provincial regulatory authorities and approved by these authorities in fulfillment of Permit obligations may also be used. In order to better understand heritage resources and the historical information associated with these resources, disturbing the resource through excavations is an acceptable practice and, in many cases, the only method to collect in situ information to add to the archaeological record. Regardless of whether the excavation of the site is for academic or development purposes, the loss of heritage resource sites is generally offset by the recovery of knowledge about the site gained through meticulous identifying, cataloguing and preserving of artifacts and features in compliance with provincial guidelines.

#### 8.1.11.3 Summary

Given that disturbances to heritage resources by the Project in Coquihalla Summit Recreation Area are effectively offset by knowledge gained through the mitigation approved by the provincial regulatory authorities, no residual effects on heritage resource indicators have been identified and, consequently, no further evaluation of the effects of the Project on heritage resources is warranted.

#### 8.1.12 Traditional Land and Resource Use

This subsection describes the potential Project effects on the traditional land and resource use (TLRU) indicators in Coquihalla Summit Recreation Area. The TLRU LSA includes the zones of influence of water quality and quantity, air emissions, acoustic environment, fish and fish habitat, vegetation, wildlife and wildlife habitat and heritage resources since TLRU is dependent on these resources, shown in Figure 8.1-3. The TLRU RSA includes the RSA boundaries of water quality and quantity, air emissions, acoustic

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environment, fish and fish habitat, wetland loss or alteration, vegetation, wildlife and wildlife habitat and heritage resources and is shown in Figure 8.1-1.

#### 8.1.12.1 Identified Potential Effects

To date, no TLRU sites have been identified along the proposed pipeline corridor in Coquihalla Summit Recreation Area. However, Trans Mountain will continue to engage Aboriginal communities through all phases of the Project. TLRU information received from participating communities will be reviewed in order to confirm literature results and mitigation measures including those found in the Pipeline EPP (Volume 6B of the Facilities Application). Any additional site-specific mitigation measures resulting from these studies will be provided in the updated Pipeline EPP (Volume 6B of the Facilities Application) to be filed with the NEB 90 days prior to construction.

The construction of the Project has the potential to directly and indirectly disrupt subsistence sites and activities, as well as the broader ecological system, through the temporary physical disturbance of land or resources. Subsistence sites and activities may also be affected by Project activities resulting from limited access and/or increased public access to traditional harvesting areas and increased pressure on environmental resources. The operations phase of the Project will affect TLRU primarily through temporary disturbances related to site-specific maintenance.

The potential effects associated with the construction and operations of the proposed pipeline on TLRU sites are listed in Table 8.1.12-1. A summary of mitigation measures provided in Table 8.1.12-1 was principally developed in accordance with Trans Mountain standards as well as industry best practices and procedures and provincial regulatory authority guidelines related to specific elements such as fish and fish habitat, vegetation, wildlife and wildlife habitat, and heritage resources.

#### **TABLE 8.1.12-1**

# POTENTIAL EFFECTS, MITIGATION MEASURES AND RESIDUAL EFFECTS OF PIPELINE CONSTRUCTION AND OPERATION ON TRADITIONAL LAND AND RESOURCE USE IN COQUIHALLA SUMMIT RECREATIONAL AREA

Potential Effect	Spatial Boundary <sup>1</sup>	Key Recommendations/Mitigation Measures [EPP Reference] <sup>2</sup>	Potential Residual Effect(s)							
Traditional Land and Resource Use Indicator – Subsistence Activities and Sites										
Disruption of use of trails and travelways		<ul> <li>Provide Aboriginal communities with the anticipated construction schedule and pipeline route maps, a minimum of two weeks prior to the start of construction in the vicinity of their respective communities [Section 4.0].</li> <li>Install signage notifying of construction activities in the area [Section 4.0].</li> <li>Work with Aboriginal communities to develop strategies to most effectively communicate the construction schedule and work areas to its members [Section 4.0].</li> <li>Upon Footprint finalization, applicable mitigation options listed below for trails and travelways within the proposed pipeline corridor will be confirmed based on the following criteria: the location of the site with respect to the proposed area of development, the relative importance of the site to the community, and the potential for an alternative mitigation strategy to reduce or avoid sensory disturbance.</li> <li>Should additional trails and travelways be identified during ongoing engagement with Aboriginal communities, implement the TLU Sites Discovery Contingency Plan [Appendix B]. Mitigation may include one or more of the following measures:         <ul> <li>detailed recording and mapping to within 100 m on both sides of the pipeline right-of-way; in partnership with community representatives, a decision is then made about the relative importance of the trail and how best to maintain and control access;</li> <li>signage or scheduling construction during periods of least impact; and/or</li> <li>alternative site-specific mitigation strategies recommended by participating Aboriginal communities.</li> </ul> </li> <li>Implement appropriate measures identified in the Heritage Resources Discovery Contingency Plan [Appendix B].</li> <li>Implement applicable mitigation measures listed above during maintenance activities (e.g., integrity digs).</li> </ul>	Disturbance of trails and travelways during construction and site-specific maintenance.							

# **TABLE 8.1.12-1 Cont'd**

Potentia	l Effect	Spatial Boundary <sup>1</sup>	Key Recommendations/Mitigation Measures [EPP Reference] <sup>2</sup>		Potential Residual Effect(s)
of trails travelwa	ays (cont'd)	RSA	<ul> <li>Provide Aboriginal communities with the anticipated construction schedule and pipeline route maps, a minimum of two weeks prior to the start of construction in the vicinity of their respective communities [Section 4.0].</li> <li>Install signage notifying of construction activities in the area [Section 4.0].</li> <li>Work with Aboriginal communities to develop strategies to most effectively communicate the construction schedule and work areas to its members [Section 4.0].</li> <li>Implement applicable mitigation measures listed above during maintenance activities (e.g., integrity digs).</li> </ul>	•	Sensory disturbance for Aboriginal and non-Aboriginal local residents and land users (from nuisance air emissions and noise) during the construction and site-specific maintenance activities (refer to Section 8.1.13).
	on of plant ing sites	RSA	<ul> <li>Provide Aboriginal communities with the anticipated construction schedule and pipeline route maps, a minimum of two weeks prior to the start of construction in the vicinity of their respective communities [Section 4.0].</li> <li>Install signage notifying of construction activities in the area [Section 4.0].</li> <li>Work with Aboriginal communities to develop strategies to most effectively communicate the construction schedule and work areas to its members [Section 4.0].</li> <li>Ensure equipment arrives at all construction sites clean and free of soil or vegetative debris. Inspect and identify equipment deemed to be acceptable with a suitable marker, such as a sticker. Do not allow any equipment arriving in a dirty condition onsite until it has been cleaned [Section 7.0].</li> <li>Should additional plant harvesting sites be identified during ongoing engagement with Aboriginal communities, implement the TLU Sites Discovery Contingency Plan [Appendix B]. Mitigation may include one or more of the following measures:         <ul> <li>limiting the use of chemical applications;</li> <li>replacement of plant species during reclamation;</li> <li>avoidance of the site; and/or</li> <li>alternative site-specific mitigation strategies recommended by participating Aboriginal communities.</li> </ul> </li> <li>See Section 8.1.8 Vegetation for additional mitigation measures.</li> <li>Implement applicable mitigation measures listed above during maintenance activities (e.g., integrity digs).</li> </ul>	•	Alteration of subsistence resources. Disruption of subsistence activities during construction and site-specific maintenance.
1.3 Disrupti subsiste hunting		LSA	<ul> <li>Provide Aboriginal communities with the anticipated construction schedule and pipeline route maps, a minimum of two weeks prior to the start of construction in the vicinity of their respective communities [Section 4.0].</li> <li>Install signage notifying of construction activities in the area [Section 4.0].</li> <li>Work with Aboriginal communities to develop strategies to most effectively communicate the construction schedule and work areas to its members [Section 4.0].</li> <li>See Section 8.1.9 Wildlife and Wildlife Habitat for mitigation relevant to sensory disturbance, loss or alteration of wildlife habitat, injury and mortality.</li> <li>Should additional hunting sites be identified during ongoing engagement with Aboriginal communities, implement the TLU Sites Discovery Contingency Plan [Appendix B]. Mitigation may include one or more of the following measures:         <ul> <li>adhering to species specific timing constraints to the extent feasible;</li> <li>leaving breaks in the pipeline trench to allow animals to cross;</li> <li>limiting the use of chemical applications; and/or</li> <li>alternative site-specific mitigation strategies recommended by participating Aboriginal communities.</li> </ul> </li> <li>See Section 8.1.5 Acoustic Environment for additional mitigation measures.</li> <li>Implement applicable mitigation measures listed above during maintenance activities (e.g., integrity digs).</li> </ul>	•	Alteration of subsistence resources. Disruption of subsistence activities during construction and site-specific maintenance.
1.4 Disrupti subsiste trapping		LSA	Provide Aboriginal communities with the anticipated construction schedule and pipeline route maps, a minimum of two weeks prior to the start of construction in the vicinity of their respective communities [Section 4.0].  Install signage notifying of construction activities in the area [Section 4.0].  Work with Aboriginal communities to develop strategies to most effectively communicate the construction schedule and work areas to its members [Section 4.0].  Prohibit the vandalism or theft of trapper equipment or trapped animals if they are observed on the construction right of way or the construction site prior to clearing [Section 7.0].	•	Alteration of subsistence resources. Disruption of subsistence activities during construction and site-specific maintenance.

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# **TABLE 8.1.12-1 Cont'd**

	Potential Effect	Spatial Boundary <sup>1</sup>	Key Recommendations/Mitigation Measures [EPP Reference] <sup>2</sup>		Potential Residual Effect(s)
1.4	Disruption of subsistence trapping activities (cont'd)	See above	Should additional trapping sites or trap line equipment be identified during ongoing engagement with Aboriginal communities, implement the TLU Sites Discovery Contingency Plan [Appendix B]. Mitigation may include one or more of the following measures:  maintaining access to the trap line;  moving of trap line equipment by the trapper prior to construction; and/or  alternative site-specific mitigation strategies recommended by participating Aboriginal communities.  See Section 8.1.5 Acoustic Environment for additional mitigation measures.  See Section 8.1.9 Wildlife and Wildlife for mitigation relevant to sensory disturbance, loss or alteration of wildlife habitat, and wildlife mortality.  Implement applicable mitigation measures listed above during maintenance activities (e.g., integrity digs).	•	See above
1.5	Disruption of subsistence fishing activities	LSA	<ul> <li>Provide Aboriginal communities with the anticipated construction schedule and pipeline route maps, a minimum of two weeks prior to the start of construction in the vicinity of their respective communities [Section 4.0].</li> <li>Install signage notifying of construction activities in the area [Section 4.0].</li> <li>Work with Aboriginal communities to develop strategies to most effectively communicate the construction schedule and work areas to its members [Section 4.0].</li> <li>Prohibit recreational fishing by Project personnel on or in the vicinity of the construction right of way. The use of the construction right of way to access fishing sites is prohibited [Section 7.0].</li> <li>Should additional fishing sites be identified during ongoing engagement with Aboriginal communities, implement the TLU Sites Discovery Contingency Plan [Appendix B]. Mitigation may include one or more of the following measures:         <ul> <li>recording and mapping of fishing locales;</li> <li>strict adherence to the legislation, standards and guidelines set by provincial and federal regulatory authorities for watercourse crossings; and/or</li> <li>alternative site-specific mitigation strategies recommended by participating Aboriginal communities.</li> </ul> </li> <li>See Section 8.1.3 Water Quality and Quantity for mitigation measures relevant to potential effects on water quality and quantity.</li> <li>See Section 8.1.6 Fish and Fish Habitat for mitigation measures relevant to potential effects on fish and fish habitat.</li> <li>Implement applicable mitigation measures listed above during maintenance activities</li> </ul>	•	Alteration of subsistence resources. Disruption of subsistence activities during construction and site-specific maintenance.
2.	Traditional Land ar	d Resource I	(e.g., integrity digs).  Use Indicator – Cultural Sites		
2.1	Disturbance of gathering places	RSA	<ul> <li>Provide Aboriginal communities with the anticipated construction schedule and pipeline route maps, a minimum of two weeks prior to the start of construction in the vicinity of their respective communities [Section 4.0].</li> <li>Install signage notifying of construction activities in the area [Section 4.0].</li> <li>Work with Aboriginal communities to develop strategies to most effectively communicate the construction schedule and work areas to its members [Section 4.0].</li> <li>See Section 8.1.4 Air Emissions and Section 8.1.5 Acoustic Environment for measures pertaining to nuisance air and noise emissions, respectively.</li> <li>Implement applicable mitigation measures listed above during maintenance activities (e.g., integrity digs).</li> </ul>	•	Sensory disturbance for Aboriginal and non-Aboriginal local residents and land users (from nuisance air emissions and noise) during construction and site specific maintenance activities (refer to Section 8.1.13).
2.2	Disturbance of sacred sites	RSA	See recommended mitigation measures outlined in potential effect 2.1 of this table	•	Sensory disturbance for Aboriginal and non-Aboriginal local residents and land users (from nuisance air emissions and noise) during construction and site specific maintenance activities (refer to Section 8.1.13).

Notes:

- LSA = TLRU LSA; RSA = TLRU RSA.
- 2 Detailed mitigation measures are outlined in the Pipeline EPP (Volume 6B of the Facilities Application).

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# 8.1.12.2 Significance Evaluation of Potential Residual Effects

To date, Trans Mountain has not been made aware of any use of the lands within Coquihalla Summit Recreation Area for traditional activities. Nevertheless, Trans Mountain assumes that TLRU activities could be potentially practiced within the recreation area.

Table 8.1.12-2 provides a summary of the significance evaluation of the potential residual socio-economic effects of the construction and operations of the proposed pipeline in Coquihalla Summit Recreation Area on TLRU indicators. The rationale used to evaluate the significance of each of the residual socio-economic effects is provided below.

#### **TABLE 8.1.12-2**

# SIGNIFICANCE EVALUATION OF POTENTIAL RESIDUAL EFFECTS OF PIPELINE CONSTRUCTION AND OPERATIONS ON SUBSISTENCE ACTIVITIES AND SITES FOR COQUIHALLA SUMMIT RECREATIONAL AREA

			y.	Te	mporal Con	text				
	Potential Residual Effects	Impact Balance	Spatial Boundary¹	Duration	Frequency	Reversibility	Magnitude	Probability	Confidence	Significance <sup>2</sup>
1	Traditional Land and Resource Use Indicator – S	Subsistence A	ctivities and	d Sites						
1(a)	Disturbance of Trails and Travelways During Construction and Site-Specific Maintenance	Negative	Footprint	Short- term	Periodic	Short- term	Medium	Low	Moderate	Not signifcant
1(b)	Alteration of Subsistence Resources	Negative	RSA	Short- term	Periodic	Long- term	Medium	Low	Moderate	Not significant
1(c)	Disruption of Subsistence Activies During Construction and Site-Specific Maintenance	Negative	RSA	Short- term	Periodic	Long- term	Medium	Low	Moderate	Not significant
1(d)	Sensory Disturbance for Aboriginal and Non- Aboriginal Local Residents and Land Users	Negative	HORU RSA	Short- term	Periodic	Short- term	Low	High	High	Not significant

Notes: 1

- LSA = TLRU LSA; RSA = TLRU RSA.
- 2 <u>Significant Residual Environmental Effect</u>: A high probability of occurrence of a permanent or long-term residual effect of high magnitude that cannot be technically or economically mitigated.

# Traditional Land and Resource Use Indicator – Subsistence Activities and Sites

# Disturbance of Trails and Travelways During Construction and Site-Specific Maintenance

Disturbance of trails and travelways during construction is anticipated to result from short-term physical disturbance of land and access limitations that may affect the practice of traditional activities by Aboriginal communities. Similar effects of reduced access may occur during periods of site-specific maintenance.

To date, no trails and travelways have been identified along the proposed pipeline corridor in Coquihalla Summit Recreation Area. If trails and travelways are identified along the proposed pipeline corridor in Coquihalla Summit Recreation Area during ongoing engagement with Aboriginal communities, the proposed mitigation measures described in Table 8.1.12-1 will be implemented to mitigate the potential adverse effects of the Project on these site types and will be dependent upon the type of site identified.

Additional measures to reduce the disruption of trails and travelways include notification regarding construction schedules and pipeline route maps, installing signage notifying of construction activities in the area and working with Aboriginal communities to develop strategies to most effectively communicate the construction schedule and work areas to its members.

Despite the implementation of the proposed mitigation measures, traditional land and resource users may still be unable to use, or be deterred from using, certain areas at times during construction and periods of site-specific maintenance and consequently, the magnitude of the residual effect is considered to be REV 0 Land Use / Occupancy Resource Use Permit

medium (Table 8.1.12-2, point 1[a]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Footprint trails and travelways may be physically disturbed if located within the construction right-of-way and TWS.
- Duration: short-term events causing the effects will be construction activity or site-specific maintenance that would occur within any one year period during operations.
- Frequency: periodic construction and site-specific maintenance activities will occur intermittently but repeatedly throughout the assessment period.
- Reversibility: short-term effects will be focused on the construction phase or site-specific maintenance that would occur within any one year period during operations.
- Magnitude: medium it is expected that Project-related disturbances would be temporary through the
  implementation of the proposed mitigation measures during construction and operations to reduce, but
  not eliminate, potential effects on disturbance of trails and travelways. Mitigation strategies are also in
  place in the event any unidentified subsistence sites are discovered.
- Probability: low to date, no trails and travelways have been identified within the proposed pipeline corridor in Coguihalla Summit Recreation Area.
- Confidence: moderate based on Project information and the professional experience of the assessment team.

#### Alteration of Subsistence Resources

Subsistence resources may be disturbed or altered during construction and operations of the pipeline. The alteration of subsistence activities could manifest itself through changes to local harvesting locales, behavioral alteration or sensory disturbance of environmental resources or increased public access to traditional harvesting areas and increased pressure on environmental resources. The operations of the proposed pipeline will affect subsistence resources primarily due to temporary disturbances related to maintenance activities.

To date, no subsistence harvesting sites have been identified within the proposed pipeline corridor in Coquihalla Summit Recreation Area. If subsistence harvesting sites are identified in Coquihalla Summit Recreation Area during ongoing engagement with Aboriginal communities, the proposed mitigation measures described in Table 8.1.12-1 will be implemented to mitigate the potential adverse effects of the Project on these site types and include measures outlined under the assessment of relevant environmental resources (e.g., air emissions, acoustic environment, fish and fish habitat, wildlife and wildlife habitat, vegetation).

Despite the implementation of the proposed mitigation measures, traditional land and resource users may still be unable to use, or be deterred from using, certain areas at times during construction and periods of site-specific maintenance. Changes to the distribution and abundance of resources could in turn result in loss or alteration of harvesting areas, which could result in indirect effects such as harvesters having to spend more time and money to travel further for subsistence activities. Therefore, the magnitude of the residual effect is considered to be medium (Table 8.1.12-2, point 1[b]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: TLRU RSA potential effects may extend beyond the Footprint into the ZOI of target environmental resources.
- Duration: short-term events causing the effects will be construction activity or site-specific maintenance that would occur within any one year period during operations.
- Frequency: periodic construction and site-specific maintenance activities will occur intermittently but repeatedly throughout the assessment period.

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- Reversibility: long-term the effects of disturbance to traditionally harvested resources will be
  dependent on each target species' sensitivities and could extend greater than 10 years following
  decommissioning and abandonment, once native vegetation regenerates over the Footprint.
- Magnitude: medium the effects assessment results for fish and fish habitat, wildlife and wildlife habitat, and vegetation indicates that effects to traditionally harvested resources may be detectable and is dependent on each target species' sensitivities.
- Probability: low to date, no subsistence resources have been identified by Aboriginal communities within the proposed pipeline corridor in Coguihalla Summit Recreation Area.
- Confidence: moderate based on Project information and the professional experience of the assessment team.

# Disruption of Subsistence Activities During Construction and Site-Specific Maintenance

The disruption of subsistence hunting, fishing, trapping and plant gathering activities is a potential residual effect of interactions between traditional resource users and construction and operations activities of the Project. In the event that subsistence activities are disrupted by the construction or operations of the Project, the interruption could mean that the traditional resource user misses the harvest opportunity or that their participation is curtailed. The disruption of subsistence activities also refers to the possibility that traditional resource users could be prevented from accessing key harvesting areas resulting from limited access or increased public access to traditional harvesting areas. The operations of the proposed pipeline will affect subsistence activities primarily due to temporary disturbances related to site-specific maintenance.

To date, Trans Mountain has not been made aware of any subsistence activities along the proposed pipeline corridor within Coquihalla Summit Recreation Area. Nevertheless, Trans Mountain assumes that subsistence activities could be potentially practiced within the recreation area, although of low probability (Table 8.1.12-2, point 1[c]).

Aboriginal communities will be provided with the anticipated construction schedule and pipeline route maps, a minimum of two weeks prior to the start of construction in the vicinity of their respective communities. Signage will be installed, notifying of construction activities in the area. Trans Mountain will work with Aboriginal communities to develop strategies to most effectively communicate the construction schedule and work areas to its members. A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: TLRU RSA the proposed Project may affect subsistence activities beyond the
  construction footprint and may also indirectly affect the distribution of traditional resource users in other
  areas of the TLRU RSA.
- Duration: short-term events causing the effects will be construction activity or site-specific maintenance that would occur within any one year period during operations.
- Frequency: periodic construction and site-specific maintenance activities will occur intermittently but repeatedly throughout the assessment period.
- Reversibility: long-term the disruption of subsistence hunting, trapping, fishing and plant gathering
  activities during construction is limited to the construction phase of the Project. However, changes to
  preferred harvesting locales could result in indirect effects such as harvesters having to spend more
  time and money to travel further for subsistence activities. Which could extend greater than 10 years
  following decommissioning and abandonment, once native vegetation regenerates over the Footprint.
- Magnitude: medium mitigation measures are in place in the event any unidentified subsistence activities and land users are discovered. The effects assessment for fish and fish habitat, vegetation, and wildlife and wildlife habitat demonstrate that equivalent land use capability will be maintained by the application of the mitigation strategies described in Table 8.1.12-1 and in the Pipeline EPP (Volume 6B of the Facilities Application). It is expected that Project-related disruptions would be temporary through the implementation of the proposed mitigation measures during the construction and operations phases to reduce, but not eliminate, the potential effects on subsistence activities.

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- Probability: low to date, no subsistence activities and land users have been identified along the proposed pipeline corridor within Coquihalla Summit Recreation Area.
- Confidence: moderate based on Project information and the professional experience of the assessment team.

Sensory Disturbance for Aboriginal and Non-Aboriginal Local Residents and Land Users (from Nuisance Air Emissions and Noise)

The construction and site-specific maintenance of the Project may result in the sensory disturbance for Aboriginal and non-Aboriginal local residents and land users (Table 8.1.12-2, point 1[d]). This potential residual effect is assessed under the Visitor Enjoyment indicator in Section 8.1.13. The significance evaluation of this residual effect is provided in Section 8.1.13 which includes all land and resource users.

# Traditional Land and Resource Use Indicator – Cultural Sites

Sensory Disturbance for Aboriginal and Non-Aboriginal Local Residents and Land Users (from Nuisance Air Emissions and Noise)

The construction and site-specific maintenance of the Project may result in the sensory disturbance for Aboriginal and non-Aboriginal local residents and land users (Table 8.1.12-2, point 2[a]). This potential residual effect is assessed under the Visitor Enjoyment indicator in Section 8.1.13. The significance evaluation of this residual effect is provided in Section 8.1.13 which includes all land and resource users.

# 8.1.12.3 Summary

As identified in Table 8.1.12-2, there are no situations for TLRU indicators that would result in a significant residual socio-economic effect. Consequently, it is concluded that the residual socio-economic effects of pipeline construction and operations on recreational values of Coquihalla Summit Recreation Area related to TLRU will be not significant.

# 8.1.13 Visitor Enjoyment and Safety

This subsection describes the potential Project effects on visitor enjoyment and safety values within Coquihalla Summit Recreation Area. This refers to the use of the land and resources by people, in both a consumptive and non-consumptive manner. Aesthetic attributes of human use areas are also considered in this discussion (e.g., sensory disturbance, changes in viewshed).

Visitor enjoyment and safety amalgamates relevant components from the human occupancy and resource use (HORU) and infrastructure and services elements in Volume 5B of the Facilities Application, particularly indicators related to parks and protected areas, outdoor recreation use and transportation infrastructure. Spatial boundaries for visitor enjoyment follow the spatial boundaries outlined for the HORU element. Spatial boundaries for visitor safety follow the spatial boundaries outlined for the infrastructure and services element. Socio-economic RSAs are shown in Figure 8.1-2.

# 8.1.13.1 Identified Potential Effects

The potential effects associated with the construction and operations of the proposed pipeline in Coquihalla Summit Recreation Area on visitor enjoyment and safety indicators are listed in Table 8.1.13-1.

A summary of mitigation measures provided in Table 8.1.13-1 was principally developed in accordance with industry accepted best practices and industry best practices. A full list of socio-economic mitigation measures is found in the Socio-Economic Management Plan (SEMP) (Section 8.0) of the Pipeline EPP (Volume 6B of the Facilities Application).

# **TABLE 8.1.13-1**

# POTENTIAL EFFECTS, MITIGATION MEASURES AND RESIDUAL EFFECTS OF PROJECT CONSTRUCTION AND OPERATIONS ON COQUIHALLA SUMMIT RECREATION AREA

Spatial Potential Effect Boundary		Key Recommendations/Mitigation Measures [EPP Reference]1	Potential Residual Effect(s)	
	,	ator – Visitor Enjoyment	211001(3)	
1.1 Physical disturbance to Coquihalla Summit Recreation Area	Footprint	<ul> <li>Minimize disturbance of valued natural features with a non-traditional human use (e.g., recreational trails, recreational use areas, key use areas within Coquihalla Summit Recreation Area) during final route refinement to the extent practical [SEMP Section 8.4.6].</li> <li>Provide provincial and federal regulatory authorities, municipal/regional governments; Aboriginal communities; BC Parks and recreational organizations with final routing information, including maps, as well as construction schedule information [SEMP Section 8.4.6].</li> <li>Install signs in Coquihalla Summit Recreation Area and known recreational use areas in the vicinity notifying users of construction activities and timing [SEMP Section 8.4.6].</li> <li>Develop and implement a communication plan for sharing information about key Project construction milestones and information with the general public in affected areas [SEMP Section 8.4.6].</li> <li>Ensure any changes in planned timing or location of construction activities is communicated to the public, relevant municipal and regional governments, Aboriginal communities, BC Parks and formal recreation organizations in affected areas [SEMP Section 8.4.6].</li> <li>Apply all measures pertaining to HORU in the SEMP and all measures pertaining to notification and vegetation in the Pipeline EPP.</li> </ul>	Physical disturbance to natural and built features in the recreation area during construction and site-specific maintenance.	
1.2 Physical disturbance to facilities, including trails and trailheads, parking lot, within Coquihalla Summit Recreation Area	HORU RSA	<ul> <li>Avoid disturbance of built features during final route refinement, to the extent practical [SEMP Section 8.4.6].</li> <li>Narrow the construction right-of-way at key locations to avoid valued built or natural features, to the extent practical [SEMP Section 8.4.6].</li> <li>Ensure closure signage is placed on affected established trails or trailheads.</li> <li>Contact appropriate regulatory authorities and municipal tourism offices prior to construction activities and provide maps and schedules of the proposed construction activities to enable them relay information about possible trail and recreational use area closures [SEMP Section 8.4.6].</li> <li>Develop and implement a communication plan for sharing information about key Project construction milestones and information with the general public in affected areas [SEMP Section 8.4.6].</li> <li>Apply all measures pertaining to HORU in the SEMP and all measures pertaining to notification and vegetation in the Pipeline EPP.</li> </ul>	Decrease in quality of the outdoor recreational experience of Aboriginal and non- Aboriginal resource users during construction.	
1.3 Change to access of recreational area	HORU RSA	<ul> <li>Maintain access to established recreation features, through the clearing, construction and reclamation period [SEMP Section 8.4.6].</li> <li>Place signage on access roads in the vicinity of construction activities to ensure users are aware that construction activities are taking place [SEMP Section 8.4.6].</li> <li>Bore under paved and high use roads [SEMP Section 8.4.6].</li> <li>Where minor roads are crossed that may affect established community use/access routes, complete an open cut crossing within one day, to the extent practical [SEMP Section 8.4.6].</li> <li>Provide provincial and federal regulatory authorities, municipal/regional governments; Aboriginal communities; BC Parks and recreational organizations with final routing information, including maps, as well as construction schedule information [SEMP Section 8.4.3].</li> <li>Develop Traffic Control Plans for site specific sections of roads affected by the Project [SEMP Section 8.4.3].</li> <li>Develop a communication plan for activities that impact normal traffic flow, such as road closures and detours [SEMP Section 8.4.3].</li> <li>Develop and implement a communication plan for sharing information about key Project construction milestones and information with the general public in affected areas [SEMP Section 8.4.6].</li> <li>Ensure any changes in planned timing or location of construction activities is communicated to the public, relevant municipal and regional governments, Aboriginal communities, BC Parks and formal recreation organizations in affected areas.</li> <li>Apply all other measures pertaining to notification and access in the SEMP.</li> </ul>	Change in land use patterns during construction and site-specific maintenance.	

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# **TABLE 8.1.13-1 Cont'd**

Potential Effe	Spatial ct Boundary	Key Recommendations/Mitigation Measures [EPP Reference] <sup>1</sup>	Potential Residual Effect(s)
1.4 Sensory disturbance land and resource us		<ul> <li>Adhere to all federal and provincial guidelines and legislation for noise management.</li> <li>Use only the size and power of tools necessary to limit noise from power tool operations. Ensure stationary equipment, such as compressors and generators, will be located away from noise receptors, to the extent feasible.</li> <li>Maintain noise suppression equipment (e.g., silencers) on all construction machinery and vehicles.</li> <li>Enclose noisy equipment and use baffles such as material storage and subsoil piles, where and when feasible, to limit the transmission of noise beyond the construction site.</li> <li>Restrict the duration that vehicles and equipment are allowed to site and idle to less than 1 hour, unless air temperature is less than 0°C.</li> <li>To reduce air and noise emissions from Project-related vehicles, use multipassenger vehicles for the transportation of crews to and from the job sites, where feasible. Actively encourage car-pooling when shuttle bus services are not practical.</li> </ul>	Sensory disturbance for Aboriginal and non-Aboriginal local residents and land users (from nuisance air emissions, noise and visual effects) during construction and site-specific maintenance activities.
1.5 Alteration of viewsheds	HORU LSA	<ul> <li>To limit the effects of clearing in areas of new pipeline right-of-way, during reclamation use seeds that ensure vegetation regrowth blends with adjacent vegetation [SEMP Section 8.4.7).</li> <li>Use seedlings and/or larger trees for vegetation screens that have been salvaged from the construction right-of-way or sourced from acceptable donor sites or commercially propagated rooted stock seedlings and container trees grown from a seed sources obtained from the same natural subregion/Biogeoclimatic Zone, as well as the same general latitude and elevation [EPP Section 8.0].</li> <li>Maintain an undisturbed vegetation screen between a new borrow site and an adjacent road [EPP Section 11.0].</li> <li>Develop and implement an issues tracking process to monitor and respond to Project-related socio-economic issues and opportunities that emerge during construction and reclamation [SEMP 8.4.11].</li> <li>Continue communication and engagement with stakeholders as the Project progresses [SEMP 8.4.11].</li> </ul>	Alteration of viewsheds.
2. Visitor Enjo	yment and Safety Indic		
Increased tr due to transportatic workers and supplies	affic Socio- economic on of RSA	Develop estimates of Project-related traffic volumes associated with all Project components, related to both the movement of workers and the movement of equipment and materials.  Continue to consult with the BC Ministry of Transportation and relevant municipalities regarding traffic volumes anticipated and the traffic management protocols.  Develop a traffic and Access Control Management Plan for the Project and Traffic Control Plans for particular contracts.  Where possible, provide daily shuttle bus service from designated staging areas to work sites.  Actively encourage carpooling for times when shuttles/buses is not practical or available.  Communicate with local police and emergency services personnel to keep these organizations informed of traffic schedules.  Develop a communication plan for activities that impact normal traffic flow, such as road closures, detours.  Apply all other transportation and traffic related measures outlined in the Pipeline EPP.	Increase in traffic on highways and access roads during construction.  Sensory disturbances for Aboriginal local residents and land use (refer to potential effect 1.4 of this table).  Increase in traffic related injury and mortality.

Note: 1 Detailed mitigation measures are outlined in the SEMP and the Pipeline EPP (Volume 6B of the Facilities Application).

# 8.1.13.2 Significance Evaluation of Potential Residual Effects

Table 8.1.13-2 provides a summary of the significance evaluation of the potential residual effects of the construction and operations of the Projects on visitor enjoyment and safety indicators. The rationale used to evaluate the significance of each of the residual socio-economic effects is provided below.

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#### **TABLE 8.1.13-2**

# SIGNIFICANCE EVALUATION OF POTENTIAL RESIDUAL EFFECTS OF PROJECT CONSTRUCTION AND OPERATIONS ON VISITOR ENJOYMENT AND SAFETY FOR COQUIHALLA SUMMIT RECREATION AREA

			<sub>1</sub> ⁄v	Temporal Context						
	Potential Residual Effects	Impact Balance	Spatial Boundary¹	Duration	Frequency	Reversibility	Magnitude	Probability	Confidence	Significance <sup>2</sup>
1.	Visitor Enjoyment and Safety Indicator -	Visitor Enjo	oyment							
1(a)	Physical disturbance to natural and built features in the recreation area during construction and site-specific maintenance.	Negative	Footprint	Short-term	Periodic	Short to medium-term	Medium	High	Moderate	Not significant
1(b)	Decrease in quality of the outdoor recreational experience of Aboriginal and non-Aboriginal resource users during construction.	Negative	HORU RSA	Short-term	Isolated	Short-term	Low	High	High	Not significant
1(c)	Decrease in quality of the outdoor recreational experience of Aboriginal and non-Aboriginal resource users during site-specific maintenance.	Neutral to negative	HORU RSA	Short-term	Periodic	Short-term	Low	High	High	Not significant
1(d)	Change in land use patterns during construction and site-specific maintenance.	Negative	HORU RSA	Short-term	Periodic	Short-term	Medium	High	High	Not significant
1(e)	Change in land use patterns during operations.	Negative to positive	HORU RSA	Short-term	Isolated	Long-term	Low	High	High	Not significant
1(f)	Sensory disturbances for Aboriginal and non-Aboriginal local residents and land users (from nuisance air emissions, noise and visual effects) during construction and site-specific maintenance.	Negative	HORU RSA	Short-term	Periodic	Short-term	Low	High	High	Not significant
1(g)	Alteration of viewsheds.	Negative	HORU LSA	Short-term	Isolated	Long-term	Low	High	High	Not significant
2.	Visitor Enjoyment and Safety Indicator -	Visitor Safe	ety							
2(a)	Increase in traffic on highways and access roads during construction.	Negative	Socio- economic RSA	Short-term	Isolated	Short-term	Low to medium	High	High	Not significant
2(b)	Increase in traffic related injury and mortality.	Negative	Socio- economic RSA	Short-term	Isolated	Short-term	Negligible to medium	Low	High	Not significant

#### Note:

- Significant Residual Socio-economic Effect: A residual socio-economic effect is considered significant if the effect is predicted to be:
  - high magnitude, high probability, short to medium-term reversibility and regional, provincial or national in extent that cannot be technically or economically mitigated; or
  - high magnitude, high probability, long-term or permanent reversibility and any spatial boundary that cannot be technically or economically mitigated.

# <u>Visitor Enjoyment and Safety Indicator – Visitor Enjoyment</u>

Physical Disturbance to Natural and Built Features in the Recreation Area During Construction and Site-Specific Maintenance

Coquihalla Summit Recreation Area (AK 992.3 to AK 1005.2) will be crossed by the proposed pipeline corridor during construction activities, as well as during periods of site-specific maintenance (*i.e.*, integrity digs). The proposed pipeline corridor crosses the intensive recreation zone of the recreation area. The intensive recreation zone is a buffer around Highway 5 (Coquihalla Highway), which the proposed revised pipeline corridor loosely parallels.

Natural and built features within Coquihalla Summit Recreation Area - such as interpretive signs, parking lots, picnic areas, trees, rocks, watercourses and trails - may have intrinsic, interpretive and recreational value, which may be disturbed as a result of pipeline construction and site-specific maintenance. The

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proposed pipeline corridor crosses access and trail heads for Falls Lake, Zopkios Ridge and Needle Peak, a parking/picnic site and a large gravel area with a winter working shed (for highways department). The proposed pipeline corridor also crosses Falls Lake Road, an access to Coquihalla Summit Recreation Area on the north side of Highway 5 (Coquihalla Highway), at approximately AK 997.4. Trans Mountains intends to bore under paved, high grade roads such as this access road. Concerns and benefits regarding access, such as blocking access during construction and use of right-of-way for trails, were raised at the Hope Parks Workshop.

Mitigation measures related to vegetation, wildlife and wildlife habitat and fish and fish habitat have been designed to reduce the amount of land disturbed in any park or protected area. Other key mitigation measures includes avoiding key valued natural or built features during right-of-way finalization, narrowing the right-of-way in certain areas, and restoring any trails or other valued features that may be disturbed. Even with the implementation of mitigation measures to reduce land disturbance, certain natural features with intrinsic value may be disrupted depending on the final right-of-way selection, resulting in a residual adverse effect. Assuming the implementation of all mitigation measures, the residual effect of the Project on natural and built features in protected areas is considered to be reversible in the short to medium-term (i.e., residual effects will primarily occur during construction, but restoration of valued features or areas may extend into the first several years of operations). The magnitude of the effect is considered medium; though the effect may be primarily that of an inconvenience or nuisance, recreation areas have an intrinsic value to many users (Table 8.1.13-2, point 1[a]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Footprint natural and built features within the recreation area will be directly affected by construction of the pipeline.
- Duration: short-term the residual effect will be caused by construction and site-specific maintenance that may occur within any 1 year during operations.
- Frequency: periodic the disturbance to natural and built features in the recreation area will be caused by construction and periods of site-specific maintenance that would occur intermittently but repeatedly during the assessment period.
- Reversibility: short to medium-term disturbance to natural and built features will be primarily limited
  to the construction phase and periods of site-specific maintenance; but post-construction restoration of
  natural areas and features may extend into the first several years of operations.
- Magnitude: medium given the intrinsic value of recreation area, disruptions are considered a moderate modification in the socio-economic environment.
- Probability: high construction activities will take place through recreation area; therefore, disturbance of natural features with intrinsic value is likely.
- Confidence: moderate particular valued built or natural features potentially disturbed will depend on right-of-way finalization.

Decrease in Quality of the Outdoor Recreational Experience of Aboriginal and Non-Aboriginal Resource Users

#### Construction

The outdoor recreational experiences of Aboriginal and non-Aboriginal resource users, such as camping, trail rides, hunting, wildlife viewing and fishing activities may be affected by the physical disturbance of outdoor recreation areas during pipeline construction. The recreation area Master Plan identifies objectives related to the following recreation activities: picnicking, swimming, fishing, ski touring, rock climbing, hiking/backpacking and viewing (BC Ministry of Park 1990). Nuisance air emissions, noise and visual effects may also occur during the construction of the Project and affect all land users living, working or recreating in the vicinity of the final right-of-way. As of 1990, approximately there are approximately 60,000 annual visitors to the recreation area (BC Ministry of Parks 1990). It was noted that the Coquihalla canyon has a high recreation value at the Hope Community Workshop.

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The impact balance of this residual effect is considered negative; however, mitigation measures designed to communicate construction locations and timing to the users in the vicinity of the proposed pipeline corridor will lessen the effect, since users will have the opportunity to choose an alternate location for recreational pursuits. Given the relatively short construction period at any given location, use of wellmaintained equipment and limiting idling of equipment, the residual effect is considered to be of low magnitude and reversible in the short-term (Table 8.1.13-2, point 1[b]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: HORU RSA sensory disturbances caused by construction can extend into the HORU LSA and HORU RSA.
- Duration: short-term the event causing the effect is construction activity.
- Frequency: isolated the event causing the effect is confined to a specific period (i.e., construction).
- Reversibility: short-term the residual effect is limited to the construction phase.
- Magnitude: low change may be detectable, but will primarily be that of an inconvenience or nuisance.
- Probability: high Project construction activity will occur in areas used for outdoor recreation.A summary of the rationale for all of the significance criteria is provided below.
- Confidence: high based feedback from stakeholders, location of the Project, and the professional experience of the assessment team.

### **Site-Specific Maintenance Activities**

The outdoor recreational experience of Aboriginal and non-Aboriginal resource users, such as camping, trail rides, hunting, wildlife viewing and fishing activities may be affected by site-specific maintenance. Use of outdoor water and land based recreation areas, such as trails and trailheads and waterways, may be disturbed or disrupted by site-specific maintenance. Site-specific maintenance (e.g., aerial patrols, vegetation management, integrity digs) will occur periodically throughout the operations phase of the Project. These activities will involve workers and equipment that could result in nuisance air and noise emissions.

The impact balance of this potential residual effect is considered negative, as it may cause disruption to park users. The magnitude of this effect will be reduced through the use of well-maintained equipment, by limiting the idling of equipment and by scheduling activities to avoid peak recreational use times where practical. The residual effect is reversible in the short-term since site-specific maintenance activities will be completed within any 1 year of operations (Table 8.1.13-2, point 1[c]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: HORU RSA noise and air emissions caused by from site-specific maintenance activities can extend into the HORU LSA and HORU RSA.
- Duration: short-term site-specific maintenance will be completed within any 1 year during operations.
- Frequency: periodic the event causing the effect (i.e., site-specific maintenance activities) occurs intermittently but repeatedly over the assessment period.
- Reversibility: short-term site-specific maintenance will be completed in any 1 year during operations.
- Magnitude: low change may be detectable, but will primarily be that of an inconvenience or nuisance.
- Probability: high site-specific maintenance activities will be required as part of regular operations and will involve the use of heavy and light equipment and vehicles.
- Confidence: high based on Project information and the professional experience of the assessment team.

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# Change in Land Use Patterns

# **Construction and Site-Specific Maintenance**

Change in land use patterns in the HORU RSA during construction is anticipated to result from short-term physical disturbance of land, access roads and/or from alteration of traffic patterns, movements and volumes along highways and roads. The Coquihalla Summit Recreation Area provides convenient roadside recreational opportunities; the area on either side of Highway 5 is zoned for intensive recreation. The recreation area also provides destination recreational opportunities such as hiking, camping, hunting and fishing (BC Ministry of Parks 1990). A short-term disruption to access and use patterns could affect recreational (both in and outside of park and protected areas) users who are deterred from visiting a particular location. Concerns and benefits regarding access, such as blocking access during construction and use of right-of-way for trails, were raised at the Hope Parks Workshop.

Falls Lake Road, crossed by the proposed pipeline corridor at approximately AK 997.4, is the main access road for the Falls Lake Trail and tent site. Other primary recreational opportunities such as the Zopkios Ridge and Needle Peak are accessed by roads off Highway 5, which are crossed by the proposed pipeline corridor at approximately AK 1000.8 and AK 1003.0, respectively. The trails heads to Falls Lake, Zopkios Ridge and Needle Peak are crossed at the approximate location of the access roads.

Trans Mountain will employ mitigation measures that will assist in minimizing the above effects. Mitigation measures to reduce Project-related traffic (such as using multi-passenger vehicles and obeying traffic, road-use and safety laws) as well as low-impact road crossing construction methods will be implemented during Project construction activities, and will also minimize access and use disruptions. However, residual effects are still anticipated, as land disturbance through a range of land use areas and increased traffic on select access routes are unavoidable during specific times of the Project.

The impact balance of this residual effect is considered negative, but these residual effects of disruption to access and use patterns of land is considered to be reversible in the short-term (*i.e.*, limited to the construction phase or periods of site-specific maintenance that would occur within any 1 year during operations). Even after the implementation of proposed mitigation measures, users may still be unable to use, or be deterred from using, certain areas at certain times. Recreationalists may alter their use destinations away from areas that interface with Project construction. Disruption of access may result in certain Aboriginal land and resource users being deterred from practicing traditional activities and could affect the livelihoods of certain users. Construction activity could affect resource based business practices (*e.g.*, commercial recreation), which could result in a loss of income for those reliant on natural resources or commercial locations for their livelihood. Given the potential implications for livelihood practices associated with a disruption to access and use patterns of some land use areas, the magnitude of this residual effect is considered to be medium (*i.e.*, more than an inconvenience or nuisance) (Table 8.1.13-2, point 1[d]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: HORU RSA access roads to use areas in the HORU RSA may be physically disturbed by construction activity and disrupted by construction-related traffic.
- Duration: short-term the event causing the disruption to access and use is the construction phase and site-specific maintenance during operations.
- Frequency: periodic the event causing the disruption to access and use would occur intermittently but repeatedly (*i.e.*, specific months of construction and during site-specific maintenance that would occur during any 1 year of operations).
- Reversibility: short-term the residual effect is limited to the construction phase or periods of site-specific maintenance occurring within any 1 year during operations.
- Magnitude: medium the change would be detectable and would extend beyond that of an inconvenience or nuisance where there are implications for livelihood practices.
- Probability: high Project activities will disturb land use areas and may impede access to specific areas at select times.

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• Confidence: high – based on Project information, regional land use and access patterns, and the professional experience of the assessment team.

### **Operations**

Changes to land use patterns during operations may result from vegetation management on the pipeline right-of-way in areas where the proposed pipeline corridor deviates from the existing TMPL right-of-way or other linear disturbances. Land use observed in areas of proposed new right-of-way includes access roads, trail heads, parking/picnic site and large gravel area.

In the areas of new right-of-way, vegetation management during operations will involve the removal of trees or any vegetation that might restrict service and maintenance equipment along the pipeline right-of-way (though some low growth vegetation will be re-established). Areas of new cleared right-of-way could improve access for some users, including outfitters, fishing/trapping/hunting users, recreationalists, and traditional Aboriginal resource users. The use of the right-of-way as a recreational trail route was mentioned as a benefit in many communities during stakeholder consultation. The Coquihalla Summit Recreation Area Master Plan also states that rights-of-way present recreational opportunities (BC Ministry of Parks 1990).

Any new cleared right-of-way could also contribute to fragmentation of certain land use areas over the longer term, resulting in a disruption to recreational and traditional use activities for both Aboriginal and non-Aboriginal resource users. For example, new right-of-way in areas used for hiking or mountain biking could result in other land users not using the area; however, it could also result in improved recreational access. Fragmentation could also result in changes in the behaviour of wildlife, and it is possible that it would have negative effects on hunting activities for both Aboriginal and non-Aboriginal resource users in some areas.

A range of mitigation measures will be implemented to manage issues related to any long-term changes in access and land use patterns that emerge based on right-of-way finalization. These mitigation measures include: notifying all affected trappers, guide outfitters before construction so they can choose alternate locations for their activities; provide compensation, considering various forms, to private land and property owners and trappers according to established industry protocols where losses or damages are proven; communications measures with governments, residents and recreational users about site-specific maintenance activities; and measures to ensure minimization of vegetation disturbance and optimize reclamation. The impact balance of this residual effect is considered negative or positive, depending on the user. The reversibility of the effect is considered long-term, since changes to access and use patterns in areas where the proposed pipeline corridor deviates from the existing TMPL right-of-way or other linear disturbances will extend throughout the operations phase. The magnitude of this residual effect is medium. Although the residual effect will be only a nuisance for some land users (*i.e.*, recreationalists), it may have implications (positive or negative) for livelihood practices for others (*i.e.*, trappers, Aboriginal, and commercial outdoor users) (Table 8.1.13-2, point 1[e]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: HORU RSA clearing of the new pipeline right-of-way may result in fragmentation
  of land use areas beyond the Footprint and HORU LSA throughout operations. However, it will occur
  only in the limited areas where new corridor is required (new corridor is proposed for only 10% of the
  proposed pipeline corridor).
- Duration: short-term the event causing the change to land use and access is the construction of the pipeline.
- Frequency: isolated the event causing the change in land use and access is the construction of the pipeline which is limited to a specific phase of the assessment period.
- Reversibility: long-term the residual effect extends throughout operations.
- Magnitude: medium after the implementation of the proposed mitigation measures change would be detectable and could have implications on livelihood practices for some land and resource users.
- Probability: high new right-of-way will be cleared in select areas.

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 Confidence: high – based on Project information, current land uses in the HORU RSA and the professional experience of the assessment team.

Sensory Disturbance for Aboriginal and Non-Aboriginal Local Residents and Land Users (From Nuisance Air Emissions, Noise and Construction-related Visual Effects) During Construction and Site-Specific Maintenance

Nuisance air emissions and noise will occur during the construction of the Project and may at times affect land users living, working or recreating in the vicinity of Project components. Possible effects may include air emissions (including odours) and noise from construction equipment and vehicles, and dust from vehicles. Also, equipment, areas of land disturbance, and the activity of construction workers will be visible to nearby land and resource users during periods of construction and site-specific maintenance. There may also be periods of night lighting around construction sites. Consequently, the visual quality of the landscape adjacent to the right-of-way or other construction areas may be adversely affected by the Project over the short-term related to construction or maintenance activity. Concern was raised at the Hope Parks Workshop that construction would impact the beauty of the area and activities.

The implementation of the proposed mitigation measures will reduce the effects of noise and air emissions (including odours) on land users. Noise and air emissions levels will adhere to municipal by-laws and stay within regulated levels. Nuisance air and noise emissions will also occur for isolated periods of time at specific locations during periodic site-specific maintenance activities (e.g., aerial patrols, vegetation management, integrity digs) during the operations phase of the Project.

A wide range of mitigation measures will be in place to manage air and noise effects. These include complying with local noise legislation; consideration of noise abatement and construction scheduling at noise sensitive locations and during noise-sensitive times, to limit disruption to sensitive receptors; watering down construction sites and access roads to control dust; and by limiting the idling of equipment. There are many mitigation measures that can also reduce the short-term visual effects of construction. Trees/shrubs will be installed at potential access points and viewsheds to the construction right-of-way to provide a visual screen to the construction right-of-way. Also, lighting for all construction activities will be directed downward, where feasible.

However, even with Trans Mountain's commitment to mitigation measures, some residual sensory disturbance is anticipated. The impact balance of this residual effect is considered negative, as it will likely be undesirable for land/resource users. Given the successful implementation of the mitigation measures, the residual effect of nuisance air emissions, noise and visual disruption is deemed low in magnitude, as it would be limited primarily to that of a nuisance of inconvenience. The effect would be short-term in duration and periodic in frequency, as sensory disturbance would be primarily caused by construction and intermittent but repeated periods of site-specific maintenance. The potential effect is considered reversible in the short-term (Table 8.1.13-2, point 1[f]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: HORU RSA noise and air emissions emanating from the construction can extend into the HORU LSA and HORU RSA.
- Duration: short-term the event causing the sensory disturbance is construction activity or site-specific maintenance that would occur within any 1 year during operations.
- Frequency: periodic the event causing the sensory disturbance would be focused during construction, but would occur intermittently but repeatedly due to site-specific maintenance.
- Reversibility: short-term the residual effect is limited to the construction phase or site-specific maintenance activities that would occur within any 1 year during operations.
- Magnitude: low the implementation of the proposed mitigation measures would effectively reduce the
  effects of noise and air emissions to that of a nuisance or inconvenience.
- Probability: high construction and site-specific maintenance activities will involve the use of heavy equipment and vehicles.

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Confidence: high – based on a good understanding of cause-effect relationships and the professional
experience of the assessment team.

#### Alteration of Viewsheds

The Project is anticipated to have longer term visual effects related the presence of the new pipeline right-of-way in select areas. This may affect the quality or experience of certain viewsheds for some park users. The Coquihalla Summit Recreation Area offers a mountain environment for scenic driving (BC Ministry of Parks 1990). Objectives of the Coquihalla Summit Recreation Area Master Plan related to viewsheds are "to retain the scenic qualities of the highway corridor and improve visual access to park features" (BC Ministry of Parks 1990). The Master Plan states that although the impact of rights-of-way is primarily related to viewsheds, the impacts can be mitigated to a degree at key user areas. The impact balance of the alteration of viewsheds is considered negative, but low in magnitude as it is considered primarily that of a nuisance or inconvenience.

Potential long-term visual effects of new pipeline right-of-way will be reduced by maintaining existing vegetation buffers and reseeding of the right-of-way and temporary workspaces to reduce the visual intrusion of new areas of right-of-way.

Allowing natural regeneration, where appropriate, planting woody species or re-seeding of disturbed land during reclamation with native and non-native grass mixtures and at rates identified in the Reclamation Management Plan in the Pipeline EPP will ensure the right-of-way vegetation is visually compatible with adjacent areas over the long term.

The overall residual visual effect of the new pipeline corridor is considered to be reversible in the long-term, as any new cleared right-of-way will be present throughout operations and until the Project is decommissioned and abandoned. However, the magnitude of residual visual effects is considered low. While Project features will be detectable from certain vantage points in the HORU LSA, the effect is considered to be that of a nuisance or inconvenience. The duration of the potential residual effect is considered short-term, and the frequency is considered isolated, as the event causing the alterations in viewshed (*i.e.*, clearing of right-of-way) occurs during the construction phase (Table 8.1.13-2, point 1[g]). Trans Mountain will continue to consult with stakeholders regarding visual effects and potential additional site-specific mitigation during the route finalization. A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: HORU LSA visual effects related to the pipeline extend beyond the pipeline rightof-way into the HORU LSA.
- Duration: short-term the event causing the alteration of viewsheds (i.e., clearing of the pipeline right-of-way) occurs during the construction phase.
- Frequency: isolated the event causing the alteration of some viewsheds is confined to a specific period (*i.e.*, construction of the pipeline).
- Reversibility: long-term the alteration of select viewsheds due to areas of new right-of-way clearing will last throughout the operations phase.
- Magnitude: low while changes in certain viewsheds will be detectable, the potential effect is considered to be that of an inconvenience or nuisance. The alteration of the local viewsheds is expected to be reduced by the alignment of the pipeline right-of-way adjacent to existing linear features.
- Probability: high the Project will involve clearing and construction activities.
- Confidence: high based on data pertinent to the Project area, viewshed modelling results, and the professional experience of the assessment team.

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# <u>Visitor Enjoyment and Safety Indicator - Visitor Safety</u>

# Increase in Traffic on Highways and Access Roads During Construction

During construction, there will be an increase in traffic on highways and access roads due to Project-related vehicles. Construction-related traffic will include vehicles used for the transportation of equipment, supplies and workers to various locations along the proposed pipeline corridor. Major highways that are likely to be used include Highway 5 (Coquihalla Highway).

Construction workers for the Project will be dispersed along the proposed pipeline corridor, spread over an anticipated 15 construction spreads and 25 facility locations (pump stations and auxiliary facilities). Ground transport to particular spreads/work sites and accommodation hubs would be primarily via key highways noted above. It is anticipated that most regionally-based personnel would use ground transport from their home community to work locations. Pipeline staging areas will have a combination of work vehicles and crew buses. Existing Annual Average Daily Traffic (AADT) varies in the Project regions. Overall Monthly Average Daily Traffic (MADT) volumes have remained consistent from 2010 to 2012 on Highway 5 in the Fraser Valley Region. The permanent traffic measurement site on Highway 5 south of the recreation area is considered highly seasonal, as evidenced by the large difference in monthly average daily traffic between winter and summer months. The addition of several hundred Project-related vehicles will more likely be perceptible on highways or highway sections with lower AADT values.

At the time of writing, detailed traffic estimates and logistics plans were not available for the proposed movement of Project workers, equipment and materials. Project effects on regional highway traffic, and how Project traffic compares to overall daily traffic volumes, will ultimately depend on the source of construction equipment, construction camp modules and other supplies and materials (especially pipe), as well as the methods used to transport these items to construction sites. Pipe and other materials obtained from Canadian or North American suppliers can be transported by rail, offloaded at rail sidings at key points within the Socio-economic RSA and transported relatively short distances by truck to construction sites.

Trans Mountain will develop detailed traffic estimates as construction and Project planning related to the movement of people, materials and equipment continues. Trans Mountain will also develop further logistics information on transportation modes and routes to be used during the construction phase, as well as timing transportation movements to each construction spread and/or facility location. This information will be further evaluated in the context of existing regional traffic volumes, and will become part of the overall information that is shared with local governments, Aboriginal communities, resource users and other stakeholders. This information will also be discussed with provincial transportation authorities during the course of the ongoing consultation planning and construction.

Trans Mountain will employ a number of measures to reduce Project-related vehicles and limit the effects associated with construction-related traffic, including providing daily shuttle bus services from staging areas to work sites and for local workers from pre-determined regional staging areas. It is anticipated that many major equipment deliveries will come to the region via rail or ship to temporary stockpile sites along the proposed pipeline corridor which will limit the distances travelled by heavy loads on regional highways. The increase in traffic will occur during the construction phase and the residual effect is considered to be reversible in the short-term (*i.e.*, limited to the construction phase). The frequency will be isolated since the increase in traffic is confined to a specific phase of the assessment period (*i.e.*, construction phase). An increase in traffic over current operational movements related to workers and maintenance is not anticipated during the operations phase.

The impact balance of an increase in traffic during construction is considered to be negative, as it may contribute to disruption of existing traffic movement patterns and highway/road users. Highway 5 (Coquihalla Highway) is the main access route for the Coquihalla Summit Recreation Area. Coquihalla Summit Recreation Area is a common rest stop of travelers on the Coquihalla Highway (BC Parks 2014).

An increase in traffic on these highways, particularly during summer months when there is a noticeable increase in traffic in some communities due to the tourist season, would be more than a nuisance or inconvenience to residents, travellers and other road users. Trans Mountain will employ mitigation measures to ensure the effects are reduced.

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Falls Lake Road, crossed by the proposed pipeline corridor at approximately AK 997.4, is the main access road for the Falls Lake Trail and tent site.

Traffic disruptions could be more than a nuisance or inconvenience to residents, travelers and other road users in some areas. The disruption could result in the need for detours or the inability to access particular locations. Therefore, the magnitude of the residual effect is anticipated to be medium. In Project areas where there are numerous national, provincial and municipal highways and other roads, options are available to road users, therefore, the magnitude of the residual effect in these areas is anticipated to be low

The probability of occurrence of the residual effect is high, since daily travel will be required to and from the work sites and materials, equipment and workers must be brought to work sites at key points during construction. The level of confidence in the prediction is also high based on the limited number of alternative transportation routes in some socio-economic regions and since daily travel will be required to and from work sites. (Table 8.1.13-2, point 2[a]). A summary of the rationale for all of the significance criteria is provided below.

- Spatial Boundary: Socio-economic RSA highways and access roads anticipated to be used by Project vehicles are located in various locations across the Socio-economic RSA.
- Duration: short-term the movement of Project-related equipment, materials and workers during construction will cause the effect; no perceptible increases in traffic are anticipated during the operations phase.
- Frequency: isolated the movement of equipment, materials and workers on regional highways resulting in increases in traffic is confined to a specific phase of the assessment period (*i.e.*, construction phase).
- Reversibility: short-term the Project-related increase in traffic is limited to the construction phase.
- Magnitude: low to medium low in areas with multiple transportation route options; medium in areas
  with single access routes or where the increase in construction traffic coincides with summer tourist
  months.
- Probability: high Project-related traffic on highways and access roads will be present during construction.
- Confidence: high transporting equipment and supplies will result in an increase in traffic, assuming that non-Project related traffic will remain constant.

#### Increase in Traffic-Related Injury and Mortality

Since the number of traffic collisions in a given area is associated with traffic volumes, an increase in Project-related traffic could be expected to result in a higher number of collisions, and with it an increase in the risk of traffic-related injuries or fatalities. It is not possible to quantify the extent of a potential increase or whether there would be a measureable, increase, because the numbers of proposed Project-related vehicles in each area are not currently known. However, there are several factors that may modify the frequency or severity of those collisions and injuries and that suggest approaches for Trans Mountain to use in minimizing the potential impacts on public safety. These factors are: numbers of vehicles; location of vehicles; and driver behaviour.

# **Number of Vehicles**

Safety performance functions that have been developed for different roadway types confirm that the number of collisions expected in a given area relates directly to the volume of traffic on that roadway segment. In other words, more traffic equates with more collisions (Parisien 2012). By limiting or minimizing the additional traffic put onto a road, the risk of collisions and traffic injuries is also reduced.

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Project traffic will comprise both vehicles used to transport equipment and supplies, and also vehicles used to transport workers. Of these, worker transport is more amenable to being reduced, through the use of buses or vans to transport workers rather than private vehicles where practical.

#### **Driver Behaviour**

A number of driver behaviours can contribute to the risk and severity of collisions. Driver inattention was the number one contributing factor to collisions in BC in 2007 according to the BC Motor Vehicle Branch (Motor Vehicle Branch 2007); excessive speed was the second most frequent contributing factor.

The development and strict enforcement of policies on driver behaviour, among both employees and contractors, is essential for minimizing potential effects on traffic safety. These policies will include screening of driver abstracts, provisions on observance of posted speed limits, a ban on cell-phone or tablet use, mandatory seatbelt use, fatigue management, no driving while impaired and other behaviours that can influence safety.

Concerns around traffic volume, congestion and safety have been raised as an issue in the context of the Project by a number of key informants (Hanlan, Hannah, Humphreys, Kreiner pers. comm.). The Project will increase the amount of traffic on public roads because of the need for transportation of equipment, supplies and workers to various locations along the proposed pipeline corridor. Trans Mountain will develop detailed traffic estimates as construction and project planning continues; these detailed traffic estimates are not currently available. The increase in traffic is projected to occur mainly during the construction phase; little Project-related traffic is anticipated for the operations phase.

Mitigation measures include the development of site-specific Traffic Access and Control Plans; the use of shuttle buses, where feasible, to reduce the volume of traffic on the road; communication with local police and emergency services; the development and enforcement of mandatory minimum driving standards; and development of a driving complaint mechanism.

In summary, the Project will increase the number of vehicles in the Socio-economic RSA, both in terms of Project-related construction vehicles and vehicles used to transport workers. Evidence from the literature shows that an increase in traffic volumes results in an increased risk of traffic collisions. This in turn increases the risk of collision-related injuries and fatalities. The impact balance of this effect is characterized as negative since vehicle collisions pose a detriment to community health. The effects would extend throughout the Socio-economic RSA, and would manifest in those locations in which the Project uses vehicles on public roadways. Risk will be particularly high in collision "hot-spots" – locations (usually intersections) which have pre-existing high rates of traffic collisions.

The duration is characterized as short-term and the frequency as isolated since the effect is primarily linked to the construction phase when the Project workforce will be large and when the movement of heavy machinery and vehicles is required. An increase in traffic-related injury and mortality is unlikely for the operations phase since there will be fewer workers and equipment requiring transport. The reversibility is similarly characterized as short-term since any effect would mainly be observed during the construction phase.

The increase in risk of traffic-related injury and mortality is highly dependent upon the number and types of additional vehicles, the current road conditions and capacity of the roadways, driver behaviour, and the characteristics of the areas through which traffic will travel. While the addition of Project-related traffic creates an increase in collision risk, traffic-related collisions, injuries and fatalities are rare events; therefore, even though the risk increases, there is no certainty that any traffic-related injuries or fatalities will result from the increase in traffic. In addition, no regulatory standards exist for this area. The magnitude of effect is characterized as negligible to medium. The probability of occurrence is rated as low since, as noted above, traffic accidents are rare. The level of confidence in this evaluation is high, since the literature showing this cause-effect relationship relates to other areas in BC and internationally (Table 8.1.13-2, point 2[b]). A summary of the rationale for all of the significance criteria is provided below.

• Spatial Boundary: Socio-economic RSA – effects extend throughout the Socio-economic RSA wherever worker and Project-related traffic exists and would be a primary concern in current traffic accident hot-spots.

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- Duration: short-term the event causing the potential increase in traffic-related injury and mortality is the construction phase, when the Project workforce will be large and when heavy machinery and vehicles are required.
- Frequency: isolated the event causing the potential increase in traffic-related injury and mortality is confined to the construction phase.
- Reversibility: short-term residual increases in traffic related injury and mortality are considered to be limited to the construction phase.
- Magnitude: negligible to medium no regulatory standards exist for this area. While the addition of Project-related traffic creates an increase in risk, traffic-related collisions, injuries and fatalities are rare events.
- Probability: low the probability of occurrence is rated as low since traffic collisions, injuries and fatalities are rare events.
- Confidence: high the literature showing this cause-effect relationship relates to other areas in BC and internationally, and some stakeholders are concerned about traffic accidents.

# 8.1.13.3 Summary

As identified in Table 8.1.13-2, there are no situations for visitor enjoyment and safety indicators that would result in a significant residual socio-economic effect. Consequently, it is concluded that the residual socio-economic effects of Project construction and operations on recreational values of Coquihalla Summit Recreation Area such as visitor enjoyment and safety will be not significant.

# 8.2 Synopsis

The impacts of TMEP's construction and operation on the social and environmental values of Coquihalla Summit Recreation Area will be minimized through mitigation and reclamation. Based on the Land Use / Occupancy Resource Use Permit prepared for BC Parks, Trans Mountain has concluded that the TMEP:

- is consistent with the Coquihalla Summit Recreation Area's Management Direction;
- allows for operational efficiencies of an existing pipeline system that has been operating for over 60 years in what is now Coquihalla Summit Recreation Area;
- will result in no significant adverse residual environmental and socio-economic effects;
- will conserve the biological diversity of natural ecosystems and maintains the recreational values within Coquihalla Summit Recreation Area:
- will maintain, and in some instances enhance, the objectives of the recreation area management plans through compensation offsets; and
- will provide positive overall economic benefit to BC.

# 9.0 RECLAMATION IN COQUIHALLA SUMMIT RECREATION AREA

The Reclamation Plan is built upon the Pipeline EPP and environmental surveys and identifies additional measures and activities to re-establish the ecological integrity of Coquihalla Summit Recreation Area during Project construction. The measures and other work described in the Reclamation Plan will generally apply to the Project Footprint within Coquihalla Summit Recreation Area. Ongoing consultation with BC Parks may entail further mitigation measures and revisions to the Reclamation Plan and as such, the final Reclamation Plan will be completed prior to construction. Additional site-specific reclamation plans (*i.e.*, riparian reclamation plans) may be required and involve further consultation with BC Parks, Aboriginal groups, stakeholders and the general public. Implementation of the measures included in the Reclamation Plan will commence during the construction phase and continue into the operations phase. Where warranted, follow-up plans will be developed to ensure that the mitigation measures, activities and other works identified in the Reclamation Plan are effective.

#### 9.1 Reclamation Consultation

The development of the Reclamation Plan has been a collaborative effort between Trans Mountain, government agencies and interested stakeholders. In particular, input regarding reclamation measures was solicited and received from the Project environmental team (including fish, vegetation and wildlife experts) and BC Parks. Additional comments have been solicited from ENGOs and will continue throughout the preparation of the Reclamation Plan (Table 9.1-1).

TABLE 9.1-1
CONSULTATION CONTACTS

Stakeholder Group	Date of Contact	Method of Contact	Items Discussed
BC Parks Representative	May 23, 2014	In person meeting at Bridal Veil Falls Provincial Park. Could not access Coquihalla Summit Recreational Area due to snow cover.	Recreational use, revegetation, steep terrain, seed mixes, short growing season, weed/problem vegetation control and erosion.
BC Parks – Conservation Specialist	September 4, 2014	Email outreach and telephone meeting.	Coquihalla Summit Recreation Area: recreational use; historical features; nearby wildlife; weed and vegetation management; seed mix development; erosion and sediment control; watercourses; and minimal disturbance during construction.

# 9.2 General Reclamation Measures

Reclamation activities will be in keeping with Coquihalla Summit Recreation Area's Master Plan and particular consideration will be given to the recreational and tourism zones as well as to the natural environments found within the recreation area.

#### 9.2.1 Trails in the Recreation Area

Reclamation measures will be applied to re-establish trails in the recreation area through the replacement of soil and/or aggregate surface material as well as the replacement of trail in the recreation area signage taken down during construction.

#### 9.2.2 Natural Regeneration

Where the potential for soil erosion and non-native invasive species infestation is low, and where it is anticipated that the root zone material contains a propagule bank (e.g., seed, stem or root pieces) of suitable species, it may in some instances be preferable to not re-seed the disturbed areas (e.g., riparian areas). This revegetation method will facilitate the establishment of pre-disturbance vegetation through native propagule establishment on the disturbed area following clean-up and root zone material replacement. In areas with potential erosion and weed concerns, a native perennial or non-native annual grass cover crop species will be applied. The grass cover crop species will establish rapidly to control erosion and limit weed growth while pre-disturbance vegetation establishes.

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Natural regeneration is preferred over seeding with commercially available native seed where it is practical and where it is anticipated that the pre-disturbance vegetation will re-establish on the disturbed area. However, care must be taken when using natural regeneration techniques to avoid invasion of non-native invasive species, as is often the case when paralleling other linear disturbances. Moist riparian environments that will regenerate easily in a short time frame are prime candidates for natural regeneration.

#### 9.2.3 Habitat Enhancement

Trans Mountain will avoid the use of Douglas-fir and spruce logs, brush and mulch for habitat enhancement within Coquihalla Summit Recreation Area. Select tree species (e.g., pine) felled during construction will be used in these locations, to the extent allowable, for habitat enhancement by providing microsites to aid in the re-establishment of woody vegetation along the proposed right-of-way where woody vegetation was cleared.

Establish mounds to create microsites on steep, wind exposed slopes where woody vegetation establishment is desirable to retain moisture and enhance vegetation establishment success.

# 9.2.4 Woody Species Revegetation

Revegetation using native tree and shrub species will occur in select areas (e.g., TWS and riparian areas) in accordance with Trans Mountain's operations and maintenance procedures (i.e., revegetation is allowed as long as the trenchline is not obstructed from aerial monitoring, or access to the pipeline right-of-way for maintenance and regular inspections is not compromised).

# 9.2.4.1 Installation of Nursery-Grown Plant Plugs

TWS, riparian and special reclamation areas will be surveyed for evidence of naturally regenerating trees, specifically sites that are cleared of coniferous vegetation. If suitable levels of naturally regenerating (from seed or vegetative propagules) deciduous or coniferous trees are not observed, then these and other areas will be considered for the installation of nursery-grown plant plugs (*i.e.*, rooted stock plugs). Native seed will be secured (through either purchase or collection) and dormant woody species cuttings will be collected, as warranted. Deciduous and coniferous rooted plugs will be installed at pre-selected sites (*e.g.*, TWS, riparian areas or for line-of-sight breaks) as determined in consultation with BC Parks Conservation Specialists. Under the guidance of a Reclamation Specialist (or other qualified professional), planting crews will install the rooted stock plugs using standardized silviculture planting equipment and techniques. The rooted stock plugs will be installed at a specified density/distribution with the purpose of initiating an early ecological recovery trajectory that will, in time, emulate the adjacent undisturbed vegetation in form and function where not influenced by Trans Mountain's operations and maintenance procedures.

Where it is determined that ungulate species may damage (browse or up-root) newly installed deciduous plants within riparian areas, protection of the trees via chemical (e.g., animal repellent [DeerGuard]) or mechanical (e.g., tree shields) methods may be warranted at the time of installation.

# 9.2.4.2 Installation of Locally Sourced Dormant Woody Species Transplants

At pre-determined locations where vegetation is disturbed by construction, the use of plant transplants may be considered. The use of dormant woody transfers is a cost effective and efficient method of re-establishing vegetation to disturbed locations. Unlike salvaging and storing dormant woody material during construction, transfers are dug when dormant, where warranted, from a location adjacent to the reclamation site that contains select plant species of a suitable size (conifers < 45 cm in height, deciduous trees < 2 cm stem calliper at ground level or 90 cm in height). Where a donor plant community is located adjacent to a potential reclamation site outside of park boundaries, a survey of the donor plant community will be completed to determine the level of plant extraction that could be achieved without affecting the form and/or function of the donor plant community.

A permit for harvesting transplants from the adjacent plant community will be discussed with the appropriate personnel.

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# 9.2.5 Nutrient Management on Disturbed Forested Areas

A slow-release nitrogen fertilizer is proposed for application on lands that contain woody debris and/or wood chips mixed into the salvaged and replaced root zone material or that have been placed on cleared and ungrubbed portions of the construction right-of-way. The nitrogen fertilizer will serve to adjust the carbon-nitrogen ratio in these carbon rich environments to a level that will be conducive to the establishment of seeded grass species and naturally regenerating vegetation.

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To avoid deposition or leaching of applied nutrient into waterbodies, nitrogen fertilizer will not be applied within a 30 m buffer to watercourses. In addition, the fertilizer application rate will vary based on the level of woody debris and/or wood chips encountered within or on the surface of the root zone material, the soil texture and the slope of the land adjacent to waterbodies to ensure nutrient movement is minimized.

# 9.2.6 Seeding of Native Grass Species

Seed mixes were developed in consultation with BC Parks and consist of species native to the recreation area or areas within the vicinity of the recreation area (Dwg. 01). Seeding will be conducted as soon as practical following root zone material replacement. Drill or broadcast seeding of native seed mixes or a grass cover crop species will be conducted on most of the right-of-way. Seed mixes will be sown at locations indicated on the Environmental Alignment Sheets, unless otherwise requested by the BC Parks Area Supervisor or Conservation Specialist.

### 9.2.7 Erosion and Sediment Control

Erosion and sediment control (ESC) measures will be implemented to: maintain soil conservation along the proposed right-of-way, preserve existing vegetation on the adjacent land use, reduce the risk of sedimentation of watercourses during and following construction activities and to facilitate the establishment of permanent vegetation along the proposed disturbance.

#### 9.2.7.1 General ESC Measures

- Woody vegetation located on TWS areas will be cleared and not grubbed where root zone material salvage is not anticipated.
- Root zone material will be stored on cleared/ungrubbed TWS areas adjacent to the proposed right-of-way.
- Subsoil will be stored on geotextile when placed over ungrubbed TWS areas.
- Root zone material and grading material (subsoil) will be stored in separate piles so as not to admix.
- Following the replacement of trench and grade subsoil, recontour the area to match the adjacent landscape profile prior to root zone material replacement. Avoid, to the extent feasible, mixing of subsoil and root zone material during materials replacement.
- Install/re-establish coir logs, erosion control blanket or sediment fencing within the riparian areas of watercourses crossed by the right-of-way.
- Install a non-native annual or native perennial grass cover crop species in the riparian areas to minimize
  competition to regenerating and installed woody vegetation and a prescribed grass seed mix through
  broadcast or drill seeding methods on all other exposed soils. Ensure any seed mixes or cover crop
  species used are approved by BC Parks.

### 9.2.7.2 Specific ESC Measures

ESC measures that will be considered for use on the proposed construction right-of-way are described in the following subsections:

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# Coir Log, Erosion Control Blanket and Sediment Fence Installation

Coir logs composed of natural fibers are designed to reduce slope length and surface water velocities (Dwg. 02). Erosion control blankets prevent scour of surface soils, conserves soil moisture and promotes vegetation establishment (Dwg. 03). Sediment fencing filters sediment from surface water that has the potential to discharge into Falls Lake Creek and Boston Bar Creek (Dwg. 04). These measures should be installed following clearing and monitored and maintained following construction until vegetation establishment occurs.

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# **Diversion Berms**

Diversion berms are intended to reduce slope length and runoff velocities, and divert runoff into well-vegetated areas. Diversion berms will be designed with a suitable spacing, slope gradient and berm height to effectively convey overland water flow, originating on the construction disturbance, away from watercourses (Dwg. 05).

# Rollback

Trans Mountain will avoid the use of Douglas-fir and spruce for rollback within Coquihalla Summit Recreation Area. Select tree species (*e.g.*, pine) felled during construction will be used in these locations as rollback, to the extent allowable, to provide erosion control and habitat enhancement. The woody material felled during construction will be used as rollback within watercourse riparian areas as well as TWS areas to provide erosion control and habitat enhancement. The woody rollback will provide microsites to aid in the re-establishment of woody vegetation and assist in the control of soil erosion along the proposed right-of-way where woody vegetation was cleared. To obtain material required for rollback, woody slash will be salvaged during construction clearing activities in suitable quantities to allow for the placement of rollback at select locations onto the construction right-of-way following root zone material replacement (Dwg. E-06).

# **Grass Seeding**

Native seed mixes have been developed and native perennial and non-native annual cover crop species selected for use on construction disturbances within Coquihalla Summit Recreation. An appropriate native grass seed mix, native perennial or annual non-native cover crop will be sown (drill or broadcast seeded) along the disturbed areas following root zone material replacement at an appropriate prescribed rate.

# 9.3 Specific Reclamation Issues

The biophysical features listed below warrant special consideration due to the difficulty in reclaiming and/or managing them. Specific reclamation and/or management plans will be developed from ongoing consultation with BC Parks personnel as well as field surveys.

#### 9.3.1 Watercourses

Stabilization of the banks and slopes of watercourses and their riparian areas prior to and immediately following construction is critical to the restoration of the habitat at these watercourse. Mitigation measures have been developed to enhance the reclamation of these watercourses and involve the installation of numerous bank and slope protection structures including:

- log crib structures (Dwg. 07);
- erosion control matting (Dwg. 03);
- revegetation grass rolls (Dwg. 08);
- sediment fences (Dwg. 04);
- biodegradable coir geotextile wraps (Dwg. 09);
- · coniferous tree revetments (Dwg. 10); and

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cobble or riprap armouring (Dwg. 11).

In recognition of the potential disturbance to watercourse bed, bank and riparian area that may be created during the crossing of various watercourses, reclamation of watercourse features will be completed as per the guidelines identified in the DFO Measures to Avoid Causing Harm to Fish and Fish Habitat.

Based on watercourse crossing methods, fish-bearing status and sensitivity classifications, detailed riparian reclamation plans may be developed for specific watercourses within the Coquihalla Summit Recreation Area. These plans will provide site specific measures that contribute to the reclamation of watercourse banks and riparian areas disturbed by construction of the proposed Project (*i.e.*, erosion and sediment control measures and the planting of trees and shrubs).

# 9.3.2 Weed and Vegetation Management Plan

Management of weeds and problem vegetation is essential to maintaining the ecological integrity of Coquihalla Summit Recreation Area during and after Project construction. Trans Mountain will use an integrated vegetation management (IVM) approach that includes non-chemical, cultural and chemical methods to control and reduce the spread of weeds and problem vegetation. The non-chemical, cultural or chemical treatment methods used will vary with life-form and mode of reproduction of the species targeted and the location and extent of the infestation. Non-chemical and cultural treatments include hand-pulling, cultivation, mowing, burning, mulching and active restoration of native plant communities. Chemical treatments include either selective herbicides (*i.e.*, target specific plant species) or non-selective herbicides (*i.e.*, target all vegetation).

Trans Mountain will actively cooperate with BC Parks and other stakeholders to implement an IVM approach to weed and problem vegetation management as outlined in KMC's Integrated Vegetation Management Plan and the Weed and Vegetation Management Plan provided in Section 14.0 in Appendix C of the Pipeline EPP. Accurate records of weed infestations, management measures conducted and the success of these measures will be maintained so that weed and vegetation management plans can be modified as necessary from year to year.

Specific weed and problem vegetation management measures for pre-construction, construction and post-construction are provided in the Weed and Vegetation Management Plan. Further measures involving monitoring and control measures following construction are provided in Dwg. 12.

Detailed weed and problem vegetation reports will be developed for site-specific locations, as required, following a pre-construction weed survey (scheduled for spring 2015) and consultation with BC Parks Conservation Specialists. Weed and problem vegetation infestations and recommended mitigation measures will be incorporated into the Environmental Alignment Sheets.

# 9.3.3 Wildlife Movement, Mortality and Human Encounters

Measures to reclaim habitat, restore the effectiveness of wildlife movement corridors and maintain biodiversity will be implemented during and after construction. These measures will include one or a combination of the following:

- cut, mow or walk down shrubs and small diameter deciduous trees at ground level to facilitate rapid regeneration, where grading is not required;
- plant native tree seedlings and/or shrubs (Dwg. 13);
- install visual barriers along the right-of-way (Dwg. 14);
- salvage and install wildlife habitat trees (Dwg. 15);
- implement rollback along the pipeline right-of-way (e.g., where high levels of coarse woody debris occur prior to construction), to provide cover and facilitate movement of wildlife:

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- reduce and block access along the right-of-way by planting tree seedlings and/or shrubs at select locations, mounding, implementing rollback, boulder barriers, earth berms or install locked gates; and
- deactivate and reclaim temporary roads that are no longer needed with native vegetation.

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# **LIST OF DRAWINGS**

Seed Mix Detail – Coquihalla Summit Recreation Area
Coir/Straw Log Installation
Erosion Control Matting/Blanket
Sediment Fence
Cross Ditches and Diversion Berms
Rollback
Cribwall Staked Logs
Streambank Protection - Grass Roll
Streambank Protection - Hedge Brush Layering
Streambank Protection – Coniferous Tree Revetment
Streambank Protection – Cobble and Riprap Armouring
Weed Control
Live Plant Salvage
Vegetation and Soil Berm - Line of Sight
Typical Wildlife Tree Enhancement Feature

#### **CRITERIA FOR IMPLEMENTATION**

Seed mixes (see tables below) will be installed at locations indicated on the Environmental Alignment Sheets, unless otherwise requested by BC Parks Area Supervisor or Conservation Specialists.

#### Notes:

- Species cultivars, where applicable, will be determined at the time of procurement based on availability and suitability as
  determined by Trans Mountain.
- 2. Native seed species will be obtained from local genomes to the extent feasible.
- 3. All seed mix species must have Certificates of Analysis to allow for the determination of weed and undesirable species content, and germination for each species seed lot in the mix.
- 4. Certificates of Analysis for each seed mix species will be reviewed by Trans Mountain prior to purchase. Any seed lot with unacceptable weed contamination or viability will be rejected.
- 5. Seed mix species that are unavailable in sufficient quantity or quality at a reasonable cost as determined by Trans Mountain at the time of procurement will be eliminated from the mix and the proportions of other species in the mix increased.
- 6. Drill seeding will be used on all segments to be seeded with the exception of slopes which are too steep to safely operate the tractor and seed drill, areas too wet to access with a tractor and seed drill without causing rutting and poor seed placement, stony areas which could cause damage to the equipment or impede the ability of the drill to properly place the seed, and any other areas which cannot be feasibly reached with the seed drill.
- 7. Broadcast seeding will be used on lands where drill seeding cannot be conducted.
- 8. All seed drills and broadcast seeders will be calibrated for each seed mix using the manufacturer's recommended procedures; alternate calibration procedures may be used if approved by the Environmental Inspectors.
- 9. The seeding contractor will develop appropriate seeding procedures to ensure even distribution of all species in each seed mix and have these procedures approved by the Environmental Inspector. This may involve, but not be limited to:
  - using seed box agitators to prevent stratification of large and small seeds;
  - seeding large and small seed species from separate seed boxes, or in separate passes with the seeder; or
  - using an inert filler agent with the seed mix.
- 10. Seeding depth with seed drills will be 1-2 cm in fine textured soils and 1-3 cm in sandy soils.
- 11. Where site and safety conditions allow, broadcast seed will be harrowed into a depth of 1-3 cm, using standard agricultural harrows or other approved equipment. Harrowing will be conducted immediately following broadcasting. Steep slopes that cannot be safely harrowed will be hand raked, if feasible, to incorporate seed.
- 12. Only the salvaged or cultivated width of the construction right-of-way will be seeded with minimal overlap onto undisturbed areas. Swing-out passes will be made to seed scalped areas adjacent to the cultivated portion as needed.
- 13. Complete coverage of the stripped area will be ensured by using a sufficient number of passes. Damage to the native root mat adjacent to the disturbed portion of the construction right-of-way will be avoided.
- 14. Broadcast seeding will be delayed during high wind conditions, as directed by the Environmental Inspector.



# TRANS MOUNTAIN EXPANSION PROJECT



# **COQUIHALLA SUMMIT SEED MIXES - BC PARKS**

7894 October 2014

Drawing E-01

# **SEED MIXES**

#### **Cover Crop**

A cover crop is a fast-germinating and establishing annual/biennial or short-lived perennial grass species that is seeded to quickly stabilise topsoil, control erosion and limit weed growth while pre-disturbance vegetation reestablishes.

Short-lived perennial grass cover crop species include slender/awned wheatgrass or Canada wild rye.

Short-lived annual/biennial cover crop species includes annual ryegrass.

Broadcast short-lived perennial grass species seed at 10 kg/ha or 100 grams/100 m<sup>2</sup> and annual/biennial cover crop species at 8 kg/ha or 80 grams/100 m<sup>2</sup>.

Seed Mixes – Coquihalla Summit Recreation Area							
	Closed Coniferous - Dry		Closed Coniferous – Moist/\	Net	Riparian		
Biogeoclimatic Zone	Mix #1	%WT	Mix #2	%WT	Mix #3	%WT	
Engelmann Spruce-	fringed brome	40	Western wheatgrass	40	slender wheatgrass	75	
Subalpine Fir/Boreal White	slender wheatgrass	20	fringed brome	30	Canada wild rye	25	
and Black Spruce	Canada wild rye	20	tufted hairgrass	15			
	Rocky Mountain fescue	10	fowl bluegrass	15	seeding rate		
	Tufted hairgrass	10			broadcast seed at 5 kg/ha		
			seeding rate				
	seeding rate		broadcast or drill seed at 15 kg/ha				
	broadcast or drill seed at 15 kg/ha						

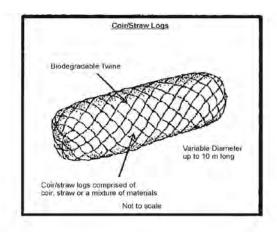


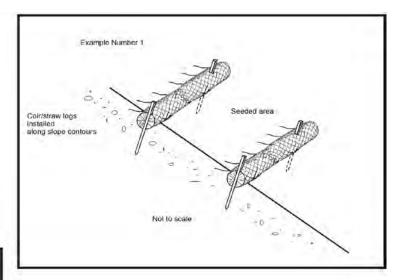


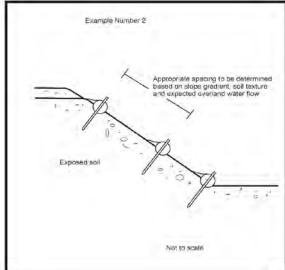


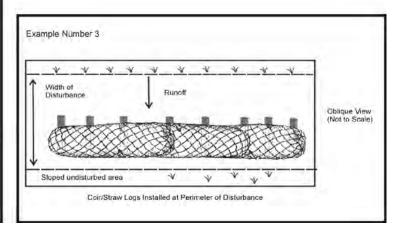
COQUIHALLA SUMMIT SEED MIXES – BC PARKS

7894 October 2014 Drawing E-01









#### Notes:

- 1. Proper placement and design is critical and qualified specialists should be involved.
- 2. Install coir/straw logs in a shallow trench (~5-7.5 cm (2"-3") deep), perpendicular to the direction of flow and across the entire width of the disturbance. Each end of the coir/staw log should be turned slightly up slope to help retain water and prevent flow along the outside of the coir/straw log.
- 3. Each coir/straw log should be secured into the ground by wooded stakes spaced every 0.9-1.2 m (3'-4') across the length of the log. Stakes should be approximately 45 60 cm (18"-24") in length and should be driven through the centre of the coir/straw log and into the ground with approximately 5 cm (2") remaining above the coir/straw log. Stakes installed at each end of the coir/straw log should be placed approximately 5-15 cm (2"-6") from the outer edge of the log.
- 4. When joining two coir/straw logs together, either tightly abut both ends or overlap each log approximately 15 cm (6").
- 5. Store, move and install when dry.
- 6. Coir/straw logs may be seeded or dormant cuttings may be inserted.
- 7. Typical spacing is indicated below.

Slope Gradient (°)	Typical Spacing (approximate m (ft))
≥1:1	1.5 m (5')
2:1<1:1	3.0 m (10')
>4:1<2:1	5.2 m (17')
6:1-4:1	7.6 m (25')
<6:1	15.0 m (50')

#### Adapted from CAPP et al. (2005)



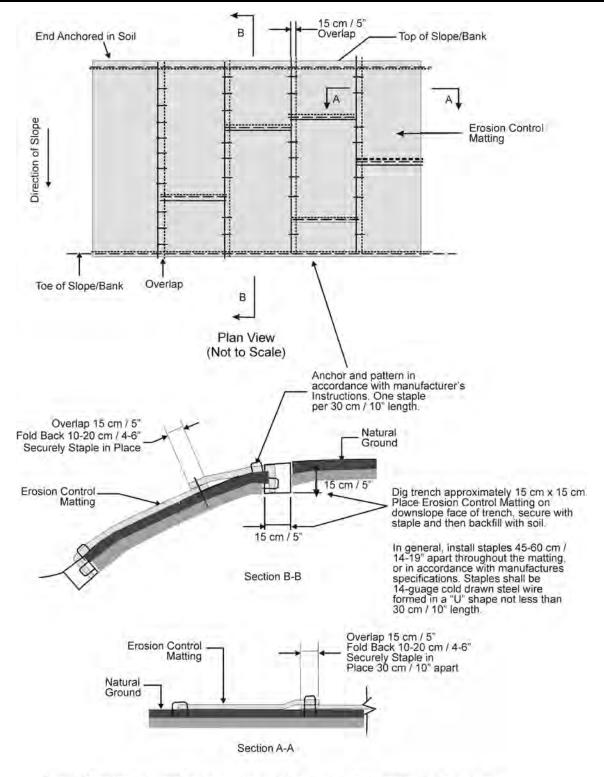
# TRANS MOUNTAIN EXPANSION PROJECT



#### **COIR/STRAW LOG INSTALLATION**

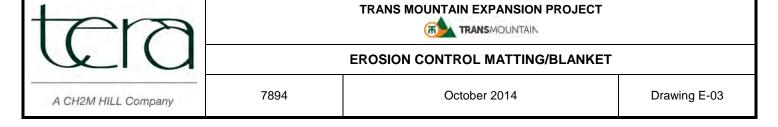
7894 October 2014

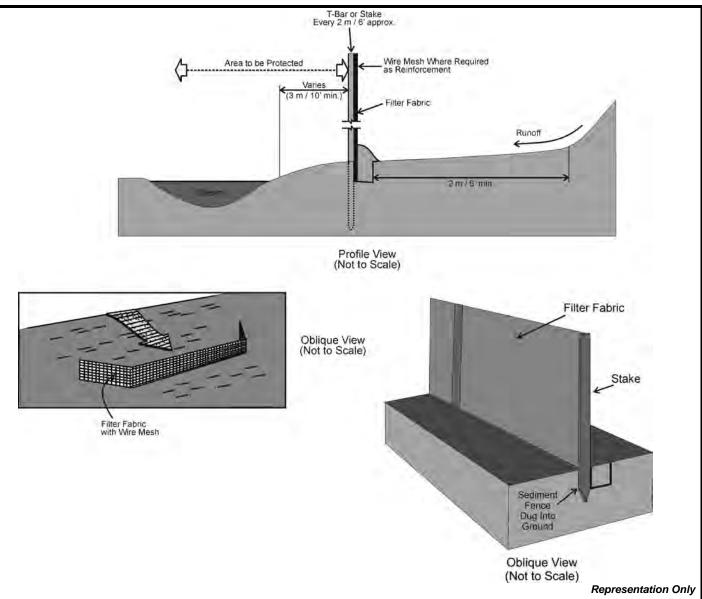
Drawing E-02



Note: When used at streambanks, erosion control matting should be secured to the bank using willow cuttings rather than staples.

Representation Only

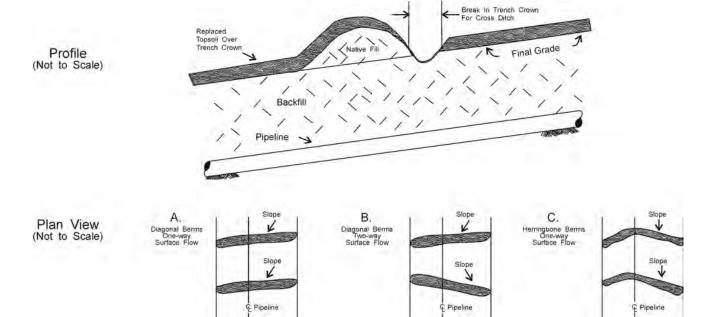




#### Notes:

- 1. Watercourses that have moderate to high sensitivity of fish habitat and/or have steep approach slopes at the proposed crossings may need sediment fences during construction, as determined by Trans Mountain's Environmental Inspector(s).
- 2. Install sediment fences at the base of approach slopes to watercourses prior to clearing and grading using the method and materials above or other approved designs.
- 3. Ensure sediment fence is keyed into the substrate. Excavate a narrow trench, place the base of the sediment fence in the trench and place the fill back into the trench, securing the sediment fence in place.
- 4. Place sediment fences a minimum 2 m (6 feet), if feasible, from the toe of the slope in order to increase ponding volume.
- 5. Maintain sediment fences in place at the base of the approach slopes until revegetation of the construction right-of-way is complete.
- 6. In areas with frequent traffic, install two or more sediment fences in a staggered and overlapped configuration to allow vehicle passage without removal or opening of the sediment fence.
- Ensure that sediment fences, if removed or damaged, are reinstalled or repaired prior to the end of the work day.
- 8. Install sediment fences, where warranted, to eliminate the flow of sediment from clean subsoil piles and disturbed areas into nearby wetlands.
- 9. Remove any sediment fences around wetlands that remain after the disturbed area is revegetated and the area is stable.

tera	TRANS MOUNTAIN EXPANSION PROJECT  TRANSMOUNTAIN				
Celu	SEDIMENT FENCE				
A CH2M HILL Company	7894	October 2014	Drawing E-04		



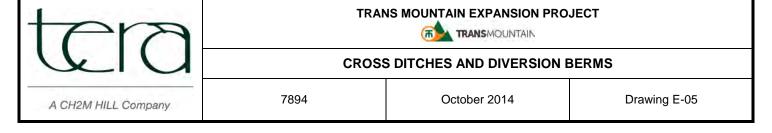
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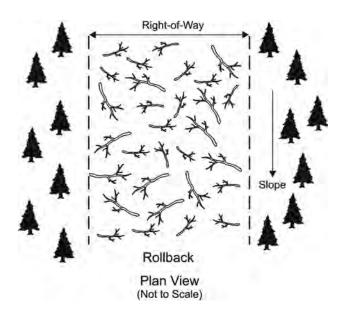
# Representation Only

- Install diversion berm and cross ditch on moderate and steep slopes on non-cultivated lands to divert surface water off the construction right-of-way. Install berms immediately downslope of trench breakers to collect seepage forced to the surface.
- 2. Skew berm across the construction right-of-way at downhill gradient of 5-10%.
- 3. Construct diversion berm of compacted native subsoils where extensive disturbance of the sod layer has occurred. Diversion berms should be constructed of timbers, imported logs or sandbags if disturbance of the sod layer is limited. Avoid use of organic material. Where native material is highly erodible, protect upslope of berm and base of cross ditch by burying a geotextile liner approximately 20 cm below the surface or armour upslope face of berm with earth-filled sand bags.
- 4. Typical diversion berm height and widths are approximately 0.75 m for summer construction and 1.0 m for winter construction. Trans Mountain shall inspect berms after heavy rains and the first spring following construction; replace or restore berms, if warranted.
- 5. Tie berms into existing berms on adjacent rights-of-way, where applicable.
- 6. Leave a break in trench crown immediately upslope of diagonal berm and cross ditch to allow passage of water across the construction right-of-way.
- 7. Use diagonal berms where direction of slope and surface water movement is oblique to construction right-of-way.
- 8. Use herringbone berm and cross ditch where direction of slope and surface water movement is parallel to construction right-of-way so runoff does not cross ditchline.
- 9. Determine location and direction of berm based on local topography and drainage patterns. Typical diversion berm spacing is indicated below.

Slope Gradient (° ;%)	Typical Sp	oacing (m) Eros	ion Hazard*
	<u>High</u>	<u>Medium</u>	Low
<7; <12	30-45	45-60	60 or more
7; 12	25	38	51
8; 14	22	33	44
9; 16	19	29	38
11; 19	16	24	32
14; 25	12	18	24
18; 33	9	14	18
27: 50	6	9	12

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





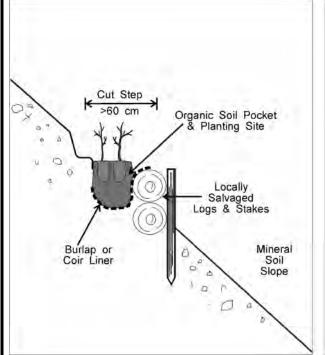
# **CRITERIA FOR IMPLEMENTATION**

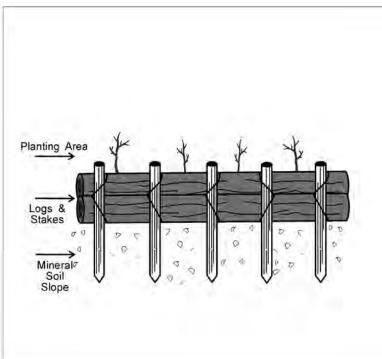
Slash and nonsalvageable timber may be used as rollback for erosion control where available and acceptable to the appropriate authority, as well as at strategic locations along the right-of-way for access control. Specific locations will be determined by Trans Mountain's Environmental Inspector(s) at the time of clearing. Do not use Douglas-fir and spruce for rollback.

#### Notes:

- 1. Retain slash and nonsalvageable timber, where required, for use as rollback.
- 2. Larger diameter slash (e.g., 10 cm in diameter or larger) should be used for rollback intended for riparian area access control, plant micro-sites establishment or as soil erosion control.
- 3. The amount of timber retained for use as rollback will be determined by Trans Mountain's Construction Supervisor(s) in consultation with Trans Mountain's Environmental Inspector(s) and the appropriate authority. Store material for rollback along the edges of the right-of-way.
- 4. Walk down rollback with a dozer on steep slopes, if safe to do so.
- Spread slash and nonsalvageable timber evenly over the right-of-way where access is a concern. Do not walk down rollback.
- 6. Leave gaps in the rollback at obvious wildlife trails.

tera	TRANS MOUNTAIN EXPANSION PROJECT  TRANSMOUNTAIN			
CO		ROLLBACK		
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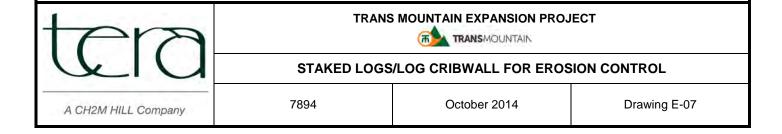


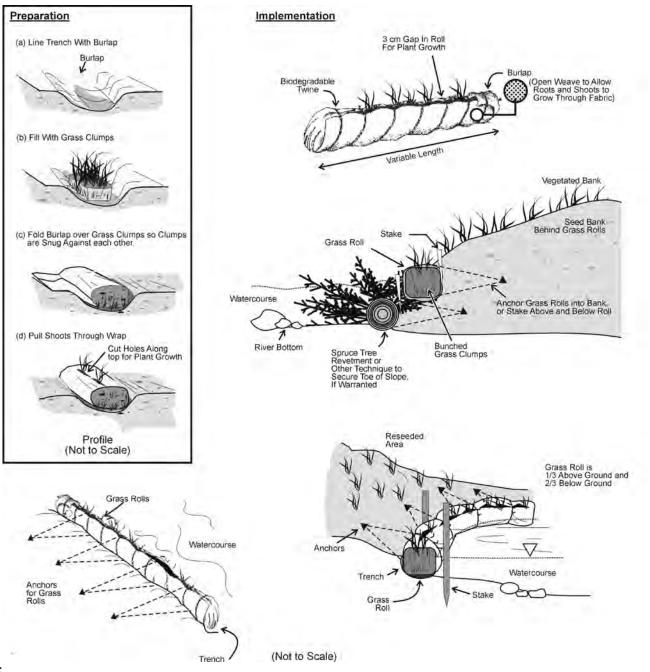


(Not to Scale)

At sites where erosion is a concern and where shrub plantings are required for reclamation, locally salvaged logs may be used to secure slopes and provide planting sites.

- 1. Sites where staked logs are to be installed will be selected by Trans Mountain's Environmental Inspector(s). When possible, sites will be selected prior to clearing and suitable local logs will be salvaged and stockpiled for later use.
- 2. Install staked logs during clean-up or reclamation phase. Where possible, use a backhoe to cut a step into the slope and push in a line of wood stakes. Note: take all necessary safety measures when working in proximity to pipeline.
- 3. With a qualified chainsaw operator, select and cut to fit suitable logs for horizontals. If necessary, the logs may be secured to the stakes using biodegradable rope.
- 4. Create a pocket behind the horizontally staked logs. The pocket can be used to install live shrub stakes and backfilled with topsoil/root zone material.
- 5. Where the planting pocket is required for rooted plugs or salvaged plantings, line the pocket with biodegradable fabric (burlap or coir). Bring the fabric over the top log. Fill the lined pocket with topsoil/root zone material or duff and tamp down. Install plants in pockets as directed by Trans Mountain's Environmental Inspector(s).

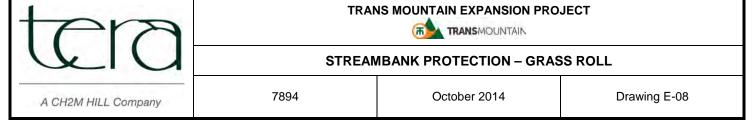


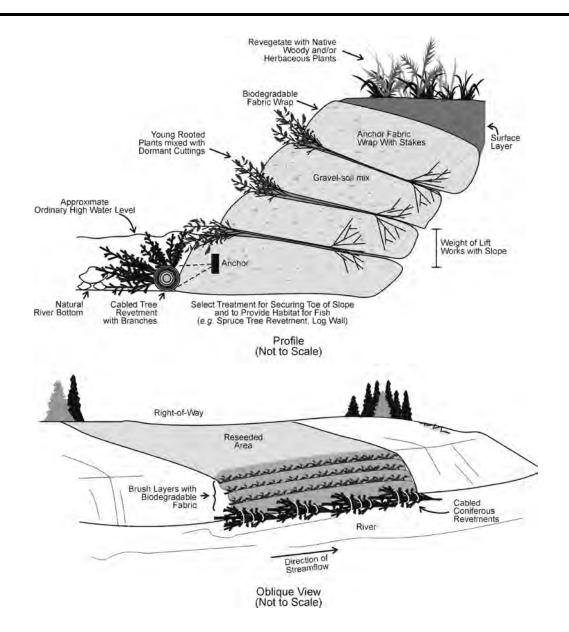


# Notes:

- 1. Proper placement and design is critical and qualified aquatics or reclamation resource specialists should be involved.
- 2. Excavate a shallow trench along the ordinary high level watermark parallel to the toe of the bank and line with burlap.
- 3. Install sod in the middle of the roll and wrap with burlap covers. Tie with twine and cut slits to expose sections of sod.
- 4. Stake or anchor firmly, ensuring up and downstream ends are secured to prevent washing out.

Adapted from CAPP et al. (2005)

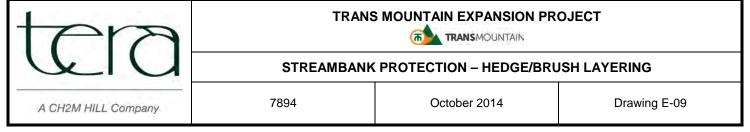


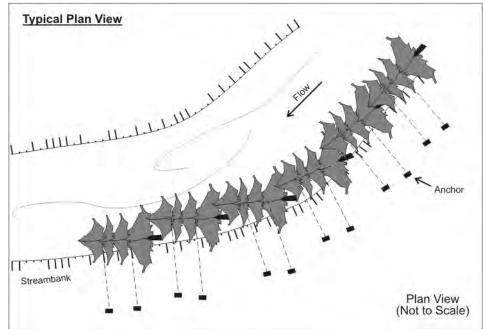


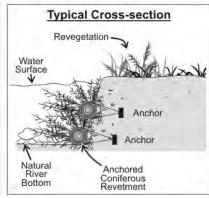
#### Notes:

- Proper placement and design is critical and qualified specialists should be involved.
- 2. Secure the toe of the slope with appropriate technique (coniferous tree revetments, log wall, riprap, etc.).
- 3. Begin layering at the bottom of slope with first hedge/brush layer situated at the approximate ordinary high water level or lower. Select plant species suitable for site conditions.
- 4. To establish banks, install layers of soil filled biodegradable fabric (coir or equivalent) wraps. To make each layer, roll out the fabric parallel with the bank with one-third into the bank and two-thirds out (streamside). Form a step of soil approximately 30-40 cm (1-1.3 feet) high over the bank side fabric. Fold the stream side fabric over the soil step and firm into place.
- 5. Arrange locally salvaged live shrubs with roots (alder, rose ssp., etc.) with live stake material (willow, poplar, red osier dogwood) over the fabric wrap at 20 stems per metre, incorporate topsoil and firm into place.
- 6. Continue building layers of fabric soil wraps and live shrubs until original bank height is reached.
- 7. Use only dormant live shrub material. Keep transplants moist and install as soon as feasible following salvage. A mixture of plant species can mimic adjacent undisturbed vegetation.

Adapted from CAPP et al. (2005)



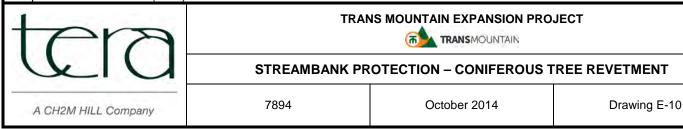


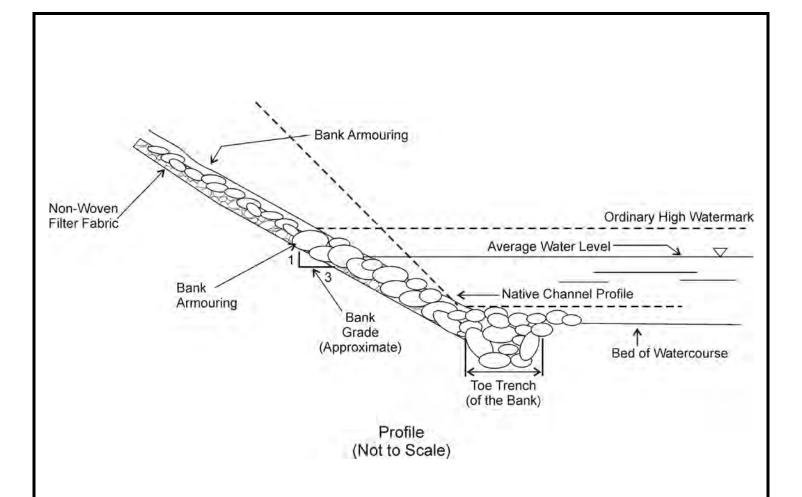


#### Notes:

- 1. Proper placement and design is critical and qualified specialists should be involved.
- 2. Select only good, sound, straight coniferous trees with adequate branches and a minimum length of 10 m.
- 3. Do not trim any branches and handle with care. Leave root ball intact if possible and transport the trees to the site with a minimum of handling to reduce damage to the branches. To the extent practical, remove soil material from the rootball before placing the tree instream. Place the trees lengthwise along or across the eroding bank to be protected beginning at the downstream end with the tips of the trees pointed in the downstream direction.
- 4. Begin assembly of the tree revetment at the downstream end and place tie back cable on the tree butt (largest end). Attach the cable to a suitable deadman or large armour rock with a drilled hole. Bury the anchor securely in the adjacent bank.
- 5. Place the butt of the next tree one-half the length of the previous tree or less upstream along the bank, so there is an overlap of the trees. If possible, cable the trees together in addition to cabling to an anchor buried in the bank.
- 6. Rock armour may be added along the toe of the slope, beneath the trees to reinforce the level of protection provided.
- 7. Maintenance, consisting of replacing severely damaged trees, will extend the life span.
- 8. Coniferous tree revetments also may be used as instream cover.

Adapted from CAPP et al. (2005)

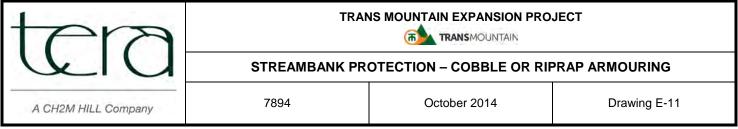




#### Notes:

- 1. Proper placement and design is critical and qualified specialists (i.e., hydrotechnical engineers) should be involved.
- 2. Remove all stumps, organic matter and work material, and grade/prepare banks to a maximum slope as directed by a geotechnical engineer (≥ 45°).
- 3. Construct toe trench to key in bottom of armour protection into the bed and bank of the watercourse bank or adopt thickened toe option.
- 4. Install non-woven filter fabric or gravel filter layer at the ordinary high water level and above where cobble or riprap bank armouring will be implemented.
- 5. Place cleaned cobble or riprap on slope to be protected such that a well-interlocked, smooth layer is produced.
- 6. Key in up and downstream ends of the armoured bank in a manner such that it will not be outflanked.
- 7. Cobble/riprap should extend 0.5 m (min) above design flood level. If design flood level is above the top of the bank, cobble/riprap should be placed to the top of the bank.
- 8. Cobble/riprap should be flush with bank adjacent to the right-of-way.
- 9. Cobble/riprap placement should not compromise bed elevation.

Adapted from CAPP et al. (2005).



#### CRITERIA FOR IMPLEMENTATION:

Management of weeds and non-native plant species is of paramount concern to Trans Mountain. The goal of non-native species management for the Trans Mountain Expansion Project is to prevent the introduction and spread of non-native plants to control them, to the extent feasible, along the existing TMPL system. Accurate records of weed infestations, control measures undertaken and the success of control measures will be maintained so that weed management and control plans can be modified as necessary to ensure an effective program of ongoing weed monitoring and control.

Following are measures to be implemented during the reclamation and post construction monitoring of the Trans Mountain Expansion Project.

- 1. All reclamation equipment shall arrive for project work in a clean condition to minimize the risk of weed introduction. Any equipment which arrives in a dirty condition will not be allowed to work until it has been cleaned off at a suitable location.
- 2. Equipment passing through areas identified as having a weed problem will be cleaned prior to continuing work on the right-of-way.
- 3. Equipment clean-off stations will be established by the main pipeline contractor under the direction of the Trans Mountain's Environmental Inspector(s). The preferred method of clean-off will be pressurized water, weather permitting.
- 4. Weed growth will be specifically monitored by personnel trained in weed identification walking the right-of-way and recording the density and species of all weeds observed. Weed monitoring will be conducted by teams in a timely manner so that weed control plans can be developed.
- 5. Monitoring will be conducted prior to, during and as per PCEM requirements.
- 6. Frequency of monitoring may be increased where: high potential for weeds of management concern was identified prior to, during or following construction. Weeds will generally be monitored in the spring when weed seedlings can be identified and subsequently controlled, if warranted. Additional weed monitoring in the late summer prior to setting seed will be conducted where high weed concerns exist or where spring surveys identify the need for follow-up.
- 7. Areas of poor plant cover will be reseeded and weed control measures applied as required.
- 8. The equipment cleaning station will be assessed in fall, late spring and mid-summer for at least three growing seasons following construction. Subsequent monitoring will be at least once per season, depending on weed issues identified during previous years. Weed species of concern that are identified at the sites will be treated. Manual removal of plants or chemical treatment will occur. If weeds are manually removed when in flower, the weed material will be disposed of in an approved land-fill facility.

tera	TRANS MOUNTAIN EXPANSION PROJECT  TRANSMOUNTAIN		
CIU		WEED CONTROL	
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#### **CRITERIA FOR IMPLEMENTATION**

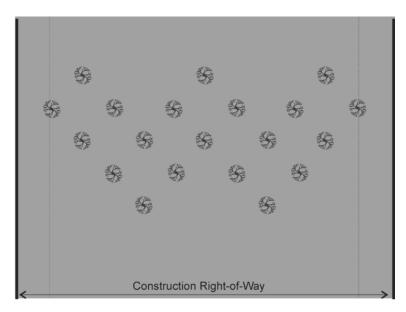
Live plant material salvage will generally be used for one of two reasons:

- salvage of shrubs with rootball; and
- salvage and transplant of rare plants.

All collection, salvage and transportation of live plant material will be conducted following approval by the appropriate regulatory authority.







Plan View (Not to Scale)

Representation Only

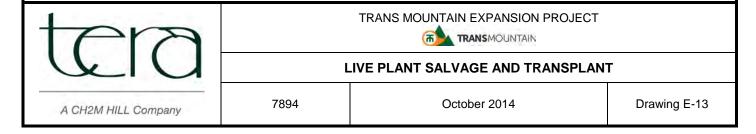
#### SALVAGE OF SHRUBS WITH ROOTBALL

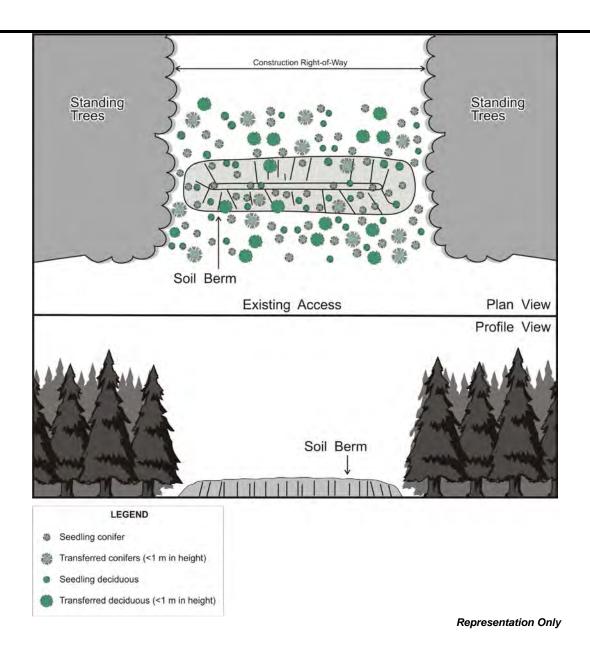
Shrubs for salvage will be selected by a qualified botanist/biologist and flagged prior to construction activities in that area.

- 1. To the extent possible, shrub salvage will be conducted during dormancy (senescence to bud break).
- 2. Shrub salvage will be timed to minimize period between salvage and restoration planting.
- 3. Prior to salvage, prune back shrub top growth as instructed by a qualified botanist/biologist. Salvage shrubs using a backhoe. Remove as large a rootball as feasible.
- 4. Cover the rootball of the salvaged plants with burlap or geotextile. Keep the covered rootball slightly moist (but not saturated) until the plants are replanted.

#### **RARE PLANTS**

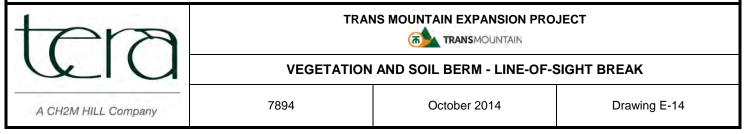
- 1. Rare plants located along the construction right-of-way that require transplanting will be identified by a qualified botanist/biologist and will be flagged prior to clearing.
- 2. A qualified botanist/biologist will select a suitable receiving site for the plant(s). Ideally, the receiving site should be adjacent to the construction right-of-way, in an area having a similar microsite to where the rare plant(s) had been growing.
- 3. Delay salvaging activities until immediately prior to construction. Cut back or prune plants to be salvaged as recommended by Trans Mountain's Environmental Inspector(s) in consultation with a qualified botanist/biologist. Salvage designated plants using a shovel or backhoe. Remove as large a rootball as feasible. Cover the rootball of the salvaged plants with burlap or geotextile. Keep the covered rootball slightly moist (but not saturated) until the plants are replanted.
- 4. Replant the salvaged plant(s) in the receiving site as soon as feasible following salvage.

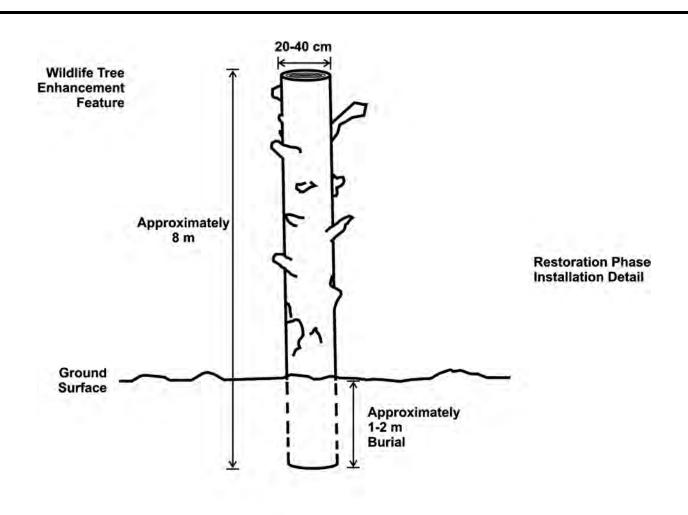




Notes:

- 1. Use subsoil to construct berm.
- 2. Locate berm across the entire width of the construction right-of-way.
- 3. Cover constructed berm with topsoil/root zone material.
- 4. Do not locate berm in drainages or depressions.
- 5. Ensure soil berm is of sufficient height to restrict line of sight down the construction right-of-way from existing access.
- 6. Plantings adjacent the berm on each side will be established no less than the width of the berm.
- 7. Plant suitable early and late seral plants together, adjacent, on the sides and top of the berm.
- 8. Transfer dormant, woody plant s <1 m in height from adjacent vegetated areas onto sides and adjacent areas of the berm.
- 9. Transfer dormant, woody plants at a density of 0.35 plant / m<sup>2</sup>.
- 10. Plant seedling woody plants at a density of 1 plant / m<sup>2</sup>.





#### Not to Scale

#### Notes:

- 1. Salvage and store sound deciduous or coniferous tree trunks at the edge of the cleared right-of-way for use as wildlife tree enhancement features.
- 2. Tree trunks should be delimbed, but can have 10-30 cm long branch remnants protruding from the trunk.
- 3. Approximate tree size: 20-40 cm diameter and 8 m long.
- 4. During restoration phase, the trunk will be "planted" to a depth of approximately 1-2 m in temporary workspace to serve as an artificial snag (wildlife tree).
- 5. Location of enhancement feature to be determined by Environmental Inspector.



# 10.0 REFERENCES

Trans Mountain Expansion Project

### 10.1 Literature Cited

- Alberta Sustainable Resource Development. 2012. Bull Trout Conservation Management Plan, 2012 2017. Alberta Sustainable Resource Development, Alberta Species at Risk Recovery Plan No. 8. Edmonton, AB. 90 pp.
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# **APPENDIX A PHOTOPLATES**



Plate 1 Hard consolidated bedrock occurs at or near the surface along much of the proposed right-of-way.



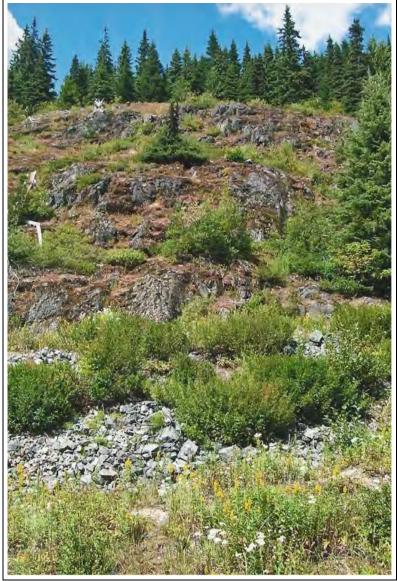
Plate 2 Shattered consolidated bedrock occurs along much of the right-of-way in the Coquihalla Summit Recreational area.



Plate 3 Dominating mountain in Coquihalla Summit Recreational area.



Plate 4 Steeply sloping terrain in most of the Coquihalla Summit Recreational area.



Lots of hard consolidated bedrock along the proposed right-of-way. Plate 5



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**Trans Mountain Expansion Project SUMMARY REPORT: BC Parks Public Comment Period** 

November 12, 2014

#### 1. BACKGROUND

The information in this report was gathered during the public open comment period from August 25 to October 12, 2014. Comments were gathered from three sources.

- 1. Online comment form on transmountain.com website
- 2. Email and phone submissions to the Trans Mountain information desk
- 3. Online comment form on BC Parks website (linked from transmountain.com)

Visitors to the transmountain.com website were encouraged to view documents and complete the comment form on that website. A link to the BC Parks hosted comment form was provided for those who wanted to provide comments directly to BC Parks. Comments submitted to BC Parks were subsequently shared with Trans Mountain as per the privacy agreement signed by the respondent.

Source	Comment Submissions
www.transmountain.com comment form	361
Emails and phone calls	4
BC Parks online comment form	606
Total Comments Submitted	1071

The data gathered from each different source is captured separately in the following sections of this report.

#### 2. COMMENT SOURCE: TRANS MOUNTAIN WEBSITE

#### 2.1 Website Statistics – www.transmountain.com

The majority of webpage visitors went directly to the Trans Mountain survey, or followed the link to the BC Parks Survey, without reading any application content. There were nine openings of



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application documents out of 3,222 page visits. The average time on webpage includes time required to complete the survey.

Website Statistics	Activity Aug 25 – Oct 12, 2014
Visits to BC Parks webpage on	3,222
www.transmountain.com	
Average time on page	6:52 min
Click-throughs to survey on	695
www.transmountain.com	361 Survey completions (52%)
Click-throughs to survey on BC Parks	498
website	
Document opening / download	
Application Introduction	5
North Thompson River	0
Lac du Bois	0
Bridal Veil Falls	2
Maps	0
• EPP	2

# 2.2 Parks of Interest

Respondents who used the Trans Mountain comment form were asked to indicate which park location they were commenting on. Respondents were able to indicate more than one park.

Park	Frequency
All Parks	310
Lac du Bois Protected Area	21
North Thompson River Provincial Park	20
Finn Creek Provincial Park	16
Bridal Veil Falls Provincial Park	10
No park identified	1

# 2.3 Topics of Interest

Respondents were given the option of indicating one or more specific topics of concern.

Email: info@transmountain.com | Phone: 1.866.514.6700 | Website: www.transmountain.com

Topic	Frequency
Environment / Conservation	321
Public Consultation	142
Recreation Activity	135
Aboriginal Engagement	60
Tenure Use	46
Other	42

# 2.4 Comment Evaluation

An evaluation completed by Trans Mountain to identify general themes and specific concerns (park location or topic) and within each comment.

# **General Comments**

Topic	Frequency and Specific Concern
Opposition to Park Disturbance	322
Opposition to Kinder Morgan or Trans	23
Mountain Expansion Project	
Opposition to Oil and Gas Activity	15

# Specific Comments

Park Location	Specific Concern
Finn Creek Provincial Park	Disturbance of park hydrology
	<ul> <li>Introduction of invasive weeds</li> </ul>
	<ul> <li>Destroying natural plant communities</li> </ul>
	<ul> <li>Loss of salmon spawning habitat</li> </ul>
North Thompson River Provincial	Disturbance of park hydrology
Park	<ul> <li>Introduction of invasive weeds</li> </ul>
	<ul> <li>Destroying natural plant communities</li> </ul>
	Oil spills into watercourse
	Disturbance to wildlife habitat
Lac du Bois Protected Area	Disturbance to the endangered
	ecosystems

Email: info@transmountain.com | Phone: 1.866.514.6700 | Website: www.transmountain.com

	<ul> <li>Introduction of non-native plant species and invasive weeds</li> <li>Disturbance to the habitat of threatened wildlife such as the Sharp-tailed Grouse</li> <li>Disruption to the area sending pollution to the watercourses on the grasslands</li> <li>Displacement of indigenous plant species</li> <li>Restoration of grasslands</li> </ul>
Bridal Veil Falls Provincial Park	Interruption to recreation use -     paragliding launch and landing area.
Not Indicated / All Parks	<ul> <li>Disturbance of fauna and flora</li> <li>Disturbance of park hydrology</li> <li>Introduction of invasive weeds</li> <li>Violation of Aboriginal treaty rights</li> <li>Regeneration of native plant species</li> <li>Destroy ecological integrity</li> <li>Aboriginal archeological sites and artefacts in the areas</li> <li>Disruption to wildlife habitat</li> <li>Linear Corridor disrupting natural wildlife habitat and integrity of vegetation</li> <li>Wetland habitat destruction</li> </ul>

# 2.5 Geographic Representation

An assessment of the location of each respondent demonstrates strong representation from outside directly impacted areas. Although all provincial parks are used by BC residents and tourists, those living closest to each park are potentially the highest users and therefore could be the most directly impacted.

Community or Region	Frequency	%
Mainland Coastal	109	31%
Island Coastal	62	18%

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Lower Mainland /Fraser Valley	60	17%
Interior BC	48	14%
Province of BC	31	9%
*Park Communities - Blue River, Avola, Clearwater, Kamloops, Chilliwack	16	5%
Unknown	16	5%
Canada	14	4%
International / USA	9	3%

<sup>\*</sup>Community closest to each park location within the Stage 2 Application

### 3. COMMENT SOURCE: INFORMATION DESK

Four comments were submitted to the Trans Mountain information desk by email. Three expressed general concern about park disturbance and pipeline development.

One email was sent by the president of the Tranquille Cattleman's Association who is also a grazing rights holder in Lac du Bois. This stakeholder would also become an impacted landowner should the Lac du Bois route be approved. The email was in support of the consultation and application processes and expressed confidence in Trans Mountain's reclamation capacity.

#### 4. COMMENT SOURCE: BC PARKS WEBSITE

The BC Parks website provided Respondents with different comment options than the transmountain.com website. Except where indicated, comments have been reviewed and categorized by the Trans Mountain team.

# 4.1 Topics of Interest and Comment Evaluation



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Comments submitted to the BC Parks website were evaluated by Trans Mountain and were categorized as to topic of interest based on the categories provided to respondents on the transmountain.com website.

### **General Comments**

Topic	Total
Opposition to Park Disturbance	587
Opposition to Kinder Morgan or Trans Mountain Expansion Project	50
Opposition to Oil and Gas Activity	31
Aboriginal Engagement	3

# Specific Comments

Park	Identified Concern
Finn Creek Provincial Park	Disturbance of riparian habitat
	Disturbance of salmon spawning
North Thompson River	Disturbance of salmon spawning
Provincial Park	Disturbance to wildlife habitat
Lac du Bois Protected Area	Interruption of recreational use
	<ul> <li>Disturbance and recovery of grasslands</li> </ul>
Bridal Veil Falls Provincial	Disturbance of park ecology
Park	<ul> <li>Interruption of recreational trail use</li> </ul>
	<ul> <li>Disturbance of wildlife habitat</li> </ul>
	Disturbance to bird migration
Not Indicated / All Parks	Polluted waterways
	<ul> <li>Destruction of wildlife habitat</li> </ul>
	<ul> <li>Disturbance of endangered ecosystems</li> </ul>
	Tourism economy
	<ul> <li>Interrupted educational opportunities</li> </ul>
	Disturbance of salmon and trout habitat
	<ul> <li>First Nations harvesting for food and</li> </ul>
	medicine

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Disturbance of Mountain Caribou habitat
Linear corridor
<ul> <li>Ecosystem fragmentation</li> </ul>
<ul> <li>Health issues as a result of a spill</li> </ul>
<ul> <li>Violation of First Nations treaties</li> </ul>
<ul> <li>Disturbance to wetland habitat</li> </ul>
<ul> <li>Disrupt integrity of vegetation</li> </ul>
Remediation - environmental damage

# 4.2 Geographic Representation

Respondents who completed the BC Parks comment form were asked to indicate their place of residence. The majority of respondents were from outside the immediate park regions.

Location	Total	%
Mainland Coastal	167	27%
Island Coastal	133	21%
Province of BC	117	19%
Lower Mainland / Fraser Valley	80	13%
Unknown	37	6%
Canada	27	4%
*Park Communities- Blue River, Avola,	23	3%
Clearwater, Kamloops, Chilliwack		
USA / International	13	2%
BC Interior – all regions	9	1%

<sup>\*</sup>Community closest to each park location within the Stage 2 Application

### 4.3 Petitions Submitted to BC Parks

Three petitions were submitted to BC Parks by environmental interest groups. Signatures were gathered through online feedback forms on each organization's website.

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#### **Forest Ethics**

The Forest Ethics petition did not contain standard statements; individuals who signed the Forest Ethics petition submitted their own comments. The general sentiment of the comments expressed opposition to park disturbance and TMEP.

#### Sierra Club

The Sierra Club petition states:

"I object to Kinder Morgan's plan to change the boundaries of Finn Creek Park, North Thompson River Park, Lac Du Bois Grasslands Protected Area and Bridal Veil Falls Park. It took more than one hundred years to build our world-renowned parks system into what it is today. Now, with Kinder Morgan's plans to run a pipeline through these parks and other industrial interests queuing up to change park boundaries, our parks system threatens to be slowly diminished and dismantled to serve the short-term profit of corporations. Please do not allow these park boundaries to be changed.

#### Sum of US

The Sum of Us petition states:

"Our provincial parks are legally held in trust for the inspiration, use and enjoyment of the public. In addition to protecting some of Canada's most pristine wilderness areas and giving sanctuary to wildlife, our parks attract thousands of visitors every year and area a beloved place to British Columbians – and many others from across the country and around the world, -- to visit and play.

I am calling on the BC government to reject Kinder Morgan's request to modify the boundaries of Finn Creek Park, North Thompson River Park, Lac Du Bois Grasslands Protected Area, and Bridal Veil Falls Park. Aside from the very real risk of a potential oil spill – which would cause immense and irreparable damage – the pipeline construction alone would be enough to risk wildlife, hurt the local tourism economy and impact local ecosystems. Our parks belong to the public, and they should not be put at risk."

Organization	Signatures	
Forest Ethics	7,277	
Sierra Club	1,980	
Sum of Us	16, 092	
Total Signatures Submitted	25,349	



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### **APPENDIX C**

### LETTERS/INVITATIONS TO STAKEHOLDERS

- Sandy Hill, June 10, 2014
- Proposed Pipeline Corridor Refinement at Grass IR, July 25, 2014
- Proposed Pipeline Corridor Refinement at Grass IR, map
- Proposed Pipeline Corridor Refinement at Ohamil IR, July 25, 2014
- Proposed Pipeline Corridor Refinement at Ohamil IR, map
- Proposed Pipeline Corridor Refinement at Matsqui IR, August 21, 2014
- Proposed Pipeline Corridor Refinement at Matsqui IR, map
- City of Burnaby, August 22, 2014
- Westridge and Burnaby Mountain neighbourhoods, January 6, 2015
- Kamloops Naturalist Club, July 11, 2014
- Simon Fraser University, September 22, 2014
- Member of the Legislative Assembly (Chilliwack-Hope), October 22, 2014
- City of Chilliwack, November 12, 2015
- Grasslands Conservation Council, November 14, 2014
- Port Metro Vancouver (PMV), January 5, 2015
- City of Coquitlam, January 19, 2015



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June 10, 2014

# Dear Neighbour,

You are receiving this letter as a neighbour of the existing Trans Mountain pipeline that has been providing petroleum products to west coast markets for over 60 years. You may be aware that Trans Mountain has applied to its regulator, the National Energy Board (NEB), to twin its existing pipeline. If the proposal is approved, construction would occur no earlier than 2016.

Trans Mountain has been engaged in conversation with the City of Abbotsford and its residents since the proposed expansion project was announced in May 2012 through meetings, Open Houses, workshops, presentations to service organizations and online dialogue. The City recently requested Trans Mountain provide a specific opportunity for the Sandy Hill neighbourhood to learn more about the Trans Mountain Expansion Project and have the opportunity to ask questions and provide input to our plans.

We invite you to learn more about our plans at a special drop in event for neighbours in Sandy Hill. Details are as follows:

DATE: June 26, 2014

**LOCATION:** Abbotsford Recreation Centre (ARC)

2499 McMillan Road, Abbotsford

TIME: Drop in anytime between 5:00pm and 8:00pm

Should the project be approved, understanding how construction activities may impact your neighbourhood is important to us. We look forward to your input into how we can complete construction activities with minimal disruption to you and your neighbours.

Although there have been and will continue to be a number of opportunities to learn more about and provide input into the proposed project, this event will be focused on your local neighbourhood. In order to aid us in ensuring that the discussion stays focused on neighbourhood interests, please bring this letter with you to the event. To assist us in our planning and ensure timely access to project team and materials, please RSVP to info@transmountain.com and let us know you will be attending.





If you are unable to attend in person, we can be reached by phone at 1-866-514-6700 or email to info@transmountain.com and would be pleased to speak with you. Additional information about our plans can be found at www.transmountain.com.

We look forward to seeing you on June 26th.

Regards,

Lizette Parsons Bell

L. M. Parsons Rell

Lead, Stakeholder Engagement and Communications;

Trans Mountain Expansion Project





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July 25, 2014

Sharon Gaetz, Mayor City of Chilliwack 8550 Young Road Chilliwack, BC V2P 8A4

Dear Mayor Gaetz,

### Re: Trans Mountain Expansion Project – Proposed Pipeline Corridor Refinement at Grass IR

On December 16, 2013, Trans Mountain Pipeline L.P. (Trans Mountain) filed its Facilities Application with the National Energy Board (NEB) for a proposed expansion of the Trans Mountain Pipeline System. In the Application, Trans Mountain identified a proposed pipeline corridor and in some cases proposed alternative pipeline corridors. Following the December filing, Trans Mountain continued its work to optimize the route and reduce impacts to people and the environment through a combination of technical and environmental studies, engagement activities with stakeholders, landowners and Aboriginal groups, and on-the-ground fieldwork. Trans Mountain's engagement is ongoing.

This is to notify you of some recent revisions that may be of interest to you. In the coming weeks Trans Mountain will be filing this information with the NEB.

Trans Mountain will be adjusting its corridor in the area of the Grass Indian Reserve No. 15. where the previously proposed pipeline corridor that crossed the Reserve between RK 1091 and RK 1091.5 will now become the alternative pipeline corridor. In addition, the proposed revised pipeline corridor will now avoid the Reserve by following its east and south boundaries. This decision has been made because of the inability to reach an agreement on the proposed routing on Reserve lands with the Ts'elxweyegw Tribe Limited Partnership. Please see the attached map that illustrates the proposed pipeline corridor refinement in this area.

The final route of the pipeline will not be determined until after the NEB issues a Certificate of Public Convenience and Necessity for the Project, and provides authorization under Section 34 of the NEB Act for the Project's detailed route.





Should you have questions about this pipeline refinement, please contact Lexa Hobenshield at 604.809.9869 or <a href="mailto:lexa">lexa</a> hobenshield@kindermorgan.com</a>. More information about the proposed project is available at <a href="https://www.transmountain.com">www.transmountain.com</a>.

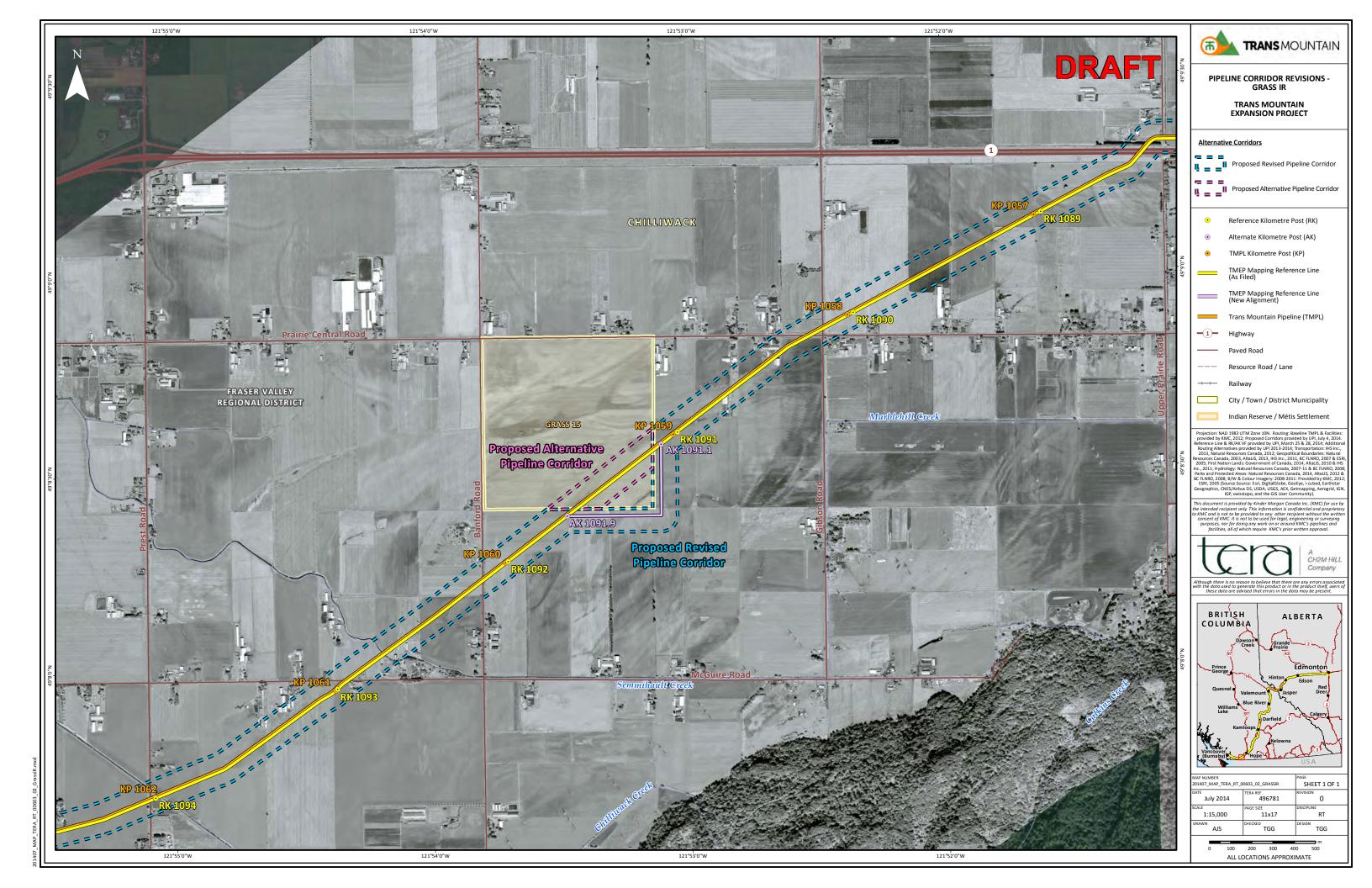
# Sincerely,

Greg Toth Senior Project Director

# Attachment

.cc David Blain, City of Chilliwack







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July 25, 2014

Sharon Gaetz, Chair Fraser Valley Regional District 45950 Cheam Avenue Chilliwack, BC V2P 1N6

Dear Chair Gaetz,

### Re: Trans Mountain Expansion Project – Proposed Pipeline Corridor Refinement at **Ohamil and Grass IR**

On December 16, 2013, Trans Mountain Pipeline L.P. (Trans Mountain) filed its Facilities Application with the National Energy Board (NEB) for a proposed expansion of the Trans Mountain Pipeline System. In the Application, Trans Mountain identified a proposed pipeline corridor and in some cases proposed alternative pipeline corridors. Following the December filing, Trans Mountain continued its work to optimize the route and reduce impacts to people and the environment through a combination of technical and environmental studies, engagement activities with stakeholders, landowners and Aboriginal groups, and on-the-ground fieldwork. Trans Mountain's engagement is ongoing.

This is to notify you of some recent revisions that may be of interest to you. In the coming weeks Trans Mountain will be filing this information with the NEB.

Trans Mountain will be adjusting its corridor in the area of the Ohamil Indian Reserve No. 1, where the previously proposed pipeline corridor that crossed the Reserve between RK 1057.5 and RK 1059.0 will now become the alternative pipeline corridor. In addition, the proposed revised pipeline corridor will now avoid the Reserve and will be located within the easement associated with the Trans-Canada Highway. This decision is the result of an inability to reach an agreement on the proposed routing on Reserve lands with the Shw'ow'hamel First Nation. Please see the attached map that illustrates the proposed pipeline corridor refinement in this area.

Trans Mountain will also be adjusting its corridor in the area of the Grass Indian Reserve No. 15, where the previously proposed pipeline corridor that crossed the Reserve between RK 1091 and RK 1091.5 will now become the alternative pipeline corridor. In addition, the proposed revised





pipeline corridor will now avoid the Reserve by following its east and south boundaries. This decision has been made because of the inability to reach an agreement on the proposed routing on Reserve lands with the Ts'elxweyeqw Tribe Limited Partnership. Please see the attached map that illustrates the proposed pipeline corridor refinement in this area.

The final route of the pipeline will not be determined until after the NEB issues a Certificate of Public Convenience and Necessity for the Project, and provides authorization under Section 34 of the NEB Act for the Project's detailed route.

Should you have questions about this pipeline refinement, please contact Lexa Hobenshield at 604.809.9869 or <a href="mailto:lexa">lexa</a> hobenshield@kindermorgan.com</a>. More information about the proposed project is available at <a href="https://www.transmountain.com">www.transmountain.com</a>.

Sincerely,

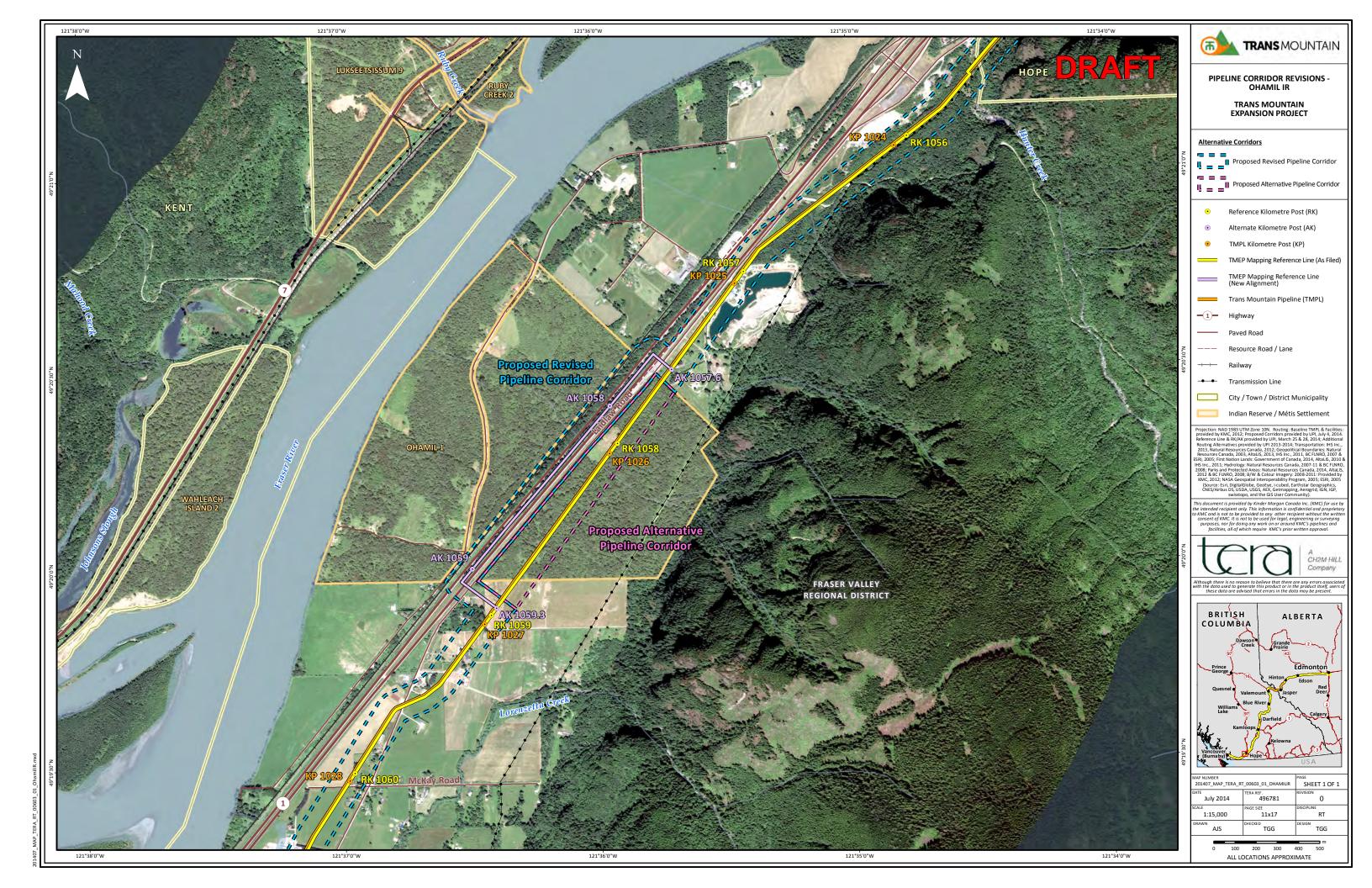
Greg Toth

Senior Project Director

Attachment

.cc Paul Gipps, Fraser Valley Regional District







August 21, 2014

Sharon Gaetz, Chair Fraser Valley Regional District 45950 Cheam Avenue Chilliwack, BC V2P 1N6

Dear Chair Gaetz,

# Re. Trans Mountain Expansion Project – Proposed Pipeline Corridor Refinement

On December 16, 2013, Trans Mountain Pipeline L.P. (Trans Mountain) filed its Facilities Application with the National Energy Board (NEB) for a proposed expansion of the Trans Mountain Pipeline System. In the Application, Trans Mountain identified a proposed pipeline corridor and in some cases proposed alternative pipeline corridors. Following that December filing, Trans Mountain continued its work to optimize the route and reduce impacts to people and the environment through a combination of technical and environmental studies, engagement activities with stakeholders, landowners and Aboriginal groups, and on-the-ground fieldwork. Trans Mountain's engagement is ongoing.

This is to notify you of some recent pipeline corridor revisions that may be of interest to you. In the coming weeks Trans Mountain will be filing this information with the NEB.

During ongoing engagement with the Matsqui First Nation regarding the proposed Project, Trans Mountain has agreed to consider an alternative pipeline corridor that traverses the southwest corner of the Matsqui Main No. 2 Indian Reserve (IR) for approximately 160 m. The Matsqui First Nation has requested the details of Project engagement remain confidential. The alternative pipeline corridor would be located between RK 1129.0 and RK 1129.8 as illustrated on the attached map. Trans Mountain continues to engage with the Matsqui First Nation, landowners, as well as other interested stakeholders regarding the selection of the pipeline corridor in the vicinity of the Matsqui Main No. 2 IR.

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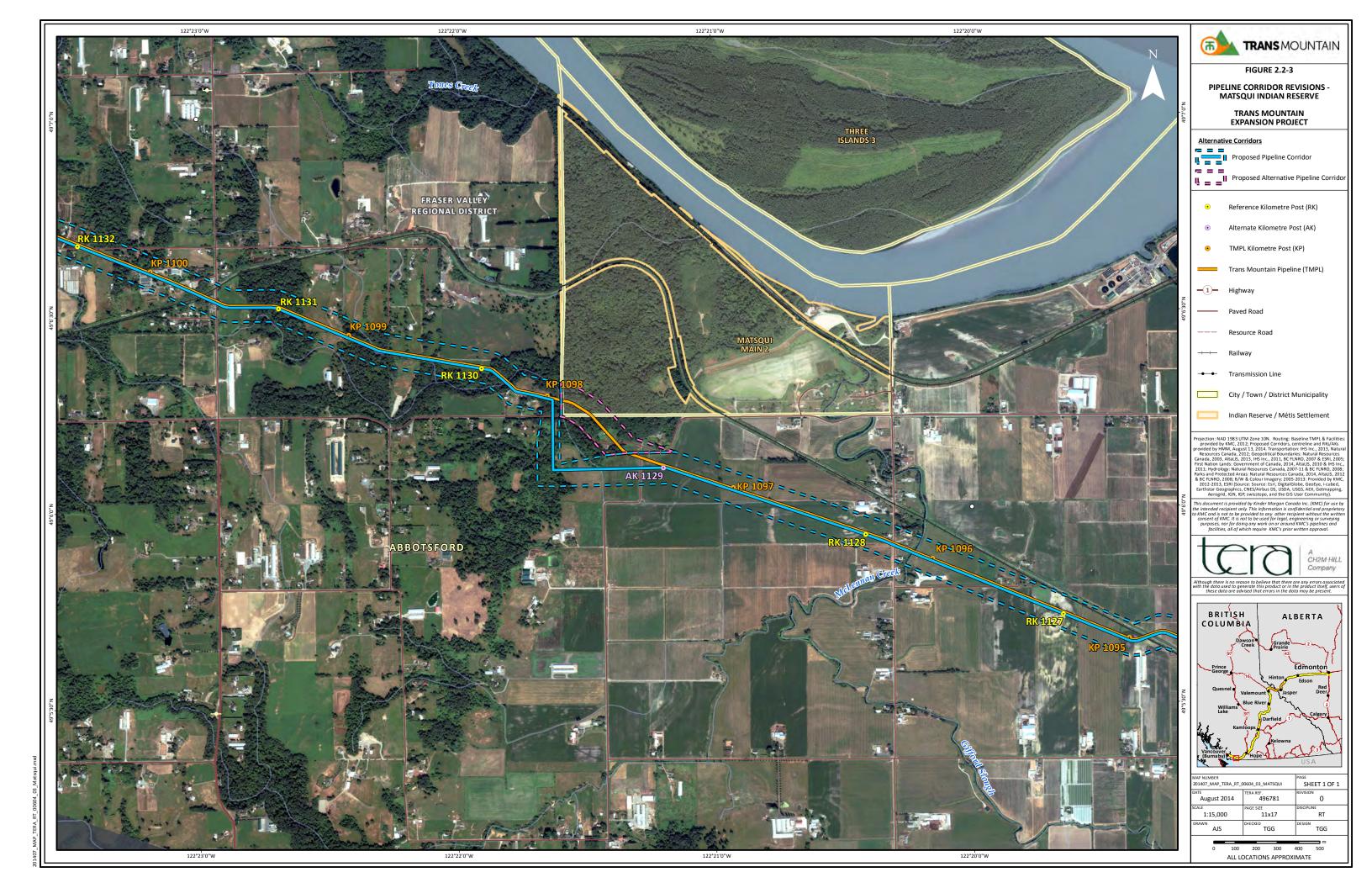
Should you have questions about this pipeline refinement, please contact Lexa Hobenshield at 604.809.9869 or lexa hobenshield@kindermorgan.com. More information about the proposed project is available at www.transmountain.com.

# Sincerely,

Greg Toth Senior Project Director

Attachment

.cc Paul Gipps, CAO





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22 August 2014

Dipak Dattani Lou Pelletier City of Burnaby 4949 Canada Way Burnaby, BC V5G 1M2

Dear Mr. Dattani and Mr. Pelletier,

#### RE: Proposed Trans Mountain Expansion Project - Technical Update #2 Filing to National Energy **Board**

As part of our commitment to continuing to work with the City of Burnaby on the proposed Trans Mountain Expansion Project, attached is information outlining sections of our August 22, 2014 Technical Update #2 Filing to the National Energy Board as they relate to Burnaby.

This Update provides additional information about the Project, with a focus on routing, risk assessment, and engineering design. Routing details on the Westridge Delivery Line will be filed in late 2014 and are not included in this update. We will continue to keep you informed.

#### **Additional Information**

The entire August 22, 2014 filing can be viewed on the National Energy Board's website at www.nebone.gc.ca and will be available on the Trans Mountain website shortly.

Additional information about the proposed Trans Mountain Expansion Project is available on our website (www.transmountain.com).





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If you have any questions or would like to set a meeting to discuss this filing, please contact me at 604-809-9869 or lexa hobenshield@kindermorgan.com. As previously discussed, should you require clarification on any aspect of this filing or wish to meet to discuss this filing, we would be pleased to do so at your convenience.

Sincerely,

Lexa Hobenshield

Kinder Morgan Canada, External Relations manager Stakeholder Engagement & Communications, Trans Mountain Expansion Project





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# **BACKGROUNDER: AUGUST 22, 2014** Trans Mountain Expansion Project Technical Update #2 **Sections of Interest in Burnaby**

#### Part 2.1 Facilities Update – Burnaby Mountain Terminal

In this filing Trans Mountain provides an update on the conceptual design development for the proposed expansion of Burnaby Terminal. Minor changes include removal of proposed Tank 79 and existing Tank 73, and increasing in the capacity of proposed Tank 74 and 76.

These changes reduce the potential geographic impact in the unlikely event of a fire emergency at the Terminal, moving the area of potential impact further away from the residential neighbourhood to the south and east of the Burnaby Terminal property.

Engineering development activities will continue until early 2015. Prior to detailed engineering design commencing in Spring 2015, further refinements to the Burnaby Terminal conceptual design are expected.

# Part 2.2 Facilities Update – Westridge Marine Terminal

In this filing Trans Mountain provides an update on the conceptual design development for the proposed expansion of Westridge Marine Terminal (WMT).

#### Layout

Trans Mountain has been working to optimize the conceptual layout of WMT to reduce the overall footprint.

A reduction of the footprint of the expansion at WMT has been achieved by shifting Berth 1 loading platform (and the vessel at Berth 1) approximately 50 m to the east, shifting Berth 2 loading platform (and the vessel at Berth 2) approximately 30 m to the east, shifting the central core of the dock complex slightly to the east and canting the main access trestle to be perpendicular to the Berth 1/2 access trestle, and eliminating both the two planned synthetic crude tanks and the relief tank, and reorganizing the remaining infrastructure on the foreshore to be more efficient.

These changes will reduce the visual impact of the proposed WMT expansion to residents of the Westridge neighbourhood and reduces the new foreshore infill area by 45%, subject to completion of geotechnical work.





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Trans Mountain, working with two of the leading international vendors of vapor recovery technology, has made progress on further definition of the scope of the two proposed vapor recovery units. This work means that there is no need for proposed synthetic crude tanks which were to have been used for absorption of the regenerated VOC vapor stream. The proposed vapor recovery systems are anticipated to provide very high capture and recovery efficiencies. The revised design concept and emissions projections have been used in the updated air quality modelling.

# Pipeline Surge

Although Trans Mountain has not yet completed the Burnaby-Westridge delivery pipelines transient hydraulic study ("surge study"), initial analysis indicates that the proposed surge relief tank is no longer required.

Engineering development activities will continue until early 2015. Prior to detailed engineering design commencing in Spring 2015, further refinements to the WMT conceptual design are expected.

#### Part 3.0 Terrestrial and Terminals Air Quality Update

This filing includes an updated air quality assessment based on updated design changes at Burnaby and Westridge Marine Terminals.

As the detailed engineering for the Project evolves, the assumptions used in the technical air quality assessment have been refined. This technical update reflects the improvement to a number of assumptions and provides the summary of the updated modelling parameters, assumptions and dispersion model results.

With this new information, Trans Mountain is able to meet all the applicable Metro Vancouver ambient air quality objectives and odour detection thresholds. Additional modelling is planned in late 2014 to further inform engineering design and support vapor recovery equipment vendor selection.

# Part 4.0 Preliminary Marine Fish Habitat Offset Plan

The Preliminary Marine Habitat Offsetting Plan includes information on preferred offsetting methods, and additional offsets identified during consultation with interest groups. The plan is based on preliminary engineering and Westridge layout and will continue to be developed as detailed design progresses.

The final offsetting strategy will be determined through discussions with DFO, participating Aboriginal communities and other interested parties. Trans Mountain is committed to working with all interested parties to identify the most appropriate means of offsetting impact to marine fish and fish habitat. The offsetting measures presented in the submitted report are intended to form the basis for initiating discussions with various participating groups. 4/6





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Follow-up meetings will be held with specific stakeholders and a second round of Offsetting Workshops will be held in 2015, prior to the submission of the final marine fish habitat offsetting plan. All additional offsetting measures identified during future consultation will be discussed with DFO, Port Metro Vancouver and Transport Canada.

It is anticipated that these discussions may lead to the identification of additional options, or to the refinement of the measures presented in the report. Additional offsets will be examined for feasibility and may be included in future plans.

#### Part 8.0 Data on Recreational Boat Traffic in Burrard Inlet

The proposed Trans Mountain Expansion Project (TMEP), with commensurate future increase in the number of tanker calls into Burrard Inlet to load at an expanded Westridge marine terminal, has raised concerns among recreational boaters about the safety of these small vessels.

A review of marine recreational activities in Burrard Inlet shows that while over 5,250 boats may be at moorage within English Bay and Burrard Inlet, there is a seasonal pattern to the use of these vessels. On average, recreational boats spend considerable time at berth. When travelling on the water, these vessels are observed by Radar and Automatic Identification System (AIS), if fitted, by Canadian Coast Guard (CCG) Marine Communications and Traffic Services (MCTS) and other vessels in the area.

Several recommendations proposed by Trans Mountain are under review by the Termpol Review Committee that will, if accepted, further enhance the safety of all mariners in the central harbour. This includes demarcation of a shipping route between the Second Narrows and Port Moody, giving a wide berth to the expanded Westridge marine terminal. The dock complex itself will have navigation marks and lights, and the oil spill booms around the vessels will be marked in a similar fashion. This will ensure that all marine users are able to identify the area during day or night and keep clear. In addition, Trans Mountain has requested Transport Canada to expand outreach activities at marinas in order to improve the level of information amongst boaters in order to benefit all users of these waterways.

It is concluded that current and already proposed future additional safeguards are sufficient to comprehensively mitigate potential effects of TMEP on marine recreational vessels.

# Part 9.0 Westridge Spill and Clean-up: Effect on Local Property Values

In response to concerns about reduced property values as a result of the proposed Trans Mountain expansion project, Trans Mountain engaged Dr. Tsur Somerville to conduct a review of the effect on local property values from the Westridge Spill and Clean-up.

Dr. Somerville, using data from Landcor, provided an analysis of the impacts from the Westridge spill on property values in the Westridge community, compared to other adjacent communities.





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Study methodology used hedonic (regression) analysis to distinguish the property value impact from the pipeline and spill from other possible influences including time and housing type. His analysis found that while there may have been shirt-term value reductions, there were no permanent negative effects on either property prices or assessed values.

In addition to this filing, a follow-up seminar for area relators is being organized to help inform this group of stakeholders who frequently have questions about this topic.

A follow-up study is being completed addressing potential property value impacts from proximity to the existing Trans Mountain pipeline. These results will be available later in 2014.





January 2, 2015

Dear Neighbour,

For more than two and a half years, we have been talking with and listening to people in our pipeline communities to hear their questions and concerns and address their feedback. We want to continue the conversation.

This letter provides you with some information about next steps and how you can continue to provide us your feedback. Most recently, we hosted a Telephone Town Hall on December 3, 2014 – and we thank those who participated. The feedback we receive makes our Project better. A recap of the town hall can be found on our blog at <a href="https://www.blog.transmountain.com">www.blog.transmountain.com</a> - it is titled Recap: December 3rd Telephone Town Hall.

# **Ongoing Community Engagement**

As set out by the NEB, the next step in the regulatory review process is a round of Information Requests, Motions and Comments. This information exchange will occur in Q1 2015.

In late spring of 2015, we will be back in the community to continue our ongoing dialogue, including sharing information about detailed engineering and seeking input as we continue to develop our plans in anticipation of construction, should the Project be approved.

As we prepare to revisit communities, we have heard from some about the format and topics they are interested in. We would like to hear from you. Please fill out the brief survey (enclosed) to tell us how you would like to continue the conversation. Please respond in this postage paid envelope by Friday January 23, 2015.

# **December 1, 2014 NEB Filing**

On December 1, 2014, we filed an update with the National Energy Board (NEB). This filing includes the *Westridge Delivery Pipelines Routing Update*, which addresses proposed routing for the delivery pipelines between our Burnaby Storage Terminal and Westridge Marine Terminal under Burnaby Mountain.

We looked at routing options between the two terminals – the proposed revised pipeline corridor through Burnaby Mountain by either a Horizontal Directional Drill (HDD) or a tunnel and the proposed revised alternative corridor through Burnaby streets. Given the strong public interest in this Project in the City of Burnaby, we are requesting the NEB examine both the proposed revised pipeline corridor using a tunnel option via Burnaby Mountain as well as the proposed revised alternative corridor through Burnaby streets in its public interest determination. It was determined from geotechnical information that the horizontal directional drill (HDD) construction method is not technically acceptable. However, from information gathered, we are able to confirm the feasibility of a tunnel under Burnaby Mountain. A tunnel option is preferred to avoid residential areas and urban infrastructure, to reduce environmental effects during construction and operation, and to minimize risk during operation.



If the Project is approved with the proposed tunnel option, we would consider relocating the existing Westridge Delivery Pipeline to the tunnel under Burnaby Mountain. Our proposal to relocate the existing pipeline is not part of the Application currently before the NEB and would be part of a separate regulatory application.

We look forward to receiving your response to the survey. In the meantime if you have any questions please do not hesitate to contact us at <a href="mailto:info@transmountain.com">info@transmountain.com</a>, 1.866.514.6700 or visit our website at www.transmountain.com.

Yours truly,

Lizette Parsons Bell

L.M. Parsonspell

Project Lead, Stakeholder Engagement & Communications

Trans Mountain Expansion Project

Kinder Morgan Canada



# Tell Us How You Want to Continue the Conversation

For more than two and a half years, we have been talking with people in our pipeline communities to hear and address their questions, concerns and feedback. We are looking for your feedback about how you want to continue the conversation. We invite you to participate in a brief survey. You can go online to <a href="https://www.transmountain.com/burnaby-survey">www.transmountain.com/burnaby-survey</a> or respond below and return to us in the pre-paid enclosed envelope.

1. Which of these would be of most interest to you (check all that apply)?
Telephone Town Hall
Online feedback forum
Panel discussion (in person and live broadcast)
Roundtable discussions
Community Open House
Speaker Series with Q&A
Radio Call-in Shows
TV Talk Shows
Webinar with Q&A
Workshops
One-on-One Meetings
Other – Please specify:
2. What topics are of most interest to you (check all that apply)?
Climate Change
Construction
Consultation
Economic Benefits
Environmental Remediation

Health Considerations
Jobs and Employment
Marine Traffic
NEB Process
Nuisance Issues
Parks and Protected Areas
Property Values
Routing
Safety and Emergency Preparedness
Water Quality/Quantity
Other – Please specify:
3. Please tell us which area you live in so we can customize opportunities to each area.
Burnaby Mountain Westridge neighbourhood Other  4. Would you like to receive mail by post or email with updates and information? You can withdraw your consent at any time.  By entering my personal information, I consent to receive mail by post or via email from the survey author's organization based on the information collected.  Mail Email  First Name  Street Address  Postal Code
Burnaby Mountain Westridge neighbourhood Other  4. Would you like to receive mail by post or email with updates and information? You can withdraw your consent at any time.  By entering my personal information, I consent to receive mail by post or via email from the survey author's organization based on the information collected.  Mail Email  First Name  Last Name  Street Address

Thank you for your feedback. We appreciate your time and input.

If you have any questions, we can be reached at <a href="mailto:info@transmountain.com">info@transmountain.com</a> or 1-866-514-6700. You can also follow us on Twitter @TransMtn.



# Trans Mountain Pipeline ULC Trans Mountain Expansion Project NEB Hearing Order OH-001-2014 Responses to Information Request from Kamloops Naturalist Club

Kamloops Naturalist Club Preliminary (P) IR No. 1

# 1.0 General

#### Reference:

Letter from the Kamloops Naturalist Club to Lexa Hobenshield (KMC) dated April 4, 2014, cut and pasted into the preamble.



# Preamble:

The Kamloops Naturalist Club (KNC) has been active in the Kamloops area for 35 years, documenting and observing the natural areas surrounding the city and has worked to preserve natural habitat in our native grasslands including the Lac du Bois Protected Area established in 1996.

The Lac du Bois grasslands were the top priority on the KNC agenda when we worked with the Kamloops Land and Resource Management Plan in 1996 to develop new Parks and Protected Areas for our area of the province. We were thrilled when our efforts led to the announcement of the establishment of Protected Area status to this area. Since that time, we have maintained a keen interest in the multiple activities in and around Lac du Bois Grasslands Protected Area.

Others efforts by the KNC in this Protected Area include assisting the Nature Conservancy of Canada in 2008 in creating the Rattlesnake Bluff protected area on the eastern edge of the Protected Area above Ord Road.

Two Ecological Reserves are found within the boundaries of the park, set aside for their special scientific research and educational significance as representative examples of the many different ecosystems. McQueen Creek Ecological Reserve is situated only metres from your proposed route of the new pipeline. It was established in 1982 to protect pristine grasslands that have been affected very little by grazing or recreational use.

It is difficult to overstate the disappointment my colleagues and I felt at your workshop on April 2, 2014 in Kamloops to hear no mention of the importance of the natural values of this Protected Area and the efforts we have made to protect them. It was especially disheartening to hear you talk as if the proposed pipeline route through Lac du Bois Grasslands Protected Area is the best and only viable route.



To our minds this Protected Area, and other grassland Parks, is not a site for industrial construction activities. The overall objective of Protection Resource Management Zones is to protect viable, representative examples of British Columbia's natural diversity and recreational opportunities and to protect special natural, cultural heritage and recreational features. The Vision Statement by BC Parks supports this in their Management Plan by stating that "The primary role of Lac du Bois Grasslands Park in protecting and presenting representative native grassland ecosystems is well appreciated as low elevation grasslands continue to be developed and altered throughout British Columbia's Southern Interior."

Another goal of the Protected Area was to ensure compatible land uses. We do not see construction of a pipeline to be a compatible land use in the Lac du Bois Protected Area. We are opposed to this use of a Protected Area as a construction site.

We request a detailed explanation of the cost savings you anticipate if you are able to use the Lac du Bois route. We fear it is all too easy for your staff and engineers to see this area as an empty space available for your convenience and construction activities.

BC's Grasslands cover less than 1% of the province's land area and current estimates are that over 20% of the historical range of grasslands in BC has been lost. We know that once natural grasslands are significantly disturbed, the chances of them recovering or being restored with native species are very, very slim. In choosing an alternate route for the proposed pipeline, we can ensure that the value of grasslands is recognized before they are lost forever.

We do not want to see the values of this important grassland area whittled away when alternative routes for a pipeline exist.

# Request:

1. Kamloops Naturalist Club requests a detailed explanation of the cost savings anticipated by Trans Mountain Pipeline ULC if the Lac du Bois route is selected.

# Response:

1. Detailed cost estimates will be developed during the detailed engineering and design phase of the Project. Preliminary estimates done during the application phase of the Project can be found in Volume 5A, Section 4, Table 4.2-4 (p.186) in the Application. The Lac du Bois route reduces the number of road crossings from 25 to 4 and will significantly improve efficiency of construction. This would significantly reduce construction resources consumed in terms of equipment operating hours and manhours, resulting in significantly less vehicle movements overall within the community. The preliminary cost reduction for the route through Lac du Bois Park versus the district of Westsyde was estimated at up to 40%.

Final route selection includes multiple considerations including constructability, public and worker safety, environmental impact, and disruption to the general public to name a few. Cost is a consideration in the final selection of a proposed route but is only one of multiple factors to be considered. The primary reason for selection of the Lac du Bois Protected Area was in response to the dense urban development proximate to the



existing Trans Mountain Pipeline and strength of feedback from landowners and stakeholders to avoid the impacts to residential areas and associated infrastructure.

From:

Hobenshield, Lexa < Lexa Hobenshield@kindermorgan.com>

Sent:

September 22,2014 1:43 PM

To:

Elizabeth Starr

Subject:

Response to questions about TMEP

With apologies for the delay, here are the responses to your questions:

#### Question:

What is the emergency plan for evacuation for SFU if there should be a fire at the tank farm and also how would SFU be affected by fumes/smoke in the case of such an emergency.

#### Response:

Kinder Morgan Canada (KMC) does not have the legislative authority to undertake community evacuation. This will be done by local municipal authorities. KMC is committed to working with all local authorities to ensure familiarity and understanding of our operations and how our personnel and local municipal personnel can work together to ensure the continued safety of the public and environment.

We look forward to discussing emergency response plans with SFU in the coming weeks.

#### Question:

When will the environmental base line studies for the area in and around the tank farm and the proposed route through Burnaby Mountain Park be completed?

# Response:

Trans Mountain plans to undertake baseline field studies at the entry and exit points of the tunnel or directional drill (along the proposed pipeline corridor) at Burnaby Mountain in August and September 2014. Trans Mountain will file an update with the National Energy Board related to the proposed pipeline corridor via Burnaby Mountain on December 1, 2014.

#### Question:

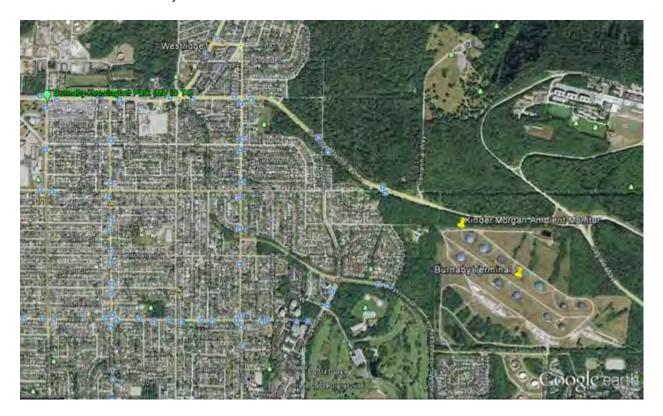
I am driving a convertible this summer and as such I have developed a keen nose. I have noticed, especially in July during the warmest of day fuel vapours from the tank farm. Do you have any knowledge of this? Do you have any measurement of air quality at this time and how air quality may be affected with the tank farm expansion?

# Response:

There is an ambient air quality monitoring station located at Burnaby Terminal monitoring hydrocarbon vapours. In July, it was upgraded with new sensors capable of measuring hydrogen sulphide (H<sub>2</sub>S) and sulphur dioxide (SO<sub>2</sub>) levels. Calibration and quality assurance of the data were completed by July 19, 2014.

Since installation of the new instrumentation there have been no readings above any provincial regulatory guidelines observed at the fence line or any abnormally high peaks. The volatile organic compound (VOC) sensor has been working since early June and there have been some intermittent peaks of VOC emissions observed, but these were detected in early August. Most of July showed little activity for VOC emissions readings and after July 19<sup>th</sup> there were no abnormal H<sub>2</sub>S or SO<sub>2</sub> readings. The peak observed on August 10th showed dominant wind direction prevailing from WSW, which would put SFU in the downstream direction of the terminal.

At a local ambient monitoring station operated by Metro Vancouver at Kensington Park, readings of total reduced sulphur were checked in July and all readings were below 2 ppb. This level is very small and only someone with a sensitive sense of smell might be able to detect. These concentrations represent potential nuisance odours and not a human health concern. A map is provided below that shows the Metro Vancouver ambient station and the Kinder Morgan ambient station at Burnaby Terminal in relation to SFU.



With respect to Project effects near Burnaby Terminal and based on ongoing dispersion studies to inform engineering design, the predicted air quality levels will be higher than current ambient levels, and will continue to meet the applicable ambient air quality objectives and be less than odour detection thresholds.

Let me know if you need anything further.

# Sincerely,

# Lexa Hobenshield

Manager, External Relations Kinder Morgan Canada

Stakeholder Engagement & Communications Trans Mountain Expansion Project

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# Trans Mountain Expansion Project Office

#### Kinder Morgan Canada Inc.

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#### Reference:

Email from Laurie Throness, Member of the Legislative Assembly (Chilliwack-Hope) to Lexa Hobenshield (Trans Mountain Expansion Project) dated September 10, 2014.

#### **Request:**

Hi Lexa, I have a couple of questions a constituent has posed to me that I'm hoping you can answer. First, when the pipeline crosses the Coquihalla River, I seem to remember that the old pipe crosses it a number of times but that the new line would eliminate that. Am I wrong here? Will both be put under the river instead of over it? If there is an aerial crossing, will there be valves on either side to protect the river?

And second, apparently the new line will require a half-inch pipe, but the old one would not now meet this new specification. Can you tell me if this is true?

#### Response:

#### **Existing Pipeline:**

Trans Mountain's existing pipeline crosses the Coquihalla River 16 times, of which 13 crossings are upstream of the Coquihalla Highway 5 Portia exit and the remaining three are located downstream. Only one of the existing crossings is an overhead aerial crossing. The remainder all cross well beneath the river bed.

Mainline valves have been placed along the existing pipeline based on spill modeling techniques and our ability to access the valve in the case of an emergency. Along the existing pipeline, mainline valves are located:

		Valve L	Valve Details		
Valve Name	КР	UTM Co-ordinates			
		Easting (m)	Northing (m)	Zone	
Juliet Creek	KP 950.1	643267.7	5510999.4	10	Block Valve
Coquihalla No. 9	KP 976.1	635888.6	5489108.2	10	Block valve
Boston Bar Creek	KP 984.9	630581.1	5483687.1	10	Block Valve
Deneau Creek	KP 995.4	624362.9	5477957.8	10	Block Valve
DS HWY No. 1	KP 1040.2	596003.5	5454164.5	10	Block Valve

The aerial crossing of the existing pipeline is located at Coquihalla Crossing 10.

<u>Coquihalla River - Trans Mountain Expansion Project (TMEP)</u>



Upstream of the Coquihalla Highway 5 Portia exit, the proposed pipeline corridor does not follow Trans Mountain's existing pipeline. It instead follows the Coquihalla Highway 5 corridor in the Boston Bar Creek valley area. Therefore there are no crossings of the Coquihalla River by TMEP in the area upstream of the Highway 5 Portia exit. However downstream of the Highway 5 Portia exit, TMEP crosses the Coquihalla River five times, two of which are a result of routing to avoid impacting the Coquihalla River Provincial Park.

Descriptions of the various water course crossing methods are provided in Volume 4A, Section 2.10 of the Application. Additional details on all of the BC water course crossings along the proposed pipeline can be found in the Fisheries (British Columbia) Technical Report included in Volume 5C of the Application.

#### <u>Aerial Crossings - Trans Mountain Expansion Project (TMEP)</u>

No aerial crossings are being considered for the TMEP corridor. The proposed pipeline will be installed well beneath the river bed at all five Coquihalla River crossings. At the four most upstream locations, Trans Mountain will be using isolated open-cut trenched crossing technique. At the fifth and most downstream location within the City of Hope, Trans Mountain is planning a trenchless installation.

# Mainline Valves - Trans Mountain Expansion Project (TMEP)

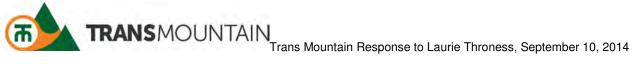
On the TMEP, mainline valves are planned for:

RK/AK		UTM Co-ordinates	Valve Details	
KK/AK	Easting (m)	Northing (m)	Zone	
AK 1018.6	629,161.0	5,483,879.5	10	Block Valve
RK 1026.2	625,628.9	5,478,697.2	10	Block Valve
RK 1032.3	622,204.4	5,474,447.2	10	Block Valve
RK 1034.8	621,958.7	5,472,174.2	10	Check Valve
RK 1042.9	614,861.6	5,470,610.8	10	Block Valve
RK 1043.8	614,313.9	5,470,089.1	10	Block Valve

#### Pipeline Wall Thickness

Trans Mountain's existing NPS 24 pipeline has a wall thickness of 0.312" (7.92 mm) throughout the upper portion of the Coquihalla Valley with the wall thickness increasing to 0.375" (9.52 mm) in the lower elevations of the valley. All crossings of the Coquihalla River are 0.375" (9.52 mm) wall thickness. The current pipeline materials and their thickness (9.52 mm at the Coquihalla River crossings) are fully compliant with industry practice and the Canadian Standards Association Z662-11 Oil and Gas Pipelines Systems standard. The minimum wall thickness that would be required under CSA Z662 is less than what is used in the existing pipeline.

As a pipeline increases in diameter, additional wall thickness is required to allow for maximum operating pressure and to maintain a factor of safety (>1.25). The formula for calculating wall thickness is the same



today as it was when Trans Mountain's existing line was designed and built. What's different is the availability of higher strength steel.

The proposed NPS 36 pipeline is larger in diameter than the existing pipeline and is designed to operate at a higher pressure. As a result, TMEP will have greater wall thickness (11.8 mm) than the existing pipeline.

On September 4, 2014 Trans Mountain filed Technical Update No. 3 with the NEB, which includes an engineering assessment report for the existing pipeline. The assessment was done in compliance with CSA Z662 and demonstrates that existing pipeline can safely operate for the future proposed flow and licensed maximum operating pressures, with safety factors greater than 1.25.



#### Reference:

Email from David Blain, Director of Planning and Engineering, City of Chilliwack to Lexa Hobenshield (Trans Mountain Expansion Project) dated August 1, 2014.

#### Request:

Thank you for the information. A while ago we discussed the possibility that KM staff could help our evaluation by identifying in the documents where we can find information relate to the issues most of concern to Chilliwack. From that perspective can you have someone point me to sections that address:

- 1. Sardis-Vedder aquifer assessment of potential impacts of a pipeline spill.
- 2. Mitigation measures proposed to minimize the impacts of the above
- 3. Vedder River Crossing Evaluation of value of the environmental feature
- 4. Proposed construction methodology
- 5. Measures proposed to limit potential impacts
- 6. Farmland construction restoration methodology and compensation proposed for lost crop production.
- 7. Procedure for crossing major roadways.
- 8. Construction in backyards (if any) construction procedure, restoration standards, compensation (if applicable)

#### Response:

All references refer to sections within the Facilities Application filed with the NEB on December 16, 2013 and subsequent filings.

# 1. Sardis-Vedder Aquifer - Assessment of Potential Impacts of a Pipeline Spill

The Groundwater Technical Report for the proposed Trans Mountain Expansion Project is provided in Volume 5C of the Facilities Application. The 'Vedder River Fan Aquifer', also known locally as the Sardis Aquifer is specifically discussed in Sections 4.1.4, 4.2.4 and 4.3.4, Volume 5C of the Application (NEB ID A3S1U8).

Under Section 4.1.4, the 'Vedder River Fan Aquifer' is described as being located at approximately RK 1094 and is also known locally as the Sardis Aquifer. The Vedder River Fan Aquifer is described as a sand and gravel deposit with high demand, productivity and vulnerability. The City of Chilliwack community wells are located within this aquifer and the mapped well capture zones cross the proposed pipeline corridor. The proposed pipeline corridor crosses the Chilliwack/Vedder River at RK 1102.2 and continues west through Aquifer #8. The Yarrow Waterworks District wells are located within Aquifer #8 on the south side of the Chilliwack/Vedder River, more than 800 m from the proposed pipeline corridor. The proposed pipeline corridor continues to overlie Aquifer #8 through to Aquifer #21, the 'Sumas Prairie' aquifer in Abbotsford. Aquifer #21 is described as a sand and gravel deposit with moderate demand, productivity and vulnerability. No aquifers are mapped from RK 1114.6 to RK 1121.2.



Under Section 4.2.4, Trans Mountain identifies areas with potential artesian conditions (i.e., areas where horizontal directional drills (HDDs) are planned and potential artesian conditions are expected relative to local wells/geology), including Chilliwack/Vedder River at RK 1102.1, RK 1102.3 and RK 1102.4 with potential artesian wells reported nearby.

Under Section 4.3.4, Trans Mountain identifies Chilliwack/Vedder River as an area susceptible to siltation, and vulnerable to possible contamination from an accident or malfunction.

The environmental effects of a pipeline spill during operations is provided in Section 6.2 of Volume 7 with a discussion of the effects on soil and groundwater in Section 6.2.2.1 (NEB ID A3S4V6). In addition, groundwater is also mentioned in Section 6.3.1.1 Potential Economic Effects on Agriculture and Forestry.

#### 2. Mitigation Measures Proposed to Minimize the Impacts of the Above

Section 2, Volume 7 of the Application (NEB ID A3S4V5) addresses Measures to Prevent and Mitigate Oil Spills. Trans Mountain considers the prevention of spills during pipeline operations to be its' primary goal and will employ the necessary management systems and resources to ensure that this goal is achieved on the TMEP. The measures available to prevent and mitigate spills from new pipelines and facilities will depend on the nature of the threat and the associated consequences of a spill. Many of the prevention and mitigation measures considered have been identified in other parts of the Application: engineering designs that eliminate or minimize integrity threats are detailed in Volume 4A, construction and quality assurance practices that will ensure the integrity of the pipeline and facilities through to commissioning in Volume 4B, and ongoing Integrity Management Programs (IMPs) that will be applied once the pipeline and facilities are operational in Volume 4C.

Spill prevention and mitigation measures are embedded throughout the full project lifecycle and start with risk assessment of preliminary engineering designs at the earliest stages of the project. Formalized risk assessments are conducted as documented in Section 3.0, as part of the design process, which allows for early identification of all applicable hazards and suitable control measures supplemental to code-based design.

In the low likelihood event of a spill, Volume 7, Section 4, describes Emergency Preparedness and Response measures available for the existing pipeline operations as well as planned enhancements to address the proposed expansion of the pipeline system. As indicated in Section 4.8, Trans Mountain will continue to actively consult and work with the first response community in the comprehensive review and enhancement of the Emergency Management Program, with completion of the updated plans 6 months prior to the start of operation of the project.

# 3. <u>Vedder River Crossing - Evaluation of Value of the Environmental Feature</u>

A discussion of groundwater quality and quantity is provided in Sections 5.3 (NEB ID A3S1L5) and 7.2.3 (NEB ID A3S1S7), Volume 5A of the Application. Section 5.3.1.4 relates specifically to the 'Hope to Burnaby Segment' of the proposed pipeline corridor and describes the planning and management of surface water, surface water quality and surface water use along the Hope to Burnaby Segment.



In addition, a discussion of fish and fish habitat is provided in Sections 5.7 (NEB ID A3S1L6) and 7.2.7 (NEB ID A3S1Q9), Volume 5A of the Application. Section 5.7.1.5 relates specifically to the 'Hope to Burnaby Segment' of the proposed pipeline corridor and describes watersheds, areas of special interest, hydrometric data, fish-bearing crossings, riparian habitat, field results, indicator species and species of management concern.

The Chilliwack/Vedder River is described in Section 4.2.6.3 of Technical Report 5C-7 in Volume 5C, Fisheries (British Columbia) Technical Report and a fish atlas of the Chilliwack/Vedder River Side Channel (BC 716) (RK 1102.1), the Chilliwack/Vedder River (BC 717) (RK 1102.3) and Chilliwack/Vedder River Side Channel (BC 718) (RK 1102.4) is provided in Appendix B of the same document (NEB ID A3S2D8).

#### 4. Proposed Construction Methodology

The Vedder River Crossing will be installed utilizing a trenchless methodology (*i.e.* horizontal directional drill). The geotechnical site investigation program for the crossing has been completed and the preliminary design feasibility report will be submitted to the NEB in early 2015.

Section 7.0, Volume 6B (NEB ID A3S2S3) of the Application provides an overview of pipeline construction mitigation measures that may be implemented during the construction phase of the pipeline in all work areas. The identified potential mitigation measures avoid or reduce potential adverse environmental effects associated with general pipeline construction activities including: temporary workspace; ancillary sites; access roads; construction camps; and borrow sites. 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 resources.

The Water Crossing Construction Monitoring Management Plan for the Project is outlined in Section 12.0, Appendix C, Volume 6B of the Application (NEB ID A3S2S3). The primary objective of the Water Crossing Construction Monitoring Management Plan is to ensure that the quality and quantity of resources for watercourses crossed by the construction right-of-way are maintained and not adversely affected due to pipeline construction. The measures to be taken to achieve this objective include:

- assessment of water quality during both pre-construction and during construction conditions;
- provide information and immediate feedback to assist in protecting aquatic resources;
- identify key activities that have the potential to affect surface water quality;
- develop strategies and mitigation to reduce or avoid the potential effect as well as contingency
  measures to be implemented at the first indication of a potential adverse effect occurring; and
- closely monitor these activities and the effectiveness of the mitigation during construction.

# 5. Measures Proposed to Limit Potential Impacts

Site-specific mitigation measures for watercourses encountered within the proposed pipeline corridor in BC are identified in Table I-2, Appendix I, Volume 6B of the Application (NEB ID A3S2S3). Vedder River references can be found at Chilliwack/Vedder River Side Channel (BC 716) (RK 1102.1), the Chilliwack/Vedder River (BC 717) (RK 1102.3) and Chilliwack/Vedder River Side Channel (BC 718) (RK 1102.4).



Section 8.0, Volume 6B (NEB ID A3S2S3) of the Application outlines the potential mitigation measures to be implemented during each activity phase of pipeline construction. This section includes: clearing and disposal; topsoil/root zone materials handling and grading; stringing, welding, trenching and lowering-in; backfilling; hydrostatic testing; construction clean-up and reclamation and water crossings.

Trans Mountain will continue to work with local governments to ensure that information of local importance is incorporated into detailed engineering design and construction planning.

# 6. <u>Farmland Construction - Restoration Methodology and Compensation Proposed for Lost Crop</u> Production

The Pipeline EPP in Volume 6B of the Application (NEB ID A3S2S3), identifies the reclamation measures that may be implemented during detailed design, pre-construction, construction, and post-construction activities on the pipeline, and contingency plans to address potential effects, events or conditions that may arise during construction. Feedback from landowners and the agricultural community has been considered and incorporated in the development of this plan.

Management plans provided in Appendix C, Volume 6B of the Application (NEB ID A3S2S3), describe the specific environmental management procedures that may apply to ongoing, planned events associated with construction. Appendix C, Section 2.0 contains the Agricultural Management Plan and Section 14.0 contains the Weed and Vegetation Management Plan. Mitigation measures related to topsoil/root zone material handling is provided in Sections 8.2 and 8.6 of the Pipeline EPP.

The Reclamation Management Plan in Section 7.0, Appendix C of Volume 6B of the Application (NEB ID A3S2S3), describes the construction reclamation measures that will be implemented prior to, during and following pipeline installation in order to assist in successfully reclaiming land.

Contingency Plans related to farmland construction and restoration methodology are available in Sections 8.0 to 10.0 of Appendix B, Volume 6B of the Application (NEB ID A3S2S3)

In Trans Mountain's response (NEB ID A3X6A7) to the Information Request (CGLAP IR No. 1.7b) submitted by Collaborative Group of Landowners Affected by Pipelines (CGLAP), Trans Mountain addressed Compensation for Agricultural Crop Loss Impacts. Under Sections 75 and 86(2)(c) of the NEB Act, Trans Mountain is required to do as little damage as possible, and make full compensation to all interested persons for all damages suffered as a result of the operations of the company. Damages caused as a result of residual effects are included within this responsibility. In general, the compensation framework would involve assessing actual damage to, for example, crop production, inconvenience, increased operating costs, and any other applicable damage. For reduced crop production, productivity off and on the right-of-way would be measured and damages would be calculated based upon the measured difference in production, holding all other mitigating factors constant. Where residual damages persisted, additional mitigation measures would be developed and employed and any remaining residual damages would be determined and compensated as indicated above.

Trans Mountain's response (NEB ID A3Y2K7) to the Information Request (FVRD IR No. 1.29a) submitted by Fraser Valley Regional District (FVRD), also addresses Compensation for Agricultural Crop Loss Impacts. As part of the land agreement with directly affected landowners, Trans Mountain will provide compensation for crop loss for a period based upon the soil and crop type, and anticipated duration for



soil and crop productivity to return to pre-construction condition. Should crop production not recover to preconstruction levels after the period covered by the initial construction related damage consideration, Trans Mountain will cooperate with the landowner to determine the cause of the reduced crop production and undertake further mitigation measures or provide commensurate compensation for crop loss directly related to and caused by the acquisition of lands, construction of the pipeline and inspection, maintenance or repair of the pipeline.

In Trans Mountain's response (NEB ID A3X6Q3) to the Information Request(Kingman B IR No. 1.3c) submitted by Brian Kingman, Trans Mountain identified it is in the process of developing a compensation program for the proposed Expansion Project based upon the requirements of the NEB Act and current industry practices. The NEB Act provides direction on the factors that need to be addressed as part of landowner compensation for a new pipeline. Under NEB Section 97(1), the following factors where applicable are considered in assessing compensation and are being addressed in developing the project compensation plan:

- a) market value of the lands taken by the company;
- b) where annual or periodic payments are being made pursuant to an agreement or an arbitration decision, changes in the market value referred to in paragraph (a) since the agreement or decision or since the last review and adjustment of those payments, as the case may be;
- c) loss of use to the owner of the lands taken by the company;
- d) adverse effect of the taking of the lands by the company on the remaining lands of an owner;
- e) nuisance, inconvenience and noise that may reasonably be expected to be caused by or arise from or in connection with the operations of the company;
- f) damage to lands in the area of the lands taken by the company that might reasonably be expected to be caused by the operations of the company;
- g) loss of or damage to livestock or other personal property or movable affected by the operations of the company;
- h) any special difficulties in relocation of an owner or his property; and
- i) such other factors as the [Arbitration] Committee considers proper in the circumstances.

Specific compensation for a land parcel will be discussed with the landowner following the provision of a notice as required under Section 87.1 of the NEB Act.

# 7. Procedure for Crossing Major Roadways

Section 3.2.20.2, Volume 4A of the Application (NEB ID A3S0Y8) addresses Highway, Road, and Railway Crossings. For highway, high-use gravel roads and railways, the preferred crossing method is a bore crossing method (i.e., thrust or auger). Low-use gravel roads, minor roads and trails will typically be specified as conventional open cut crossings.

For hammer-bore or auger-bore crossing techniques, an uncased crossing is preferred. However, contingency designs will be provided for NPS 42 and NPS 48 cased crossings in the event that substantial cobbles or boulders are encountered during construction that would prevent the successful completion of an uncased crossing. During the installation of these crossings, provincial, municipal or railway authorities may specify traffic and general safety controls to be implemented.



Table 5.1.14 in Appendix D, Volume 4A of the Application (NEB ID A3S0Y8) provides a preliminary list of the highway, road and railway crossings along the pipeline route. RKs related to Chilliwack are in the 1100s.

# 8. <u>Construction in backyards (if any), construction procedure, restoration standards, compensation(if applicable)</u>

In general, Trans Mountain has attempted to avoid construction through backyards to the extent practical through routing of the pipeline. For the Chilliwack area, the pipeline is contiguous with the existing Trans Mountain pipeline with the exception of the Vedder Crossing area where an alternative route has been proposed which generally follows the BC Hydro transmission corridor and avoids urban density and the Watson Elementary school traversed by the existing TMPL.

In Trans Mountain's response (NEB ID A3X5Y6) to the Information Request (Amy C IR No. 1.3h) submitted by Chris Amy, Trans Mountain identified its responsibility for compensation for impacts to adjacent, not directly affected, members of the community should the activities of the company, after efforts to minimize and mitigate effects result in directly related damages as defined in the NEB Act.

Should adjacent landowners be of the opinion that the operations related to the TMPL have caused them directly related damages as defined in the NEB Act, TMPL would look to the affected parties to provide the company with information and documentation as to the nature and extent of the perceived damages. That information can be provided to the Manager, Land, Trans Mountain Pipeline. Using the information received, if Trans Mountain determines that damages resulted from the company's operations, it will provide any commensurate compensation due to the affected party.

Site specific construction and restoration details will be determined during Detailed Engineering and Construction Planning Phase. Property specific construction procedures and restoration standards will be captured through Landowner agreements and documented in the Line List issued to the General Contractor. Land Agents will continue to consult with property owners throughout the course of and following construction, and restoration will be completed in accordance with surrounding conditions and to the satisfaction of the individual landowner.



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November 14, 2014

Scott Benton **Executive Director** Grasslands Conservation Council of British Columbia PO Box 3341 Kamloops, British Columbia V2C 6B9

Document Number: L-GCC-TERA-00001

Dear Mr. Benton,

RE: Trans Mountain Pipeline ULC – Response to Letter from Grasslands Conservation Council of British Columbia Dated October 12, 2014

Thank you for your letter dated October 12, 2014. Please find attached Trans Mountain Pipeline ULC's (Trans Mountain) response to the Grassland Conservation Council (GCC) analysis and input to the Stage 2 Detailed Proposal for the Lac du Bois Grasslands Protected Area. Upon review of the letter, Trans Mountain would like to provide more comment and try to address some of the key concerns you raised including:

- route selection:
  - justification for the route through Lac du Bois Grasslands; and
  - assessment of the route alternative proposed by GCC;
- minimizing environmental impact:
  - measures proposed to control the spread of invasive species; and
  - impacts to upgraded roads;
- impacts on grazing; and
- financial implications;
  - successful reclamation or restoration of native grasslands.

The following provides some background to these areas of concern. Furthermore, Trans Mountain is willing to continue to have further dialogue on these points raised as the conversation we had on October 22, 2014 was valuable from our perspective.





#### **Route Selection**

Beginning in 2012, Trans Mountain conducted a preliminary route assessment of the existing Trans Mountain pipeline alignment to identify potential routing options for the Trans Mountain Expansion Project (the Project). Field studies and ongoing engagement with British Columbia (BC) Parks, First Nations and interested stakeholders aided in the identification of sensitive environmental features in the routing study area.

Prior to conducting field investigations, Trans Mountain established routing criteria that would apply to the entire Project and serve as a framework for consideration of route alternatives. The key environmental routing criteria were to follow the existing Trans Mountain pipeline right-of-way, to the maximum extent, and to traverse or parallel previously cleared areas beside other previously developed easements, deviating from the route only where necessary to reduce environmental and social impacts or to address technical or safety issues. The GCC letter states that "it appears the cost and ease of construction are the main drivers in the application as well as avoid social conflicts." Although these drivers were considered in the assessment of alternatives, the factors for route feasibility include a range of factors, which are shown below in Table 1.

#### **TABLE 1**

# FACTORS THAT COULD RESULT IN DEVIATION FROM EXISTING TRANS MOUNTAIN PIPELINE EASEMENT

# Factor Safety - minimize areas posing hazards to: construction/operations workers - workspace, overhead hazards, geotechnical hazards; and public - traffic interaction, proximity to excavations and heavy equipment. Pipeline integrity - minimize crossing areas with geotechnical hazards, high potential for third-party contact and poor maintenance access. Environment - minimize environmental impacts by attempting to reduce the following, as much as practical: the total number of watercourse crossings; length in the riparian reserve zone; c. difficult reclamation areas and unstable terrain; d. length within protected areas and other designated protected areas; the total number of wetland crossings; and creating new access in areas considered to be ecologically important. Constructability – avoid factors negatively affecting construction efficiency. Terrain - minimize crossing side slopes, geohazards, rock, waterbodies, wetlands and high water table areas. Infrastructure – minimize encroachment on existing and planned infrastructure. Access – avoid limited or difficult existing access roads (stability, turn radius and local interference). Stakeholders and socio-economic requirements: review and be consistent with land use policy documents; landowner - consider landowner concerns; protected areas - avoid where practical; recreational areas - avoid where practical; infrastructure - dependant on meetings with representatives of applicable utility; and residential density - reduce length in high density areas where other options are available.





#### **TABLE 1 Cont'd**

#### Factor

- 9. Aboriginal impact:
  - a. reserve lands dependant on consultations; provide alternate routing for planning; and
  - b. Traditional Lands dependant on consultation.
- Cost and schedule reduced length is preferred; schedule reduction due to improved constructability over a longer distance should be considered

Route alternatives that did not meet construction feasibility were not considered for further detailed routing studies. The route alternative proposed by GCC was considered previously in the preliminary route assessment process, however, due to safety and constructability issues, the route was not deemed to be a viable alternative. Furthermore, this alternative route suggested by the GCC would not align with Trans Mountain's routing criteria to parallel existing infrastructure, where practical. This route alternative also poses safety hazards to the construction crews as a result or lack of useable (level) space for material storage and safe work areas, therefore, extensive grading would be required on the steep slopes and side hill terrain in that area. This route alternative would not be recommended due to geotechnical concerns associated with side slopes. Therefore, this route was not considered for further detailed route assessments.

Trans Mountain recognizes that the protected area was established for the purpose of protection of diverse grasslands and is committed to restoring the grasslands and minimizing disturbance due to pipeline construction, if the Stage 2 Detailed Proposal is approved.

During Trans Mountain's award-winning TMX-Anchor Loop Project, Trans Mountain, BC Parks and Parks Canada worked together to develop management objectives and desired end results. In recognition of the unique setting of the Lac du Bois Grasslands Protected Area, Trans Mountain encourages BC Parks to take a similar approach.

#### Minimizing Environmental Impact

The GCC letter states that, "the lack of a firm commitment to restoring the grassland's original condition speaks to the level of uncertainty in the ability to deliver on this objective and underscores the need for a long term ongoing commitment to managing the foot prints impacts from construction and maintenance." Trans Mountain recognizes the unique ecosystem of the Lac du Bois Grasslands Protected Area and invites the GCC to engage with BC Parks in the opportunity to provide feedback on the management objectives they would like to see accomplished in the protected area. Conversations and commitments regarding the proposed work in the protected area would be ongoing through to the construction phase of the Project.

Trans Mountain acknowledges the concerns raised by GCC regarding the spread of invasive species and has proposed a number of measures to control the spread of invasive species prior to construction, during construction and post-construction in the reclamation phase of the Project. Prior to construction, and to meet the goals for the management of non-native invasive and





agronomic species within the protected area, Trans Mountain will utilize the Weed Survey Report to identify the distribution and density of undesirable vegetation and to implement the appropriate chemical and mechanical (where feasible) controls. It is anticipated that the results of the preconstruction vegetation management will reduce the spread of undesirable species along the right-of-way during construction as well as their establishment following topsoil replacement. During construction, Trans Mountain will ensure that all equipment arriving on-site is clean and free of soils and plant materials. Where areas of concern for invasive plant species are identified, machine clean-off stations will be installed to mitigate for the potential of the spread of invasive plant material (roots and seed). Topsoil will be stripped and stockpiled separately prior to grading in preparation for a safe subsoil surface for construction crews. Following installation of the pipeline, the subsoil and topsoil will be backfilled using clean equipment and access to the right-of-way will be restricted. Clean-up crews will re-install natural drainage patterns and employ erosion control measures, where required, such as cross berms, biodegradable geofabric matting and track packing of topsoil down slope. Reclamation methods used to re-establish desired growth include:

- the use of secured logs, biodegradable fabrics and woody debris to provide microsites for a diversity of protected growing conditions;
- two-step hydroseed methods where seed is broadcast first, then covered with fibre mulch with a slow release fertilizer added as required;
- the use of native species crop cover or a non-persistent grass species;
- island plantings of forbs, trees and shrubs; and
- a post-construction weed control program that is designed for compatibility with installed plantings and establishment of a diversity of native plant growth.

BC Parks representatives have requested the use of native grass species with a suitable local genome for revegetation of the construction disturbances within Lac du Bois Grasslands Protected Area. In an effort to meet the request of BC Parks, Trans Mountain have engaged the local Tk'emlups te Secwepemc through the Tk'emlups Forestry Development Corporation (TFDC). In July 2014, the TFDC collected approximately 275 kg of native seed from native grasslands within the vicinity of Lac du Bois Grasslands Protected Area. A large portion of the collected seed contained bluebunch wheatgrass and other native species indigenous to the protected area. The collected seed will be cleaned, native species will be separated, and non-native invasive and agronomic species will be removed. The separated native species seed will either be seeded on the construction right-of-way, used in native seed multiplication plots to increase the volume of seed available for direct seeding, or used for rooted stock plug propagation and planting of the proposed construction right-of-way. Trans Mountain will continue to work with TFDC and Thompson Rivers University to identify the most appropriate methods of acquiring local native grass seed for the Project's reclamation phase.





In the event that local native grass seed collection and/or seed multiplication efforts do not meet the seed mix (or native perennial cover crop) species volume requirements for the Project, then commercially available native species seed will be required to make up the balance.

As described in on Page C8-1 in Section 8.0 of the Stage 2 Detailed Proposal, Trans Mountain has also been in negotiations with Telus to use their right-of-way during construction and which have included discussions regarding restoring and replanting the surface of the Telus right-of-way with native grasses. Trans Mountain agreed that the nature of the restoration shall be determined in consultation with Telus and BC Ministry of Environment.

The GCC letter states that "none of the calculations appear to include the impact of upgraded roads to get crews and materials to the ROW site. These up-grades will greatly enhance the potential for spread of invasive plants, and further complicate the enforcement of vehicle closure areas and reduce grasslands habitat." Trans Mountain will provide mapping and shapefiles of the proposed existing roads to be upgraded to BC Parks in mid-December, and will confirm whether or not the upgraded roads will require additional road width.

In order to minimize the spread of invasive weeds, Trans Mountain will implement weed controls which would include herbicide applications on access roads and pull out areas. Herbicide application would continue into the reclamation phase of the Project. All access roads and trails would be reclaimed or deactivated and revegetated in consultation with interested stakeholders and BC Parks.

Trans Mountain has developed a preliminary Traffic and Access Control Management Plan (see Appendix C of Pipeline Environmental Protection Plan in Appendix A of the Stage 2 Detailed Proposal) in order to minimize disturbance by traffic to the right-of-way. Construction work flow will be designed to use the right-of-way as much as possible, thereby minimizing the development of new access roads. During the reclamation phase of the Project, Trans Mountain will work with BC Parks, First Nations, landowners, grazing lease holders and other stakeholders to deactivate access, where required, and to improve access controls by installing fences, barriers and gates. Trans Mountain will also work with BC Parks, First Nations, landowners and other stakeholders to identify where upgrades to existing roads may be warranted by improvements to drainage and surface materials. These measures will be outlined in the Access Management Plans including ways to reduce use of 4x4 trucks and all-terrain vehicles.

# Impacts on Grazing

The GCC letter states that the "cattlemen using the area will face the very significant disruption/costs to their operations to accommodate construction. The establishment of the restoration seeding will be greatly complicated by the presence of grazing, as the restoration will cross several pastures at the same time, making it impossible to remove cattle from a given area. Seeding areas need to remain ungrazed for two growing seasons." Trans Mountain will work with





BC Parks, First Nations, landowners, grazing lease holders and other stakeholders to deactivate access, where required, and improve access controls, where appropriate, by installing fences, barriers and gates. For construction safety and to facilitate the establishment of reclamation plant cover, Trans Mountain proposes to fence off the right-of-way in select areas and install cross fenced passage ways for cattle access. Where access to grazing has been reduced by construction, compensation payments will be discussed and offered to ranchers for hay and water to maintain their cattle. Trans Mountain has received support from the President of the Tranquille Cattleman's Association who represents the ranchers in Lac du Bois Grasslands Protected Area, for the route through Lac du Bois Grasslands Protected Area. The President of the Tranquille Cattleman's Association has been an active participant in the Protected Area Workshop in Kamloops as well as other workshops led by Trans Mountain. Trans Mountain has also been in correspondence with BC Ministry of Forests, Lands and Natural Resource Operations (FLNRO) regarding consulting ranchers/range tenure holders about the construction schedule in order for them to manage their livestock and prevent conflict and disruption to livestock grazing schedules and patterns. Trans Mountain did provide a response to FLNRO regarding potential disruption to ranchers on May 8, 2014 following a teleconference call.

# **Financial Implications**

Trans Mountain acknowledges that the costs associated with pipeline construction in the Westsyde may be greater than costs associated with pipeline construction in Lac du Bois Grasslands Protected Area, however, that is not the only factor taken into consideration, as stated in Table 1. Trans Mountain will work with BC Parks to determine compensation offset opportunities to benefit the protected area, if the Stage 2 Detailed Proposal is approved.

The letter states that the "Grassland Conservation Council is unaware of any successful reclamation or restoration of native grasslands in BC and very few in North America in significantly disturbed areas." Trans Mountain has a proven record of working with regulators and interested stakeholders to achieve high standards of reclamation. During the TMX Anchor Loop, Trans Mountain worked with Parks Canada and BC Parks to reclaim disturbances on and outside of the construction footprint, and implemented a number of restoration measures, with the objective of restoring the ecological integrity of these lands. Although the native grassland areas of Jasper National Park are different from those of Lac du Bois Grasslands Protected Area, fire suppression and coniferous tree encroachment has reduced the amount of historic grassland plant community. As part of the post-construction monitoring program in Jasper National Park, trees were cleared from the construction right-of-way in conjunction with Jasper National Park's "Fire Smart" Program and native grass species were seeded which have increased native grassland and forage opportunities for wildlife. Another project in the Vaseux-Bighorn National Wildlife Area included a restoration program which included the following:





- reduction in weed infestations by hand pulling, seed vacuuming and mowing and herbicide applications;
- removal of encroaching Douglas-fir;
- restoration of the disturbed right-of-way using locally collected and propagated native grass, forbes and shrubs;
- hand salvage, storage and replacement of rare and other plants in incidents where it was not possible to propagate those plants by seed or cuttings;
- hydro seeding moss and lichen fragments to restore the microbiotic crust; and
- seeding applications of locally collected native grass seed.

The objective of the Project is to return the land to equivalent land capability without compromising operations and maintenance requirements, however, in recognition of the unique setting of protected areas, several restoration measures beyond normal pipeline practice will be undertaken. These measures will be developed in conjunction with landowners, BC Parks, First Nations and interested stakeholders in order to meet the successional trajectory.

# Closing

Further to our meeting in Kamloops on October 22, 2014, Trans Mountain would like to invite further dialogue with the GCC and would also be willing to meet, review and discuss any of the responses provided above.

Trans Mountain is committed to keeping you informed about the Project and your feedback is greatly appreciated in ensuring that we address the issues that are important to you.

If you have any questions or require additional information, please feel free to contact me by email at margaret\_mears@transmountain.com.

Sincerely,

Trans Mountain Pipeline L.P.

Man Mem

**Margaret Mears** 

TMEP Environment Lead

cc: Amanda Weber-Roy, BC Parks

Kate Stebbings, TMEP Stakeholder Engagement Jason Smith, TERA, A CH2M HILL Company

Enclosure: Grassland Conservation Council Letter Dated October 12, 2014





October 12, 2014

Parks and Conservation Officer Division PO Box 9339 STN PROV GOV Victoria BC V8W9M9

RE: Trans Mountain Lac du Bois Park Boundary Amendment Proposal

Please find attached the Grasslands Conservation Council of BC's analysis and input to the–park boundary amendment proposal by Trans Mountain Pipeline in the Lac du Bois Protected Area. The Grasslands conservation council is a non-profit society dedicated to the education, stewardship and conservation of the provinces grasslands.

# **Background**

Lac du Bois Protected Area was established in 1996 as a result of a regional strategic land use planning process with extensive multi stakeholder involvement and agreement on the final plan. Government accepted the consensus recommendations of the planning table recognizing that trade-offs were made between regional resource development and land conservation and protection.

Lac du Bois is currently managed as a class A park while being designated as a protected area in recognition of historical grazing that has occurred at the recommendation of the planning table. No utility corridors were contemplated or requested to be established through this protected area at the time of the land use plan or the subsequent protected area management plans. The protected area designation does not diminish the level of significance or protection afforded to this land. It's a reflection of obligation to pre-existing grazing rights and associated activity.

Government's statement of purpose for the protected area is to "fulfil a very important conservation role in representing the Thompson Basin and Northern Thompson Uplands Eco-sections. This protected area contains complex geology, a mixture of grasslands and forest types, a highly differential set of topographical features and soils and a variety of cultural uses combining to produce an area of notable diversity".



Grasslands are a rare ecotype in British Columbia occupying less than 1% of the land base. They also contain over 30 % over the provinces species at risk. Lac Du Bois provides occupied habitat for some of these species. Lac Du Bois has representation of low, medium and high elevation grasslands within it. There are no other large grasslands protected in BC that provide this representation. Conserving large un-fragmented areas of this ecotype is key to its future viability.

Disturbance and land conversion are the number one cause of loss of native grasslands. Native grasslands are extremely sensitive to soil disturbance and can take 50 to 100 years to recover from significant soil disturbance, if they can recover at all. Soil disturbance invariably leads to the introduction of invasive plants which become a long term (and possibly in perpetuity) management issue to address. Sometimes the forage production and habitat values of entire sites are lost to invasive plants.

Kalamalka Lake Park is an example of this where soil disturbance, insufficient management effort and loss of funding has led to the loss of natural grasslands to invasive plants in significant areas of the park. Like Lac Du Bois, Kalamalka Lake Provincial Park was established to protect and represent a portion of grasslands. The introduction ad dominance of invasive plants has significantly compromised this objective.

Significant soil disturbance also contributes to the loss of soil carbon and increased soil carbon emissions from the soil. This leads to lower soil productivity and loss of plant vitality. There are very few examples of successful native grass reintroduction in BC or elsewhere in North America. The loss of native grasslands reduces habitat and forage for native species. BC has lost over 20% of its original grasslands to forest ingrowth, land conversion for intensive agriculture, residential and industrial development and invasive plants.

Trans Mountain-currently holds an Order In Council right of way for its pipelines that passes through the community of Westsyde. The boundary amendment application acknowledges that the City of Kamloops and preceding municipal governments failed to account for the pipeline right of way in its planning making it difficult and costly to utilize this right of way today. This right of way currently has two pipelines in it, one of which is quiescent and the other being active.

The land owners whose property abut or intersect the existing pipeline right of way have a legal obligation to honour the right of way. As the application notes "since the construction of the TMPL in 1952, the community of Westsyde has developed and grown along a broad terrace of the North Thompson River and considerable urban development



has been encroaching upon the TMPL right-of-way." The Report does not indicate if the existing right of way has the capacity to hold another large diameter pipe.

Both the city of Kamloops and Trans Mountain are supporting the alternate route through the protected area to avoid the social impact and political issues associated with construction and economic impacts of using the existing right of way. Instead they favour the route that has the highest environmental impact by going through Lac Du Bois Grasslands.

The Grasslands Council of BC's professional opinion is the long term impacts to grasslands and costs to managing the disturbance are significantly understated in the application.

#### Discussion

Route Selection: These protected area lands were established for the purpose of protection of diverse grasslands through a public process that was endorsed by government. The existing legal right of way that pre-exists the majority of development in Westsyde was established as an industrial corridor for disturbance. The City of Kamloops, land owners and Trans Mountain should be bearing the cost of having to relocate the pipeline or construct it in its current location, not the people of British Columbia and not at the expense of land or the values on it that was established for a different purpose. This is not the Rocky Mountains where there were limited or no options for locating the twinning of the pipeline.

As noted above, the long term impacts to grasslands and associated cost are understated in the application as are the impacts to the integrity of the prime purpose of the protected area. The application's analysis and presentation on other route options and costs is insufficient to make an informed decision on the pros and cons of using Westsyde, Lac Du bois or another route.

There are no compelling arguments provided on why the protected area route has been selected. It appears cost and ease of construction are the main drivers in the application as well as avoiding social conflicts. No other routes have been received the same level of analysis (or it hasn't been presented) nor is there any discussion on what other routes were considered other than Westsyde.

As an example, there is a bench located closer to the east side of the Protected Area that may be a possible route that is less visible from the public view, potentially decreasing the aesthetic impact. In addition, locating an installation on this bench might have less impact to the proper management of grazing. Consideration and explanation of other route options is a key step in the boundary review process application. Putting a corridor



through a protected area is supposed to be the last option considered when there are no other viable options.

Minimizing Environmental Impact: It is not apparent that the duty of care proposed for construction within the protected area differs from outside it other than an undefined 'narrowing' of the construction foot print. The lack of a firm commitment to restoring the grassland's original condition speaks to the level of uncertainty in the ability to deliver on this objective and underscores the need for a long term ongoing commitment to managing the foot print impacts from construction and maintenance.

Restoring a natural grassland to its original state is far from a sure thing. Since this protected area was established for the purpose of conserving grasslands, this is unacceptable. The application fails to recognize the significance or rare nature of the grassland ecosystem in the province or the role of this protected area in conserving it.

Lac Du bois Grasslands have been recovering from significant disturbance from a variety of human induced sources for the past 100 years. Its prime purpose and stated policy is to conserve grasslands and provide sustainable grazing. Both objectives have been compatible. The introduction of pipeline line and the associated disturbance and access corridors introduces another substantive lineal corridor and vector for the introduction of invasive plants and unauthorized motor vehicle use leading to the potential for permanent loss of native vegetation. These factors compromise both short and long term wellbeing of protected area values.

The argument used that the area being proposed for the pipeline corridor is already disturbed is simplistic and not providing a fair comparison. The disturbance caused by the Telus fibre optic line is insignificant compared to the disturbance that will be caused by installing a pipeline. The foot print and depth of excavation are very different, as is the impact of access to the proposed construction zone.

By the applicant's estimate nearly 57 hectares of protected area lands will be disturbed. None of the calculations appear to include the impact of up-graded roads to get crews and materials to the ROW site. These up-grades will greatly enhance the potential for spread of invasive plants, and further complicate the enforcement of the vehicle closure areas and reduce grasslands habitat.

**Impact on Grazing**: The cattleman using the area will face very significant disruptions/costs to their operations to accommodate the construction. The establishment of the restoration seeding will be greatly complicated by the presence of grazing, as restoration efforts will cross several pastures at the same time, making it impossible to



remove cattle from any given area. Seeded areas need to remain ungrazed for 2 growing seasons.

The grazing opportunity in Lac du Bois provided to the several ranchers is no small matter. Because the grasslands are used in the spring and fall, the only alternative if this opportunity is lost in the short, medium or long term the only alternative is to feed more hay. The economic value to the ranchers is several hundred dollars for every calf or yearling marketed.

**Financial Implications**: Trans Mountain is claiming it would cost \$20 million more to place a pipeline in its current right of way or under Westsyde Road and is recommending instead to create an additional new right of way through Lac Du Bois. There is no mention of the long term costs to government for the ongoing increased management cost to the park or compensation to the people of BC for the loss of environmental or protected area values. If the decision is made to award a second right of way to Trans Mountain through Lac Du Bois, a comparable level of compensation is required on top of long term mitigation efforts to offset the loss of protected area values.

The introduction of invasive plants is an annual problem on utility corridors as experienced on the current pipeline right of way. The introduction of invasive plants cannot be limited to the right of way. The application appears deficient in what the long term commitment is for invasive plant and access control in the protected area. The applicant states in table C7.1.1-2 states, "there are no situations where there is a high probability of occurrence of a permanent or long-term residual environmental effect on the physical environment indicator of high magnitude that cannot be technically or economically mitigated. Consequently, it is concluded that the residual environmental effects of pipeline construction and operations on conservational values of Lac du Bois Grasslands Protected Area related to physical environment will be not significant.

This perspective is not informed by experience or evidence in recovering disturbed grasslands in BC. The Grasslands Conservation Council is unaware of any successful reclamation or restoration of native grasslands in BC and very few in North America in significantly disturbed areas. Grasslands with disturbed soils can take up to 100 years to recover or alternately never be restored to a natural state. The impact on native grasslands in Lac Du Bois will be long term and potentially permanent. Cost to recover them will be high and ongoing. Despite the claim made by the proponent in the application, money and engineering cannot fix everything and the claim of no long term residual impacts is not supported by experience.



#### Recommendation

Because of the deficiencies noted above, included failure to even mention a possibly viable alternative, the Grasslands Conservation Council of British Columbia is not supportive of the application and strongly recommends that the boundary amendment application not be approved as submitted.

Yours Truly

Scott Benton

**Executive Director** 

Grasslands Conservation Council of BC

CC: Jim Standen Assistant Deputy Minister Brian Bawtinheimer Executive Director Jeff Leahy Regional Manager



# Trans Mountain Pipeline ULC Trans Mountain Expansion Project Responses to Information Request from Port Metro Vancouver (PMV)

#### Reference:

On June 11, 2014, Port Metro Vancouver (PMV) requested Stephanie Snider and Lexa Hobenshield (Trans Mountain Expansion Project) provide PMV with a summary of all marine-related consultation for the Trans Mountain Expansion Project (TMEP).

#### Request:

A summary of all consultation related to marine issues raised by stakeholders for TMEP. Trans Mountain agreed to provide a summary that includes all consultation on marine matters in the jurisdiction of PMV that have occurred since the Project was announced in May 2012.

#### Response:

Trans Mountain's engagement and communications activities have been ongoing since the Project was announced in May 2012. Trans Mountain will file its next Consultation Update No. 3 with the National Energy Board (NEB) in Q1 2015.

This consultation summary is presented in two parts. Table 1-1 below provides Trans Mountain responses to the most commonly raised marine issues. Appendix A provides a summary of marine issues raised by stakeholder group, TMEP responses including a cross-reference to the commonly raised issues identified in Table 1.1 as applicable, and any commitment or follow-up actions TMEP has made to date.

This is a list of the abbreviations and acronyms used in this response.

Term	Meaning
BBL/D	Barrels per Day
BC	British Columbia
BCIT	British Columbia Institute of Technology
BCCPA	BC Coast Pilots Association
CCG	Canada Coast Guard
CN	CN Rail
CNR	Canadian National Rail
CoV	City of Vancouver
COSBC	Chamber of Shipping BC
COPC	Chemicals of Potential Concern
DFO	Department of Fisheries and Oceans
EC	Environment Canada
EMSW	Emergency Management Stakeholder Workshops
EPP	Environmental Protection Plan
ERP	Emergency Response Plan
ESA	Environmental and Socio-Economic
EVOS	Exxon Valdez Oil Spill
GHG	Greenhouse Gas(es)



Term	Meaning
HHRA	Human Health Risk Assessment
ICS	Incident Command System
IHS	IHS Global Canada Limited
IMO	International Maritime Organization
IMT	Incident Management Team
INTERTANKO	International Association of Independent Tanker Owners
IOPC	International Oil Pollution Compensation Fund
KMC	Kinder Morgan Canada
LTMP	Long Term Monitoring Plan
MLA	Marine Liability Act
MRA	Movement Restricted Area
NEB	National Energy Board
PMV	Port Metro Vancouver
PPA	Pacific Pilotage Authority
RAP	Reduced Activity Period
RSA	Regional Study Area
SCAT	Shoreline Clean Up Assessment Technique
SOPF	Ship-Source Oil Pollution Fund
SRKW	Southern Resident Killer Whale
TC	Transport Canada
TERMPOL	Technical Review Process of Marine Terminal Systems and Transshipment Sites
TMEP	Trans Mountain Expansion Project
TMPL	Trans Mountain Pipeline Ltd.
TRB	Transportation Research Board
US	United States
VCS	Vapour Control System
VCU	Vapour Combustion Unit
VEC	Vancouver Economic Commission
VRU	Vapour Recovery Units
WCMRC	Western Canada Marine Response Corporation



ISSUES, CONCERNS AND COMMON TRANS MOUNTAIN RESPONSES FOR THE MARINE CONSULTATION PROGRAM

Code	Interest/Issue/Concern	Trans Mountain Response	Reference
1.0 E	nvironment - Marine Impacts	·	
1.A	Potential environmental impacts of a spill in Fraser Delta ecosystem and Burrard Inlet ecologically sensitive areas	The Trans Mountain Pipeline Ltd. (TMPL) has been operating safety for over 60 years. This includes Westridge Marine Terminal (Westridge) where tankers have been loading safety since the dock was commissioned in 1956. While Trans Mountain does not own or operate the vessels calling at the Westridge Marine Terminal, it is responsible for ensuring the safety of the terminal operations. In addition to Trans Mountain's own screening process and terminal procedures, all vessels calling at Westridge must operate according to rules established by the International Maritime Organization (IMO), Transport Canada (TC), the Pacific Pilot Authority (PPA), and PMV.  Trans Mountain recognizes the high consequence potential of the increased Project-related marine vessel traffic.  Trans Mountain is committed to keeping its operations safe, while protecting its employees, facility users and visitors, the public and the environment. Trans Mountain strives to safeguard its facilities and to meet or exceed all applicable federal, provincial and local safety regulations.  Western Canada Marine Response Corporation (WCMRC) is the TC-certified spill responder for Canada's west coast. WCMRC's mandate is to ensure there is a state of preparedness in place and to mitigate the impact should an oil spill occur. This includes the protection of wildlife, economic and environmental sensitivities, and the safety of both the responders and the public. View WCMRC's website at <a href="http://wcmrc.com">http://wcmrc.com</a> .  Trans Mountain is a member of WCMRC and works closely with them and other members to ensure WCMRC remains capable of responding to spills from vessels loading or unloading product or transporting within their area of jurisdiction.	Section 5.6.2 of Volume 8 (Filing IDA3S5Q3), Environmental effects of a hypothetical oil spill for marine transportation  Section 8.3 of Volume 7 (Filing ID A3S4V6) discusses potential effects of a marine oil spill at Westridge Terminal on the environment.  Section 5.7 of Volume 8 (Filing ID A3S4Y9) – Hypothetical Spill Scenario: Oil Spill from a Tanker at Arachne Reef  Section 4.5.2 of Volume 7 (Filing ID A3S4V5) discusses WCMRC as part of external spill response resources
1.A.1	Threat to the regenerated herring fishery and salmon populations	In compliance with <i>Canada's Fisheries Act</i> , it is Trans Mountain's responsibility to ensure the proposed work or activity will not likely result in serious harm to fish or any permanent alteration to, or destruction of, fish habitat. Where harm cannot be avoided, Trans Mountain will work with the NEB and Department of Fisheries and Oceans (DFO) to determine serious harm and identify appropriate conditions to proceed.  Key issues for marine fish and fish habitat were identified through discussions with federal government agencies, including DFO, Environment Canada (EC) and PMV, through feedback received from public participants at open houses and Environmental and Socio-Economic (ESA) workshops held in the Lower Mainland and southern Vancouver Island, and through the professional judgment of the assessment team based on extensive experience working on marine transportation projects in British Columbia (BC).  For example, construction of Westridge Marine Terminal will result in the loss and/or alteration of intertidal and subtidal habitat, some of which could be used as herring spawning habitat. While herring spawn has not been observed in the vicinity of the Terminal, there is some indication local herring populations are rebuilding, as evidenced by the 2009 spawn observed in False Creek - the first spawn at this location in many decades. To ensure there is no net loss of productive capacity of marine fish habitats due to construction of the Westridge Marine Terminal, any unavoidable loss of fish habitat will be compensated for by the creation or enhancement of new fish habitats.  Currently, the preferred marine habitat compensation option is the construction of subtidal rocky reefs. These reefs would be colonized by a diversity of algae and invertebrates and would provide high-value habitat for a variety of commercially, ecologically and culturally important fish species, including juvenile salmon, herring and rockfish.  Sections 4.3.6 and 4.4.4 of Volume 8A evaluates potential Project effects on fish and fish	Section 7.6.9 of Volume 5A Westridge Terminal, (Filing ID A3S1R0)  Section 8.3.3.1.2 of Volume 7 Hypothetical Spill Scenario Ecological Risk Assessment: Westridge Marine Terminal (Filing ID A3S4V6)  Sections 4.3.6 and 4.4.4 of Volume 8A Marine Transportation (Filing ID A3S4Y3)  NEB IR No. 1.51 (Filing ID A3Y2K0)  Preliminary Marine Fish Habitat Offsetting Plan (Filing ID A4A4E4)
1.A.2	Threat to newly returned resident whale populations (Howe Sound, English Bay, Burrard Inlet)	Refer to responses 3.A and 3.B for information regarding steps taken to prevent spills from tankers. Despite the low probability of a marine oil spill, if one were to occur there is potential for oiling of marine mammals such as whales. Actual effects would depend upon the size of the oil spill, the efficacy of measures intended to promptly contain and recover spilled oil, the ability of oil spill responders to capture and treat oiled animals, and the intrinsic sensitivity of the animals to exposure.  Trans Mountain is consulting with local environmental stewardship organizations to understand local efforts to conserve and protect marine mammals on BC's south coast.	Section 8.3.3.1.4 of Volume 7 - Ecological Risk of Hypothetical Oil Spill at Westridge Marine Terminal (Filing ID A3S4V6)  Sections 4.3.7 and 4.4.5 of Volume 8A (Filing ID A3S4Y3)
		Sections 4.3.7 and 4.4.5 of Volume 8A evaluates potential Project effects on Marine Mammals.	



TABLE 1-1
ISSUES, CONCERNS AND COMMON TRANS MOUNTAIN RESPONSES FOR THE MARINE CONSULTATION PROGRAM (continued)

Code	Interest/Issue/Concern	Trans Mountain Response	Reference
l.0 E	nvironment - Marine Impacts (cont	tinued)	
I.A.3	Effects on Marine Birds (resident and migratory)	Marine birds were part of the effects assessment for the Project. Indicator species were reviewed in consultation with marine stakeholders in Vancouver and Victoria, BC in Spring 2013.	Section 8.3.3.1.3 of Volume 7 - Ecological Risk of Hypothetical oil spill at Westridge Marine Terminal (Filing ID A3S4V6)
		As described in Trans Mountain's Application, Project effects (permanent or long-term) can most likely be technically or economically mitigated. Consequently, it is concluded the Project's contribution to cumulative effects on marine birds within the Marine regional study area (RSA) will be not significant.	Section 4.4.6 of Volume 8A (Filing ID A3S4Y3)
		Where practical, the proposed pipeline route will remain within the existing TMPL right-of-way or parallel existing roads, which will minimize new disturbances to ecological communities. Every effort is made to minimize new disturbances to ecological communities, to minimize impact to wildlife, water courses and key wildlife biodiversity zones. A detailed Environmental Protection Plan (EPP) will be submitted to the NEB, which will document every linear metre of the construction right-of-way and mitigation strategies to help avoid or minimize environmental impacts from construction.	
		Trans Mountain will work with EC and comply with the <i>Migratory Birds Convention Act</i> Migratory Birds Sanctuary Regulations related to the Project components and impacts. Trans Mountain will conduct clearing and preconstruction activities outside the minimum migratory bird Reduced Activity Period (RAP) of May 1 to July 31 where practicable. In the event of schedule changes and clearing activities are planned during the migratory bird RAP, a migratory bird nest sweep will be conducted. In the event an active nest is found, a protective buffer will be established around the net. The size of the buffer will be influenced by the status of the bird. Typically a 30 m buffer is applied to a songbird nest and a 100 m buffer around waterfowl or raptor nests. If a bird species with a provincially or federally recommended setback distance is found, then that buffer will be applied around the nest, unless otherwise authorized by the appropriate regulatory authority.	
		The marine transportation acoustic environment assessment considers increased frequency of noise events like ship anchors being raised and lowered and vessel horns. The types of noise events are not expected to change from existing vessel operations, however, the frequency may increase.	
		Section 4.4.6 of Volume 8A evaluates potential effects of the Project on marine birds	
I.A.4	Environmental conservation as mitigation for impacts	Trans Mountain continues to be involved in initiatives to enhance the fish and wildlife habitat within the Company's operating areas.	City of Port Moody IR No. 1.3.17a (Filing ID A3X5Z8)
		Trans Mountain continues to engage stakeholders to better understand local concerns and priorities for environmental protection and enhancement. Following the submission of its Application, Trans Mountain continued its work to refine the Project design, to complete additional field studies and to identify potential investments in local benefits including opportunities for environmental enhancement.	
I.B	Increase in spill risk	Trans Mountain has been in consultation with various maritime authorities such as TC, PMV, PPA, BC Coast Pilots Association, Chamber of Shipping BC (COSBC), WCMRC, tug providers, and others in the maritime community to identify potential improvements to existing navigational safety controls related to the predicted increase in tanker traffic as a result of the Project.	Section 5.3.2 of Volume 8A (Filing ID A3S4Y4)
		In order to reduce the probability of an accident occurring that would result in a spill from a Project-related tanker, Trans Mountain is seeking endorsement from TC for additional measures to improve navigational safety outlined in Section 5.3.2 of Volume 8A. This includes additional tug escort, and moving safety zone around laden tankers.	
		Provided the proposed additional navigational controls were implemented as a result of the Project, the risk of a credible worst-case oil spill resulting from the Project-related increase in tanker traffic would be about the same as it is today, without the Project.	
		A summary of the results of the risk assessment for the proposed Project is provided in Section 5.3.2 of Volume 8A.	
I.B.1	Increase in risk with increase in tanker traffic	Risk management for the proposed expansion is focused on minimizing the potential effects of increased vessel transits (i.e. increase in frequency).	Section 5.3.2 of Volume 8A (Filing ID A3S4Y4)
		A summary of the results of the risk assessment for the proposed Project is provided in Section 5.3.2 of Volume 8A.	
I.B.2	Increased risk with increased volumes of oil transiting the harbour	Risk is a product of frequency times the consequence. The size of vessel remains the same with the proposed expansion (i.e. up to Aframax class vessels); therefore, the consequence of a marine oil spill remains the same as it would be today.	Section 5.3.2 of Volume 8A (Filing ID A3S4Y4)
	Haiboui	A summary of the results of the risk assessment for the proposed Project is provided in Section 5.3.2 of Volume 8A.	



TABLE 1-1
ISSUES, CONCERNS AND COMMON TRANS MOUNTAIN RESPONSES FOR THE MARINE CONSULTATION PROGRAM (continued)

Code	Interest/Issue/Concern	Trans Mountain Response	Reference
	Environment - Marine Impacts (con		
1.B.3	Spill response times, WCMRC equipment locations and	Increase in tanker traffic would increase the financial contribution to the spill response capacity through membership fees and a per tonne bulk oil cargo fee.	Section 5.5 of Volume 8A (Filing ID A3S4Y6)
	response capacity	WCMRC is completely funded by industry. Four major oil companies, Imperial Oil, Shell Canada, Chevron and Suncor, along with Trans Mountain are the shareholders. WCMRC has a membership of more than 2,000 marine operators, air services, lumber mills, fishing camps, ferries, port authorities and cruise ships. Annual membership dues assist in WCMRC's funding. See <a href="https://www.wcmrc.com">www.wcmrc.com</a>	Technical Report 8C 12-S12 in Volume 8C (Filing ID A3S5I9)
		Section 5.5 of Volume 8A provides an overview of current spill response capability and proposed improvements.  Technical Report 8C 12-S12 in Volume 8C is a report by WCMRC regarding future oil spill response approach plan recommendation for bases and	
		equipment.	
.B.4	Response Plans for sensitive or populated shorelines ( <i>i.e.</i> Point Grey, Maplewood Flats, Indian Arm, Port Moody Arm)	WCMRC is currently undertaking a mapping update program for Geographic Response Plans. The plan is to map the entire BC coast, including Burrard Inlet. WCMRC will connect with municipal emergency planners and First Nations to seek their assistance in identifying environmental, cultural and economic sensitivities in the inlet. Through engagement, top sensitivities and appropriate booming strategies will be updated in existing site-specific Geographic Response Plans to maximize the effectiveness of clean up strategies while protecting sensitive and valuable land areas.	Section 4.1.3 of Volume 8C Technical Report TR 8C-12 S12 (Filing ID A3S5I9)
.B.5	Implications of the closure of the Kitsilano Coast Guard Station to	The impact of the Kitsilano Coast Guard Station closure on commercial marine traffic is low.	Volume 3A – Public Consultation, Table 1.7.4 (Filing ID A3S0R5)
	spill response and community safety	In the case of a marine oil spill, through its environmental response program, the Canada Coast Guard (CCG) is responsible for monitoring and directing the clean-up of ship-sourced spills of oil and other pollutants into Canadian waters. The actual response operation is carried out by WCMRC. CCG responsibilities include monitoring clean-up efforts by polluters and managing cleanup efforts when polluters are unknown, unwilling or unable to respond to a marine pollution incident.	Volume 8A – Marine Transportation, Section 5.0 (Filing ID A3S4Y3)
.B.6	Coordination with local resources (i.e. municipal,	The Incident Command System (ICS) is used to provide a structured and consistent approach to management of the pipeline emergency and provides seamless integration with third parties through a Unified Command structure. More detail on Unified Command and ICS is available in Section 4.3 of	District of North Vancouver IR No. 1.5.07a (Filing ID A3Y2J7)
	provincial) in the event of a marine oil spill	Volume 7.	Section 4.3 of Volume 7 (Filing ID A3S3Y0).
		Beginning in September 2013, Trans Mountain initiated delivery of Emergency Management Stakeholder Workshops with emergency managers and first responders in regional districts along the pipeline corridor. In December 2013 a workshop was held at E-Comm in the City of Vancouver (CoV) with the participation of the Regional Emergency Planning Committee. This was the first step in a multi-year process to review the current emergency preparedness and response plans for Trans Mountain and initiate stakeholder input on the development of an updated Emergency Response Plan (ERP) for the expanded system.	
.B.7	Impacts of a spill on human health and quality of life in	Trans Mountain has proposed additional safety enhancements to prevent spills and mitigate their impacts. Refer to Section 3.0 and 8.below.	Section 4.3.12 of Volume 8A - ESA (Filing ID A3S4Y3)
	coastal areas	In support of the ESA for the Project, Kinder Morgan Canada (KMC) has commissioned a Human Health Risk Assessment (HHRA), the principal aim of which is to identify and understand the potential short-term and long-term health risks, including carcinogenic risks, to people exposed to the chemicals that could be released to the environment from a marine spill.	Supplemental HHRA (Filing ID's A61083, A61084, A61085 and A61086)
.C	Behaviour and Effects of diluted bitumen	Various studies have been undertaken and are ongoing about the fate and behaviour of oils in the marine environment. The studies are available on the Trans Mountain website at www.transmountain.com	Volume 8C, TC 8C 12-S7 – Fate and Behaviour of Diluted Bitumen Oils on Marine Waters (Filing ID A3S5G2)
		The focus of any oil spill is to contain the spill and begin recovery as soon as possible to mitigate any long-term effects.	



ISSUES, CONCERNS AND COMMON TRANS MOUNTAIN RESPONSES FOR THE MARINE CONSULTATION PROGRAM (continued)

Code	Interest/Issue/Concern	Trans Mountain Response	Reference
1.0 E	Environment - Marine Impacts (con	tinued)	
1.C.1	Proportion of product that can be cleaned up following a spill	Trans Mountain has proposed significant increase in spill response capacity and reduction in response times for marine spill response. Effectiveness of future spill response was evaluated using computer simulation. A credible worst case oil spill cleanup has been simulated by computer and the report was filed with the Application (Refer to TR 8C-12 S10 and TR 8C-12 S12).	Section 5.4 of Volume 8A – Fate and Behaviour of an oil spill in a marine environment. (Filing ID A3S4Y5)Section 5.5 of Volume 8 (Filing ID A3S4Y6) Oil Spill Preparedness and Response
		The amount of product that can be recovered will depend on response capacity in place proximate to the spill location, as well as many other factors such as weather and product volume spilled. In some situations, it is not possible to remove or fully remediate the impacts of a spill. These situations may occur due to limited access to the area or in situations when trying to remediate the area will result in more harm ( <i>i.e.</i> disturbance/damage) than	Section 5.7 of Volume 8 (Filing ID A3S4Y9) – Hypothetical Spill Scenario: Oil Spill from a Tanker at Arachne Reef
		good. In these situations a Risk Management Plan will be developed and a Long Term Monitoring Program will be implemented to ensure that contamination is not migrating/moving and, is not a threat or risk to the public or environment. As with the remediation process, other agencies or affected stakeholders and Aboriginal groups will be involved in the assessment of risk and development of a Long Term Monitoring Program.	Technical Report TR 8C-12 S10 (Filing ID A3S5I3) Modelling the Fate and Behaviour of Marine Oil Spills
		and development of a Long Term Momenting Program.	Technical Report TR 8C-12 S 12 (Filing ID A3S5I9) Future Oil Spill Response Approach Plan
			Sections 3.2 and 5.0 of Volume 7 – Risk Assessments and Management of Pipeline and Facility Spills (Filing ID A3S4V5)
1.D	Emission impacts from vessels in transit	All vessels calling to PMV are required to comply with international and local regulations on the types of engines ( <i>i.e.</i> both propulsion and generators) that they are fitted with. Those engines have to meet strict exhaust emission requirements set by IMO and carry manufacturers' certificates to show that. Regular surveys and checks are conducted by local authorities to verify this and to ensure that the engines are maintained to ensure their continued	Sections 4.3.3, 4.3.4 and 4.4.2 of Volume 8A – ESA, Marine Transportation (Filing ID A3S4Y3)
		adherence to those standards.	Marine Air Quality and GHG Marine Transportation Technical Report (Filing ID A61086)
		There is an ongoing internationally mandated process underway to improve the type of fuel used by the ships. Vancouver is part of the North American Emissions Control Area, as are Seattle, San Francisco, and Los Angeles, and all ships entering or plying within 200 miles of the BC coast have to change over to cleaner burning fuel. Mandated further improvement in fuel standards take effect in 2015 and 2020, which period straddles the Project's late 2018 coming into operation schedule.	Marine Air Quality and GHG Marine Transportation Technical Report (Filing ID A4F5H8)
		In addition, every ocean going commercial vessel is currently required by the IMO to have in place a Shipboard Energy Efficiency Management Plan.  From a more practical perspective, given the high cost of fuel, ship operators benefit greatly by taking extra care to ensure that the ship's engines	Volume 5A, Sections 5.4, 6.0 and 7.5.4 (Filing IDs A3S1L5, A3S1Q6 and A3S1Q9)
		operate efficiently, which plays a very positive overall role in reducing emissions as well. All of the above factors help prevent degradation of air quality in the region from shipping. Trans Mountain, as part of pre-arrival checks, only accepts modern vessels that meet and follow all of the above international requirements to load at Westridge.	Volume 5C Air Quality and GHG Technical Report (Filing ID A3S1U0)
		** Note: December 1, 2014, an update to the Marine Air Quality and greenhouse gas (GHG) Technical Report for Marine Transportation was filed, which indicated emissions will remain within Metro Vancouver, provincial and national objectives.	Volume 6B Pipeline EPP, Sections 7.0 and Appendix O (Filing IDs A3S2S3 and A3S2S4)
		maiotica cinicatoria mini fontani maini motto variocavor, provincia ana national especiavos.	Volume 3A, Public Consultation (Filing ID A3S0R5)
1.D.1	operations vapour co	There will be no fugitive emissions associated with product loading activities at the Westridge Marine Terminal. During product loading, which includes a vapour combustion unit (VCU) and/or vapour recovery units (VRUs) under normal operations, 100% of any potential vapours will be collected by the Vapour Control System (VCS).	Section 3.4.4.6.1 of Volume 4A – VRU, Facilities Design, Westridge Marine Terminal (Filing ID A3S0Y9)
			Section 7.6.4 of Volume 5A (Filing ID A3S1Q9)
		More information on this topic was provided in Trans Mountain's Response to Lower Fraser Valley Air Quality Coordinating Committee - Informal Information Requests from September 25 and November 13, 2014 Meetings.	Marine Air Quality and GHG Marine Transportation Technical Report (Filing ID A4F5H8)
		Section 7.6.4 of Volume 5A (Filing ID A3S1R0) discusses potential air emissions for Westridge Marine Terminal.	Response to Lower Fraser Valley Air Quality Coordinating Committee - Informal Information Requests from September 25 and November 13, 2014 Meetings (Filing ID A4FAC9)



TABLE 1-1
ISSUES, CONCERNS AND COMMON TRANS MOUNTAIN RESPONSES FOR THE MARINE CONSULTATION PROGRAM (continued)

Code	Interest/Issue/Concern	Trans Mountain Response	Reference
1.0 E	Environment - Marine Impacts (cont	tinued)	·
1.D.2	Emissions of vessels at anchor	Ships at anchor within the Port are under the jurisdiction of PMV.  PMV encourages the reduction of emissions from vessels at berth or anchored within PMV's jurisdiction through the EcoAction program. This voluntary program provides discounted harbour rates for vessels complying with the program.  Additional information on PMV harbour air emission standards can be found in the Fee Document at: <a href="http://portmetrovancouver.com/en/portusers/fees.aspx">http://portmetrovancouver.com/en/portusers/fees.aspx</a> ** Note: December 1, 2014, an update to the Marine Air Quality and GHG Technical Report for Marine Transportation was filed, which indicated emissions will remain within Metro Vancouver, provincial and national objectives.	PMV Harbour Air Emissions Standards <a href="http://portmetrovancouver.com/en/portusers/fees.aspx">http://portmetrovancouver.com/en/portusers/fees.aspx</a> Marine Air Quality and GHG Marine Transportation Technical Report (Filing ID A4F5H8)
1.D.3	Emissions from terminal construction	<ul> <li>Specific mitigations measures to manage noise and air quality impacts from construction include:</li> <li>Trans Mountain will consult with and inform landowners and stakeholders of the potential to be affected by emissions from construction activities prior to commencement of these activities in the proximity.</li> <li>Restrict the duration vehicles and equipment are allowed to sit and idle to less than one hour unless air temperatures are less than 0°C.</li> <li>Use multi-passenger vehicles for the transportation of crews to and from the job sites, where feasible.</li> <li>Ensure equipment is well-maintained during construction to reduce air emissions.</li> <li>Control emissions to ambient air from construction at the facility sites or associated components so concentrations of pollutants do not exceed "maximum desirable levels" defined in the <i>Canadian Environmental Protection Act</i> and other appropriate regulatory authority ambient air quality objectives.</li> <li>Refer to environmental resource-specific mitigation tables for air quality provided in Appendix O of Volume 6C.</li> <li>For more information on the processes to be used for construction of the expanded Westridge Marine Terminal, Refer to the response to City Burnaby IR No. 1.18.13a.</li> </ul>	Volume 5A: ESA – Biophysical, Sections 5.0, 6.0, 7.0 and 8.0 (Filing IDs A3S1L5, A3S1Q6 and A3S1Q9)  Section 5.2.8 of Volume 4B – Noise Control Plan, Project Design and Execution – Construction (Filing ID A3S1K6)  Volume 5C: ESA - Biophysical Technical Reports TR-5C4: Marine Air Quality and GHG, Section 9.4.2. (Filing ID A3S1T3)  Appendix O of Volume 6C (Filing ID A3S2S6)  Volume 7: Risk Assessment and Management of Pipeline and Facility Spills, Section 7.0 (Filing ID A3S4V6)  Volume 8A: Marine Transportation, Sections 4.2, 4.3, 4.4, 5.6 and 5.7 (Filing IDs A3S4X6, A3S4Y3, A3S5Q3 and A3S4Y9)  Volume 8B: Technical Reports, Marine Air Quality and GHG Emissions (Filing ID A3S4K1)  Response to City Burnaby IR No. 1.18.13a (Filing ID A3Y2E6) Construction of new dock complex
1.E	Water quality impacts	Storm water run-off will be collected from areas such as:  • dock loading platforms • tank containment areas • manifold areas • WRU and related equipment areas  Collected storm water will be directed through separators and released in accordance with permit requirements.  Sections 7.6.3 and 7.11.1.3 of Volume 5A discusses potential water quality impacts of Westridge Marine Terminal. Section 4.3.2 of Volume 8A discusses potential water quality impacts of Marine Vessel Transportation.  Section 8.3.3.2.1 of Volume 7 discusses risk characterization of hypothetical oil spill Potential Effects on Marine Water and Sediment Quality at Westridge Marine Terminal.	Sections 7.6.3 and 7.11.1.3 of Volume 5A (Filing ID A3S1R0)  Section 8.3.3.2.1 of Volume 7 (Filing ID A3S4V6)  Section 4.3.2 of Volume 8A (Filing ID A3S4Y3)



TABLE 1-1
ISSUES, CONCERNS AND COMMON TRANS MOUNTAIN RESPONSES FOR THE MARINE CONSULTATION PROGRAM (continued)

Code	Interest/Issue/Concern	Trans Mountain Response	Reference
1.0	<b>Environment - Marine Impacts (cont</b>	·	
1.E.1	Introduction of invasive species from ocean-going ships calling at Westridge Marine Terminal	Ballast water releases in Canadian waters are strictly regulated by TC under the Canada Shipping Act, 2001 in order to prevent the release of contaminated substances and/or invasive species.	Section 7.6 of Volume 5A Effects Assessment, Westridge Marine Terminal Expansion and Operations (Filing ID A3S1R0)
		New IMO regulations regarding Ballast Water Management that are expected to come into effect will require additional technological measures to be fitted on vessels. Visit <a href="https://www.imo.org">www.imo.org</a> to learn more.	
		The potential introduction of invasive species from Project-related tankers is discussed in the marine fish and fish habitat assessment for the Westridge Marine Terminal - Section 7.6 of Volume 5A.	
1.E.2	Bilge water management, oily water separation	Vessel Pollution and Dangerous Chemicals Regulations (annexed to the <i>Canada Shipping Act</i> , 2001) were put in place to prevent the recognized adverse effects of oil on water and sediment quality and on the health of marine birds and mammals. Bilge water must be treated before being discharged at sea or must be disposed of at an authorized facility. The release of contaminated bilge water is illegal in Canadian waters.	Section 4.3.13.3.1 of Volume 8A Marine Transportation (Filing ID A3S4K6)
1.E.3	Long term effects of oil spills on water quality (i.e. what were effects from Westridge 2007	Ongoing monitoring of marine plant and animal life in the affected area has shown very good recovery from the 2007 spill. Stantec conducted KMC's long term monitoring program post-2007 Westridge spill. The results of the monitoring program are available at <a href="http://www.transmountain.com/westridge-2007-spill">http://www.transmountain.com/westridge-2007-spill</a>	Section 5.0 of Volume 8A - Marine Transportation (Filing ID A3S4Y3)
	spill?) Is the Long Term Monitoring Plan (LTMP) report public? How often are assessments being done?	<u> </u>	http://www.transmountain.com/westridge-2007-spill
1.E.4	Shoreline erosion due to increase in tanker traffic wake	Within Burrard Inlet, Project-related tankers and tugs travel at speeds of eight knots or less (typically around six knots), this is not expected to create wake that would have impacts above and beyond other commercial or recreational vessel traffic transiting Vancouver Harbour. Tables 4.3.6.4 and 4.3.6.5, Section 4.3.6.6.1 of Volume 8A describes maximum predicted wave heights of 0.03 m at a distance of 500 m and 0.02 m at a distance of 1,000 m.	Tables 4.3.6.4 and 4.3.6.5, Section 4.3.6.6.1 of Volume 8A (Filing ID A3S4K6)
2.0	Marine Terminal		
2.A	Alternate terminal locations ( <i>i.e.</i> Roberts Bank, Cherry Point – USA, Shell, City of Burnaby	As a matter of due diligence in proposing the Project, Trans Mountain evaluated the potential of a variety of marine terminal locations, including an expansion of its existing Westridge Marine Terminal.	NEB IR No. 2.044a (Filing ID A3Z4T9)
	property east of existing Westridge Marine Terminal)	The Westridge Marine Terminal has operated safely for over 60 years and the proposed expansion of this facility is considered the best, most responsible option.	
2.B	Impacts from construction of terminal marine life	Construction activities associated with the expansion of the Westridge Marine Terminal have the potential to directly and indirectly affect marine fish and fish habitat through:	Section 7.6.9 of Volume 5A (Filing ID A3S1R0)  Volume 6D Westridge Marine Terminal EPP (Filing ID A3S2S9)
		<ul> <li>alteration or loss of marine fish habitat</li> <li>change in productive capacity of marine fish habitat</li> <li>injury or mortality of marine fish</li> </ul>	Volume of Woodlage Marine Ferninal 211 (Filling 12 7100200)
		Injury or mortality of marine fish	
		EPPs will identify potential mitigation and reclamation measures that may be implemented during detailed design, pre-construction, construction and post-construction activities at the Westridge Marine Terminal, and contingency and management plans to address potential effects, events or conditions that may arise during construction. In addition, the Westridge Marine Terminal EPP outlines environmental inspection and construction inspection roles and responsibilities during and following construction.	
		Section 7.6.9 of Volume 5A describes potential Project effects on fish and fish habitat.	



TABLE 1-1
ISSUES, CONCERNS AND COMMON TRANS MOUNTAIN RESPONSES FOR THE MARINE CONSULTATION PROGRAM (continued)

Code	Interest/Issue/Concern	Trans Mountain Response	Reference
2.0	Marine Terminal (continued)		1
2.C		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 one hour, unless air temperatures are less than 0°C.	Section 7.6.6 of Volume 5A (Filing ID A3S1R0)  Section 3.4.4.6.1 of Volume 4A (Filing ID A3S0Y9)
	odours, visual impacts, vessels using berths as anchors, number of tankers that can berth concurrently). Can shore power	Trans Mountain will develop a Noise Management Plan and adhere to all federal ( <i>i.e.</i> EC, <i>Motor Vehicle Safety Act</i> , Oil and Gas Occupational Safety and Health Regulations, Health Canada), and provincial ( <i>i.e.</i> Noise Control, BC Oil and Gas Commission, <i>Worker's Compensation Act</i> , Occupational Health and Safety Regulations [BC Reg 296/97 as amended] Section 7.2 [BC Reg. 382/2004, s.1]) and municipal guidelines and regulations for noise	BC Hydro IR 1.3.b (Filing ID A3X5X1)  Marine Air Quality and GHG Marine Transportation Technical
	be offered/required to offset noise and emissions concerns?	management [Section 7.0].  Mitigation to reduce light and visual effects may include landscaping to limit visual effects to wildlife and the public ( <i>i.e.</i> leave a vegetation buffer) and installing lighting control systems in the facility site that permit the reduction of the amount of lighting during periods of low activity.	Report (Filing ID A4F5H8)  Response to Lower Fraser Valley Air Quality Coordinating Committee - Informal Information Requests from September 25
		As a measure to help reduce and mitigate GHG emissions from ships in port, a number of ports around the world, including PMV, provide the ability for ships fitted with special high voltage electrical power connectors to connect to shore power during their time alongside a berth. Trans Mountain has checked with International Association of Independent Tanker Owners (INTERTANKO), whose members control over 3,000 tankers, and was advised that there are virtually no tankers able to connect to shore power due to safety concerns (refer to the response to Syme N IR No.1.3b. Westridge Marine Terminal is being designed with the ability to retro-fit shore power facilities for tankers, should conditions change in future.	and November 13, 2014 Meetings (Filing ID A4FAC9)  Response to Syme N IR No. 1.3b (Filing ID A3X6U3) Marine and GHG Emissions
		There will be no fugitive emissions associated with product loading activities at the Westridge Marine Terminal because 100% of vapours will be collected by the VCS during crude oil loading, which includes a VCU and/or VRUs under normal operations.  More information on this topic was provided in Trans Mountain's Response to Lower Fraser Valley Air Quality Coordinating Committee - Informal Information Requests from September 25 and November 13, 2014 Meetings.	
2.D	Consideration of sea level rise in Terminal construction and operations	Sea level rise will be considered in the design and construction of the new Marine Terminal. Refer to Section 3.4.4.3.2 in Volume 4A for information about tide and water levels related to Westridge Marine Terminal.	Section 3.4.4.3.2 in Volume 4A (Filing ID A3S0Y9)
2.E	Fire suppression systems at the terminal (i.e. capacity, ability to fight interface fires), are fire boats required?	Westridge Marine Terminal has a fire suppression system in place. Additional fire suppression upgrades are being considered as part of the Project. Refer to Section 3.4.4.8.2 of Volume 4A for details of Westridge fire protection system.	Section 3.4.4.8.2 of Volume 4A (Filing ID A3S0Y9)
2.F	Ability to contribute to marine fire response for Vancouver Harbour	Trans Mountain understands PMV is involved in discussions with the CoV regarding opportunities for PMV, representing the interests of the Port its tenants and users, to contribute towards the cost of a new consortium and funding arrangement, which would allow the purchase two new modern fire boats, new boat sheds, and allow for enhanced training of enough CoV fire fighters to provide continuous fire response coverage.	Province BC IR No. 1.1.78 (Filing ID A3S4T3)
		Trans Mountain understands the details of the program, including timing, funding and participation are not yet finalized. Through its existing relationship with PMV as a tenant within the Port, Trans Mountain is exploring the opportunity to support the initiative.	
2.G	Potential geotechnical issues with Westridge Marine Terminal location	The expanded facilities will be built in accordance with the latest building codes, which will account for any geotechnical issues identified through a geotechnical assessment of the foreshore and jetty sites that are currently ongoing. These will guide the engineers on specific engineering design and construction details required to be undertaken in constructing proposed Westridge facilities.	Appendix A of Volume 7 – Threat Assessment Report (Filing ID A3S4V7)



TABLE 1-1
ISSUES, CONCERNS AND COMMON TRANS MOUNTAIN RESPONSES FOR THE MARINE CONSULTATION PROGRAM (continued)

Code	Interest/Issue/Concern	Trans Mountain Response	Reference
2.0	Marine Terminal (continued)		
2.H	Move new dock away from neighbours (to east)	TMEP proposes to expand the existing Trans Mountain Pipeline System, including the existing terminal facilities. Paralleling and expanding existing facilities reduces new disturbance, uses existing infrastructure and. minimizes environmental effects. This is consistent with good project planning and best environmental practices.	Section 3.4.4.1.4 of Volume 4A – Westridge Marine Terminal – Proposed Expansion (Filing ID A3S0Y9).  City Burnaby IR No. 1.1.01a (Filing ID A3Y2E6)
		Twenty different layouts were considered for the Westridge dock complex. The process of selecting a location and orientation for the berths is influenced by a number of different criteria and involves optimizing a number of often competing interests.	Corcoran K IR No. 1.2.2 (Filing ID A3X 6A9)
		In assessing the various criteria, the overriding priority is the terminal safety as it pertains to navigation/vessel safety and spill avoidance, as well as safety and of operating personnel and neighbours.	Technical Update 2 – Part 2 (Filing ID A4A4D5) Update Facilities. Also Attachments 2.0-1 (Filing ID A4A4D9), Attachment 2.0-3 (Filing ID A4A4E1) and Attachment 2.0-4 (Filing ID A4A4E2)
		The dock layout option presented in the Application has been deemed the best suited for the location at Westridge and provides the necessary high degree of safety for the terminal, vessels, workers and other users of Burrard Inlet while minimizing the impact on those residing near the marine terminal to the greatest practical extent.	(Filling ID A4A4E1) and Attachment 2.0-4 (Filling ID A4A4E2)
		*Note: In response to input received during public consultations since May 2012, the dock footprint and location design has been modified to minimize the impact on the neighbouring residents of Westridge (Refer to Technical Update 2 – Part 2 Update Facilities).	
2.1	Alternate dock layouts. What other options were considered?	Twenty different layouts were considered for the Westridge dock complex. The process of selecting a location and orientation for the berths is influenced by a number of different criteria and involves optimizing a number of often competing interests.	Corcoran K IR No. 1.2.2 (Filing ID A3X6A9)
		In general, it is not possible to optimize all of these criteria simultaneously, as optimizing one criterion often means adjusting another. For example, spacing the berths further apart to provide more room for manoeuvring increases the overall environmental footprint and intrudes more into neighbouring view-sheds. In assessing the various criteria, the overriding priority is the terminal safety as it pertains to navigation/vessel safety and spill avoidance, as well as safety and of operating personnel.	Section 3.4.4.1.4 of Volume 4A of the Application (Filing ID A3S0Z0)  Technical Update 2 – Part 2 (Filing ID A4A4D5) Update Facilities.  Also Attachments 2.0-1 (Filing ID A4A4D9), Attachment 2.0-3  (Filing ID A4A4E1) and Attachment 2.0-4 (Filing ID A4A4E2)
		The dock layout option presented in the Application has been deemed the best suited for the location at Westridge and provides the necessary high degree of safety for the terminal, vessels, workers and other users of Burrard Inlet while minimizing the impact on those residing near the marine terminal to the greatest practical extent.	
		*Note: In response to input received during public consultations since May 2012, the dock footprint and location design has been modified to minimize the impact on the neighbouring residents of Westridge (Refer to Technical Update 2 – Part 2 Update Facilities).	
2.J	Footprint of expanded infill and new berths of Westridge Marine Terminal: How much larger,	Twenty different layouts were considered for the Westridge dock complex. The process of selecting a location and orientation for the berths is influenced by a number of different criteria and involves optimizing a number of often competing interests, which include minimizing impact (e.g. view sheds, lights, noise, odour, traffic) on neighbouring residential areas.	Section 3.4.4.1.4 of Volume 4A of the Application (Filing ID A3X6A9)
	obtrusive, visible?	In assessing the various criteria, the overriding priority is the terminal safety as it pertains to navigation/vessel safety and spill avoidance, as well as safety and of operating personnel.	Technical Update 2 – Part 2 (Filing ID A4A4D5) Update Facilities. Also Attachments 2.0-1 (Filing ID A4A4D9), Attachment 2.0-3 (Filing ID A4A4E1) and Attachment 2.0-4 (Filing ID A4A4E2)
		The dock layout option presented in the Application has been deemed the best suited for the location at Westridge and provides the necessary high degree of safety for the terminal, vessels, workers and other users of Burrard Inlet while minimizing the impact on those residing near the marine terminal to the greatest practical extent.	
		*Note: In response to input received during public consultations since May 2012, the dock footprint and location design has been modified to minimize the impact on the neighbouring residents of Westridge (Refer to Technical Update 2 – Part 2 Update Facilities).	



TABLE 1-1
ISSUES, CONCERNS AND COMMON TRANS MOUNTAIN RESPONSES FOR THE MARINE CONSULTATION PROGRAM (continued)

Code	Interest/Issue/Concern	Trans Mountain Response	Reference
2.0	Marine Terminal (continued)		
2.K	Marine Terminal (continued)  Compensation for property devaluation (impacted views, nuisance, safety)	TMEP's compensation framework for situations where we do not directly affect adjacent lands, but where the property owner is concerned about potential property value effects is addressed in Trans Mountain's response to Wembley Estates IR No. 1.  Should adjacent landowners be of the opinion that the operations related to the TMPL have caused them directly related damages as defined in the NEB Act, Trans Mountain would look to the affected parties to provide the Company with information and documentation as to the nature and extent of the actual damages.  1. More specifically, if adjacent property owners believe they have been directly affected by the Project and feel forced to sell their property, Trans Mountain would expect the owner to undertake the following process:  2. Sell the affected property to an independent third party through the open market.  3. Retain an independent licensed and certified appraiser, being a member of the Appraisal Institute of Canada, to determine the market value of the property and ascertain whether the property sold for less than market value as a result of the operations of Trans Mountain.  4. If the appraiser determines that an actual loss has occurred that is directly related to the operations of Trans Mountain, prepare and submit a claim for compensation to Trans Mountain inclosing a copy of the appraisal report to:  Manager, Land Trans Mountain Pipeline/ Kinder Morgan Canada 7815 Shellmont Street Burnaby, BC V5A 4S9  Using the information received, Trans Mountain would conduct an independent assessment, and if the Company determined that damages resulted from the Company's operations, it would provide any commensurate compensation due to the affected party.  In determining whether compensation is applicable to a specific landowner, Trans Mountain would be guided by legislative and legal requirements. In general Trans Mountain's obligation for compensation is to directly impacted landowners for damages directly related to Company operations, including	Earle T IR No. 1.1 (Filing ID A3X6C9)  Wembley Estates IR No. 1 (Filing ID A3Y3W9)
		construction.	
3.0	Marine Tankers		
3.A	Tanker Safety	While Trans Mountain does not own or operate the vessels calling at the Westridge Marine Terminal, it is responsible for ensuring the safety of the terminal operations. In addition to Trans Mountain's own screening process and terminal procedures, all vessels calling at Westridge must operate according to rules established by the IMO, TC, the PPA, and PMV.  Although Trans Mountain is not responsible for vessel operations, it is an active member in the maritime community and works with BC maritime agencies to promote best practices and facilitate improvements to ensure the safety and efficiency of tanker traffic in the Salish Sea.  Sections 1.0 and 2.0 of Volume 8A discusses tanker safety related to TMEP.	Sections 1.0 and 2.0 of Volume 8A (Filing IDs A3S4X3 and A3S4X4)
3.A.1	Tanker size and capacity	On average up to 34 Aframax class vessels are expected to call at Westridge Marine Terminal if the expansion proceeds. Section 2.1.3 of Volume 8A discusses marine vessel types and the size of vessels calling at Westridge Marine Terminal. These will be similar in size to vessels currently calling at Westridge Marine Terminal. The expansion is not proposing larger vessels.	Section 2.1.3 of Volume 8A (Filing ID A3S4X4) Existing Marine Traffic at Westridge Marine Terminal  TERMPOL 3.9 Ship Specifications in Volume 8C (TR 8C-7) (Filing ID A3S4T2)
3.A.2	Safety features such as double hull and compartmental storage of oil	Tankers are the most scrutinized vessels in the shipping industry. The international tanker inspection regime includes both mandatory regulatory inspections as well as regular inspections by private customers like Trans Mountain who are all united in their efforts to ensure the safety of marine transportation of oil cargoes. Tanker construction has evolved rapidly to meet the strictest of building standards, which meet IMO, Flag State and Class Society requirements. Various modern build features include double hulling, back-up power generators, improved agility and brake horsepower capacity, high quality corrosion control, collision-avoidance radar navigational instruments, Additionally, the entire cargo area of the typical Aframax tanker is subdivided into 12 to 14 smaller cargo tanks which are maintained in an inert condition ( <i>i.e.</i> oxygen content less than 5% volume), which removes any danger of fire or explosion in the tanks.	Section 5.0 of Volume 8A – Risk Assessment and Spill Management (Filing ID A3S4Y3)



TABLE 1-1
ISSUES, CONCERNS AND COMMON TRANS MOUNTAIN RESPONSES FOR THE MARINE CONSULTATION PROGRAM (continued)

Code	Interest/Issue/Concern	Trans Mountain Response	Reference
3.0 N	larine Tankers (continued)		
3.A.3	Improvement to tanker design, construction and operations	Tankers are built with double hulls and segregated into 12 to 14 smaller cargo holds to reduce the possibility of cargo spills and to minimize any potential spill volume, if the tanker were to collide with another vessel or run aground, damaging the structure of the tanker. Section 1.4.3 of Volume 8A describes the Journey of a Tanker and the safety considerations built into the tanker management regime.	Section 1.4.3 of Volume 8A (Filing ID A3S4X4) Journey of a Tanker
3.A.4	Records to show each tanker's safety history	While Trans Mountain does not own or operate the vessels calling at the Westridge Marine Terminal, it is responsible for ensuring the safety of the terminal operations. In addition to Trans Mountain's own screening process and terminal procedures, all vessels calling at Westridge must operate according to rules established by the IMO, TC, the PPA, and PMV.  Vessels proposed by a pipeline shipper to receive oil at the Westridge Marine Terminal are pre-screened by the Trans Mountain Loading Master using industry databases and the Company's own records before being accepted or rejected for scheduling purposes. Section 1.4.3 of Volume 8A describes the Journey of a Tanker and the safety considerations build into the tanker management regime.	Sections 1.0 and 2.0 of Volume 8A (Filing IDs A3S4X3 and A3S4X4)  Section 1.4.3 of Volume 8A (Filing ID A3S4X4) Journey of a Tanker
3.A.5	KMC's involvement in tanker safety and spill prevention. Vessel Acceptance Criteria.	As an additional layer of oversight KMC, as the operator of the Trans Mountain Pipeline, has ship acceptance criteria that must be met by any vessel prior to their arrival at Westridge and prior to any commencement of loading operations. Vessels proposed by a pipeline shipper to receive oil at the Westridge Marine Terminal are pre-screened by the Trans Mountain Loading Master using industry database and the Company's own records before being accepted or rejected for scheduling purposes. When a tanker is at the Westridge Marine Terminal, the Loading Master boards the tanker to conduct a physical inspection and to conduct a ship-shore safety meeting with the master and terminal operators. The Loading Master stays on board throughout the loading process and he/she has the authority to request the vessel to rectify any issues that might develop during the vessels' stay and to stop the loading process at any time should concerns arise. When a tanker loading is complete, the Loading Master stays on board until pilots come to move the vessel away from the dock.  Section 1.4.3 of Volume 8A describes the Journey of a Tanker and the safety considerations build into the tanker management regime.	Section 3.2 of TERMPOL 3.9 Technical report TR 8C-7 of Volume 8C (Filing ID A3S4T2)  Section 1.4.3 of Volume 8A (Filing ID A3S4X4) Journey of a Tanker
3.A.6	Increase in tanker traffic (i.e. how many?)	On average up to 34 Aframax class vessels are expected to call at Westridge Marine Terminal if the expansion proceeds. Section 2.1.3 of Volume 8A discusses marine vessel types and the size of vessels calling at Westridge Marine Terminal. Currently an average of five tanker call at Westridge Marine Terminal each month.  Currently vessels calling at Westridge Marine terminal account for approximately 2% of all marine traffic in Burrard Inlet. With the proposed expansion vessels for Trans Mountain are estimated to account for approximately 7% of the total traffic in Burrard Inlet.	Section 2.1.3 of Volume 8A (Filing ID A3S4X4) Existing Marine Traffic at Westridge Marine Terminal  TERMPOL 3.9 Ship Specifications in Volume 8C (TR 8C-7) (Filing ID A3S4T2)
3.B	Tanker navigation	The established shipping lanes maintain separation between inbound and outbound traffic, which is particularly important in different areas of the Juan de Fuca Strait and Strait of Georgia, where different types of vessels use the shipping lanes to access the ports and terminals of the Puget Sound, various ferry terminals, Robert's Bank terminal, the mouths of the Fraser River, and the Burrard Inlet/Vancouver Harbour.	Section 1.4.3 of Volume 8A – Journey of a Tanker (Filing ID A3S4X4)
3.B.1	Tanker navigation in shipping lanes through the Gulf Islands and adequacy of existing shipping lanes to accommodate increase in tanker traffic	Shipping lanes used by vessels calling at Westridge Marine Terminal are part of an internationally established shipping route and traffic separation scheme. Alternatives related to the tanker shipping lanes and traffic patterns were not considered as the shipping lanes established in the Salish Sea region have proven effective at safely managing the existing volumes of marine traffic in this region.	Section 2.2.2 of Volume 8A – Alternative considered related to marine transportation for the Project (Filing ID A3S4X4)
3.B.2	Ability of Vancouver Harbour, specifically Second Narrows, to safely accommodate more tankers	The impacts of increased vessel traffic through the movement restricted area (MRA) can be managed through efficient scheduling as tanker transit times are specific to tidal schedules. This is shown from analysis of the tides and weather as put forward in response to PMV IR No. 1.2.1.  The practices and procedures relevant to the movement of tankers into and out of the Westridge Marine Terminal include the Second Narrows MRA, which are contained in the Port Harbour Operations Manual. This MRA procedures document regulates the movement of vessel traffic within the Second Narrows, a geographically constricted area within the Burrard Inlet through which vessels calling at the Westridge Marine Terminal must pass.	Section 1.4.2.4 of Volume 8A – jurisdiction of PMV (Filing ID A3S4X3)  Section 3.2 of Appendix B to Technical Report TR 8C-10 of Volume 8C – TERMPOL 3.5 & 3.12 (Filing ID A3S4T9)  Response to PMV IR No. 1.2.1 (Filing ID A3X6V4) Analysis of Second Narrows Transits
		Regulations restrict the size and draft of tankers in relation to the available width of the channel, which is controlled by the tidal cycle. Aframax tankers are only permitted to transit during daylight regardless of whether they are empty or laden.	Second Narrows Transits



TABLE 1-1
ISSUES, CONCERNS AND COMMON TRANS MOUNTAIN RESPONSES FOR THE MARINE CONSULTATION PROGRAM (continued)

Code	Interest/Issue/Concern	Trans Mountain Response	Reference
3.0	Marine Tankers (continued)		
3.B.3	Tugboat escorts in Burrard Inlet and at Saturna Island	The tanker will start by traveling west to Berry Point with a minimum of three tethered escort tugs, two at the stern and one at the bow of the tanker. The tanker will enter the MRA at Berry Point and travel west through Second Narrows to enter the inner harbour of PMV and continue to travel west passing the First Narrows and enter English Bay. Once in English Bay, depending on the prevailing conditions, traffic and based upon the pilots' requirements, the tanker will disconnect from the escort tugs and travel through the Strait of Georgia without tug escort. An escort tug will reconnect two nautical miles north of East Point on Saturna Island just before the tanker enters Boundary Pass. From East Point the tanker will travel through Boundary Pass and Haro Strait and arrive at Brotchie Ledge. The tug will disconnect from the tanker and the two pilots will disembark from the tanker. The tug will continue untethered escort of the tanker to Race Rocks. The tanker will then travel through the Juan De Fuca Strait and exit into the Pacific Ocean passing Buoy "J". The tanker will then continue to its final destination.  Trans Mountain will require all outbound laden tankers traveling between Westridge Marine Terminal to Buoy "J" to be attended by at least one escort tug at all times. In certain high-risk transit areas, to be determined by pilots and regulatory authorities, the tug/s would be tethered to the ship.	Section 10.0 0 of Technical Report TR 8C-12 S12 WCMRC Future Oil spill Response Approach Plan (Filing ID A3S5I9)  Section 2.1 of Technical Report TR 8C-2 TERMPOL 3.2 – Origin, Destination and Marine Traffic Volume Survey (Filing IDs A3S4R7 and A3S4R8)
3.B.4	Impacts of increase tanker traffic on pleasure craft use of harbour	At present, more than 250 deep draft vessels enter the port each month — about 3,000 per year. Of those 250 per month, only eight are presently destined for Westridge Marine Terminal, five are tankers. This means traffic to Westridge currently represents less than 3% of the total traffic of PMV.  With the proposed expansion of the TMPL and associated dock facilities, the Westridge Marine Terminal is forecast to serve 37 vessels per month, of which approximately 34 would be tankers. This increased total would then represent about 14% of today's marine tanker traffic in PMV.  The marine ESA considers the potential effects of increased Project-related marine vessel traffic on recreational users in (Section 4.3.11 of Volume 8A).  *Note: As part of Technical Update No. 3 – Part 7: a Review of Marine Recreational Vessel Activities in Burrard Inlet, was filed with the NEB.	Table 1.7.3 of Section 1.7.3 of Volume 3A (Filing ID A3S0R5)  Sections 4.3.11 and 5.0 of Volume 8A - Risk Assessment and Spill Management (Filing ID A3S4Y3)  Technical Update No. 3 – Part 7: a Review of Marine Recreational Vessel Activities in Burrard Inlet (Filing ID A4A4I4)
3.B.5	Volume and management of Vancouver tanker traffic in consideration of United States (US) bound tanker traffic in Puget Sound	US bound tankers and tankers leaving Canada travel in opposite directions using separated shipping lanes through the Juan de Fuca Strait.  Currently PMV handles 250 vessels of all types, every month. At present, the Westridge Marine Terminal handles approximately eight vessels per month, five of which are tankers, representing less than 3% of the total traffic in PMV.  Should the proposed Project be approved, the number of vessels, including tankers and barges, being loaded at the Westridge Marine Terminal could increase to approximately 37 per month in 2017, 34 of which could be tankers, or about 14% of today's total PMV tanker traffic. Within Juan de Fuca Strait, Trans Mountain predicts the Project-related increase in marine traffic will represent 6.6% of total marine traffic volume, compared to the current 1.1%.	Section 2.2 of Volume 8A (Filing ID A3S4X4) Project-related Changes to Marine Transportation and Traffic Volumes  Section 5.0 of Volume 8A - Risk Assessment and Spill Management (Filing ID A3S4Y3)
3.B.6	Pilotage of tankers	Ships are subject to compulsory pilotage if, the vessel is over 350 gross tons for non- pleasure craft vessels, and over 500 gross tons for pleasure craft vessels. Compulsory pilotage does not apply to government vessels, ferries, or US government ships under 10,000 gross tons.  In BC coastal waters, pilots are provided by the British Columbia Coast Pilots Ltd. under license from the PPA. Two PPA-certified pilots come aboard to ensure the tanker safely navigates out of Canadian waters. The PPA requires laden tankers to have two PPA-certified pilots on board, one to ensure safe conduct of the vessel and one to monitor the bridge crew and ship systems. The two PPA-certified pilots disembark at the Victoria pilot station near Brotchie Ledge.	Section 1.4.1.3 of Volume 8A – <i>Pilotage Act</i> (Filing ID A3S4X3)  Section 1.4.3 of Volume 8A (Filing ID A3S4X4) Journey of a Tanker
3.B.7	British Columbia Institute of Technology (BCIT) training facility for tanker pilots	In 2011, Trans Mountain contributed to the BCIT Marine Simulator upgrade.  Trans Mountain continues to meet with academic institutions such as BCIT Marine.  Trans Mountain intends to contribute to community benefits in communities where it operates and has initiated discussions with local organizations such as BCIT (marine and land initiatives) to explore community benefit opportunities related to its priority areas of: environment; safety, emergency preparedness and response; and community growth and well-being.	City Burnaby IR No.1.03.05a (Filing ID A3S4X4)  Section 1.4.2.11 of Volume 8A (Filing ID A3Y2E6)



TABLE 1-1
ISSUES, CONCERNS AND COMMON TRANS MOUNTAIN RESPONSES FOR THE MARINE CONSULTATION PROGRAM (continued)

Code	Interest/Issue/Concern	Trans Mountain Response	Reference
3.0	Marine Tankers (continued)		
3.B.8	Do Metro Vancouver waterlines create draft restrictions at Second Narrows?	Draft restrictions and under keel clearance requirements are explained in section 2.1.4 of Volume 8A.  The PMV MRA rules for Second Narrows define the allowable beam ( <i>i.e.</i> , width) and draft ( <i>i.e.</i> , depth) of tankers in relation with the channel. Tankers have to maintain an under keel clearance of 10% over a channel width of 2.85 times the vessel's beam and are restricted to daylight transit. Since the center of the Second Narrows channel is relatively deep in comparison to the vessel's draft it is typically the width of the channel that determines the allowable draft and therefore the extent to which a tanker can be loaded.  The wrip wrap encasing Metro Vancouver water lines are part of a number of factors limiting the width of the channel at Second Narrows.	Sections 2.1. of Volume 8A - ESA (Filing ID A3S4X4)
3.C	Anchorages	PMV manages anchoring of vessels in the waters within its jurisdiction and maintains the safe operating procedures for ships using these anchorages. Anchorages may be used by tankers calling at the Westridge Marine Terminal to wait in the event that scheduling does not permit direct berthing of a vessel at the Westridge Marine Terminal.	Section 1.4.2.4 of Volume 8A – PMV (Filing ID A3S4X3)  Section 10 of TR 8C-10 (TERMPOL 3.5 & 3.12) of Volume 8C (Filing ID A3S4T7), Route Analysis and Anchorage Elements, Second Narrows Movement Restriction Area Procedures, PMV Harbour Operations Manual (Filing ID A3S4T9)
3.C.1	Is an increase in anchorages	The Project does not seek to request any increases to the existing number of designated anchorage locations. Therefore Project traffic will have minimal	Section 4.3.11.6.2 of Volume 8A (Filing ID A3S4Y3)
	required for more tanker traffic	impact on other non-Project vessels that wish to use the anchorages.	Section 3.3 of TERMPOL 3.7 TR 8C-5 of Volume 8C (Filing ID A3S4S9)
3.C.2	Will there be greater utilization of anchorages with an increase in tanker traffic	The expansion of Westridge Marine Terminal will result in three berths within the dock complex. Trans Mountain intends to maximize use of the three berths at Westridge and minimize use of the four existing anchorages east of Second Narrows. This means the anchorages will be available for use by all vessels, as is the current practice.	Section 2.2.1 of Volume 8A - Vessel Type and Marine Traffic Volume (Filing ID A3S4X4)  Section 3.3 of TERMPOL 3.7 (TR 8C-5 of Volume 8C) 8C (Filing ID A3S4S9)
3.C.3	Viewscape impacts if more tankers at anchorage	Yes, tankers will be at anchor from time to time however the expansion of Westridge Marine Terminal will result in three berths within the dock complex. Trans Mountain intends to maximize use of the three berths at Westridge and minimize use of four existing anchorages east of Second Narrows. This means the anchorages will be available for use by all vessels, as is the current practice.	Section 2.2.1 of Volume 8A - Vessel Type and Marine Traffic Volume (Filing ID A3S4X4)  Section 3.3 of TERMPOL 3.7 (TR 8C-5 of Volume 8C) (Filing ID A3S4S9)
3.C.4	Noise, lights of tankers at	Tankers bound for Westridge Marine Terminal are not the only vessels that call in the Port of Vancouver or anchor in Burrard Inlet near Westridge.	Table 1.7.3 of Section 1.7.3 of Volume 3A (Filing ID A3S0R5)
	anchorage and during transit	Trans Mountain has been working with PMV and the COSBC to communicate guidelines for all vessels that may use the anchorages near Westridge. This will also address any cases of excessive illumination of vessels at anchor. The effects of lights from ships can be mitigated to a large extent by such guidelines and shall make adherence a requirement for acceptance to call at the Westridge facility in the future. At the same time Trans Mountain will be planning the port turnaround of the tankers carefully to minimize the time tankers spend at anchor.	Village of Belcarra, NEB IR No. 1.8 (Filing ID A3X6W1)
3.D	Tanker Loading Operations	The vessel loading process at Westridge is a closed system, with oil loading via loading arms and displaced vapour being transmitted to onshore processing facilities via the vapour piping system. After loading operations are completed, the terminal personnel drain and disconnect the loading arms and vapour line in accordance with written terminal procedures.  Vessels proposed by a pipeline shipper to receive oil at the Westridge Marine Terminal are pre-screened by the Trans Mountain Loading Master using industry database and the Company's own records before being accepted or rejected for scheduling purposes. When a tanker is at the Westridge Marine Terminal, the Loading Master boards the tanker to conduct a physical inspection and to conduct a ship-shore safety meeting with the master and terminal operators. The Loading Master stays on board throughout the loading process and he/she has the authority to request the vessel to rectify any issues that might develop during the vessels' stay and to stop the loading process at any time should concerns arise. When a tanker loading is complete, the Loading Master stays on board until pilots come to move the vessel away from the dock and stay on board of the required transit.	Section 4.1 of Volume 7 (Filing ID A3S4V5) Emergency Preparedness and Response  Section 1.4.3 of Volume 8A (Filing ID A3S4X4) Journey of a Tanker



TABLE 1-1
ISSUES, CONCERNS AND COMMON TRANS MOUNTAIN RESPONSES FOR THE MARINE CONSULTATION PROGRAM (continued)

Code	Interest/Issue/Concern	Trans Mountain Response	Reference
3.0 N	Marine Tankers (continued)		
3.D.1	Process for loading tankers and potential for small spills	Loading arms and vapour recovery lines are connected to the tanker. The Westridge Marine Terminal vapour destruction system is started and loading commences. Loading typically takes 24 to 36 hours depending on the size of the vessel. Operational best practices are followed in accordance with international standards.	Section 1.4.3 of Volume 8A (Filing ID A3S4X4)
		The Loading Master stays aboard the tanker throughout the loading process. The Trans Mountain Loading Master has the authority to request the vessel to rectify any issues that might develop during the vessel's stay and to stop the loading process at any time should concerns arise. The Loading Master also acts as the key shipside contact for communication with the terminal.	
3.D.2	Inspections of tankers prior to loading	The Trans Mountain Loading Master boards the tanker to conduct a physical inspection and to conduct a ship-shore safety meeting with the master and terminal operators. The tanker is not accepted to load unless it passes the inspection.	Section 1.4.3 of Volume 8A (Filing ID A3S4X4)
3.E	Dredging	PMV has jurisdiction over dredging programs for Burrard Inlet and the Fraser River as part of the Port's mandate to ensure safe and unimpeded access to terminals for vessels.	Section 3.9 of of Appendix B to Technical Report TR 8C-10 of Volume 8C – TERMPOL 3.5 & 3.12, Route Analysis and Anchorage Elements, Dredging, PMV Harbour Operations Manual
		Regardless; no dredging is proposed by Trans Mountain for Second Narrows to accommodate increase in marine transportation for the Project. Near-shore dredging might be necessary to accommodate the expansion of Westridge Marine Terminal.	(Filing ID A3S4T9)  Sections 7.6.8 and 8.11.3 of Volume 5A (Environmental and Cumulative Effects Assessments - Westridge Marine Terminal) (Filing I's A3S1R0 and A3S1R2)
3.E.1	Is dredging proposed? (i.e. Second Narrows, at Westridge Marine Terminal berths)	PMV has jurisdiction over dredging programs for Burrard Inlet, regardless; no dredging is proposed by Trans Mountain for Second Narrows to accommodate increase in marine transportation for the Project. Near-shore dredging might be necessary to accommodate the expansion of Westridge Marine Terminal.	Sections 7.6.8 and 8.11.3 of Volume 5A (Environmental and Cumulative Effects Assessments - Westridge Marine Terminal) (Filing IDs A3S1R0 and A3S1R2)
3.E.2	Impacts of dredging on tides and on West Vancouver's shoreline near Ambleside	The Project does not require or propose dredging of First or Second Narrows. Removal of existing material from the intertidal shores of Westridge in Burnaby will be carried out in order to develop infill to accommodate the new dock complex and associated facilities. Maintenance and dredging concerns to First Narrows fall within the stringent regulations and requirements of PMV who undertake a dredging program to ensure that all vessels navigate local waters safely.	Table 1.7.4 of Volume 3A, Public Consultation (Filing ID A3S0R5)
3.E.3	Possibility for tanker size to increase if dredging occurs in the future, and the ability of KMC to influence this. Ease of removing Second Narrows restrictions in future	The maximum size of vessels (i.e. Aframax class) served at the terminal will not change as part of the proposed Project. If at any time in the future a larger vessel class is proposed, a new regulatory application and review process would be undertaken.	Section 2.0 of Volume 8A – Description of Marine Transportation Activities (Filing ID A3S4X4)
3.F	Other impacts of the proposed increase in tanker traffic	Within the Burrard Inlet, Trans Mountain predicts the Project-related increase in marine tanker traffic will represent 16.4% of total marine tanker traffic volume, compared to the current 3%. Trans Mountain does not expect long term impacts beyond increasing the number of vessel transits.  Trans Mountain's assessment has considered potential increase in PMV traffic, information that is available in Section 2 of Volume 8A - Marine Transportation.	Section 2 of Volume 8A - Marine Transportation (Filing ID A3S4X4).
3.F.1	Impact of wave action with increase in tanker movements on local shoreline in Burrard Inlet	Some information is available in the Marine ESA found in Section 4.3 of Volume 8A – Effects Assessment, Marine Vessel Traffic Operations. There will be no detailed modeling because of negligible effect. Tankers can only travel at six knots in the harbour. In response to stakeholder interest on the north shore, Trans Mountain sent consultants out to watch when a vessel went by and Trans Mountain provided vessel transit details to local interest groups so they could observe vessel wake for themselves.	Section 4.3.6.6.1 of Volume 8A – Disturbance to Intertidal Habitat due to Vessel Wake (Filing ID A3S4Y3)



TABLE 1-1
ISSUES, CONCERNS AND COMMON TRANS MOUNTAIN RESPONSES FOR THE MARINE CONSULTATION PROGRAM (continued)

Code	Interest/Issue/Concern	Trans Mountain Response	Reference
3.0 M	larine Tankers (continued)	·	
3.F.2	Impact of increased tanker traffic on orca populations	Customers contract tankers to transport those products through existing marine shipping lanes to market. Those tankers intersect transit shipping lanes inhabited by the Southern Resident Killer Whale (SRKW). While Trans Mountain does not own or operate the tankers that call at Westridge Marine Terminal, it is committed to encouraging and participating in collaborative solutions to aid in the recovery of the SRKW population.  The marine mammal's assessment in the Application considers the effects of increased underwater noise on SRKW and modeling has been conducted. In addition, Trans Mountain supports the comprehensive nature and overall objectives of the DFO draft Action Plan for the Northern and SRKW (Orcinus orca) in Canada. Trans Mountain is investigating potential mitigation options such as participating in a joint industry-government advisory group that would develop effective mitigation measures to reduce potential effects of underwater noise on marine mammals in the region.	Sections 4.3.7 and 4.4.5 of Volume 8A (Filing ID A3S4Y3)  Responses to NEB IR No. 1.55, NEB IR No. 1.56 and NEB IR No. 1.57 (Filing ID A3W9H8)  Fisheries and Oceans Canada. 2014. Action Plan for the Northern and SRKW (Orcinus orca) in Canada [Draft]. Species at Risk Act Action Plan Series. Fisheries and Oceans Canada, Ottawa.
3.F.3	Effects on traffic transiting the second narrows (vessel traffic and rail traffic)	The effect of increased tanker movements on other waterway users particularly at the Second Narrows MRA has been assessed and is expected to be minimal. This is because movement restrictions at the Second Narrows are more stringent for tankers, especially Aframax vessels, than for non-tankers and vessels of lesser size. These other vessels have significantly more opportunities to transit the Second Narrows MRA during each tidal cycle either before or immediately after laden tankers have passed. Furthermore, non-tankers are allowed to transit the Second Narrows MRA at night and avail of those tides as well.  The opportunity exists to further mitigate the effects of increased vessel traffic to Rail Bridge through efficient scheduling, as tanker transit times are specific to tidal schedules.  TMEP modelling data has been provided to PMV and CN Rail.  Trans Mountain will continue to engage with CN, as well as PMV, and provide Project related information in order for CN and PMV to coordinate efforts towards efficient management of any effect from increase in marine traffic as a result of TMEP.  Potential effects to the CN Rail Bridge are discussed in Section 4.3.11.4.2 of Volume 8A. Mitigations for potential effects discussed Table 4.3.11.2 in Section 4.3.11.4.2 of Volume 8A.	Section 4.3.11.4.2 of Volume 8A (Filing ID A3S4Y3)  Table 4.3.11.2 in Section 4.3.11.4.2 of Volume 8A (Filing ID A3S4Y3)
3.F.4 4.0 D	The impact of TMEP on the expansion of other products handled at PMV. <i>E.g.</i> Opportunities for Project to help improve the rail car transit capacity of the second narrows CN Rail Bridge?	Trans Mountain will continue to engage with CN, as well as PMV, and provide Project related information in order for CN and PMV to coordinate efforts towards efficient management of goods movement in light of the proposed increase in marine traffic as a result of TMEP.	Section 2.2.1 of Volume 8A (Filing ID A3S4X4)  Table 4.3.11.2 in Section 4.3.11.4.2 of Volume 8A (Filing ID A3S4Y3)
4.0 D	Properties of diluted bitumen	The general behaviour of diluted bitumen is similar to other heavy oils in terms of fate and weathering, and spill countermeasures.	Section 5.0 of Volume 7 – Fate and behavior of a hydrocarbon
4./\	Properties of unded bitumen	Trans Mountain has been exporting diluted bitumen from Vancouver for over 20 years without incident.  Typically, once released into the marine environment oil begins to "weather" depending on conditions and could reach density of fresh water. When released into water, lighter components of hydrocarbons will begin to evaporate, some will dissolve into the water column, and the remainder will float as long as the density of the remaining oil is less than the density of the water into which it was released.  Trans Mountain tested dilbit behaviour in brackish water under simulated conditions and oil did not sink for 10 days of the tests.	release (Filing ID A3S4V5).  Table 5.1.7 of Appendix D of Volume 4A and Table 5.4.2 of Volume 8A (Filing IDs A3S0Z5 and A3S4Y5)  Section 5.4.1 of Volume 8A (Filing ID A3S4Y5) Fate and Behaviour of an Oil Spill in a Marine Environment Technical Report 8C-12 S 8 of Volume 8C - A Comparison of the Properties of Diluted Bitumen Crudes with other Oils (Filing ID A3S5G7)  Technical Report TR 8C-12 S7 of Volume 8C (Filing ID A3S5G2) Fate and Behaviour of Diluted Bitumen Oils on Marine Waters



ISSUES, CONCERNS AND COMMON TRANS MOUNTAIN RESPONSES FOR THE MARINE CONSULTATION PROGRAM (continued)

Interest/Issue/Concern	Trans Mountain Response	Reference
Diluted Bitumen (continued)		
Corrosivity to pipeline and storage tanks	transported. These products do not contain any substances in the concentrations required to promote internal corrosion. Therefore, the Project is not considered to increase the risk of internal corrosion. Further, a recent National Research Council study has confirmed that there are no concerns to oil	Section 3.1.1 of Volume 4A discusses corrosion risk TMEP (Filing ID A3S0Y8)  Transportation Research Board (TRB) Special Report 311: Effects
		of Diluted Bitumen on Crude Oil Transmission Pipelines. Washington, DC: The National Academies Press, 2013.
Density and the possibility that bitumen will sink in the event of a marine spill	Typically, once released into the marine environment oil begins to "weather" depending on conditions and could reach density of fresh water. When released into water, lighter components of hydrocarbons will begin to evaporate, some will dissolve into the water column, and the remainder will float as long as the density of the remaining oil is less than the density of the water into which it was released.	Section 5.4.1 of Volume 8A - Fate and Behaviour of an Oil Spill in a Marine Environment (Filing ID A3S4Y5)
	Trans Mountain tested dilbit behaviour in brackish water under simulated conditions and oil did not sink for 10 days of the tests.	Technical Report TR 8C-12 S7 of Volume 8C (Filing ID A3S5G2) Fate and Behaviour of Diluted Bitumen Oils on Marine Waters
Ability to clean up spilled diluted bitumen	Diluted bitumen exhibits properties and weathering behavior similar to other heavy crude oils. During the course of the testing done for the Project, the diluted bitumen floated on the water and could be retrieved effectively using conventional skimming equipment.	Section 5.5 of Volume 8A (Filing ID A3S4Y6)
	Section 5.5 of Volume 8A outlines current and planned improvements to the oil spill response regime.	Technical Report 8C-12 S12 of Volume 8C - Future Oil Spill Response Approach Plan (Filing ID A3S5I9).
Human health impacts related to spilled bitumen and dilbit	Trans Mountain does not move bitumen, which is a very dense product – instead Trans Mountain moves diluted bitumen.  Odours resulting from an oil spill can alone contribute to discomfort, irritability and anxiety. The exact nature and severity of any health effects will depend on several factors such as a persons' proximity to a spill, the spill circumstances, the timeliness of emergency response and any one person's sensitivity to chemical exposures.	Section 5.6.1.2 of Volume 8A (Filing ID A3S5Q3)
	Section 5.6.1.2 of Volume 8A describes possible human health effects form heavy oil spill in a marine environment.	
Socio-Economic Benefits and Impa	cts	
Comparing the need for oil export with the risks to the	Vancouver's port is one of Canada's largest gateways to accessing the world economy. As the busiest port in Canada and the fourth largest tonnage port in North America, PMV facilitates trade with more than 160 world economies, with 95% of port activity focused on Canadian import/export markets.	Section 1.4.2.4 of Volume 8A – PMV (Filing ID A3S4X3)
environment and Vancouver's coastal way of life	I way of life	Section 3.4.2 of Volume 2 – Energy industry benefits (Filing ID A3S0R0)
	producing and oil marketing business have signed binding 15- and 20-year contracts for additional capacity on the proposed expanded pipeline system to move their products, should the Project be approved.	Section 5.0 of Volume 8A – Marine Transportation (Filing ID A3S4Y3)
	that risk assessments are important to municipalities and stakeholders. Risk communications to stakeholders will be a component of the engagement	Table 3.1.6 of Appendix C of Volume 8A - Summary of Outcomes of the Public Consultation Program (Filing ID A3S4Z2)
	Transshipment Sites (TERMPOL) Review Process. The results of the quantitative risk assessment are presented in Section 5.0, Volume 8A of the Application.	Technical Report TR 8C-12 TERMPOL 3.15 (Filing ID A3S5F4 to A3S5F8) General Risk Analysis and Intended Methods of Reducing Risks
	Density and the possibility that bitumen will sink in the event of a marine spill  Ability to clean up spilled diluted bitumen  Human health impacts related to spilled bitumen and dilbit  Comparing the need for oil export with the risks to the environment and Vancouver's	Corrosivity to pipeline and storage tanks   The products proposed to be transported in the existing active, reactivated, and new pipeline segments are very similar to those currently being transported. These products do not contain any substances in the concentrations required to promote internal corrosion. Therefore, the Project is not considered to increase the risk of internal corrosion. Further, a recent National Seasearch Council Study has confirmed that there are no concerns to oil pipelines and tanks specific to the transport of diluted bitumen compared with the carriage of other crude oils.    Density and the possibility that bitumen and the possibility that bitumen will sink in the event of a marine spill   Typically, once released into the marine environment oil begins to "weather" depending on conditions and could reach density of fresh water. When released into water lighter components of hydrocarbons will begin to evaporate, some will dissolve into the water column, and the remainder will float as long as the density of the remaining oil is less than the density of the water into which it was released.    Ability to clean up spilled diluted   Diluted bitumen exhibits properties and weathering behavior similar to other heavy crude oils. During the course of the testing done for the Project, the diluted bitumen floated on the water and could be retrieved effectively using conventional skimming equipment.    Section 5.5 of Volume &A outlines current and planned improvements to the oil spill response regime.



ISSUES, CONCERNS AND COMMON TRANS MOUNTAIN RESPONSES FOR THE MARINE CONSULTATION PROGRAM (continued)

Code	Interest/Issue/Concern	Trans Mountain Response	Reference
5.0	Socio-Economic Benefits and Impa	cts (continued)	
5.A.1	Human health impacts related to noise, air quality (normal operations and accidents) at Westridge Marine Terminal	Overall the health assessment in the Application found that during construction of the Westridge Marine Terminal, the maximum predicted levels of exposure to the chemicals of potential concern (COPC) (acting either singly or in combination) remained below the levels of exposure that would be expected to cause health effects. In the majority of cases, the exposure levels were well below those associated with health effects. Therefore it is unlikely that people would experience health effects as a result of the expansion of the Westridge Marine Terminal.	Section 7.6.9 of Volume 5B – HHRA, Westridge Marine Terminal Expansion (Filing ID A3S1S9)  Technical Report RE 73 Qualitative HHRA Westridge of Volume 7
		Overall the health assessment in the Application found that as a result of normal vessel operations, the maximum predicted levels of exposure to the COPC (acting either singly or in combination) remained below the levels of exposure that would be expected to cause health effects. Based on the weight of evidence, it is unlikely that people would experience health effects from exposure to the potential increase in marine vessel traffic under the cumulative effects assessment.	(Filing ID A3S4X2)  Sections 4.4.10 and 5.6.1.2 of Volume 8A – Marine Transportation (Filing IDs A3S4Y3 and A3S5Q3)
		In the case of accidents or malfunctions, potential socio-economic effects of credible worst case and smaller oil spills will vary depending on the exact location and nature of the incident. In the event of a marine spill, the tanker owner, CCG, WCMRC, and TC will initiate spill response and notify municipal, provincial and federal authorities responsible for the protection of public health. Evacuation of affected areas will occur if health and safety of	Technical Report RE 8B8 of Volume 8B – Screening Level HHRA of Spills from Marine Transportation (Filing ID A3S4R1)  Technical Report RE 8B9 of Volume 8B – Qualitative HHRA of
		the public is threatened and this will limit opportunities for short-term exposure to hydrocarbon vapours and potential for acute effects. Involvement of local, provincial and federal public health officials will also ensure that controls to limit long-term exposure and chronic effects potential will be implemented if warranted. Examples of such controls include closure of recreational or commercial fisheries, beach closures, the issuance of drinking water or food consumption advisories, and forced evacuation. This will limit long-term exposure from all pathways, including: inhalation; ingesting	Spills from Marine Transportation (Filing ID A3S4R2)  HHRA Westridge Marine Terminal Part 1 (Filing ID A3Y1G0) and Part 2 (Filing ID A3Y1G1)
		contaminated food, fish, plants, or animals; drinking from a contaminated source; or incidental skin contact with oil. Based on the known health effects of the COPC studied for the health assessment, potential effects would likely be dominated by irritation of the eyes and/or breathing passages, possibly accompanied by nausea, headache, light headedness and/or dizziness. These effects could range from barely noticeable to quite noticeable, depending on the exposure circumstances and the sensitivity of the individuals exposed. Odours might be apparent, dominated by a hydrocarbon-like smell, with	HHRA Marine Transportation Part 1 (Filing IDs A3Y1F7 and A3Y1F8)
		some prospect for other distinct odours due to the presence of sulphur-containing chemicals in the vapour mix. The odours themselves could contribute to discomfort, irritability and anxiety. The exact nature and severity of any health effects are further explored in Section 5.6.1 of Volume 8A in the Application,	NEB F-IR. No. 2.024b including NEB F-IR No. 2.024b - Attachment 1 (Filing ID A4A1Z8)
5.B	Benefits for non-pipeline communities or non-landowners	Trans Mountain plans to maximize local, regional and Aboriginal employment opportunities by working with communities and industry associations in the vicinity of the Project. Communities who are not along the pipeline route may also benefit from socio-economic opportunities associated with pipeline design, construction and operations.	Sections 5.7 and 7.2.7 of Volume 5B – Employment and Economy (Filing IDs A3S1S4 and A3S1S7)
		Trans Mountain will provide more information about community investments and submit this to the NEB in Consultation Update No. 3 that will be filed in Q1 2015.	
5.B.1	Benefits for Aboriginal Peoples living along the coast (shipping lanes)	TMEP is engaging with Aboriginal groups long the coast to seek their input through meaningful discussion, as to how they can see appropriate community benefits from TMEP.	Appendix D of Volume 8A – presentation to the Esquimalt First Nation (Filing ID A3S4Z2)
5.B.2	local small business operators and induced employment and procurement opportun	The construction and operation of the Project will create substantial economic benefits and opportunities locally and regionally. Numerous direct, indirect and induced employment and procurement opportunities will be created related to Project construction. There will also be direct, indirect, and induced employment effects and procurement opportunities during operations.	Section 7.2.7 of Volume 5B – Employment and Economy (Filing ID A3S1S7)
		When construction of the Project is at its peak, the anticipated workforce will reach up to 4,500 workers. Trans Mountain plans to maximize local, regional and Aboriginal employment opportunities by working with communities, construction companies and industry associations along the pipeline corridor.	Section 12.5 of Technical Report 5D-2 Socio-Economic Technical Report of Volume 5D (Filing ID A3S2J5)
5.C	Potential financial impact of a worst-case marine spill	Potential socio-economic effects of credible worst case and smaller spills will vary depending on the exact location and nature of the incident, and will be influenced by factors including:	Section 5.6 of Volume 8A (Filing ID A3S5Q3).
		<ul> <li>distance from human settlements</li> <li>size and population density of nearby human settlements (<i>i.e.</i> rural versus urban areas)</li> <li>particular patterns of resource use in the vicinity (<i>i.e.</i> commercial, recreational, traditional)</li> <li>key economic activities and sectors in areas that may be reached by the spill, in particular the presence of resource-based economic activities (<i>i.e.</i> tourism, commercial fisheries, traditional uses by Aboriginal people)</li> </ul>	



ISSUES, CONCERNS AND COMMON TRANS MOUNTAIN RESPONSES FOR THE MARINE CONSULTATION PROGRAM (continued)

Code	Interest/Issue/Concern	Trans Mountain Response	Reference
5.0	Socio-Economic Benefits and Impa		
5.C.1	Effects to commercial, Aboriginal fisheries	Potential socio-economic effects of credible worst case and smaller spills will vary influenced by factors such as the spill volume, location, nature of the resources affected, the extent of traditional and non- traditional activities in the affected area, and the duration of clean-up and recovery	Section 5.6.1.1.1 of Volume 8A – Commercial Fishing (Filing ID A3S5Q3)
		Commercial fishing and aquaculture is an important economic activity in the Salish Sea region and available information on important fishery areas and effort are provided in Fishery Resources Survey (TERMPOL 3.3, Volume 8C, TR 8C-3). A marine spill, particularly a large one that affects one or more	Section 5.6.1.3.2 of Volume 8A - Aboriginal Culture and Subsistence Use (Filing ID A3S5Q3).
		important commercial fishing areas, would likely result in loss of commercial fishing income due to regulated or voluntary closures and possibly reduced demand due to concerns about fish quality.	TERMPOL 3.3, Volume 8C, TR 8C-3 (Filing ID A3S4S0).
		Aboriginal peoples have historically used or presently use the shipping route to maintain a traditional lifestyle and continue to use marine resources throughout 'the Salish Sea region for a variety of purposes including fish, shell-fish, mammal and bird harvesting, aquatic plant gathering, and spiritual/cultural pursuits as well as through the use of waters within the region to access subsistence resources, neighbouring communities and coastal settlements.	
		A marine spill, particularly a large one that affects one or more important commercial fishing areas, would likely result in loss of commercial fishing income due to regulated or voluntary closures and possibly reduced demand due to concerns about fish quality. Following the Exxon Valdez Oil Spill, emergency fishing closures were instituted for salmon, herring, crab, shrimp, rockfish and sablefish immediately following the spill. All fisheries were reopened the next year.	
5.D	Liability regime in Canada in the event of a marine oil spill	Ship-source spill: If oil were released from a vessel, the vessel owner would be the Responsible Party. In addition to the ship owner's insurance, there are a variety of funding sources available to cover the costs of cleaning up such a spill under the <i>Marine Liability Act</i> (MLA) through the Ship Source Oil Pollution Fund.	Sections 1.4.1.6 and 5.5.3 of Volume 8A - Marine Transportation (Filing IDs A3S4X4 and A3S4X3).
		Although liability for such spills would not fall to the marine terminal owner, Trans Mountain has established programs to reduce the potential for ship-source spills. Vessels must pass a rigorous screening process set out by international and local governing bodies and Trans Mountain, before being allowed to accept oil from the Westridge Marine Terminal. By ensuring that only the safest vessels dock at Westridge, Trans Mountain reduces the risk of a ship-source oil spill.	
5.D.1	Adequacy of \$1.3 billion to cover the costs of a spill	In Canada, liability and compensation for ship-source oil spill pollution are governed by the <i>Canada Shipping Act</i> and MLA. Both acts reflect Canada's commitment to international conventions administered by the IMO, such as those regarding the International Oil Pollution Compensation Funds (IOPCs).	Section 1.4 of Volume 8A (Filing ID A3S4X3).
		Conventions limit the liability of the Responsible Party (ship owner) and establish sources of funding for clean-up and compensation for damages. Up to \$1.312 billion is available for an individual spill.	Allan R IR No. 1.21j (Filing ID A3X5V9).
		In May 2014, the Government of Canada announced it will enhance the liability and compensation regime by introducing legislative and regulatory amendments. These include:	
		<ul> <li>Allow the full balance of the Ship-Source Oil Pollution Fund (SOPF), currently about \$400 million, to be available in the event of an oil spill.</li> <li>In the event that all available sources of funds have been exhausted by spill-related claims, the Government of Canada will ensure compensation is provided to eligible claimants, and then recover those payments from the marine oil transport industry through a levy.</li> <li>Align the SOPF with international funds by covering pure economic losses suffered by people who have had a loss of earnings but whose property has not been contaminated by an oil spill.</li> </ul>	
5.D.2	Risk that taxpayers may have to cover some of the costs	In May 2014 the Government of Canada enhanced the liability and compensation regime by introducing legislative and regulatory amendments which include:	Allan R IR No. 1.21j (Filing ID A3X5V9)
	associated with a spill	<ul> <li>In the event that all available sources of funds have been exhausted by spill-related claims, the Government of Canada will ensure compensation is provided to eligible claimants, and then recover those payments from the marine oil transport industry through a levy</li> </ul>	TC Backgrounder released May 13, 2014: <a href="http://news.gc.ca/web/article-en.do?mthd=advSrch&amp;crtr.mnthndVl=11&amp;crtr.mnthStrtVl=1&amp;crtr.pa">http://news.gc.ca/web/article-en.do?mthd=advSrch&amp;crtr.mnthndVl=11&amp;crtr.mnthStrtVl=1&amp;crtr.pa</a> ge=1&nid=847489&crtr.yrndVl=2014&crtr.kw=tanker+safety&crtr.y  rStrtVl=2002&crtr.dyStrtVl=1&crtr.dyndVl=3



TABLE 1-1
ISSUES, CONCERNS AND COMMON TRANS MOUNTAIN RESPONSES FOR THE MARINE CONSULTATION PROGRAM (continued)

Code	Interest/Issue/Concern	Trans Mountain Response	Reference
	Socio-Economic Benefits and Impa		T
5.D.3	Ability to recover costs from responsible parties	In the event of an oil spill in a marine environment, funding is available in a tiered system:	Section 1.4.1.6 of Volume 8A – MLA (Filing ID A3S4X3).
		<ul> <li>The first level of funding for emergency response, clean-up and compensation to affected parties is from the responsible party's protection and indemnity insurance. Ship owners and operators obtain insurance coverage against third-party liability through a protection and indemnity association of ship owners and operators Protection and Indemnity (P&amp;I Club), which would be a member of the International Group of P&amp;I Clubs (Transport Canada 2013c). The responsible party's liability is limited based on vessel tonnage to a maximum of about \$136.76 million.</li> <li>If the responsible party's insurance is not adequate to cover costs and compensation, funds are available through the IOPC (\$172.50 million) and the Supplementary Fund Protocol (\$833.34 million).</li> <li>Lastly, Canada maintains its own source of funding called the SOPF, which has up to \$161.29 million of funding available.</li> </ul> In May 2014 the Government of Canada enhanced the liability and compensation regime by introducing legislative and regulatory amendments, which	Section 1.4.4 of Volume 8A – Canada's marine Oil Spill Preparedness and Response Regime (Filing ID A3S4X4).
		will strengthen the liability coverage for the regime.	
5.D.4	Responsibility for terminal source spill	Trans Mountain is committed to keeping pipelines safe, and to protecting employees, the public and environment. Trans Mountain has worked hard to develop a mature suite of programs focused on preventing pipeline failures, as well as minimizing their impact if they do happen. Trans Mountain has detailed ERPs for all the facilities, and in the event of an emergency, Trans Mountain will immediately mobilize all of the necessary resources to minimize its impact on the public and environment.	Volume 7 – Risk Assessments and management of Pipeline and Facility Spills (Filing IDs A3S4V5 to A3S4X2)
5.E	Cross-border responsibilities in the event of a marine oil spill	If an oil spill occurs in the marine environment, multiple organizations quickly take co-ordinated action to mitigate public and environmental effects. WCMRC has mutual aid agreements with emergency response organizations in the State of Washington.	Volume 8A - Marine Transportation, Section 5.0 (Filing ID A3S4Y3)
5.F	KMC collaboration with trade	Trans Mountain continues to meet with academic institutions such as trade schools.	Volume 8A, Section 1.4.2.11 (Filing ID A3S4X4)
	schools and high schools regarding skills development and equipment funding	Trans Mountain intends to contribute to community benefits in communities where it operates and has initiated discussions with local organizations such as trade schools to explore community benefit opportunities related to its priority areas of: environment; safety, emergency preparedness and response; and community growth and well-being.	
5.F.1	Employment and training for local workforces - Increasing the number of jobs available in BC	Trans Mountain plans to maximize local, regional and Aboriginal employment opportunities by working with communities and industry associations in the vicinity of the Project.	Sections 5.7 and 7.2.7 of Volume 5B (Filing ID A3S1S4 and A3S1S7).
5.F.2	Potential for more safety-related jobs in the harbour	Trans Mountain plans to maximize local, regional and Aboriginal employment opportunities by working with communities and industry associations in the vicinity of the Project.	Volume 8A, Section 3.2.1.3 (Filing ID AS34X4)
5.G	Investment in local clean technology companies including local clean (renewable) energy companies	Trans Mountain is supportive of the oil industry's efforts to invest in renewable technologies.	Table 1.7.4 of Section 1.7.4 of Volume 3A (Filing ID A3S0R5).
5.H	Trans Mountain investment in local initiatives such as herring and bird population restoration	As a long-time industry and community member, Trans Mountain is committed to working with residents, regulatory authorities and other stakeholders on environmental initiatives.	City of Port Moody IR No.1.3.17 (Filing ID A3X5Z8)
	projects	KMC, as the operator of TMPL, and the Kinder Morgan Foundation have funded many local environmental education initiatives since 2006, benefiting schools, local stream keepers and other stewardship groups. Trans Mountain continues to engage with these groups regarding the Project.	
		KMC funded a foreshore restoration project near Westridge Marine Terminal in 2007, which involved the creation of an artificial reef where boulders and rip-rap were placed. This project was managed by the Pacific Wildlife Foundation.	
6.0	Regulatory Process		
6.A	Timeframe for Application to NEB and regulatory review	Consultation on TMEP was initiated two years prior to filing the Application with the NEB on December 16, 2013.	http://www.transmountain.com/regulatory-process
	process	In early April 2014, the NEB determined the Application is complete and issued a Hearing Order which lays out the key steps and schedule for the process to consider the Project. One July 15, 2014 the Board is released revised hearing events and steps table in Procedural Direction No. 4, which updates and replaces the table found in Procedural Direction No. 2.	NEB Procedural Update No. 4 - https://docs.neb-one.gc.ca/ll-eng/llisapi.dll/fetch/2000/90464/90552/548311/956726/2392873/2449981/2486819/A59%2D1 %2D Procedural Direction No. 4 - Revised hearing events and steps table %2D A3Z2W8.pdf?nodeid=2487048&vernum=-2



TABLE 1-1

ISSUES, CONCERNS AND COMMON TRANS MOUNTAIN RESPONSES FOR THE MARINE CONSULTATION PROGRAM (continued)

Code	Interest/Issue/Concern	Trans Mountain Response	Reference
6.0	Regulatory Process (continued)		
6.B	NEB requirements for the Application	When seeking approval, applicants such as Trans Mountain must submit applications or information filings (collectively referred to as filings) to the National Energy Board.	NEB Filing Manual: <a href="http://www.neb-one.gc.ca/clf-nsi/rpblctn/ctsndrgltn/flngmnl/flngmnl-eng.pdf">http://www.neb-one.gc.ca/clf-nsi/rpblctn/ctsndrgltn/flngmnl/flngmnl-eng.pdf</a>
		The Filing Manual has been developed by the NEB to provide direction regarding the information the Board would typically expect to see addressed in a filing.	
6.B.1	Is shipping aspect within NEB review scope?	Marine Transportation (shipping) is within the list of issues to be evaluated by the NEB for TMEP.	NEB List of Issues as found on the NEB Website: <a href="https://www.neb-one.gc.ca/bts/nws/nr/2013/nr22-eng.html">https://www.neb-one.gc.ca/bts/nws/nr/2013/nr22-eng.html</a>
		"The potential ESA effects of marine shipping activities that would result from the proposed Project, including the potential effects of accidents or malfunctions that may occur."	
6.B.2	Will there be a marine risk assessment, if so who will do the assessment?	Marine risk assessments – both qualitative and quantitative for normal operations as well as for accidents and malfunctions were completed for the Application. In addition, TMEP elected to undergo a TERMPOL review of navigational safety related to the proposed Project. All information is available in Volumes 8A and 8C.	Section 5.0 of Volume 8A – Risk Assessment and Spill Management (Filing ID A3S4Y3)
	assessment:	in volumes on and oc.	Technical Report 8C-12, TERMPOL 3.15 of Volume 8C – General Risk Analysis and General Methods of Reducing Risks (Filing IDs A3S5F4 to A3S5J6)
			NEB IR No. 1.98a (Filing ID A3W9H9) including NEB IR No. 1.98a - Attachment 4 for Risk Assessment Westridge Marine Terminal (Filing ID A3W9S6) and Attachment 5 for Risk Assessment Westridge Marine Terminal Ship Loading Portion (Filing IDs A3W9S7 and A3W9S8)
6.C	Release of the entire ESA Assessment and other Application data for stakeholder review	The ESA was filed with the Application and is available on the NEB's website, the Project's website and in libraries along the pipeline route.	The entire ESA is provided in Volumes 5A, 5B, 5C and 5D (Filing IDs A3S1L2 to A3S2L9)
6.C.1	Does HHRA consider accidents or only normal operations?	Normal operations as well as accidents and malfunctions are considered in the HHRA for Westridge Terminal as well as Marine Transportation.	Section 7.6.9 of Volume 5B – HHRA, Westridge Marine Terminal Expansion (Filing ID A3S1S9)
			Technical Report RE 73 Qualitative HHRA Westridge of Volume 7 (Filing ID A3S4X2)
			Sections 4.4.10 and 5.6.1.2 of Volume 8A – Marine Transportation (Filing IDs A3S4Y3 and A3S5Q3)
			Technical Report RE 8B8 of Volume 8B – Screening Level HHRA of Spills from Marine Transportation (Filing ID A3S4R1)
			Technical Report RE 8B9 of Volume 8B – Qualitative HHRA of Spills from Marine Transportation (Filing ID A3S4R2)
			HHRA Westridge Marine Terminal Part 1 (Filing ID A3Y1G0) and Part 2 (Filing ID A3Y1G1)
			HHRA Marine Transportation Part 1 (Filing IDs A3Y1F7 and A3Y1F8)
			NEB F-IR. No. 2.024b including NEB F-IR No. 2.024b – Attachment 1 (Filing ID A4A1Z8)



TABLE 1-1

ISSUES, CONCERNS AND COMMON TRANS MOUNTAIN RESPONSES FOR THE MARINE CONSULTATION PROGRAM (continued)

Code	Interest/Issue/Concern	Trans Mountain Response	Reference
6.0 F	Regulatory Process (continued)		
6.D	Size of study area (i.e. expand beyond Burrard Inlet)	The Application includes a discussion of methodology and how study areas and indicators were chosen. Stakeholder input was considered in the selection of a RSA beyond Burrard Inlet to ensure the regional effects of the increase Project-related marine vessel traffic could be considered.  The local study area was expanded to include the inbound and outbound marine shipping lanes the area between the shipping lanes and a two km buffer extending from the outermost edge of each shipping lane.  The RSA comprised of a large portion of the Salish Sea, including the inland marine waters of the southern Strait of Georgia and Juan de Fuca Strait and their connecting channels, passes and straits. The RSA generally centred on the marine shipping lanes, which extend from the Westridge Marine Terminal through Burrard Inlet, south through the southern part of the Strait of Georgia, the Gulf Islands and Haro Strait, westward past Victoria and through Juan de Fuca Strait out to the 12 nautical mile limit of Canada's territorial sea.  Detailed descriptions of the element-specific RSAs are provided in Section 4.2 and associated rationales are provided in Section 4.3 of Volume 8A.	Section 4.2.1 of Volume 8A (Filing ID A3S4X5) Regional Overview Table 4.3.1.2.of Section 4.3.1.3.2 Volume 8A. (Filing ID A3S4Y3). Spatial Boundaries
6.E	Consideration of upstream and downstream climate impacts in NEB's review of the Application	The NEB has issued a list of 12 issues it will consider in reviewing Trans Mountain's Application. The Board does not intend to consider the ESA effects associated with upstream activities, the development of oil sands, or the downstream use of the oil transported by the pipeline.	NEB List of Issues (released July 29, 2013) http://www.neb- one.gc.ca/clf-nsi/rthnb/nws/nwsrls/2013/nwsrls22-eng.html
6.F	Impacts of changes to legislation (Fisheries Act, NEB vs DFO oversight, etc.)	Trans Mountain does not foresee changing its approach to the ESA in light of recent legislative changes.	Section 1.4 of Volume 8A (Filing ID A3S4X3).
7.0	Corporate Policy		
7.A	Sustainability	Across all its operations, Kinder Morgan strives to provide for the safety of the public, its employees and contractors; protect the environment; comply with applicable laws, rules, regulations, and permit requirements; and operate and expand efficiently and effectively to serve our shareholders and customers.  Trans Mountain has been safely loading tankers and barges since 1956 from the Westridge Marine Terminal in Burnaby, BC. Trans Mountain is responsible for and has internal standards and procedures relating to marine safety at the Westridge Marine Terminal including rigorous inspections and monitoring for each vessel. In addition, Trans Mountain works closely with PMV, TC, the Canadian Coast Guard, and other agencies to ensure the safety and efficiency of this traffic. Trans Mountain has consistently worked to bring parties to the table to advance opportunities to improve the safety and efficiency of tanker traffic.  While Trans Mountain does not own or operate the vessels calling at the Westridge Marine Terminal, it is responsible for ensuring the safety of the terminal operations. In addition to Trans Mountain's own screening process and terminal procedures, all vessels calling at Westridge must operate according to rules established by the IMO, TC, the PPA, and PMV. Although Trans Mountain is not responsible for vessel operations, it is an active member in the maritime community and works with BC maritime agencies to promote best practices and facilitate improvements to ensure the safety and efficiency of tanker traffic in the Salish Sea.	Section 1.2.1 of Volume 2 – About the Applicant (Filing ID A3S0Q8)  Section 1.1 of Volume 8A – Marine Transportation (Filing ID A3S4X3)
7.A.1	Stance on upstream issues, GHG emissions and climate change	Trans Mountain is assessing the carbon impact of constructing and operating the proposed expansion and its related facilities. The GHG impacts are outlined in the ESA submitted with the Application. A carbon management plan will be developed to mitigate (reduce) emissions as much as possible.  For upstream or downstream impacts outside of Trans Mountain's jurisdiction or control, Trans Mountain is acting as a catalyst to influence the industry to help address issues upstream and downstream from the pipeline.  Sections 4.2, 4.3 and 4.4 of Volume 8A describe GHG and Air Quality Assessments and potential investments for marine components of TMEP.	Section 3.4.4.6 of Volume 4A (Westridge Marine Terminal) (Filing ID A3S0Y9)  Sections 4.2, 4.3 and 4.4 of Volume 8A (Filing ID A3S4X3 and A3S4Y3).
7.A.2	Environmental benefits – will KMC ensure environmental investments to compensate for potential environmental harm from expanded operations	Engagement with stakeholders to better understand local concerns and priorities for environmental protection and enhancement is ongoing. Trans Mountain will provide more information about environmental enhancement as part of Consultation Update No. 3 in Q1 2015.	City of Port Moody IR No. 1.3.17 (Filing ID A3X5Z8)
7.A.3	KMC should set expectations of vessel behavior (i.e. noise, lights)	KMC sent a letter to PMV Operations to request support in educating vessel operators about common community complaints about local shipping activity.	Table 7.6.4-2 of Section 7.6.4.4 of Volume 5B Human Occupancy and Resource Use (Filing ID A3S1S9



TABLE 1-1
ISSUES, CONCERNS AND COMMON TRANS MOUNTAIN RESPONSES FOR THE MARINE CONSULTATION PROGRAM (continued)

Code	Interest/Issue/Concern	Trans Mountain Response	Reference
7.0	Corporate Policy (continued)		
7.B	Export	Trans Mountain commissioned third party expert opinion from IHS Global Canada Limited (IHS) to examine the oil market supply and demand.	Section 3.3.1 of Volume 2 – Supply and Demand (Filing ID A3S0R0)
		Total Western Canadian crude production is forecasted to grow at 3% annually from 2013 to 2037, resulting in 3.43 million barrels per day (bbl/d) of incremental production over the same period. Oil sands crude production is expected to grow by about 3.23 million bbl/d between 2013 and 2037, from 1.95 million bbl/d to 5.17 million bbl/d.	
		Despite a lack of demand growth in US refining markets, Canadian crude exports to the US are expected to approximately double from 2013 to 2035, representing growth of more than 2.5 million bbl/d. Canadian crude exports will account for a growing share of US crude consumption, and will lead to a dramatic drop in US imports from other countries. This will occur despite an increase in US crude production. This suggests that there is a need for additional transportation capacity to provide access to both North American and offshore markets.	
7.B.1	Export of unrefined product (minimize environmental spill risk, create more jobs in	Transporting dilbit is as safe as transporting other types of crude oil. This is because there is virtually no difference between the two products.  Our industry has been safely transporting dilbit in pipelines for over 30 years and conventional crude for over 60 years.	Table 1.7.7 of Section 1.7.7 of Volume 3A (Filing ID A3S0R5).
	Canada)	Trans Mountain transports crude oil, semi-refined and refined products – for use in local markets and for export – on behalf of its customers. In the same way a highway does not own the cars travelling on it, Trans Mountain does not own the product it transports. Any product moved in the pipeline must meet Trans Mountain's tariff requirements. These are the specifications that must be followed in order for the product to be moved in the Trans Mountain Pipeline.	
7.B.2	Product destination	The toll on the expanded TMPL will enable western Canadian oil producers to deliver crude oil to tidewater at a very attractive rate, both for long-term shippers and spot shippers. The evidence provided by IHS demonstrates that the Project will provide access to markets that yield attractive netbacks, and Trans Mountain is confident that the expanded TMPL system will attract considerable spot volumes during its operating life.	Section 3.3 of Volume 2 (Filing ID A3S0R0).
7.B.3	Support of Chinese growth and use of petroleum	Demand for most types of crude is forecast to increase in China and India, as refining industries in these countries expand and evolve to meet domestic product requirements.	Section III of Appendix A to Volume 2 - Asian Crude Market Overview (Filing ID A3S0R1)
		An increasing need for imported crude of all types suggests that interest in Canadian oil sands crudes should continue. China is generally expected to move towards more complex refining configurations as capacity is added, with the addition of cracking, coking and hydro processing capacity.	
7.B.4	Types of products moved by the pipeline and by tanker	A list of the various types of crude oil that are currently approved for shipment in the Trans Mountain pipeline system is included in the response NEB IR No. 1.93a.	Table 5.1.7 of Appendix D to Volume 4A – Representative Properties of Crude Oils (Filing ID A3S0Z5)
		The representative properties of these crude oils are included in Table 5.1.7, Appendix D, Volume 4A of the Application.	NEB IR No. 1.93a (Filing ID A3W9H9)
		Trans Mountain anticipates that the types of crude oil that will be shipped in the expanded pipeline system will be the same as or very similar to those currently shipped. Material Safety Data Sheets for the currently approved types of crude oil are included in Attachment 1 (Province BC IR No. 1.1.26a - Attachment 1) Part 1 and Part 2.	Province BC IR No. 1.1.26a - Attachments 1 and 2 (Filing IDs A3Y3A4, A3Y3A5 and A3Y3A6).
8.0	Emergency Response		
8.A	Desire to observe/participate in Emergency Response exercise	The objective of response exercises is to practice the knowledge and skills received in training, identify areas of future training priority, identify areas to improve current emergency procedures or equipment, engage with local response communities, and to share exercise learnings to ensure a smooth response in the event of an incident.	Sections 4.6.2 and 4.7.1 of Volume 7 – Exercises and Continuing Education Program (Filing ID A3S4V5)
		KMC conducts, on average, 20 to 25 training, table-top, and deployment exercises at locations along the pipeline each year. Many of the exercises involve Aboriginal communities, regulatory agencies, stakeholders, and contracted emergency response support companies.	
		For emergency responders (including Provincial emergency programs) once every three years there is a direct mail campaign addressing how to participate in KMC's emergency response drills, table-top exercises, or equipment deployments, how to notify KMC in the event of a suspected pipeline emergency, where to get information on oil characteristics and recommended equipment for responding to a pipeline emergency; and information about KMC's ERPs specific to their local municipality, county, or regional district.	



TABLE 1-1
ISSUES, CONCERNS AND COMMON TRANS MOUNTAIN RESPONSES FOR THE MARINE CONSULTATION PROGRAM (continued)

Code	Interest/Issue/Concern	Trans Mountain Response	Reference
8.0 E	Emergency Response (continued)	·	
8.B	Adequacy of boom technology (existing technology ineffective in wave action). Commit to best available technology	The function of oil containment boom is to contain, concentrate and reduce the spreading of spilled oil. Containment boom is an engineered product constructed according to guidance published by many international standards organizations. As there is a robust market for the product, the manufacturers of containment boom are constantly refining and testing their products to maintain the "best available technology."  TC in consultation with the CCG, EC and other stakeholders codified containment boom and other response resources according to the environment in which they will operate (Transport Canada 1995). These TC equipment designations of shoreline, sheltered and unsheltered water capability will drive boom and other resource selections and its appropriate placement at the various locations between the Westridge Marine Terminal and Buoy "J" at the Pacific Ocean.	Belcarra IR No. 1.3 (Filing ID A3X6W1)
8.C	Emergency Response capability of WCMRC	Trans Mountain is a founding member of WCMRC, the TC-certified marine spill response organization with a mandate to respond to spills in navigable waters on the BC coastline. WCMRC's mandate is to ensure there is a state of preparedness in place and to mitigate the impact when an oil spill occurs.  WCMRC is certified to Tier 4, which is the highest certification level available to a Canadian spill response organization and has more than the capacity required to respond to an oil spill up to 10,000 tonnes. Trans Mountain has been working collaboratively with WCMRC to effect enhancement of the emergency preparedness and response capacity.	Section 4.8.1.3 of Volume 7 – Industry Initiatives (Filing ID A3S4V5)  Sections 1.4.2.5 and 5.5.1 of Volume 8A (Filing IDs A3S4X3 and A3S4Y6)
		WCMRC's current mandate includes response to a spill in the marine environment at the Westridge Marine Terminal. The Westridge Marine Terminal also serves as a base for a WCMRC response vessel, which enables rapid response in the event of a spill. For the Westridge delivery line release in 2007, WCMRC was instrumental in the response and high recovery rate of oil achieved.  WCMRC maintains its certification under the <i>Canada Shipping Act</i> , 2001 by undertaking a number of equipment deployment exercises, tabletop	
		exercises, and oil spill response training courses and scenarios within the certification period (WCMRC 2013a). The current capacity of WCMRC to respond to an oil spill is further detailed in Section 5.5.1 of Volume 8A. TMEP has proposed that WCMRC expands its capacity and resources in accordance with Table 5.5.3 of Section 5.5.2 in Volume 8A.	
8.D.	ERPs/capabilities are not in place/adequate for Westridge Marine Terminal	ERPs are available for the TMPL (including pump stations), terminals (Edmonton, Kamloops, Sumas, and Burnaby) and the Westridge Marine Terminal. These plans detail prescriptive procedures, activities, and check-lists to ensure consistent response to an incident across the pipeline with the common objective of protecting public and Company personnel, the environment, and Company and public property. The ERPs are utilized in coordination with the Control Point and Field Guide manuals which provide complementary information specific to the spill location including predetermined control points and response tactics.	Sections 4.4 and 4.6 of Volume 7 – Training (Filing ID A3S4V5)
		The current ERP for TMPL provides a generic response to a spill for any location along the pipeline, whereas the ERPs for Terminals/Tank Farms and for Westridge Marine Terminal are location-specific. All plans have a common structure and format and address key elements. These include:  • responder health and safety • internal and external notifications • spill/site assessments • spill containment and recovery • protection of sensitive areas • multiple hazards	
		Each of the plans also includes detailed information on the ICS, includes the Environmental Health and Safety Policy, regulatory background, and documents the approach to training and exercises.	
		KMC has a rigorous training and response exercise program that ranges from detailed equipment deployment drills to full ICS management and organization training and deployment. Training is provided to operations and head office staff, and at locations along the pipeline.	
		The goal is to ensure that employees receive the training necessary to protect themselves, the public, the local community and the environment during a spill or emergency.	
		At a minimum, all employees who could be involved in emergency response will receive ICS level 100 training, which provides a general overview of the ICS, structure, procedures, processes, and standard forms. The Incident Management Team (IMT) members receive increased detail and complexity of ICS training depending on their role following the widely recognized training format of ICS-200, ICS-300 and ICS-400 level. The level of training is commensurate with the anticipated roles and responsibilities of personnel, with efforts to cross-train key personnel for ICS Leadership roles such as incident commander, deputy incident commander, and the section chief roles.	

#### **APPENDIX A – CONSULTATION SUMMARY**



### CONSULTATION ACTIVITIES FOR PMV FOR THE PERIOD OF MAY 2012 TO JULY 31, 2014

Stakeholder/ Group Name	Comments/Concerns Expressed and addressed in Table 1.1 - Common Issues/Responses	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
FEDERAL CONSULTATION	duareccou in rubio in Common control control	L		
Port Metro Vancouver (PMV)	<ul> <li>Increase in Tanker Traffic (See 3.B.2: Ability of Vancouver Harbour, specifically Second Narrows, to safely accommodate more tankers)</li> <li>Dock Site for Westridge Marine Terminal (See 2.A: Alternate terminal locations)</li> <li>Improvements to Tanker Safety (See 3.A: Tanker Safety)</li> <li>Regulatory – New legislation and regulations (6.A: Timeframe for application to the National Energy Board (NEB) and regulatory review process, 6.B: NEB requirements for the facilities application and 6.G: Impacts of changes to legislation (fisheries act, NEB vs Department of Fisheries and Oceans (DFO) oversight, etc.)</li> <li>Regulatory – PMV Environmental Assessment process for Westridge Marine Terminal (WMT) (See 6.C: Release of the entire Environmental and Socio-Economic Assessment for stakeholder review)</li> <li>Acoustic Environmental effects on marine mammals (See 2.B: Impacts from construction of terminal and 3.F.2: Impact of increased tanker traffic on orca populations)</li> <li>Impacts of terminal expansion and increased vessel traffic on neighbours (2.C: Impacts from terminal construction, operations (lights, noise, odours, visual impacts, vessels using berths as anchors, number of tankers that can berth concurrently)</li> <li>Engagement process – Stakeholder (See 6.F: Influence of public opinion on ultimate decision)</li> <li>Vessel Anchorages (See 3.C.1: no new anchorage locations requested for TMEP)</li> <li>Air Quality (See 1.D emissions impacts from vessels in transit, 1.D.1: emissions from loading operations, 1.D.2: emissions from vessels at anchor, and 1.D.3: emissions from terminal construction)</li> </ul>	Canadian National Rail (CN Rail) Bridge at Second Narrows Approach to TERMPOL and Risk assessment Safe Navigation of Second Narrows Movement Restricted Area (MRA) Emergency Response in Metro Vancouver	<ul> <li>TMEP undertook analysis of possible impediments to rail traffic accessing Vancouver's north shore via CN Rail Bridge. Data was shared with PMV and CN Rail as well as other potentially affected terminals east and west of Second Narrows.</li> <li>PMV was included in Hazard Identification (HAZID) workshops and consulted in the design of the proposed Westridge Marine Terminal Expansion.</li> <li>TMEP has conducted Emergency Management Stakeholder workshops of which PMV has attended, and TMEP is supportive of PMV's new Marine Emergency Response Coordination Committee (MERCC)</li> </ul>	Comments were considered by the Project Team Trans Mountain will continue to engage with PMV to inform their review of the marine terminal and other issues identified in consultation with marine communities and local FNs. Trans Mountain will remain in contact with CN, as well as PMV, and provide project related information in order for CN and PMV to coordinate efforts towards efficient management of any effect from increase in marine traffic as a result of TMEP Engagement summaries provided to PMV for all marine consultations for Aboriginal and non-Aboriginal communities TMEP has committed to participate in PMV marine mammal monitoring program. See response to NEB IRs No. 1.55 and 1.56 (Filing ID A3W9H8).
Transport Canada	<ul> <li>Increase in tanker traffic (See 1.B.1: Increase in risk with increase in tanker traffic)</li> <li>Improvements to tanker safety (See 3.A: Tanker Safety and 3.B: Tanker Navigation)</li> <li>Anchorage utilization (See 3.C: Anchorages)</li> </ul>	TERMPOL review Discussion of MRA rules Infrastructure – CN Rail Bridge	TMEP will continue to engage with Transport Canada (TC) to address questions and comments raised by TERMPOL TMEP will remain an active member of the marine transportation community in Burrard Inlet TMEP will continue to work with PMV to share vessel transit information and support increased efficiency of the rail bridge.	Comments were noted in the Facilities Application and considered by the Project Team     Trans Mountain will remain in contact with TC and PMV, and provide project related information in order for PMV to coordinate efforts towards efficient management of any effect from increase in marine traffic as a result of TMEP.
Canada Coast Guard	<ul> <li>Discussion of MRA at second narrows (See 3.B.2: Tanker navigation in shipping lanes through Gulf Islands and adequacy of existing shipping lanes to accommodate increase in tanker traffic and 3.A: Tanker Safety)</li> <li>Spill risk (See 1.B.1 to 1.B.3: Increase in risk with increase in tanker traffic, 1.B.2: Increased risk with increased volumes of oil transiting the harbor, and 1.B.3: Spill response times, WCMRC equipment locations and response capacity)</li> </ul>	Discussion of impacts of vessel traffic on Rail Bridge	TMEP undertook targeted engagement with CN Rail and other potentially affected terminals east and west of Second Narrows.	Comments were noted in the Facilities Application and considered by the Project Team Trans Mountain will remain in contact with CN and PMV, and provide project related information in order for CN and PMV to coordinate efforts towards efficient management of any effect from increase in marine traffic as a result of TMEP
Member of Parliament for North Vancouver	<ul> <li>Level of engagement with local Aboriginal groups (See 5.B.1: Benefits for Aboriginal Peoples living along the coast)</li> <li>Opportunities for local stakeholder input, including local municipalities (See 5.B.2: Procurement opportunities for local small business operators)</li> <li>Economic Benefit/Impact for North Vancouver and Aboriginal groups (See 5.B.2: Procurement opportunities for local small business operators)</li> <li>Ability for Vancouver Harbour to accommodate increase in tanker traffic (See 3.B.2: Tanker navigation in shipping lanes through the Gulf Islands and adequacy of existing shipping lanes to accommodate increase in tanker traffic)</li> </ul>	• N/A	• N/A	Comments were noted in the Facilities Application and considered by the Project Team Trans Mountain is also identifying ways to include First Nations in the project development, construction and operations of the project. For example the habitat studies, the long term monitoring of the inlet.
Member of Parliament for West Vancouver, Sunshine Coast and Sea to Sky Country	<ul> <li>Spill modelling – worst case spill (See 5.C: Potential financial impact of a worst-case marine spill)</li> <li>What about a fund to put aside money in case of catastrophe? (See 5.D.1: Adequacy of \$1.3 billion to cover the costs of a spill and 5.D: Liability regime in Canada in the event of a marine oil spill)</li> <li>Opportunities for public input (See 6.F: Influence of public opinion on ultimate decision)</li> </ul>	MP attended the Bowen Island information session November 10, 2012 and spoke with TMEP as well as WCMRC representatives. What is the purpose of twinning the old pipe (meet producer demand, ensure BC/Lower Mainland secure supply, national benefit) The environment is the economy – this is something he feels is an important theme to explore in his riding	Increasing the capacity of the pipeline will enable TMPL to meet producer demand, ensure BC/Lower Mainland secure supply, and provide a national benefit in terms of maximizing opportunities to diversity market for natural resources)	Comments were noted in the Facilities Application and considered by the Project Team     Request from MP Weston's office has been kept informed of any public information opportunities
Member of Parliament for Vancouver Centre	<ul> <li>Engagement with local stakeholders, particularly commercial fishing sector (See 5.C.1: Effects to commercial, Aboriginal fisheries)</li> <li>Liability regime for marine oil spills, ability to recover costs (See 5.D.1: Adequacy of \$1.3 billion to cover the costs of a spill and 5.D.3: Ability to recover costs from responsible parties)</li> <li>Impact of changes to Fisheries Act (See 6.G: Impacts of changes to legislation; fisheries act, NEB vs DFO oversight, etc.)</li> <li>Properties of Diluted Bitumen (See 1.C: Behaviour and Effects of diluted bitumen)</li> <li>Regulatory process – timeline (See 6.A: Timeframe for application to NEB and regulatory review process)</li> </ul>	Member is seeking copies of seismic studies for Burnaby Mountain	Seismic analysis was conducted and provided as part of the Application.	Comments were noted in the Facilities Application and considered by the Project Team
Health Canada (Burnaby office)		• N/A	• N/A	Comments were noted in the Facilities Application and considered by the Project Team     TMEP will continue to engage on a regular basis with regulators to review interests or concerns throughout the regulatory process.



Stakeholder/ Group Name	Comments/Concerns Expressed and addressed in Table 1.1 - Common Issues/Responses	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
PROVINCIAL GOVERNMENT CO	DNSULTATION			
BC Ministry of Environment	<ul> <li>Air Quality issues as it relates to BC MOE and Metro Vancouver which include Marine sources of SO2, reductions of GHGs at the dock, air quality from increased tanker traffic (See 1.D emissions impacts from vessels in transit, 1.D.1: emissions from loading operations, 1.D.2: emissions from vessels at anchor, and 1.D.3: emissions from terminal construction)</li> <li>Tanker Size (See 3.A.1: tanker size and capacity)</li> <li>Escort Tugs (See 3.B.3: escort tugs in Burrard Inlet and Saturna Island)</li> <li>Engagement with Aboriginal communities (See 5.B.1: Benefits to Aboriginal Peoples along the coast)</li> </ul>	Review the ESA Approach for the Trans Mountain Expansion Project     Marine related hazard identification     Marine Risk Assessment (Quantitative and Ecological)	<ul> <li>In Hazard Identification (HAZID) workshops and consulted in the design of the proposed Westridge Marine Terminal Expansion.</li> <li>Detailed risk assessment conducted for the marine component of the application were filed as part of Technical Report 8C-12 TERMPOL 3.15 of Volumes 8C. (NEB Filing ID A3S5F4) General Risk Analysis and Intended Methods for Reducing Risk. Ecological Risk is evaluated as part of Technical Report TR 8B-7 of Volume 8B (NEB Filing ID A3S4K7) Marine Ecological Risk Assessment</li> </ul>	Comments were noted in the Facilities Application and considered by the Project Team
Member of the Legislative Assembly (MLA) for North Vancouver – Lonsdale	<ul> <li>Marine - Tanker Safety Regime, how to bring the risks down, who is responsible for the training in the harbour (See 3.A: Tanker Safety)</li> <li>Liability for oil spills (See 5.D: Liability regime in Canada in the event of a marine oil spill)</li> <li>Marine – more traffic and increase risk of a spill (See 1.B: Increase in spill risk)</li> <li>Economic benefits for the north shore And - what will the expansion mean for GDP and tax revenues to the province (See 5.B: Benefits for non-pipeline communities)</li> <li>Emissions from bunker fuel, routing through the Gulf Islands and the Georgia Straight (See 1.D: Emission impacts from vessels in transit)</li> <li>Corporate Responsibility (See 7.A: Sustainability)</li> <li>Marine - Tanker details (size, number, etc.</li> <li>Tanker Safety - safe operations of vessels. (See 1.B.1: Increase in risk with increase in tanker traffic, and 3.A tanker safety.)</li> <li>Maintenance of ships and propellers to ensure we keep noise levels down and reduce impacts to wildlife (See 3.F.2: Impact of increased tanker traffic on orca populations)</li> </ul>	MLA attended the North Vancouver public information session on November 3, 2013 and spoke with TMEP as well as Seaspan, and WCMRC representatives	• N/A	Comments were noted in the Facilities Application and considered by the Project Team
Member of the Legislative Assembly (MLA) for North Vancouver – Seymour	<ul> <li>Need for more export capacity and long term viability of the project proposal (See 7.B.1: Export of unrefined product; minimize environmental spill risk, create more jobs in Canada)</li> <li>Marine - Tanker Safety and higher risk of oil spills on BC's coast (See 3.A: Tanker Safety)</li> <li>Emergency Spill Response capabilities, interested in a tour of WCMRC (See 1.B.3: Spill response times, WCMRC equipment locations and response capacity)</li> <li>Environmental and human health effects of marine oil spills (See 1.A.2: Threat to newly returned resident whale populations (Howe Sound, English Bay, Burrard Inlet), 1.A.3: Effects on Marine Birds (resident and migratory) and 1.B.7: Impacts of a spill on human health and quality of life in coastal areas)</li> <li>Potential procurement/Business Opportunities on the north shore as a result of the proposed project (See 5.B.2: Procurement opportunities for local small business operators)</li> <li>Bitumen – properties, misconceptions (See 4.0: Diluted Bitumen)</li> <li>Education and training opportunities from TMEP – like British Columbia Institute of Technology (BCIT) Marine Campus (See 5.F: Kinder Morgan Canada collaboration with trade schools and high schools regarding skills development and equipment funding)</li> <li>Refineries – why not build new ones here (See 7,B,1 – export of unrefined product and 7.B.2: product destination))</li> </ul>	Meeting BC's five conditions, creation of a fund     Wants to know more behind the price difference in Canadian oil sold to the US vs sold elsewhere in the world     MLA attended the West Vancouver information session November 7, 2013 and spoke with TMEP as well as Seaspan, and WCMRC representatives.	<ul> <li>Trans Mountain has taken into consideration the interests and concerns expressed by both the provinces of BC and Alberta, in particular the BC Five Conditions enunciated by the Province of British Columbia in 2012. The conditions are addressed in the Facilities Application through a comprehensive analysis of the potential benefits, effects, and risk mitigation for the expansion. Provincial interests are further considered in Section 4 of Volume 1 (Filing ID A3SOQT), using the themes of the BC Five Conditions as a template, and within the context of the regulatory process now underway for the Project.</li> <li>Through enhanced access to California and other Pacific Rim markets, the Project offers producers an alternative to traditional North American markets and greater market optionality, thus reducing the likelihood of a recurrence of the price discounting of Canadian oil experienced over the past several years. Energy Industry benefits are further explained in Section 3.4.2 and Appendix C of Volume 2 (Filing ID A3SOR0 and A3SOR1)</li> </ul>	Comments were noted in the Facilities Application and considered by the Project Team  WCMRC was provided with a list of representative who have expressed interest in tours and learning more about their role.
Member of the Legislative Assembly (MLA) for West Vancouver – Sea to Sky	<ul> <li>Engagement with local community groups (See 6 F: Influence of public opinion on ultimate decision)</li> <li>Relationships with Aboriginal groups on the north shore (See 5.B.1: Benefits for Aboriginal Peoples living along the coast/shipping lanes)</li> <li>Risk of increase in tanker traffic (See 1.B.1: Increase in risk with increase in tanker traffic)</li> <li>Nuisance - Visual Impact of more tankers (See 2.C: Impacts from terminal construction, operations (lights, noise, odours, visual impacts, vessels using berths as anchors, number of tankers that can berth concurrently).</li> </ul>	MLA attended the West Vancouver information session November 7, 2013 and spoke with TMEP as well as Seaspan, the Pacific Pilotage Authority and WCMRC representatives.	• N/A	Comments were noted in the Facilities Application and considered by the Project Team     Trans Mountain has reached out to community groups as suggested (West Vancouver Stream keepers and WV Shoreline Preservation Society).
LOCAL GOVERNMENT CONSUI				T
Village of Lions Bay	<ul> <li>Environment - Cumulative Effects of increased tanker traffic (See 3.B.4: Impacts of increase tanker traffic on pleasure craft use of harbor)</li> <li>Shoreline erosion due to vessel wake (See 1.E.4: Shoreline erosion due to increase in tanker traffic, wake)</li> <li>Air emissions from increase in tanker traffic (See 1.D: Emission impacts from vessels in transit)</li> <li>Marine - Tanker details (size, number etc.) and impacts of increased traffic in Vancouver Harbour (See 3.B.2: Ability of Vancouver Harbour, specifically Second Narrows, to safely accommodate more tankers)</li> <li>Regulatory - NEB process including timeline and stages of review (See 6.A: Timeframe for application to NEB and regulatory review process)</li> <li>Stakeholder Engagement Process (See 6.F: Influence of public opinion on ultimate decision)</li> </ul>	Speed of ocean-going vessels travelling to Howe Sound, particularly freighters.	<ul> <li>Vessel speed in PMV is defined in the PMV Harbour Operations         Manual – no greater than six knots transit speed through the MRA.         Tankers are also required to travel at less than 10 knots in Haro         Straight and Boundary Pass.</li> <li>PMV Community Relations was notified by TMEP of Lions Bay         concerns about speeding vessels in Howe Sound.</li> </ul>	Comments were considered by the Project Team     Trans Mountain attended the Federation of Canadian Municipalities Conference 2013, clarifying, conveying feedback received from their engagement program and describing what stage they are at in the NEB process.



Stakeholder/ Group Name	Comments/Concerns Expressed and addressed in Table 1.1 - Common Issues/Responses	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
LOCAL GOVERNMENT CONSUI	TATION			
City of Richmond	<ul> <li>Ecological risk of marine oil spill to marine birds – conservation area (Reifel Reserve, Delta) (See 1.A.3: Effects on Marine Birds (resident and migratory)</li> <li>Nuisance effects of increased tanker traffic – noise, odour (belching) (See 1.D: Emission impacts from vessels in transit) Environmental and socio-economic risk of marine oil spill to commercial fishery3.B.2: Ability of Vancouver Harbour, specifically Second Narrows, to safely accommodate more tankers</li> <li>Environmental impact to Richmond's foreshore of a marine oil spill (See 1.A: Potential environmental impacts of a spill in Fraser Delta ecosystem and Burrard Inlet ecologically sensitive areas)</li> <li>Regulatory – NEB process and impacts of new legislation and regulations (See 6A: regulatory timeline and 6.F: effects of new legislation)</li> <li>Air Emissions/Greenhouse Gas impacts of increased tanker traffic (See 1.D – air emissions impact from vessels in transit)</li> </ul>	Community Investment and opportunities to enhance community emergency response resources – firefighting and spill response for south arm of Fraser River	Trans Mountain is committed to investing in community benefits initiatives in municipalities and regions crossed by the Project.  Richmond was invited to Emergency Management Stakeholder workshops through the Regional Emergency Planning Committee. These workshops were an introduction to Trans Mountain's emergency management plan and an initial discussion to determine interests and concerns of local municipalities as the current ERP is updated to meet the needs of the proposed expansion.  Fraser Valley Watersheds Coalition (FVRD) IR No. 1.5 (Filing ID A3Y2K7)  Hale IR No. 1.5.2 (Filing ID A3Y2R9)	Comments were considered by the Project Team     Trans Mountain and KMC Operations to keep City of Richmond in mind for any future emergency exercise training even if not scheduled for Richmond location, anticipated to be completed in 2015
Municipality of Bowen Island	<ul> <li>Sufficiency of emergency planning and spill response – what is Bowen Island's role? (See 1.B.6: Coordination with local resources (municipal, provincial) in the event of a marine oil spill)</li> <li>Effectiveness of spill response in recovery of product and company (TMEP/WCMRC)'s plans in dealing with diluted bitumen – concerns that it is more dangerous and difficult to clean up (See 1.C: Behaviour and Effects of diluted bitumen)</li> <li>Our system compared to that of the US? How are we integrated given ship traffic to Puget Sound? i.e. relationship between US Coast Guard and Canada Coast Guard (See 3.B.5: Volume and management of Vancouver tanker traffic in consideration of US bound tanker traffic in Puget Sound)</li> <li>Belief there should be more refining capacity in Canada for added value, and moving refined product would also be safer (See 7.B.1: Export of unrefined product; minimize environmental spill risk, create more jobs in Canada)</li> <li>Air quality (from transiting tankers) (See 1.D: Emission impacts from vessels in transit)</li> <li>Odours – belching from tankers (See 1.D2: Emissions of vessels at anchor)</li> <li>Regulatory process – how to get involved (See 6.A: Timeframe for application to NEB and regulatory review process and 6.F: Influence of public opinion on ultimate decision). How to protect the noticeable and recent recovery of marine biodiversity in Howe Sound and surrounding areas in Georgia Straight (return of the dolphins, salmon to Bowen Island) (See 1.A.1: Threat to the regenerated herring fishery and salmon populations)</li> <li>1.A.2: threat to newly returned whale populations and 1.A: Potential environmental impacts of a spill in Fraser Delta ecosystem and Burrard Inlet ecologically sensitive areas</li> <li>Tanker traffic numbers – surprise at amount of current traffic (See 1.B.1 increase in spill risk with increase in tanker traffic and 3.A.6 pillotage of tankers)</li> </ul>	<ul> <li>Public information session was held on Bowen Island November 10, 2012.</li> <li>Bowen Island has engaged further with TMEP and WCMRC regarding spill response and emergency preparedness via their participation in the Islands Trust.</li> <li>Bowen Island was included in the invitation to the Regional Emergency Planning Committee members for a workshop that was hosted at E-Comm in Vancouver on December 6, 2013.</li> </ul>		Comments were noted in the Facilities Application and considered by the Project Team
City of North Vancouver (CNV)	<ul> <li>Project might enable investments in shift to cleaner technologies (lessen dependence on fossil fuels) (See 5.G: Investment in local clean technology companies including local clean (renewable) energy companies issues, greenhouse gas emissions and climate change)</li> <li>Commitment made to clarify the liability/responsibility for marine oil spills (who is liable, what is the risk to municipalities) (See 5.D: Liability regime in Canada in the event of a marine oil spill)</li> <li>Alternatives to Westridge (Roberts Bank?) (See 2.A: Alternate terminal locations)</li> <li>Will new docks take into account possible sea level rise? (See 2.D: Consideration of sea level rise in Terminal construction and operations)</li> <li>Effects of the project on climate change (See 7.A.1: Stance on upstream issues, greenhouse gas emissions and climate change)</li> <li>Oil spill response coordination (See 1.A Potential impacts of a spill)</li> <li>How are you reducing risk? (See 1.B: increase in spill risk)</li> </ul>	TMEP spill/safety record What is the interaction with PMV on emergency response – CNV has concerns about lack of fireboats in the harbour Petroleum products (volumes) shipped from Vancouver Wharves terminal on north shore	Spill record for Trans Mountain is available on the NEB and the TMEP website.  Trans Mountain continues to engage with PMV about safe vessel navigation of Burrard Inlet. PMV is pursuing a program to enhance the current firefighting capability in partnership with local municipalities. See Response to Province of BC IR No. 1.1.78 Firefighting Capabilities at Westridge Marine Terminal (Filing ID A3Y2Z1)  TMEP project staff appeared before CNV council in November 2012. Information regarding the volume of petroleum products shipped from Kinder Morgan Canada Terminals (KMCT) Vancouver Wharves was provided to the Deputy City Manager in advance of the council presentation. No questions were raised about these details by mayor and council during the presentation.	Comments were noted in the Facilities Application and considered by the Project Team



•	Looking for more knowledge about the risks. How is TMEP assessing risks associated with expansion, and how will those be communicated to the public (See the numbers behind the assessment) (See 1.B., 1.B.1 and 1.B.2: increase in risk)  Westridge Marine Terminal construction and operations impact to local residents and flora/fauna in proximity to Westridge Marine Terminal. E.g. marine air emissions, marine birds, contaminated sediments, ecological risks all due to shipping activity at Westridge and the construction of the expanded marine terminal. Noise and lights at Westridge Marine Terminal (See 1.D.3: terminal construction air emission impacts, 2.B: impacts of terminal construction on marine life and 2.C: impacts of terminal construction on neighbours)  Marine vessel traffic increase and potential impacts to DNV Cates Park. DNV has plans to create a new boat launch near Cates Park, worried about collisions with recreational traffic (See 3.B.4: Impacts of increase tanker traffic on pleasure craft use of harbour	Approach to engagement on marine studies (ESA)	District of North Vancouver was invited, and participated, in a marine ESA workshop held May 22, 2013 where the approach to the ESA was presented and discussed with stakeholders in attendance.	Comments were noted in the Facilities Application and considered by the Project Team
•	communicated to the public (See the numbers behind the assessment) (See 1.B., 1B.1 and 1.B.2: increase in risk)  Westridge Marine Terminal construction and operations impact to local residents and flora/fauna in proximity to Westridge Marine  Terminal. E.g. marine air emissions, marine birds, contaminated sediments, ecological risks all due to shipping activity at Westridge and the construction of the expanded marine terminal. Noise and lights at Westridge Marine Terminal (See 1.D.3: terminal construction air emission impacts, 2.B: impacts of terminal construction on marine life and 2.C: impacts of terminal construction on neighbours)  Marine vessel traffic increase and potential impacts to DNV Cates Park. DNV has plans to create a new boat launch near Cates Park,		ESA workshop held May 22, 2013 where the approach to the ESA was	
•	Terminal. E.g. marine air emissions, marine birds, contaminated sediments, ecological risks all due to shipping activity at Westridge and the construction of the expanded marine terminal. Noise and lights at Westridge Marine Terminal (See 1.D.3: terminal construction air emission impacts, 2.B: impacts of terminal construction on marine life and 2.C: impacts of terminal construction on neighbours)  Marine vessel traffic increase and potential impacts to DNV Cates Park. DNV has plans to create a new boat launch near Cates Park,		presented and discussed with stakeholders in attendance.	
			presented and discussed with stakeholders in attendance.	
	· · · · · ·			
	Project approach to Aboriginal engagement. Benefits to FNs should include education/training opportunities. (See 5.B.1: benefits for Aboriginal Peoples and 5.B.2: procurement opportunities)			
•	Location of the marine terminal (options) (See 2.A: alternate terminal locations)			
	Tanker traffic and safety regime: Anticipated increase in tanker traffic with expansion – how will traffic be managed? (See 3.A: Tanker Safety)			
-	Size of the vessels post expansion (See 3.A.1: tanker size and capacity)			
•	Characteristics of diluted bitumen and how it behaves in the environment (See 4.A: properties of bitumen and dilbit)			
	Value chain and the ethics of dealing with oil sands (carbon impact) (See 7.A: Sustainability and 7.A.1: stance on upstream issues)			
	Refine more product in Canada before being shipped (See 7.B.1: export of unrefined product)			
	DNV has the largest exposed shoreline and public interest is high to ensure it is protected, and that DNV does not have liability risk (See 5.D: Liability Regime and 5.D.2: risks that taxpayers have to cover some of the costs)			
	What is the capacity of the agencies in the harbour to response to a spill – want to see more from Seaspan, SMIT Marine, Port, Chamber of Shipping (See 8.C: emergency response capacity of WCMRC)			
	Ability of spill response regime to respond to increased risk of oil spills .Increase in tanker traffic would increase financial contribution to spill response capacity? (See 1.B.3: WCMRC equipment locations and response capacity)	Federal closure of the Kitsilano Coast Guard Station and the effect on spill response/safety     ESA approach – study methods     How will the Project report back to the community after the assessments?	Trans Mountain has engaged with the Canada Coast Guard and no impacts to Trans Mountain's risk assessment and emergency response protocols have been identified as a result of the Kits Coast Guard Station closure.  District of West Vancouver was invited, but did not participate, in a	Comments were noted in the Facilities Application and considered by the Project Team
•	Marine/tanker management (See 3.A: tanker safety) WCMRC – who are they, how funded? (See 1.A: impacts of spill in Fraser Delta, 1.B.3: response times, WCMRC equipment and resources)			
	Characteristics of diluted bitumen in marine waters. What is a successful oil spill clean-up on water (20%)? (See 4.B: ability to clean up spilled bitumen)	Assumptions behind marine traffic growth numbers.	<ul> <li>marine ESA workshop held May 22, 2013 where the approach to the ESA was presented and discussed with stakeholders in attendance.</li> <li>All assessment information was filed with the facilities application to the NEB in December 2013 (See Volumes 5.A, 5.B, 5.C and 5.D) .Trans Mountain continues to offer updates and will respond to any meeting request received by District of West Vancouver.</li> <li>Marine traffic analysis can be found in Section 2.2 of Volume 8A (Filing ID A3S 4X4) of the Application</li> </ul>	
	Size of tankers/dredging required? (See 3.A.1: tanker size and capacity, and 3.E.1: dredging)  Location of oil tanker traffic (See 3.B: tanker navigation)			
	Liability for marine based spills – how to recoup from ship owner and how much are taxpayers liable for? (See 5.D: Liability regime in Canada)			
	Why is this expansion needed? Economic benefits and the drivers for expanding west coast access (See 5.A: need for oil export) Visual impacts of the project - a lot of ships are moored off West Vancouver's foreshore. What will this look like with TMEP expansion and more tankers? (See 3.A.6: increase in tanker traffic)			
	Pressure on existing anchorage locations with expansion? (See 3.C.1:ls an increase in anchorages required)			
	Location of terminal – Delta Port? Or US port in Washington State? (See 2.A: alternate terminal locations)			
	Enabling more environmental impacts to Canada's oil sands. Cumulative effects on climate change should TMEP proceed. (See 7.A.1: stance on upstream issues)			
	Air and/or water quality impacts from ships moored at mouth of Burrard Inlet such as foreshore protection efforts from ship wash (vessel wake) and identify mitigation of discharge of grey water (See 3.F.1: impact of wave action, 1.E.2: Bilge water management, oily water separation)			
	Opportunities for benefits and collaboration with FN communities. (See 5.B.1: benefits for Aboriginal peoples). How to avoid impacts of heavy diesel particulate from ships? (See 1.D: emissions impacts from vessels in transit)			
Manager of Office	Size and capacity of tanker details(See 3.A.1: tanker size and capacity)  Tanker traffic increase (See 3.A.6: increase in tanker traffic)	Use/coordination of volunteers from the north shore in the event of an oil spill	Trans Mountain does not use volunteers in oil spill response. WCMRC does not use volunteers in oil spill response.	Comments were noted in the Facilities Application and considered by the Project Team
•	Westridge Marine Terminal – construction impacts, operations (See 2.C: impacts of terminal construction and operations). Marine impacts of shipping, oil spills (See 1.B: Increased spill risk, 1.B.1: Increased risk with increased tanker traffic, and 1.E.3: Long-term effects of oil spills on water quality (e.g., effects of Westridge 2007 spill)	Desire to observe/participate in Emergency Response exercise	<ul> <li>Follow-up to City of Vancouver IR No. 1.10.02g of the NEB Ruling 33 submission (Filing ID A4D3G2)</li> <li>City of Burnaby IR No. 1.25.01g (Filing ID A3Y2E6)</li> </ul>	• • •
	Emergency preparedness information (See 8.C: Emergency Response capability of WCMRC)		Only of Bulliaby In two. 1.20.019 (1 IIIIII9 ID A012E0)	



Stakeholder/ Group Name	Comments/Concerns Expressed and addressed in Table 1.1 - Common Issues/Responses	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
OCAL GOVERNMENT CONSUL	TATION			
Metro Vancouver (Regional District)	Marine - Dock location, can the dock be located somewhere other than Burrard Inlet (See 2.A: alternate terminal locations) Marine - Dredging, is dredging of the inlet required (See 3.E.1: is dredging proposed) Corporate Policy - Export, Can TMEP address desire for more refinery capacity in Canada (See 7.B.1: export of unrefined product)	<ul> <li>Is the project subject to municipal bylaws – or is it like the airport (federally regulated)?</li> <li>Project GHG totals to be compared to Lower Fraser Valley emissions as well as provincial/national emissions; it was indicated that Metro Vancouver (MV) has their own GHG targets</li> <li>MV permit requirements - might be triggered if any new incinerators for Volatile Organic Compounds and mercaptans destruction are installed</li> <li>July 30, 2013 letter from Metro Vancouver Chair Greg Moore, in support of Village of Belcarra's call for an Emergency Preparedness Study in Burrard Inlet. In particular, Mayor Drew recommends: <ul> <li>inclusion of a post-mortem examination of the environmental monitoring and impact assessment of the 2007 pipeline oil spill, by a third party, that reached Burrard Inlet via storm sewers, and</li> <li>baseline data is needed regarding the aquatic life in Burrard Inlet.</li> </ul> </li> </ul>	<ul> <li>operation of the Project.(See response to City Burnaby IR No. 1.01.03a (Filing ID A3Y2E6))</li> <li>Trans Mountain will continue to meet with regulators regarding air quality throughout the project development to respond to interests and concerns in the air quality and GHG assessments filed with the NEB.</li> <li>Excerpts from Trans Mountain response letter to Chair Moore, dated August 12, 2013, a copy of which is located in Appendix B:         <ul> <li>Since the 2007 third party strike to TMPL, we have cleaned up and remediated the area impacted by the oil spill. See "Summary of Clean up and Effects of the 2007 Spill of Oil from the Trans Mountain Pipeline to Burrard Inlet," for a description of clean up, effects, and long-term monitoring program results.</li> <li>KMC's Emergency Response Plans (ERPs) for existing operations were reviewed and information incorporated and is being used by TMEP to update ERPs for the proposed TMEP. This information</li> </ul> </li> </ul>	Comments were noted in the Facilities Application and considered by the Project Team



Stakeholder/ Group Name	Comments/Concerns Expressed and addressed in Table 1.1 - Common Issues/Responses	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
LOCAL GOVERNMENT CONSUL	TATION			
Metro Vancouver (Regional District)	See above	See above	*Note: An updated Preliminary Marine Fish Habitat Offset Plan (including a self-assessment of serious harm) was filed with the NEB as Part 10 to Technical Update No. 4 on December 1, 2014 (NEB Filing ID A4F5C5)  For marine transportation, we undertook an ESA based on a substantive body of existing information including baseline information on indicator species and habitats that will be used to assess potential project-related and cumulative effects on marine resources and to provide recommendations on mitigation measures that could be implemented to reduce or eliminate potential adverse effects from increased tanker operations.  We are committed to gathering and utilizing existing and new information to support our application to the NEB. We have and continue to work with local maritime stewardship groups.  For additional information about the Geographic Response plans see response 1.B.4 in Table 1.1 Response Plans for sensitive or populated shorelines	
Metro Vancouver Port Cities Committee (PCC), also known as Metro Vancouver Transportation Committee (name changed in 2013)	<ul> <li>Concern about bitumen response in water (sinks), emergency response tactics to address (See 1.C: behavior and effects of diluted bitumen)</li> <li>Concern about who is responsible for emergency response in Burrard Inlet, including during vessel loading (See 1.A: potential environmental impacts of a spill)</li> <li>Concern about emergency response time in Burrard Inlet (See 1.B.3: spill response time, WCMRC equipment locations and response capacity)</li> <li>Interest in knowing how often emergency response is exercised and where. Attendees expressed interest in viewing/participating in a table top exercise (See 8.A: desire to participate in emergency response exercises)</li> <li>City of Burnaby expressed concern about municipal liability if participate in Unified Command (See 5.D: liability regime in Canada)</li> <li>Interest in tanker safety vetting process (See 3.A: tanker safety, 3.A.4: records show each tanker's safety history, and 3.A.5: KMC involvement in tanker safety and spill prevention).</li> <li>Concern about noise during loading and mooring (See 2.C: impacts from terminal construction and operations on neighbours)</li> <li>Does the KMC loading master look at crew requirements/safety record? (See 3.A.5: KMC involvement in tanker safety and spill prevention – vessel acceptance)</li> </ul>	Concern that KMC ERP not robust enough. Encouraged KMC to seek a third party critique of KMC ERPs Concern about resource availability in event of an emergency and structure, timeliness of response (Command Centre, agency participation – e.g.; Canadian Coast Guard), who is coordinating, who is responsible for timely response and who is responsible for enforcement Recommend a document that confirms responsibility of marine parties (that all sign off on) that is simply worded and simple to digest Concern that WCMRC response team is not robust, equipment not robust; therefore ability to respond not robust Interest in knowing structure of Incident Command Post in event of land and water incident (would you set up a joint ICP for land and water?)	<ul> <li>Trans Mountain provided a redacted copy of the ERP to the Port Cities Committee when a presentation made to the committee on July 26, 2012.</li> <li>Emergency response coordination is described in the Application (Section 4.0 of Volume 7 – Filing ID A3S4V5). Trans Mountain continues to engage in emergency management and is supportive of WCMRC plans to engage communities going forward to explain their role.</li> </ul>	Comments were noted in the Facilities Application and considered by the Project Team
UBC Endowment Lands – Metro Vancouver Electoral Area "A"	<ul> <li>Environmental and socio – economic effects of oil spills on Vancouver (See 5.C: potential effects of a worst-case marine spill)</li> <li>More global issues of oil export, transport of crude, etc. (See 7.B: export and 7.B.1 export of unrefined product)</li> <li>Properties of diluted bitumen – does is sink or float? (See 4.A: properties of diluted bitumen)</li> <li>Funding for response – liability (See 5.D: liability regime in Canada)</li> </ul>	Metro Vancouver Parks should be engaged in any briefings about the project as it would be MV parks affected by oil spills. Metro Vancouver's primary focus is the Pacific Spirit Park - of which Wreck Beach is a part of this park.  Different organizations involved in spill response should be part of public meetings so they can be questioned  Metro Vancouver executive and elected directors should also receive briefings	Trans Mountain has met with Metro Vancouver executive and members of the board on multiple occasions in the past two years (2012-2014). Parks staff were in attendance at many of the meetings. Trans Mountain had third party organizations from the marine industry attend public information events. Trans Mountain presented to the MV Port Cities Committee in July 2012. Follow up attempts were made to include committee members in the observation of a live exercise but they postponed for a future opportunity	Comments were noted in the Facilities Application and considered by the Project Team



Stakeholder/ Group Name	Comments/Concerns Expressed and addressed in Table 1.1 - Common Issues/Responses	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
OCAL GOVERNMENT CONSU	LTATION			
City of Vancouver (COV)	<ul> <li>Nuisance - Visual impact of terminal (See 2.C: impacts form terminal construction and operations on neighbours)</li> <li>Regulatory - New legislation and regulations and impacts to timeline of regulatory process (See 6.A: timeframe for NEB review process)</li> <li>Tanker Safety - Some concern about the tugs that drop off after loaded tankers pass through the first narrows. Why should tugs drop off at all through Straight? (See 3.B.3: tugboat escort in Burrard Inlet ,and 1.B: increase in spill risk))</li> <li>History of transportation of oil (particularly crude) through the harbour (See 7.B.1: export of unrefined product)</li> <li>Who had control over the dredging of the narrows (See 3.E: Dredging)</li> <li>The product mix - what TMPL moves and to where (now and post-expansion) (See 7.B.2: export of unrefined product and 7.B.4 types of products moved by tanker)</li> <li>Interested in the shipping lanes - wanted to know more about the traffic between Haro Straight and the harbour. (See 3.B: tanker navigation)</li> <li>Properties of diluted bitumen (See 1.C: behavior and effects of diluted bitumen, and 1.C.1: proportion of product that can be cleaned up following a spill)</li> <li>Socio-Econ. Marine - Economic Benefit/Impact of expansion (See 5.B: Benefits for non-pipeline communities, 5.B.2: Procurement opportunities for local small business operators, and 5.C: potential financial impacts of a worst-case spill)</li> <li>Tanker safety, spill response times (See 3.A: spill response times)</li> <li>Safe transit of tankers (See 3.B: tanker navigation)</li> <li>What will increased tanker traffic look like (See 3.A.6: increase in tanker traffic)</li> <li>CoV would like to see more coordination in the emergency exercises and ICS training (See 81: desire to participate in emergency response exercises)</li> <li>TMEP approach to carbon management strategy (See 1.D.1: emissions from terminal construction)</li> </ul>	Has Trans Mountain conveyed to the Federal government concerns about relocation of spill response coordination to Ottawa     KMC doesn't really make decisions on ship size     Consultation process and early results     ESA Approach     Community Capacity Building - Can WCMRC fill a gap in fire response in Vancouver harbour?     CoV wants to work with WCMRC in evaluating the geographic area response plans.	<ul> <li>Vancouver has met with Vessel Traffic Services of the Canada Coast Guard to understand impacts of recent federal changes to the operating regime</li> <li>Trans Mountain has designed the proposed expansion based on vessel sizes up to Aframax class tanker. See 3.A 1: Tanker size and capacity)</li> <li>Trans Mountain provided COV results from Phase 2 of public engagement which included public turnout at public information sessions and key topics covered: tanker size, environmental review, alternate locations for marine terminal, spill risk, liability regime and types of products moved by TMPL or loaded onto tankers.</li> <li>Vancouver was invited, and participated, in a marine ESA workshop held May 22, 2013 where the approach to the ESA was presented and discussed with stakeholders in attendance.</li> <li>WCMRC and Trans Mountain have discussed fire capacity enhancements for Vancouver Harbour. Trans Mountain has since followed up with Port Metro Vancouver. See 2.F (ability to contribute to marine fire capacity in Vancouver Harbour)</li> <li>WCMRC and CoV connected directly after the Dec 2013 meeting to arrange tours and collaborative discussions.</li> </ul>	Comments were noted in the Facilities Application and considered by the Project Team
City of Burnaby	<ul> <li>Tanker traffic increase (See 3.A.6: Increase in tanker traffic)</li> <li>Whether shipping aspect in NEB review scope or not (See 6.B.1: Is shipping aspect within NEB review scope)</li> <li>Safety features such as double hull and compartmental storage of oil (See 3.A.2: Safety features)</li> <li>Tanker size (See 3.A.1: tanker size and capacity)</li> <li>Emissions from loading operations and vessels at anchor: City suggested discussion re. Federal government program looking at VOCs. (See 1.D.1: Emissions from loading operations and vessels at anchor).</li> <li>Emissions from loading operations and vessels at anchor/ nuisance from terminal construction and operations (odours): (See 2.C: Impacts from terminal construction and operations on neighbours, 1.D.1: Emissions from loading operations, and 1.D.2: Emissions of vessels at anchor).</li> <li>Concern with transiting vessel emissions (City recommended TMEP review Metro Vancouver recent study examined implications of marine activity on uplands). (See 1.D: Emission impacts from vessels in transit).</li> <li>Nuisance from terminal construction and loading operations (odours). City recommended TMEP investigate other jurisdictions practices. (See 2.C: Impacts from terminal construction and operations on neighbours)</li> <li>Nuisance from terminal construction and operations (noise). Ensuring marine noise associated with loading activities is assessed. (See 2.C: Impacts from terminal construction and operations (noise). Ensuring marine noise associated with loading activities is assessed. (See 2.C: Impacts from terminal construction and operations (noise). Ensuring marine noise associated with loading activities is assessed.</li> <li>Responsibility for terminal source spill (See 5.D.4: Responsibility for terminal source spill)</li> <li>Liability regime in Canada in event of marine oil spill (See 5.D. Liability regime in Canada in event of oil spill)</li> <li>Marine risk assessment (See 6.B.1: Marine risk assessmen</li></ul>		<ul> <li>Cargo transfers are conducted in accordance with tanker best practices. The tanker is always surrounded by an oil spill boom. Drip trays and drain down tanks are available and utilized during connection and disconnection to avoid and minor spills. See Section 1.4.3 of Volume 8A (Filing ID A3S4X4) Journey of a Tanker</li> <li>Sediment and Water Quality report was filed as part of the Application – see the Technical Report 5C-12 in Volume 5C Marine Sediment and Water Quality (NEB Filing ID A3S2R6)</li> <li>PMV will conduct an environmental review for Westridge Marine Terminal; however PMV is an intervenor in the NEB review process for TMEP and will ask for information first through that process. Should there be items remaining on the PMV's list of permitting needs that are not fully addressed in the NEB process, those will be dealt with by PMV prior to issuing a project permit for the terminal works.</li> <li>Trans Mountain has engaged with all regulatory authorities retarding air quality, this includes Metro Vancouver, Fraser Valley Regional District, Port Metro Vancouver, Environment Canada and the BC Ministry of Environment.</li> <li>Mobile air monitoring is among some of the items identified as potential community investment opportunities. Trans Mountain continues to engage with communities and stakeholders to determine whether items such as this will be pursued as community benefits should the project proceed.</li> <li>Noise predictions will be updated based on final design data as committed in the mitigation for Westridge Marine Terminal in the ESA (Volume 5A, Filing IDs A3S1Q9 and A3S1R0) and Westridge Marine Terminal Environmental Protection Plan (Volume 6D, Filing ID A3S2S9) and will be completed as part of the detailed Environmental Management Plans and Noise Management Plans outlined in the draft NEB Conditions of Approval (Filing ID A59688), once engineering is finalized.</li> </ul>	Comments were noted in the Facilities Application and considered by the Project Team



Stakeholder/ Group Name	Comments/Concerns Expressed and addressed in Table 1.1 - Common Issues/Responses	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
LOCAL GOVERNMENT CONSU	TATION			
City of Burnaby	<ul> <li>Analysis of anchorage use as result of expansion (See 3.C: Anchorages, 3.C.1: Is an increase in anchorages required for more tanker traffic)</li> <li>Footprint of Westridge Marine Terminal with additional foreshore and new dock. Number of tankers that can be loaded concurrently. (See 2.J: Footprint of expanded infill and new Westridge Marine Terminals berths)</li> <li>Consideration of sea level rise in Terminal construction and operations (See 2.D Sea level rise)</li> <li>Is the health risk assessment based on normal operations or accidents? (See 1.B.7: Impacts of a spill on human health and quality of life)</li> <li>Spill response times, WCMRC equipment locations and response capacity, response plans for sensitive or populated shorelines: Concern about the gap in the 2007 response. Complementary about pre-scat approach. Interest in in improvement continuum (See 1.B.3: Spill response times, WCMRC equipment locations and response capacity, 1.B.4: Response Plans for sensitive or populated shorelines)</li> </ul>		See above	See above
City of Port Moody	<ul> <li>Interest in benefits for non-pipeline communities (See 5.B: Benefits for non-pipeline communities)</li> <li>Effects on marine birds: Concern about limited timeframe for study in time of year when bird populations lowest in Inlet (See 1.A.3: Effects on marine birds)</li> </ul>	Support for TMEP Emergency preparedness study July 3, 2013 letter from City of Port Moody, in support of Village of Belcarra's call for an Emergency Preparedness Study in Burrard Inlet. In particular, Mayor Drew recommends:  inclusion of a post-mortem examination of the environmental monitoring and impact assessment of the 2007 pipeline oil spill, by a third party, that reached Burrard Inlet via storm sewers, and  baseline data is needed regarding the aquatic life in Burrard Inlet.	<ul> <li>KMC's Emergency Response Plans (ERPs) for existing operations were reviewed and information incorporated and is being used by</li> </ul>	e d



Stakeholder/ Group Name	Comments/Concerns Expressed and addressed in Table 1.1 - Common Issues/Responses	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
LOCAL GOVERNMENT CONSU	LTATION			
City of Coquitlam including area residents, elected officials, staff	<ul> <li>Tanker safety: Will you do Aframax risk assessment? (See 6.B.2: Will there be a marine risk assessment)</li> <li>Impact of increased tanker traffic (in Second Narrows) on pleasure craft use of harbor (See 3.B.4: Impacts of increased tanker traffic on pleasure craft use of harbor)</li> <li>Liability regime in Canada in event of marine oil spill (See 5.D: Liability regime in Canada in event of marine oil spill)</li> <li>ESA for Burrard Inlet:         <ul> <li>Footprint of Westridge Marine Terminal new dock (See 2.J: Footprint of expanded infill and new berths of Westridge Marine Terminal)</li> <li>product type breakdown (See 7.B.4: Types of products moved by the pipeline and tanker)</li> <li>emissions impact from loading operations, vessels in transit, at anchor: GHGs (See 1.D: Emissions impacts from vessels in transit, 1.D.1: Emissions from loading operations, 1.D.2: Vessels at anchor, 7.A.1: stance on upstream issues, GHG emissions and climate change)</li> </ul> </li> <li>Long term effects of oil spills on water quality (e.g.; what were the long term effects from Westridge 2007 spill; is the report public?</li> <li>How often are assessments being done? (See 1.E.3: Long term effects of oil spills on water quality)</li> </ul>	Environmental and Socio-Economic     Assessment for Burrard Inlet - What fish     species are being studied?	<ul> <li>TMEP conducted a marine assessment that includes the Westridge Marine Terminal located in Burnaby, and marine transportation. More information is available in Section 6.2 of Volume 5A (NEB Filing ID A3S1Q8) Environmental Setting for Facilities – Westridge Marine Terminal</li> <li>Section 4.2.6 of Volume 8A (NEB Filing ID A3S4X8) Environmental an Socio-Economic Setting – Marine Fish and Fish Habitat</li> <li>Section 4.3.6 of Volume 8A (NEB Filing ID A3S4Y3) Effects Assessment– Marine Fish and Fish Habitat</li> <li>Section 4.4.4 of Volume 8A (NEB Filing ID A3S4Y3) Cumulative Effect – Marine Fish and Fish Habitat</li> <li>Further details are available in Technical Reports found:         <ul> <li>TR 5C-13 of Volume 5C (NEB Filing ID A3S2R7) Marine Resource – Westridge Marine Terminal</li> </ul> </li> <li>*Note: An updated Preliminary Marine Fish Habitat Offset Plan (including a self-assessment of serious harm) was filed with the NEB at Part 10 to Technical Update No. 4 on December 1, 2014 (NEB Filing ID A4F5C5)</li> <li>For marine transportation, TMEP undertook an ESA based on a substantive body of existing information including baseline information on indicator species and habitats that will be used to assess potential project-related and cumulative effects on marine resources and to provide recommendations on mitigation measures that could be implemented to reduce or eliminate potential adverse effects from increased tanker operations.</li> <li>We are committed to gathering and utilizing existing and new information to support our application to the NEB. We have and continut to work with local maritime stewardship groups.</li> </ul>	S S S S S S S S S S S S S S S S S S S
Village of Belcarra	<ul> <li>Emergency response capabilities and plans are not in place (See 8.4: ERPs/capabilities are not in place/adequate for Westridge Marine Terminal, 8.3 emergency response capability of WCMRC)</li> <li>Emergency response capacity of WCMRC is inadequate (See 8.3 emergency response capability of WCMRC)</li> <li>KMC staff must be fully trained and equipped for emergency response at Westridge Marine Terminal. WCMRC must be considered back up response (See 8.4: ERPs/capabilities are not in place/adequate for Westridge Marine Terminal, 8.3 emergency response capability of WCMRC)</li> <li>Bitumen will sink in marine spill due to higher density (See 4.A.2 density and the possibility that bitumen will sink in the event of a marine spill)</li> <li>Increase in tanker traffic (numbers) (See 3.A.6: increase in tanker traffic)</li> <li>Is dredging of Second Narrows proposed (See 3.E.1: is dredging proposed)</li> <li>Will footprint of Westridge Marine Terminal (with additional foreshore and new dock) expand? (See 2.J: Footprint of expanded infill and new berths of Westridge Marine Terminal)</li> <li>Did you investigate Deltaport as an alternate terminal locations: Burrard Inlet not appropriate for tanker terminal (See 2.A: Alternate terminal location)</li> <li>Potential geotechnical issues: Concern about fault locations in area of Westridge Marine Terminal/Burrard Inlet/Burnaby Mountain (See 2.G: potential geotechnical issues with Westridge Marine Terminal location)</li> <li>Satisfied with BGC Engineering geotechnical summary presented. Satisfied that TMEP is doing their homework.</li> <li>Noise, lights from tankers at anchorage (See 3.C.4: noise, lights of tankers at anchorage and during transit)</li> <li>KMC should set expectations for vessels (noise/lights in Burrard Inlet) (See 7.A.3: KMC should set expectations of vessel behavior)</li> <li>Confident in safety of tankers through the harbor, with three tethered tugs and two captions. The marine ESA considers the potential effects of increased Project-related marine ves</li></ul>	Concern that KMC learns from previous incidents (continuous improvement in the process): KMC still has not publicly disclosed its review of the incident.  Response time is critical to minimizing environmental impact of spill including: Concern that response time (two hours in Burrard Inlet) not adequate, should be one hour: 2007 incident WCMRC delayed response Rapid response and protection and concurrent habitat protection measures to protect Burrard Inlet's recreational, tourism, fisheries, sensitive marine habitat Emergency response time in Burrard Inlet must be one hour WCMRC must have on water home base, have adequate resources in the right places Belcarra Council passed a resolution to request a comprehensive review of oil spill emergency response procedures in Vancouver Harbour to address Belcarra's belief that emergency response capabilities and plans are not in place.	structured framework for management and continuous improvement to the EMP in the future. In the event of an emergency at any of our facilities, we want to ensure a prompt response to minimize impact to the public and environment.  Section 8 of Volume 7 (NEB Filing ID A3S4V6) Hypothetical Spill Scenario, Westridge Marine Terminal Release reaching Burrard Inlet and Technical Report TR 8C-12 TERMPOL 3.15 of Volume 8C (NEB Filing ID A3S5F4) General Risk Analysis and Intended Methods of Reducing Risks reviews in detail the risks related to oil spills, measures to prevent oil spills and emergency response in the event of a spill. Sample oil spills of varying sizes have been modeled using computer-based simulations (see Technical Report 8C-12 S9 (NEB Filing ID A33S5G9) Modelling the Fate and Behaviour of Marine Oil Spills).  Spill response in the region is also currently the subject of review by the	considered by the Project Team  The Metro Vancouver Port Cities Committee was invited to observe an exercise for Westridge Marine Terminal in fall of 2012. However, due to the travel time required of the committee to attend the session they declined closer to the date. Trans Mountain has since initiative two rounds of engagement about emergency response with local municipalities with plans to co-host a scenario discussion with WCMRC about a water-based spill in spring 2015.  Note, as part of Technical Update No. 3 – Part 7: a Review of Marine Recreational Vessel Activities in Burrard Inlet, was filed with the NEB (NEB filing ID A4A4I4)



Stakeholder/ Group Name	Comments/Concerns Expressed and addressed in Table 1.1 - Common Issues/Responses	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
OCAL GOVERNMENT CONSUL		<u> </u>		ı
LOCAL GOVERNMENT CONSULT	<ul> <li>Interest in (Metro Vancouver Transportation Committee) visiting a KMC emergency response centre/observing Emergency Response drill. (See 8.1: desire to observe/participate in Emergency Response exercise)</li> <li>Belcarra shared information about aquatic lifeBenefits for non-pipeline communities: What will TMEP give back to Inlet communities for tripling footprint of Westridge Marine Terminal? Approach to benefits should be best practices, provide legacy enhancements. Suggested potential legacy enhancements (squid and herring spawn research, etc.) (See 5.B: benefits for non-pipeline communities)</li> <li>Adequacy of boom technology (effective in wave action?) Commit to best available technology (See 8.2: adequacy of boom technology)</li> </ul>	Encouraged KMC to assume worst case in designing spill scenarios and emergency response. Concern with using US contractors in incident command     Need for more baseline data regarding Burrard inlet aquatic life	<ul> <li>Marine spill response is one part of an overall safety regime that also includes prevention. To mitigate the effect of increased tanker traffic a number of enhancements are recommended in Technical Report 8C-12 S12 of Volume 8 (NEB Filing ID A3S5!9) Review of TMEP Future Oil Spill Response Approach Plan); which, if implemented, will raise the level of care and safety in the Salish Sea to well above globally accepted shipping standards. As part of these measures, Trans Mountain is proposing significant improvements to the oil spill response regime for the area.</li> <li>These recommendations for prevention and response enhancements were informed by a quantitative risk assessment that has been prepared to meet both the requirements of the NEB review as well as a voluntary review of marine safety that Trans Mountain has requested of Transport Canada.</li> <li>The risk assessment considered regional traffic growth, navigational hazards, vessel construction, and risk controls provided under the existing safety regime. The assessment quantified the risk of spills from tankers in terms of probable spill volume. Further work was conducted to assess the fate and behavior of oil in the local marine environment. This included testing of diluted bitumen weathering and spill trajectory modelling to establish the extent of potential oil spill effects including those on the environment and human health. This process was used to identify the recommended enhancements to the safety regime that will reduce the potential for oil spill accidents and mitigate the risk presented by increased tanker traffic. It was also used to assess the adequacy of the existing marine spill response planning standards and recommend enhancements.</li> <li>Trans Mountain engaged WCMRC to review this work and to describe enhancements to the existing planning standards that would better accommodate the Project.</li> </ul>	
			<ul> <li>The enhanced planning standards for marine spill response described by WCMRC will result in a response capacity that is double and a delivery time that is half the existing planning standards. These enhancements will reduce times for initiating a response to a maximum of two hours for the harbour and six hours for the remainder of the study area and parts of the West Coast of Vancouver Island. Kinder Morgan Canada is also supportive of WCMRC's efforts to refine their geographic responses plans. We helped fund a project to gather current information about the shorelines surrounding the Westridge Marine Terminal as part of a program to update local Shoreline Clean Up Assessment Technique (SCAT) information. SCAT information forms part of the emergency response plans for both Kinder Morgan Canada and WCRMC.</li> <li>The type of boom considered for the Westridge Marine Terminal will meet high global standards for emergency response.</li> <li>Since the 2007 third party strike to TMPL, Trans Mountain has cleaned up and remediated the area impacted by the oil spill. See "Summary of Clean up and Effects of the 2007 Spill of Oil from the Trans Mountain Pipeline to Burrard Inlet," for a description of clean up, effects, and long-term monitoring program results.</li> <li>KMC's Emergency Response Plans (ERPs) for existing operations were reviewed and information incorporated and is being used by TMEP to update ERPs for the proposed TMEP. This information was used to frame the geographic extent of the Central Burrard Inlet Westridge Marine Terminal Emergency Preparedness Study.</li> </ul>	



Stakeholder/ Group Name	Comments/Concerns Expressed and addressed in Table 1.1 - Common Issues/Responses	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
LOCAL GOVERNMENT CONSU	JLTATION			
Village of Anmore	• N/A	No response from Village of Anmore to TMEP's invitation to meet	Offered to share project information and offered invitation to engage	• N/A
City of Chilliwack/ FVRD	Emissions from vessels in transit (See 1.D: Emissions impact from vessels in transit)	Suggested TMEP contact UBC experts     (including Douw Steyn) who have done work on air quality in FV region (some of this work indicated 8% of air degradation in FV due to vessels (discussion whether ships or tankers)	RWDI used the photochemical modelling files that UBC (Douw Steyn) created in 2008 for predicting ozone and PM2.5 in the LFV for TMEP. TMEP has committed to updated modelling with the same UBC files. TMEP is meeting with the Lower Fraser Valley Air Quality Coordinating Committee (LFVAQCC) to specify the scenarios and assumptions.	<ul> <li>Comments were considered by the Project Team</li> <li>Action item to follow up in 2014/2015 once additional information received about vapour controls at Westridge Marine Terminal and additional information available about Burnaby and Westridge Marine Terminals** Note, Dec 1, 2014 an update to the Marine Air Quality and GHG Technical Report for Marine Transportation was filed with the NEB as Part 3 to Technical Update No. 4. In addition, responses to Lower Fraser Valley Air Quality Coordinating Committee Informal Information Requests from September 25 and November 13, 2014 Meetings was also filed as Part 12 of Technical Update No. 4(NEB Filing ID A4F5C9).</li> </ul>
INDUSTRY CONSULTATION				
CN Rail	<ul> <li>Potential impacts of increased vessel traffic through Second Narrows MRA (See 3.F.3: effects on traffic transiting the Second Narrows).</li> <li>Opportunities for project to help improve the rail car transit capacity of the second narrows CN Rail Bridge. (See 3.F.4: impact of TMEP on the expansion of other products handled at PMV)</li> <li>Project procurement opportunities (See 5.B.2: procurement opportunities)</li> </ul>	• N/A	No response required	<ul> <li>Comments were considered by the Project Team</li> <li>Trans Mountain will continue to engage with CN, as well as PMV, and provide project related information in order for CN and PMV to coordinate efforts towards efficient management of any effect from increase in marine traffic as a result of TMEP.</li> </ul>
Canadian Pacific (CP) Rail	Potential impacts of increased vessel traffic through Second Narrows MRA (See 3.F.3: effects on traffic transiting the Second Narrows).	CP Rail wants to be kept informed of progress	Trans Mountain will meet with CP officials, as requested and share any	Comments were considered by the Project Team
	Opportunities for project to help improve the rail car transit capacity of the second narrows CN Rail Bridge. (See 3.F.4: impact of TMEP on the expansion of other products handled at PMV)	discussions	updates of interest. Trans Mountain did not receive follow up request from CP for a meeting after the offer was made to brief operations staff.	, ,
Suncor Terminal	Potential impacts of increased vessel traffic through Second Narrows MRA (See 3.F.3: effects on traffic transiting the Second Narrows).	• N/A •	No response required	Comments were considered by the Project Team
Pacific Coast Terminal (PCT)	Potential impacts of increased vessel traffic through Second Narrows MRA (See 3.F.3: effects on traffic transiting the Second Narrows).	PCT interested to be involved in TERMPOL process (HAZID workshop)	TMEP invited PCT to the HAZID workshop April 29, 2013	Comments were considered by the Project Team
Chevron	Potential impacts of increased vessel traffic through Second Narrows MRA (See 3.F.3: effects on traffic transiting the Second Narrows).	Chevron declined a follow up meeting but requested any presentation files to be sent by email. This was completed in March 2014.	No response required	Comments were considered by the Project Team
Shell Terminal	Potential impacts of increased vessel traffic through Second Narrows MRA (See 3.F.3: effects on traffic transiting the Second Narrows).	accommodate schedules.	No response required	Comments were considered by the Project Team
		No response to date to offer made on July 11, 2014 to reschedule meeting.		
Seaspan Shipyards	<ul> <li>Potential impacts of increased vessel traffic through Second Narrows MRA (See 3.F.3: effects on traffic transiting the Second Narrows).</li> <li>Project procurement opportunities (See 5.B.2: procurement opportunities)</li> </ul>	Trades Training (particularly Aboriginal students and promoting their entry to tug master training at BCIT Marine)  No response to offer of Trans Mountain follow up meeting regarding vessel transit evaluation	Trans Mountain has engaged with BCIT Marine to discuss possible funding for Aboriginal students to train at the Marine Campus.	Comments were considered by the Project Team
Neptune Terminals	Opportunities for project to help improve the rail car transit capacity of the second narrows CN Rail Bridge. (See 3.F.4: impact of TMEP on the expansion of other products handled at PMV)	Unpredictability of bridge lifts due to random requests from pleasure craft     Need to reduce tunnel venting time to allow more trains to transit rail tunnel in Burnaby Mountain and second narrows Rail Bridge     Consultation with other terminals	Trans Mountain has shared feedback to PMV and CN Rail regarding tunnel venting Interviews were conducted with a number of terminals east of Second Narrows (Imperial Oil Company, Suncor Energy Inc. and Pacific Coast Terminals facilities and others) as well as the north shore terminals west of Second Narrows to validate the estimated traffic of commercial vessels within the Central Harbour.	<ul> <li>Comments were considered by the Project Team</li> <li>Trans Mountain will remain in contact with CN, as well as PMV, and provide project related information in order for CN and PMV to coordinate efforts towards efficient management of any effect from increase in marine traffic as a result of TMEP.</li> </ul>
Canexus Chemicals	<ul> <li>Potential impacts of increased vessel traffic through Second Narrows MRA (See 3.F.3: effects on traffic transiting the Second Narrows).</li> <li>Opportunities for project to help improve the rail car transit capacity of the second narrows CN Rail Bridge. (See 3.F.4: impact of TMEP on the expansion of other products handled at PMV)</li> </ul>	• N/A	No response required	<ul> <li>Comments were considered by the Project Team</li> <li>Trans Mountain will remain in contact with CN and PMV to provide project related information in order to coordinate efforts towards efficient management of any effect from increase in marine traffic as a result of TMEP.</li> </ul>



Stakeholder/ Group Name	Comments/Concerns Expressed and	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
INDUSTRY CONSULTATION	addressed in Table 1.1 - Common Issues/Responses	,	'	<u>'</u>
Westward Shipping	Detential impacts of increased used by the through Coased Newsya MDA (Coa 2 F 2) offsets on traffic transiting the Coased Newsya)	- N/A	No response required	- Comments were considered by the Drainst Toom
Westward Gripping	<ul> <li>Potential impacts of increased vessel traffic through Second Narrows MRA (See 3.F.3: effects on traffic transiting the Second Narrows).</li> <li>Opportunities for project to help improve the rail car transit capacity of the second narrows CN Rail Bridge. (See 3.F.4: impact of TMEP on the expansion of other products handled at PMV)</li> </ul>	• N/A		<ul> <li>Comments were considered by the Project Team</li> <li>Trans Mountain will remain in contact with CN and PMV to provide project related information in order to coordinate efforts towards efficient management of any effect from increase in marine traffic as a result of TMEP.</li> </ul>
Shipping Agents: BC Chamber of Shipping, Alliance Shipping Group (AGC), Empire, Westward Shipping, Mason Agency, Inchcape Shipping	Potential impacts of increased vessel traffic through Second Narrows MRA (See 3.F.3: effects on traffic transiting the Second Narrows).	Pressure on Indian Arm anchorage in terms of need by all types of deep sea vessels	<ul> <li>Expanded Westridge Marine Terminal will allow straight out departure of Westridge vessels to Second Narrows</li> </ul>	Comments were considered by the Project Team     KMC will do everything possible to allow for direct arrival to terminal on inbound passage
Coast Mountain Bus Company (Seabus) (CMBC)	Potential impacts of increased vessel traffic through Second Narrows MRA (See 3.F.3: effects on traffic transiting the Second Narrows).	Number of vessels waiting to transit MRA at slack-water tide     CMBC declined a follow up meeting but advised if project nears approval they would want to reconfirm number of vessels travelling Burrard Inlet.	Multiple vessels can transit MRA during slackwater but most ships in the area are not under the MRA restriction such as tankers	Comments were considered by the Project Team     Trans Mountain will remain in contact with CMBC to provide project related information and number of vessels travelling Burrard Inlet.
SMIT Marine	<ul> <li>Potential impacts of increased vessel traffic through Second Narrows MRA (See 3.F.3: effects on traffic transiting the Second Narrows).</li> <li>Project procurement opportunities (See 5.B.2: procurement opportunities)</li> </ul>	• N/A	No response required	Comments were considered by the Project Team
Erco Worldwide	Potential impacts of increased vessel traffic through Second Narrows MRA (See 3.F.3: effects on traffic transiting the Second Narrows).	No response to invite sent by TMEP on	No response required	Comments were considered by the Project Team
	<ul> <li>Opportunities for project to help improve the rail car transit capacity of the second narrows CN Rail Bridge. (See 3.F.4: impact of TMEP on the expansion of other products handled at PMV)</li> </ul>	February 5, 2014 for a follow up meeting to update on vessel transit evaluation		
Cargill	<ul> <li>Potential for further backlog of grain ships at anchorage and opportunities for project to help improve the rail car transit capacity of the second narrows CN Rail Bridge. (See 3.F.4: impact of TMEP on the expansion of other products handled at PMV)</li> <li>First Nation trades training opportunities (See 5.B.2: benefits for Aboriginal Peoples)</li> </ul>	• N/A		<ul> <li>Comments were considered by the Project Team</li> <li>Trans Mountain will remain in contact with Cargill to provide project related information</li> </ul>
Richardsons International	Potential for further backlog of grain ships at anchorage and opportunities for project to help improve the rail car transit capacity of the second narrows CN Rail Bridge. (See 3.F.4: impact of TMEP on the expansion of other products handled at PMV)	• N/A	No response required	<ul> <li>Comments were considered by the Project Team</li> <li>Trans Mountain will remain in contact with CN and PMV to provide project related information in order to coordinate efforts towards efficient management of any effect from increase in marine traffic as a result of TMEP.</li> </ul>
Vancouver Pile and Dredge	<ul> <li>Project procurement opportunities (See 5.B.2: procurement opportunities)</li> <li>Opportunities for project to help improve the rail car transit capacity of the second narrows CN Rail Bridge. (See 3.F.4: impact of TMEP on the expansion of other products handled at PMV)</li> </ul>	Opportunities to address speed of tugs passing dry-dock area	Trans Mountain will convey concerns regarding speeding tugs to escort tug companies.	Comments were considered by the Project Team     Trans Mountain will continue to remain in contact with CN, as well as PMV, and provide project related information in order for CN and PMV to coordinate efforts towards efficient management of any effect from increase in marine traffic as a result of TMEP.
Western Stevedoring	Opportunities for project to help improve the rail car transit capacity of the second narrows CN Rail Bridge. (See 3.F.4: impact of TMEP on the expansion of other products handled at PMV)	Will TMEP present to the PMV North Shore Waterfront Industry Liaison Committee (NSWILC). Western Stevedoring is chair of the committee in 2014.	<ul> <li>TMEP accepted invitation to present to PMV's NSWILC on June 6, 2014. Presentation was subsequently postponed by PMV until a later date in 2014.</li> </ul>	<ul> <li>Comments were considered by the Project Team</li> <li>Trans Mountain will continue to remain in contact with CN, as well as PMV, and provide project related information in order for CN and PMV to coordinate efforts towards efficient management of any effect from increase in marine traffic as a result of TMEP.</li> <li>As of July 31, 2014 a new date for the NSWILC was not scheduled.</li> </ul>
Island Tug and Barge	<ul> <li>Potential impacts of increased vessel traffic through Second Narrows MRA (See 3.F.3: effects on traffic transiting the Second Narrows).</li> <li>Procurement Opportunities (vessel salvage, escort)(See 5.B.2: procurement opportunities)</li> </ul>	• N/A	No response required	Comments were considered by the Project Team     Trans Mountain will continue to remain in contact with CN, as well as PMV, and provide project related information in order for CN and PMV to coordinate efforts towards efficient management of any effect from increase in marine traffic as a result of TMEP.



Stakeholder/ Group Name	Comments/Concerns Expressed and addressed in Table 1.1 - Common Issues/Responses	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
INDUSTRY CONSULTATION		1		
Fibreco	Opportunities for project to help improve the rail car transit capacity of the second narrows CN Rail Bridge. (See 3.F.4: impact of TMEP on the expansion of other products handled at PMV)	• N/A	No response required	Comments were considered by the Project Team     Trans Mountain will continue to remain in contact with CN, as well as PMV, and provide project related information in order for CN and PMV to coordinate efforts towards efficient management of any effect from increase in marine traffic as a result of TMEP.
KMC Terminals Vancouver Wharves	<ul> <li>Potential impacts of increased vessel traffic through Second Narrows MRA (See 3.F.3: effects on traffic transiting the Second Narrows).</li> <li>Opportunities for project to help improve the rail car transit capacity of the second narrows CN Rail Bridge. (See 3.F.4: impact of TMEP on the expansion of other products handled at PMV)</li> </ul>	• N/A	No response required	Comments were considered by the Project Team     Trans Mountain will continue to remain in contact with CN, as well as PMV, and provide project related information in order for CN and PMV to coordinate efforts towards efficient management of any effect from increase in marine traffic as a result of TMEP.
Cascadia Grain Terminal/Pacific Elevator	• N/A	No response to invitation to meet	No response required	• N/A
West Coast Reduction	• N/A	No response to invitation to meet	No response required	• N/A
Alliance Grain Terminal	• N/A	No response to invitation to meet (Parrish and Heimbecker, Limited)	No response required	• N/A
Allied Ship Builders Limited	• N/A	Declined invitation to meet, did not expect any impacts     Interested in procurement opportunities	No response required	• N/A
Lantic Inc. (Rogers Sugar)	• N/A	No response to invitation to meet	No response required	• N/A
Vanterm (Terminal Systems Inc.)	• N/A	Declined invitation to meet, did not expect any impacts	No response required	• N/A
BC Marine Trades Association (BCMTA)	<ul> <li>The risks of oil spills with the increase of tanker traffic and the mitigation of these risks (See 1.B: increase in spill risk, and 1.B.1: increase in risk with increase in tanker traffic)</li> <li>The plans associated with emergency situations, how they will be responded to, where the response stations will be located etc. (See 8.C: emergency response capability of WCMRC)</li> <li>The usage of tethered tugs through the narrows(See 3.B.3: tugboat escorts in Burrard Inlet)</li> <li>The usage of pilots aboard tankers through the narrows and the Port of Metro Vancouver (See 3.B.6: the pilotage of tankers)</li> <li>Potential impacts of increased vessel traffic through Second Narrows MRA (See 3.F.3: effects on traffic transiting the Second Narrows).</li> <li>Project procurement and employment opportunities (See 5.B.2: procurement opportunities)</li> </ul>	• N/A	No response required	• N/A
BC Maritime Employers Association (BCMEA)	Project procurement opportunities (See 5.B.2: procurement opportunities)	• N/A	No response required	• N/A
OTHER CONSULTATION - BC		T		
BCIT – Marine Campus	<ul> <li>Project procurement opportunities (See 5.B.2: procurement opportunities)</li> <li>Benefits to Aboriginal people (See 5.B.1: benefits to Aboriginal people)</li> <li>Training Opportunities – scholarships and possibility of hiring some of BCIT's cadets in their second or third term to spend time on ships at anchor in the harbour (See 3.B.7: BCIT training facility for tanker pilots)</li> </ul>	Can BCIT participate in HAZID workshops	<ul> <li>Representatives from BCIT marine were invited, and attended the HAZID workshop (January 22, 2013) as well as the Marine ESA workshop held May 22, 2014.</li> </ul>	Comments were considered by the Project Team
Canexus-ERCO-Univar-Newalta Community Advisory Panel (CAP)	Coordination of Emergency Response (Marine) (See 8.C: emergency response capability of WCMRC)	• N/A	No response required	Comments were considered by the Project Team     Trans Mountain encouraged the CAP to follow up with WCMRC to answer more of their inquiries regarding marine emergency response



Stakeholder/ Group Name	Comments/Concerns Expressed and addressed in Table 1.1 - Common Issues/Responses	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
HER CONSULTATION - BC				
<ul> <li>Potential geotechnical issues (See 2.G: Potential geotechnical issues with Westridge Marine Terminal)</li> <li>Nuisance from terminal construction and operations (odours, noise, air quality, visual impact – vessels at berth will be visible), concern about noise from pumps at Westridge Marine Terminal: Make shore power available (See 2.C: Impact from terminal construction and operations on neighbours)</li> <li>Emissions from loading operations (See 1.D.1: Emissions from loading operations)</li> <li>Product types (dilbit, condensate) (See 7.B.4: Types of products moved by pipeline and tanker)</li> <li>Will there be greater utilization of anchorages with increase in tanker traffic? (See 3.C.2: Will there be greater use of anchorages with increased tanker traffic?)</li> <li>Noise (high pitched whine), lights of tankers at anchorage (See 3.C.4: Noise, lights of tankers at anchorage and during transit)</li> <li>Footprint of Westridge Marine Terminal (with additional foreshore and new dock) (See 2.J: Footprint of expanded Westridge Marine Terminal)</li> <li>Tanker size and capacity (See 3.A.1: Tanker size and capacity)</li> <li>Ease to remove Second Narrows restrictions in future, including restrictions to ship size (See 3.E.3: Possibility for tanker size increase if dredging occurs in future. Ease of removing Second Narrows restrictions in future)</li> <li>Human health impacts (noise, air quality) (See 5.A.1: Human health impacts)</li> <li>KMC should set expectations of vessels re. noise, lights so that neighbours don't need to call about light spillage concerns for every vessel that is at anchor or berth (See 7.A.3: KMC should set expectations of vessel behaviour)</li> <li>Visual impact: move dock further east (See 2.H: Move new dock away from neighbours, to east)</li> <li>Proximity of ships at Westridge Marine Terminal (can the number of berths be reduced). (See 2.J: Footprint of Westridge Marine Terminal: How much larger, obtrusive, visible)</li> <li>Increase in tanker traffic (numbers) in Burrard Inlet (</li></ul>		<ul> <li>Environmental sensitivities in ravine west of Cliff Avenue</li> <li>Will you abide by city noise bylaws?</li> <li>Who regulates air quality: whose regulations is TMEP bound by?</li> </ul>	Every effort is made to minimize impact to wildlife, watercourse and key wildlife biodiversity zones. A detailed Environmental Protection Plan will be submitted to the NEB as part of the Application which will document every linear metre of the construction right-of-way and mitigation strategies to help avoid or minimize environmental impacts from construction (See section 6.2 of Volume 5A (NEB Filing ID A3S1Q8) Environmental setting for facilities, Westridge Marine Terminal). (See also 1.A.3: Effects on Marine Birds (resident and migratory)  As a federally regulated entity under the National Energy Board Act, if Trans Mountain Pipeline ULC (Trans Mountain) is granted a Certificate of Public Convenience and Necessity, it will proceed to apply for all permits and authorizations that are required by law. Trans Mountain will also continue to work with local municipalities to understand the applicability of their bylaws and standards to the construction and operation of the Project. (See response to City Burnaby IR No. 1.01.03a (Filing ID A3Y2E6))  Air quality lead regulatory agency to be determined by regulators.	Comments were considered by the Project Team
orth Vancouver Chamber of mmerce	<ul> <li>Property devaluation (impacted views, nuisance, safety) (See 2.K: Compensation for property devaluation)</li> <li>Community Capacity Building – Trades Training and local procurement opportunities (See 5.B.2: procurement opportunities for small business, 5.F.1: employment and training for local workforces))</li> <li>Products moved by the pipeline and their product destination (See 7.B.4: types of products moved by the pipeline and by tanker, and 7.B.2: product destination)</li> <li>Tug escort of tankers (See 3.B.3: tugboat escorts in Burrard Inlet)</li> </ul>	Economic benefits of the marine portion of TMEP	Every time a tanker docks in Burnaby it brings \$310,000 in revenue to local economy – that is \$126,000,000 every year.	Comments were considered by the Project Team
cific Prawn Fishermen's sociation	Shipping lanes and any potential effect increased shipping will have on commercial fishery	Follow-up on previous request for maps showing study area, shipping lanes and fishing effort.	Links to maps in Application sent	N/A
cific Halibut Management sociation	• N/A	Follow-up on previous request for maps showing study area, shipping lanes and fishing effort.	Links to maps in Application sent	N/A
orgia Strait Alliance	<ul> <li>Regulatory - NEB process and timeline for project review (See 6.A: timeframe for application and NEB application review)</li> <li>Regulatory - New legislation: how does the project benefit from changes to fisheries legislation? (See 6.F: impact of changes to legislation)</li> <li>Marine - dredging: is it proposed? (See 3.E.1: is dredging proposed)</li> <li>Consideration of upstream issues in project proposal (e.g. climate change) (See 6.E: consideration of upstream and downstream impacts)</li> </ul>	Engagement Process – Stakeholder; how best to engage with environmental groups in the marine community for their input to the project development?	Trans Mountain will include environmental groups in the invitation to the Marine ESA workshop May 22, 2013. GSA did not attend; however six other environmental interest groups did attend.	Comments were considered by the Project Team



Stakeholder/ Group Name	Comments/Concerns Expressed and addressed in Table 1.1 - Common Issues/Responses	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
HER CONSULTATION - BC				
acific Wildlife Foundation	<ul> <li>Size of tankers for the project (See 3.A.1:Tanker size and capacity)</li> <li>Consideration of upstream issues in project proposal (e.g. climate change) (See 6.E: consideration of upstream and downstream impacts). Introduction of invasive species from ballast water</li> </ul>	<ul> <li>Can you construct a lock system for the Westridge Marine Terminal instead of the current berth system?</li> </ul>	<ul> <li>Information regarding proposed lock system was passed onto project marine development lead – this was declined as it is a matter for PMV as the entire waterway is under their jurisdiction.</li> </ul>	Comments were considered by the Project Team
	<ul> <li>How will increased ship traffic in PMV be affected by TMEP increase in tankers? How will more tankers be able to transit Second Narrows and not cause congestion through MRA? (See 3.B.2: ability of Second Narrows to safety accommodate more tankers)</li> <li>How is blood alcohol of crew members enforced? (it is a requirement for Canadian Pilots to be in control of large ships in Canadian waters (See 3.B.6: pilotage of tankers)</li> <li>What is the project effect on whales? (See 3.F.2: impact of increased tanker traffic on orca populations)</li> <li>What amount of sea level rise was accounted for in the project development? (See 2.D: consideration of sea level rise).</li> <li>ESA Approach (methodology, indicator species)</li> <li>Can Trans Mountain invest in the recovery of forage fish to Burrard Inlet? (See response to 1.A.4: investment in environmental enhancements)</li> <li>Wake studies completed for the project? (See 1.E.4: shoreline erosion due to increased tanker wake)</li> <li>How will you mitigate underwater noise at Westridge Marine Terminal during construction (See 2.C: impacts from terminal construction)</li> </ul>	<ul> <li>Will there be dredging for bigger tankers?</li> <li>Can you avoid the use of creosote in pilings materials for dock construction?</li> <li>RE sediment and water quality, what is meant by short term reversibility</li> <li>What do you compare you sediment samples against?</li> <li>Were there field studies outside the harbour?</li> <li>Did the project account for bird strikes on vessels at night</li> </ul>	<ul> <li>No dredging of the channel is required. Removal of material from the intertidal region close to the dock for infill purposes will be required. (See 3.E.1: dredging proposed?)</li> <li>Pilings for Westridge Marine terminal will be steel, avoiding the need for creosote.</li> <li>Short term reversibility means it would take a relatively short amount of time to get back to the situation prior to turbid conditions caused by terminal construction and operations.</li> <li>Sediment samples are compared against Environment Canada Disposal at Sea standards. Full details of sediment assessment available in</li> <li>For the marine transportation aspect there were no field studies outside of the harbour. Desktop studies were the primary method of research regarding the shipping lanes due to the high degree of research already available. See Section 4.1.4, Scope of the Assessment in Volume 8A (Filing ID A3S4X5)</li> <li>Potential injury or mortality from strikes or collisions with Project-related marine vessels is described in our application – See Section 4.3.8 of Volume 8A (Filing ID A3S4Y3)</li> </ul>	
ourism Vancouver	Oil spill risk and perceived impacts to tourism sector (Vancouver's brand, liability for operators) (See 1.B: increase in spill risk, 5.C: potential financial impacts of a worst case spill, 5.D.2: risk taxpayers have to cover costs, and 5.D.3: ability to recover costs from responsible parties).	Engagement with tourism operators to date, feedback received and how we've responded	<ul> <li>Different stakeholders within Vancouver's tourism and hospitality sector were consulted as part of the ESA (See section 7.2.5.5 of Volume 5B – potential residual effects on infrastructure and services (Filing ID A3S1S7)</li> </ul>	Comments were considered by the Project Team
University of British Columbia	<ul> <li>Size of tankers (See 3.A.1: tanker size and capacity)</li> <li>Aboriginal engagement (See 3.B.1: benefits for Aboriginal Peoples living along the coast)</li> </ul>	• N/A	No response required	Comments were considered by the Project Team
Jniversity Neighbourhood Association (UNA)	<ul> <li>Funding for spill response (and liability). They do not feel \$1.3B in liability coverage in Canada is enough (See 5.D.1: adequacy of \$1.3B)</li> <li>Properties of diluted bitumen (See 4.A: properties of diluted bitumen)</li> <li>Emergency Response Plan for the Pt. Grey shoreline (See 1.B.4: response plans for sensitive or populated shorelines)</li> <li>Kits Coast Guard Station closure – have we voiced or opposition to the Federal Gov't (See 1.B.5: closure of Kits Coast Guard Station)</li> <li>Will climate impact of product be taken into account with assessment? (See 6.E: consideration of upstream)</li> </ul>	Current pipeline spill history     Work with community to address concerns much like Nexterra did for biomass facility     What contact have we have with Islands Trust	<ul> <li>Trans Mountain's spill history was described as it is posted on the project website.</li> <li>Trans Mountain is committed to transparent and respectful dialogue. A public information session was held in the UBC/Point Grey area on November 27, 2012.</li> <li>Islands Trust is one of the Island Coastal stakeholders that have been engaged since the early days of the project announcement. Contact details for the Chair of the Islands Trust were shared with UNA.</li> </ul>	Comments were considered by the Project Team
Vest Vancouver Shoreline reservation Society	<ul> <li>Tanker transit procedures, tanker construction and monitoring (See 3.B.2: ability of Vancouver Harbour to safely accommodate more tankers)</li> <li>Dredging for Burrard Inlet - Is there any dredging planned for the first narrows (more interest in first narrows vs second narrows) (See 3.E.1: is dredging proposed, and 3.E.2: impact of dredging on West Vancouver shorelines)</li> <li>Shoreline erosion from tanker wake (See 3.F.1: increase in wave action from vessel movements)</li> </ul>	Society representatives were invited to attend the District of North Vancouver panel session on September 12, 2013.     Representative attended West Vancouver Information session on November 7, 2012 and North shore Probus Club meeting on November 12, 2012.     ESA approach could be reviewed at a future meeting     Tanker speeds	Trans Mountain included the West Vancouver Shoreline Preservation Society in the invitation to the Marine ESA workshop held on May 22, 2013 but they were unable to send a representative.	Comments were considered by the Project Team
orth Shore Probus Club	<ul> <li>How is TMEP bring in upstream producers and downstream shippers into the conversation (See 7.A.1: stance on upstream issues)</li> <li>Would KMC move more refined product if it is safer for the environment? (See 7.B.1: export of unrefined product)</li> </ul>		<ul> <li>Moving oil by pipeline is the safest means of transport. Other common forms of transport for petroleum products are rail and tanker truck.</li> </ul>	Comments were considered by the Project Team
ancouver Probus Club	<ul> <li>Relationship between KM and the marine industry – the contractual arrangement (See 1.A: potential impacts of a spill)</li> <li>Can you just refine it in AB and therefore not ship the bitumen (See 7.B.1: export of unrefined product)</li> </ul>	Liability and chain of custody of product on the water	<ul> <li>The regulatory framework for marine transportation is described in Section 1.4 of Volume 8A (Filing ID: A3S4X3)</li> </ul>	Comments were considered by the Project Team



Stakeholder/ Group Name	Comments/Concerns Expressed and addressed in Table 1.1 - Common Issues/Responses	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
OTHER CONSULTATION - BC				
Vancouver Board of Change	<ul> <li>Effects of more tanker traffic to the inlet (See 1.B.1: increased risk with increased tanker traffic)</li> <li>Increased risk of a spill is too great for what Vancouver gets in return (See 5.A: comparing the need to export oil to the risks to the environment)</li> <li>Properties of diluted bitumen (See 1.C: behavior and effect of diluted bitumen)</li> <li>What investment will KMC be making in clean technology? (See 5.G: investments to clean technology)</li> <li>Effects of increased oil consumption on climate change (See 7.A.1: stance on upstream issues, GHGs and climate change)</li> <li>Feeding China's demand for oil (See 7.B.3: support of Chinese growth and use of petroleum)</li> <li>Burnaby (Westridge) spill in 2007 (See 1.E.3: long term effects of oil spills)</li> <li>Dredging of the inlet/size of the ships, number of ships with expansion (See 3.E.1: is dredging proposed)</li> <li>Spill response capability and response times (See 8.C: spill response capability of WCMRC)</li> <li>Safe navigation of the harbour (See 3.B.2: ability of Vancouver Harbour to accommodate more tankers)</li> <li>Effects of an oil spill on resident endangered species of the inlet and Georgia Strait (se 1.A.1: threat to fisheries, and 1.A.2: threat to whale populations)</li> <li>After effects of the Exxon Valdez spill (See 5.C.1: threats to commercial, Aboriginal fisheries)</li> </ul>	<ul> <li>Tsleil-Waututh Nation opposition is to protect the inlet</li> <li>Spill history of Trans Mountain</li> </ul>	<ul> <li>Trans Mountain is committed to working with Aboriginal communities and Aboriginal groups in a spirit of cooperation and shared responsibility; and building and sustaining effective relationships based on mutual respect and trust to achieve respective business and community objectives. Tsleil-Waututh Nation has declined or not responded to Trans Mountain attempts to engage with them about TMEP. Trans Mountain will continue to reach out, in hopes an opportunity could arise for dialogue with the Nation about their interests and concerns regarding the proposed project.</li> <li>Trans Mountain's spill history was described as it is posted on the project website.</li> </ul>	Comments were considered by the Project Team
Vancouver Economic Commission	· · ·	Regulatory – Access to the NEB process	<ul> <li>Any interested parties are welcome to apply to the NEB to participate in their review of TMEP. The Commission was advised to contact the NEB of or details.</li> <li>Economic and Biophysical Impacts of Oil Tanker Spills – Literature Review <a href="http://vancouvereconomic.com/userfiles/file/Attachments/VEC%20Report%20">http://vancouvereconomic.com/userfiles/file/Attachments/VEC%20Report%20-%20Impacts%20of%20Oil%20Tanker%20Spills%20Relevant%20to%20</a> Vancouver.pdf</li> </ul>	Comments were considered by the Project Team VEC risk assessment was completed and presented to COV council in 2013.
Rotary Club of Coquitlam	<ul> <li>Number of tankers (See 3.A.6: increase in tanker traffic)</li> <li>Size of tankers (See 3.A.1: Tanker size and capacity)</li> </ul>	• N/A		Comments were considered by the Project Team
Rotary Club of Coquitlam (Sunshine)	<ul> <li>Tanker safety: measures taken (See 3.A: Tanker safety, 3.A.2: safety features, 3.A.3: improvement to tanker design, construction and operations)</li> <li>Concern from Belcarra resident about:         <ul> <li>Number of tankers (See 3.A.6: increase in tanker traffic)</li> <li>Noise and lights from tankers at anchorage (See 3.C.4: noise, lights of tankers at anchorage and during transit)</li> </ul> </li> <li>Destination of products transported (See 7.B.2: product destination)</li> </ul>	• N/A	No response required	Comments were considered by the Project Team
St. Timothy's Anglican Church Panel, Burnaby	<ul> <li>Ability to clean up bitumen spilled in water (See 4.B: Ability to clean up spilled diluted bitumen)</li> <li>Amount of tanker traffic and size of tankers ( will supertankers be navigating Burrard Inlet) (See 3.A.6: increase in tanker traffic, see 3.A.1: Tanker size and capacity)</li> <li>Alternate locations sought to Westridge Marine Terminal (e.g.; Delta Port) (See 2.A: Alternate terminal locations)</li> <li>Existing supply/traffic okay</li> </ul>	How is an oil spill responded to     What are the benefits for Burnaby	No response required	Comments were considered by the Project Team
Fraser Health Authority, Vancouver Coastal Health	<ul> <li>Will the footprint of Westridge Marine Terminal increase? (See 2.J: footprint of expanded infill and new berths of Westridge Marine Terminal)</li> <li>Interest in participating in spill scenario (See 8.1: Desire to observe/participate in Emergency Response exercise)</li> </ul>	Will a marine environmental assessment occur     Is air quality monitoring assessment adequate?	<ul> <li>Trans Mountain conducted a marine environmental assessment that includes the Westridge Marine Terminal located in Burnaby, and marine transportation (shipping lanes). More information is available in section 6.0 of Volume 5A and section 4.0 of Volume 8A of the Application.</li> <li>Section 6.2 of Volume 5A (NEB Filing ID A3S1Q8) Environmental Setting for Facilities – Westridge Marine Terminal</li> <li>Section 4.2 of Volume 8A (NEB Filing ID A3S4X8) Environmental and Socio-Economic Setting:</li> <li>Section 4.3 of Volume 8A (NEB Filing ID A3S4Y3) Effects Assessment</li> <li>Section 4.4 of Volume 8A (NEB Filing ID A3S4Y3) Cumulative Effects</li> </ul>	Comments were considered by the Project Team



Stakeholder/ Group Name	Comments/Concerns Expressed and addressed in Table 1.1 - Common Issues/Responses	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
OTHER CONSULTATION - BC	·	·		
Fraser Health Authority, Vancouver Coastal Health  See above		See above	<ul> <li>Further details are available in Technical Reports found:         <ul> <li>TR 5C-13 of Volume 5C (NEB Filing ID A3S2R7) Marine Resources – Westridge Marine Terminal</li> <li>TR 5C-14 of Volume 5C (NEB Filing ID A3S2R8) Marine Birds – Westridge Marine Terminal</li> <li>TR 8B – 1 of Volume 8B (NEB Filing ID A3S4J5) Marine Resources – Marine Transportation</li> <li>TR 8B-2 of Volume 8B (NEB Filing ID A3S4J6) Marine Birds – Marine Transportation</li> </ul> </li> <li>*Note: Updates were filed with the NEB on December 1, 2014 for the following:         <ul> <li>An updated Preliminary Marine Fish Habitat Offset Plan (including a self-assessment of serious harm) was filed with the NEB as Part 10 to Technical Update No. 4 on December 1, 2014 (NEB Filing ID A4F5C5)</li> <li>Environment Socio Economic Assessment Update was filed as part 4 to Technical Update No. 4 (NEB Filing ID A4F4Z3)</li> <li>Sediment Characterization for Dredging was filed as Part 5 to Technical Update No. 4 (NEB Filing ID A4F4Z5)</li> <li>Part 3 Update to the Marine Air Quality and GHG Technical Report for Marine Transportation was filed as Part 3 to Technical Update No. 4 (A4F5H8 through A4F5I2).</li> </ul> </li> <li>For marine transportation, we undertook an ESA based on a substantive body of existing information including baseline information on indicator species and habitats that will be used to assess potential project-related and cumulative effects on marine resources and to provide recommendations on mitigation measures that could be implemented to reduce or eliminate potential adverse effects from increased tanker operations.</li> </ul>	



## MULTI-STAKEHOLDER CONSULTATION EVENTS THE PERIOD OF MAY 2012 TO JULY 31, 2014

Event/Date	Attendees	Comments/Concerns Expressed and addressed in Table 1.1 - Common Issues/Responses	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
Environmental Socio- Economic Assessment (ESA) Vorkshop for Lower Mainland/Fraser Valley held on March 7, 2013	Abbotsford Soil Conservation     Association     Adamah Consultants     BC Nature, Burke Mountain     Naturalists     Township of Langley     Fraser Valley Watershed Society     Stoney Creek Environmental     Committee     Metro Vancouver     Oiled Wildlife Society of BC     Steelhead Society     Fraser Valley Regional District     City of Surrey     Wildlife Rescue Association     Fraser Valley Regional District     BC Parks     UVic/Stewardship Centre of BC     Stoney Creek Environmental     Committee     City of Abbotsford     Metro Vancouver Regional District     City of Coquitlam     Environment Canada		<ul> <li>What is the utility berth for?</li> <li>Who is responsible for the marine component of the application?</li> <li>Will offsets be considered for tanker emissions? GHGs and others</li> </ul>	The Utility Berth is actually a small utility dock with multiple berths for tugs, pilot boats, spill response vessels and equipment, and boom boats. See section 3.4.4.1.4 of Volume 4A (NEB Filing ID A3S0Y9) Proposed Expansion.  Tanker emissions offsets will not be pursued. Trans Mountain is supportive of a collaborative industry approach to reducing impact of air emissions from commercial shipping. Further, Kinder Morgan Canada Westridge Marine Terminal is a member of Green Marine ( <a href="https://www.green-maring.org">www.green-maring.org</a> ) a voluntary effort to certify and disclose environmental performance for individual members. Green Marine has established performance indicators for reducing emissions from shipping operations.  ** Note, Dec 1, 2014 an update to the Marine Air Quality and GHG Technical Report for Marine Transportation was filed which indicated emissions will remain within Metro Vancouver, provincial and national objectives.	Comments were considered by the Project Team
Marine ESA Workshop held on May 22, 2013	Eagle Creek Streamkeepers     Seymour Salmonid Society     Stoney Creek Environment     Committee     Eagle Creek Streamkeepers     Vancouver Aquarium     Pacific Salmon Foundation     Raincoast Conservation Foundation     International Kayak Association     BCIT Marine     Tri Cities Chamber of Commerce     District of North Vancouver     North Shore Emergency     Management Office     Seaspan     Bowen Island Municipality/Islands     Trust     District of North Vancouver     Metro Vancouver     City of Vancouver     City of Vancouver     City of North Vancouver     City of Richmond     City of Langley     Regional Emergency Planning     Committee     Fraser Valley Regional District     Hwlitsum First Nation     First Nations Emergency Services     Society     PMV	<ul> <li>Are there benefits for coastal First Nations? (See 5.B.1: benefits for Aboriginal peoples living on the coast)</li> <li>What emergency exercises are conducted (for Terminal) and who is commonly involved? (See 8.D.4: ERP/capabilities for Westridge Marine Terminal)</li> <li>How do you respond to diluted bitumen if it sinks in the water? (See 4.A.2: diluted bitumen and possibility it will sink in marine oil spill)</li> <li>What is the ballast discharge policy? (See 1.E.1: introduction of invasive species in response to Ballast Water discharge policy.)</li> <li>What is the number one risk of oil spill from tankers? (See 1.B: increase in spill risk)</li> <li>The Risk assessment – does it account for more marine traffic? And the effects of climate change? (See 1.B.1: increase risk with increase tanker traffic)</li> <li>Concern over recent closures of Environmental Canada offices and consolidation back east. (See 6.F: impacts of changes in legislation (NEB, fisheries Act, DFO oversight).</li> <li>What is the length of time for the product to weather and sink? (See 4.A: properties of diluted bitumen) I</li> <li>If there is a possibility to increase the draft of vessels beyond the Aframax Tanker, the berth may be able to accommodating the increase vessel size; however, that would involve a separate regulatory review. The current project is designed to accommodate up to Aframax size vessels (See 3.A.1: tanker size)</li> </ul>	<ul> <li>Capacity of Spill Response infrastructure and how would it be increased to meet new demand of the project?</li> <li>Spill scenarios – would you consider worst case or just credible scenarios?</li> <li>How is the movement from vessels from all different docks coordinated in the harbour?</li> <li>In an emergency, how much room does a 70,000 MT tanker need to stop?</li> <li>You mentioned the berth would be designed for 50 year life span. If PMV dredges, could your berth accommodate larger vessels?</li> <li>Was First Nations traditional knowledge used to determine the location of spill modelling?</li> <li>Cold Lake Winter Blend – the only product used in the spill risk assessment? Is its behavior similar to diluted bitumen Financial Risk assessment – conducted for worst case spill?</li> </ul>	<ul> <li>In Section 5.3 (Oil Spill Prevention) and Section 5.5.2 (proposed enhancements) of Volume 8A (Filing ID A3S4Y4 and A3S5Q3), Trans Mountain has recommended a number of enhancements to marine safety and spill response including:         <ul> <li>Extending tug escorts</li> <li>Implementing a Moving Exclusion Zone around laden tankers</li> <li>Improvements to the oil spill response regime</li> </ul> </li> <li>Credible worst case spill scenarios are described in the application – specifically see Technical Report 8C-12 S9 in Volume 8C: modelling the fate and behaviour of marine oil spills (Filing ID A3S5G9 through A3S5H5)</li> <li>Port Metro Vancouver harbour operations coordinates the movements of vessel in the harbour as per the Port Harbour Operations Manual.</li> <li>Stoppage time is dependent on external forces as well as the speed of the vessel. The vessels in the harbour are moving slowly so the stopping time is just a few vessel lengths.</li> <li>Aboriginal traditional knowledge was not involved in selection of spill modelling location.</li> <li>See Section 4.4 of Volume 7: selection of representative hydrocarbons (Filing ID A3S4V5)</li> <li>Socio-Economic impacts for marine oil spill are described in Section 9.0 of Volume 7 (Filing ID A3S4V6)</li> </ul>	Comments were considered by the Project Team



Event/Date	Attendees	Comments/Concerns Expressed and	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
REPC, Emergency Response workshop held on December 6, 2013	All member organizations of the Regional Emergency Planning Committee (REPC) for Metro Vancouver were invited. 30 attendees from the following organizations attended:  Burnaby RCMP City of Burnaby City of Coquitlam Delta Police Dept. Emergency Management BC Fraser Health Authority Integrated Partnership for Regional Emergency Management (IPREM) Justice Institute of BC Langley, City & Township North Shore EMO Port Metro Vancouver Port Moody RCMP, LMD RCMP, ORR Richmond Vancouver City Vancouver Fire Rescue Surrey	<ul> <li>addressed in Table 1.1 - Common Issues/Responses</li> <li>Behavior of dilbit in a marine oil spill (See 4.A: properties of diluted bitumen)</li> <li>Clean up costs of marine oil spill – was this studied? Clean up costs for oil spills depend on many factors including weather, location, size of spill, etc. (See 5.D.3: ability to recovery costs from responsible parties)</li> <li>Fireboats – will TMEP be part of a program to purchase, where is that at? (See 2.F: ability to contribute to marine fire response for Vancouver Harbour)</li> <li>Would KM cover the cost of an oil spill from a vessel? In the event of an oil spill costs are covered by the Canadian Ship source Oil Pollution Fund regime (See 5.D: Liability regime in Canada in the event of a marine oil spill)</li> <li>Who is responsible for ensuring WCMRC has the resources they need? Trans Mountain is a member of WCMRC and works closely with them and other members to ensure that WCMRC remains capable of responding to spills from vessels loading or unloading product or transporting it within their area of jurisdiction (See 1.A: potential environmental impacts of a spill)</li> <li>Federal cuts to DFO, Environment Canada, Coast Guard, creates concern that oversight is there for marine safety and environmental requirements. Trans Mountain does not foresee changing its approach to the ESA in light of recent legislative changes (See 6.F: impacts of changes to legislation)</li> <li>WCMRC is certified to Tier 4, which is the highest certification level available to a Canadian spill response organization and has more than the capacity required to respond to an oil spill up to 10,000 tonnes. Trans Mountain has been working collaboratively with WCMRC to effect enhancement of the emergency preparedness and response capacity. (See 8.C: response capacity of WCMRC)</li> </ul>	<ul> <li>Regulations and statutes that govern the oil transport industry (land/marine)</li> <li>Vessel insurance requirements</li> <li>Portion of PMV vessel traffic east of the Second Narrows?</li> <li>Planning standards for WCMRC</li> <li>Spill modelling – what products were used, what models were used?</li> <li>Can current tug fleet handle the proposed increase in tankers?</li> <li>Shoreline mapping and accessibility of data for other uses. How are impacts of climate change considered in shoreline mapping and prespill SCAT analysis?</li> <li>How do marine pilots work with WCMRC?</li> <li>Better communication protocols between all levels of government required for better emergency response. First responder training for local municipalities in the event of an oil spill? (e.g., Unified Command training).</li> </ul>	<ul> <li>Section 1.4 of Volume 8A (Filing ID A3S4X3) describes the regulatory framework for marine transportation.</li> <li>Section 5.5.3 of Volume 8A (Filing ID A3S5Q3) describes the first level of funding for emergency response, clean up and compensation to affected parties is from the Responsible Party's (ship owner's) protection and indemnity insurance.</li> <li>Currently vessels calling at Westridge Marine terminal account for approximately two per cent of all marine traffic in Burrard Inlet. With the proposed expansion vessels for Trans Mountain are estimated to account for approximately seven per cent of the total traffic in Burrard Inlet. In see 3.A.6: regarding increase in tanker traffic</li> <li>Modelling marine oil spills is explored in Technical Report TR 8C-12 S9 (NEB Filing ID A3S5G9) - Modelling the Fate and Behaviour of Marine Oil Spills for TMEP.</li> <li>Every indication from Seaspon and SMIT and other local companies is that yes, sufficient escort tugs will be available to handle the proposed increase in tanker traffic (from two per cent of all marine traffic to approximately seven per cent).</li> <li>Shoreline mapping (pre-spill SCAT analysis) is first time something like this has been done in BC. Is specific to Westridge Marine terminal and will form part of Westridge Emergency Response plans. WCMRC also have it for their geographic response planning: WCMRC can use the information and the Province of BC can use it to expand on for planning.</li> <li>A pilots' role is to ensure safe conduct of the vessel. However in terms of emergency, the ship is the responsible party. Standard Operating Procedure (SOP) emergency plan must be in place on tankers. WCMRC arrangement must also be in place before arriving in Canada. in the Incident Command Structure (ICS) the ship owner is the incident commander, but WCMRC can fill all roles as needed</li> <li>ICS training is something Trans Mountain is willing to look at. (In see response 8.A: desire to participate in emergency</li></ul>	Comments were considered by the Project Team
Westridge Marine Terminal HazID workshops held on January 22, 2014 and April 29, 2013	knowledgeable of the study area were assembled. Members of the team had experience in piloting, escorting and conning vessels to and from Vancouver Harbour and working on marine projects in the Vancouver and BC coast areas, including:  BC Ministry of Environment  BC Coast Pilots Association  Canada Coast Guard  Chamber of Shipping BC  Council of Marine Carriers  BC Ministry of Forests, Lands and Natural Resource Operations  Port Metro Vancouver	<ul> <li>Need for greater municipal fire support capacity (See 2.F of Table 1.1: ability to contribute to marine fire response)</li> <li>Possible impacts to recreational boat traffic (See 3.B.4 of Table 1.1: impacts of increased tanker traffic on pleasure craft)</li> <li>Will TMEP be providing ship to shore power at Westridge as an option? (See 2.C of Table 1.1: can shore power be offered)</li> <li>Mitigating measures for fire? Fire suppression systems at the new Westridge Marine Terminal will likely include water and foam systems which covers the loading area. Fire hydrant points on the trestle. Ships have their own fire suppression and fighting systems. So do the tugs. (See 2.E in Table 1.1: Fire suppression systems at the terminal)</li> <li>Marine issues part of NEB review, what about TERMPOL timeline, how does it fit in (In Table 1.1 See 6.B1: is the shipping aspect part of the NEB review and 6.B.2: will there be a marine risk assessment)</li> <li>Fate and behavior of diluted bitumen spill in marine waters (See 1.C of Table 1.1: behaviour and effects of diluted bitumen)</li> </ul>	What happens in the event of a fog delay     How are loading arms connected/disconnected (process)     Boom system effectiveness in increase wave conditions?	<ul> <li>In the event of fog delays, tankers will not transit the MRA. There are a range of options, leading to shut down of the pipeline if necessary.</li> <li>Loading arms at the terminal are consistently drained. Does not always need to be drained to the ship. Straight drain down by introducing air, arm not disconnected until there no product in the arm</li> <li>Containment booms come in various types suitable for open water, sheltered water and shorelines. See section 2.2 of Technical Report 8C-12 S13 of Volume 8C (NEB Filing ID A3S5J0) Oil Spill Response Simulation Study Arachne Reef and Westridge Marine Terminal and Technical Report 8C-12 S8 (NEB Filing ID A3S5G7) A Comparison of the Properties of Diluted Bitumen Crudes with other Oils.</li> </ul>	Comments were considered by the Project Team



Event/Date	Attendees	Comments/Concerns Expressed and addressed in Table 1.1 - Common Issues/Responses	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
Westridge Marine Terminal HazID workshops held on January 22, 2014 and April 29, 2013	WCMRC     BCIT Marine     City of Vancouver (Fire, Police)     Village of Belcarra     Aquaguard	See above	See above	See above	See above
Public Open House, North /ancouver held on November 3, 2012	73 total attendees; including seven attendees who did not sign in	<ul> <li>Destination of product – assumption that product is going to China (See 7.B.2: product destination)</li> <li>Bitumen properties, does it sink? (See 4.A: properties of diluted bitumen).</li> <li>Concerns over increased tanker traffic (See 3.B.2: ability of Vancouver Harbour to accommodate more tankers)</li> <li>Would there be dredging with the project? (See 3.E.1: is dredging proposed)</li> <li>What happens if the \$1.3 billion in spill liability coverage is exceeded? Who would pay? (See 5.D.1: adequacy of \$1.3B to cover the cost)</li> <li>Project's contribution to global warming, and the importance of using energy wisely, move towards green energy and away from fossil fuels (See 8.A.1: stance on upstream issues)</li> </ul>	• N/A	• N/A	Comments were considered by the Project Team
Public Open House, Belcarra eld on November 6, 2012	42 total attendees	<ul> <li>Emergency response capacity (of WCMRC) (See 1.B.3: Spill response times, WCMRC equipment locations and response capacity</li> <li>What is the largest tanker size (See 3.A.1: tanker size and capacity)</li> <li>Tanker number increase. What does "current marine traffic" mean (what does that phrasing include) (See 3.A.6: increase in tanker traffic)?</li> <li>Questions about dredging Second Narrows (See 3.E.1: is dredging proposed)</li> <li>Concern about bitumen sinking (See 4.A: properties of diluted bitumen)</li> <li>Why not route to Deltaport? Burrard Inlet not appropriate for tanker terminal (See 2.A: alternate terminal locations)</li> </ul>	Will footprint of Westridge Marine Terminal expand?	The redevelopment of Westridge Marine Terminal will be within the same waterlot lease but the number of berths will go from one to three.	Comments were considered by the Project Team
ublic Open House, West ancouver held on ovember 7, 2012	49 total attendees; including nine attendees who did not sign in	<ul> <li>Sinking and submerging of bitumen (See 4.A.2: density and possibility bitumen will sink)</li> <li>Marine spill clean-up liability (See 5.D: marine liability in Canada)</li> <li>Do taxpayers bear any responsibility in paying for spill clean-up? (See 5.D.2: risk to taxpayers)</li> <li>Alternate locations for port (e.g. Delta, Roberts Bank) (See 2.A: alternate terminal locations)</li> </ul>	transported  Where does Kinder Morgan's responsibility begin and end? What is the "chain of custody" for the product?  History of emergency spill response that was taken in oil spill events  Is Trans Mountain engaging with environmental organizations E.g. stream-keepers, Shoreline Preservation Society	<ul> <li>Comments were considered by the Project Team</li> <li>Properties of oil are available as part of the tariff, regulated by the NEB. Also further described in the application: Technical Report 8C-12 S 8 of Volume 8C - A Comparison of the Properties of Diluted Bitumen Crudes with other Oils (Filing ID A3S5G7)</li> <li>The regulatory framework for marine transportation is described in Section 1.4 of Volume 8A (Filing ID: A3S4X3)</li> <li>Trans Mountain continues to engage with a wide range of stakeholders including environmental organizations.</li> </ul>	Comments were considered by the Project Team
ublic Open House, Bowen sland held on November 10, 012	27 total attendees; including 16 attendees who did not sign in	Many comments about the noticeable and recent recovery of marine biodiversity in Howe Sound and surrounding areas in Georgia Straight (return of the dolphins, salmon to Bowen Island Number of tankers coming through (See 1.A.2: threat to newly returned whale populations) Effectiveness of spill response in recovery of product Company's plans in dealing with diluted bitumen – concerns that it is more dangerous and difficult to clean up (See 4.B: ability to clean up spilled diluted bitumen) Concerned about negative consequences of potential spills(See 5.C: potential financial impact of worst-case marine spill) Belief there should be more refining capacity in Canada for added value, and moving refined product would also be safer (See 7.B.1: export of unrefined product)	How does our emergency response system compare to that of the US?     How are we integrated given ship traffic to Puget Sound? i.e.     relationship between US Coast Guard and Canada Coast Guard	<ul> <li>Comments were considered by the Project Team</li> <li>In the event of an oil spill accident, that threatens to cross the international border, Trans Mountain is aware the CCG would implement the emergency response protocol outlined in the Canada-United States Joint Marine Contingency Plan. The State of Washington would participate in the management of such an incident through the Unified Command. Section 1.4.2.8 of Volume 8A (Filing ID A3S4X4) – Roles and Responsibilities, Canada US. See also response to Makah TC IR No. 1.1.14 (Filing ID A3X6Q9) and response to Makah TC IR No. 1.1.16 (Filing ID A3X6Q9)</li> </ul>	Comments were considered by the Project Team



Event/Date	Attendees	Comments/Concerns Expressed and addressed in Table 1.1 - Common Issues/Responses		Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
Public Open House, Vancouver (East) held on November 13, 2012	88 total attendees; including 50 attendees who did not sign in	<ul> <li>Climate change and global warming. Will the company be investing in clean technology? What is the plan to address GHGs (See 7.A.1: upstream issues, climate change, and 5.G: investment in local clean technology companies)</li> <li>Tanker destinations – concerns about where they are going / coming from. What are the benefits of shipping product to Asia? (See 7.B.2: tanker destinations, and 7.B.3: support of Chinese growth).</li> <li>Interest in the US traffic and how it compares. (See 3.B.5: Vancouver tanker traffic compared to US-bound tankers)</li> <li>Inquiries about the properties of diluted bitumen (See 4.A: properties of diluted bitumen)</li> <li>Potential air pollution as a result of expansion project – odours (5.A.1 – human health impacts related to noise, air quality)</li> <li>Water quality in English Bay affected by tankers, tanker polluting waters (See 1.E.2: bilge water management and oily water separation)</li> <li>Size of tankers – current tankers, ones in the future (See 3.A.1 – tanker size and capacity)</li> <li>Concerns on size of draft allowed for tankers (See 3.B.2: ability of Vancouver Harbour to accommodate more tankers, and 3.B.8: do Metro Vancouver water lines create draft restrictions)</li> <li>Who pays for the spill response and what happens if the cost for the clean-up goes above the insurace amount? (See 5.D.1: adequacy of \$1.3B to cover the costs of the spill)</li> <li>Liability: how do we define damages? Does the company consider property values? What about the effect on businesses based on waterfront/waterways? (See 5.D.3: ability to recover costs)</li> </ul>	• N/A		Comments were considered by the Project Team	Comments were considered by the Project Team
Public Open House, Vancouver (downtown) Held on November 15, 2012	139 total attendees; including 72 attendees who did not sign in	<ul> <li>Climate change – project's impact on global warming, KM's investments in clean technologies and concerns that green energy won't advance with this project (See 7.A.1: stance on upstream issues, climate change and GHGs, 5.G: investment in clean technologies)</li> <li>Where is product going? Where should it go to get the best economic return? Is extra volume of product going to China? (See 7.B.2: product destination)</li> <li>Tanker noise: negative effects on orcas and marine life (See 3.F.2: impact of vessels on orca populations)</li> <li>Concerns about increases in tanker traffic (See 3.A.6: increase in tanker traffic)</li> <li>Questions about Aframax tanker size (See 3.A.1: tanker size and capacity)</li> <li>Expansion: route should the Westridge Marine Terminal go through US, Roberts Bank (2.A: alternate terminal locations)</li> <li>Weakened legislation (gutting of environmental legislation) (See 6.F: impacts to changes in legislation).</li> <li>Liability for marine spills: who pays for them? How is money collected? How long is the process for payment? (See 5.D: liability regime in Canada, and 5.D.3: ability to recover costs)</li> <li>Concerns the liability limits of \$1.3B for marine spills is not enough under SSOF (See 5.D.2: risk to taxpayers)</li> <li>Concerns that diluted bitumen sinks – referring to Kalamazoo (See 1.C: fate and behaviour of diluted bitumen)</li> </ul>	• N/A		Comments were considered by the Project Team	Comments were considered by the Project Team



Event/Date	Attendees	Comments/Concerns Expressed and addressed in Table 1.1 - Common Issues/Responses	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
Public Open House, Vancouver (West - Point Grey) held on November 17, 2012	106 total attendees; including 57 attendees who did not sign in	<ul> <li>Acoustic impact of tankers on marine life, specifically orcas (See 3.F.2: impacts of vessel traffic on orcas)</li> <li>Concerns about dredging in the port. Misconception that there will be dredging involved with the project (See 3.E.1: is dredging proposed)</li> <li>Will tanker sizes will be increasing (many mentions of "supertankers" coming to Burrard Inlet) (See 3.A.1: tanker size and capacity)</li> <li>Concerns about tanker safety and ship movements. Questions about safety/integrity checks on tankers (See 3.A.5: KMC involvement in tanker safety and spill prevention)</li> <li>Vapour recovery at Westridge (looking for details) (See 1.D.1: emissions from loading operations)</li> <li>Are super tankers part of the marine transportation being planned for TMEP? (See 3.A.1: tanker size and capacity)</li> <li>Tanker destinations: where are they going/coming from and how does this compare with the US? (See 7.B.2: product destination)</li> <li>Roberts Banks/other US terminals as options with expansion (See 2.A: alternate terminal location)</li> <li>Interest in the redevelopment of Westridge dock expansion (how many berth faces, can it be moved east, etc.) (See 2.H: moving dock to the east?)</li> <li>Process: what are the roles of municipalities/government? Perception that Federal regulations have been "weakened", allowing for more oil pipelines to be built (See 6.F:impacts to changes in legislation)</li> <li>Concerns about liability (marine based) (See 5.D: liability regime in Canada) (See 5.D.3: ability to recover costs)</li> <li>What if the cost of the spill surpasses the coverage available? (See 5.D.2: risk to taxpayers)</li> <li>Refining – why are those jobs offshore? Need more capacity to refine here [in Canada / BC] (See 7.B.1: export of unrefined product)</li> <li>Security of supply in the lower mainland – if we can guarantee local supply, what else do we need to move? (See 7.B: export)</li> </ul>	<ul> <li>Study area for the marine side – suggestion it should be 12 nautical miles off shore</li> <li>Who is responsible for the tankers once they leave Westridge?</li> <li>Would increasing throughput to the US via Puget Sound line decrease the number of tankers leaving Vancouver?</li> <li>What is the chemical makeup of the products?</li> <li>How does the bylaw the City of Vancouver is proposing play into this?</li> </ul>	<ul> <li>As a results of stakeholder feedback the RSA for the marine ESA was extended beyond Burrard Inlet. See Section 4.2.1 of Volume 8A (Filing ID A3X4S6)</li> <li>The regulatory framework for marine transportation is described in Section 1.4 of Volume 8A (Filing ID: A3S4X3)</li> <li>The proposed increase in tankers is estimated up to 34 per month. It is possible fewer vessels than 34 may call at Westridge due to changes in preferred destinations for pick up by shippers.</li> <li>Properties of oil are available as part of the tariff, regulated by the NEB. Also further described in the application: Technical Report 8C-12 S 8 of Volume 8C - A Comparison of the Properties of Diluted Bitumen Crudes with other Oils (Filing ID A3S5G7)</li> <li>Marine liability is under the jurisdiction of the federal government.</li> </ul>	Comments were considered by the Project Team
Public Open House, Burnaby held on November 24, 2012	98 total attendees; including 46 attendees who did not sign in	Concerned about view impacts with proposed Westridge Marine Terminal expansion (See 2.C: Impacts from terminal construction and operations on neighbours)  Burnaby Councillor Dan Johnston expressed interest in:  no dredging (See 3.E dredging)  no more ships (See 3.A.6 increase in tanker traffic)  odour control (See 2.C: Impacts from terminal construction and operations on neighbours)  vessel inspections (See 3.D.2 Inspections of tankers prior to loading, see 3.A.4 records to show each tanker's safety history, see 3.A.5 KMC involvement in tanker safety and spill prevention)	Burnaby Councillor expressed interest in spill record     Concern about unintentional/unavoidable oil leakage from tankers	Oil leakage from tankers is prevented by following operational best practices. No spills or leaks from a tanker has occurred in the 60 years of Westridge service. Marine Risk assessment carried out, available in Technical Report 8C-12 TERMPOL 3.15 (NEB Filing ID A3S5F4) General Risk Analysis. Odour abatement technology such as tank vapour adsorption unit (TVAUs) will be installed on tanks at Westridge.  As stated in Section 3.4.4.4 of Volume 4A (NEB Filing ID A3S0Y9) – Westridge Marine Terminal Storage Tankers, Tanks and their foundations will be designed in accordance with API 650 and the CCME guidelines. They will have steel pontoon or light-weight aluminum floating roofs with mechanical seals and fixed steel cone or dome roofs or fixed aluminum dome roofs. Tanks will be provided with nozzles to allow for process connections, maintenance access and the future installation of propeller mixers and/or jet mixers. They will also be fitted with a TVAU for odour control. The final number and sizes of the nozzles and the specification for the TVAU will be determined during the detailed engineering and design phase.	Comments were considered by the Project Team



**TABLE A-2** 

Event/Date	Attendees	Comments/Concerns Expressed and addressed in Table 1.1 - Common Issues/Responses	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
Public Open House, Burnaby neld on November 24, 2012	See above	See above	See above	Kinder Morgan Canada Inc. as the operator of TMPL, is committed to transparency involving any and all spills that have occurred along its lines, or partner vessels carrying KMC transported product. Spills are reported, and available for public knowledge. Trans Mountain's historical spill record is posted at <a href="www.transmountain.com">www.transmountain.com</a> . See also Volume 7 — Risk Assessments and Management of Pipeline and Facility Spills.	See above
Public Open House, Burnaby Mountain held on November 26, 2012	118 total attendees; including 37 attendees who did not sign in	Interest in reducing emissions from tankers (See 1.D emissions impacts from vessels in transit, 1.D.2 emissions of vessels at anchor) Interest in tanker liability (See 5.D: liability regime in Canada) Interest in and some support for alternate location for Westridge Marine Terminal (Deltaport) (See 2.A: alternate terminal locations)	Concern about emergency response delays (from July 24, 2007 Westridge rupture), lessons learned to improve response time.	<ul> <li>Comments were considered by the Project Team</li> <li>The July 24, 2007 Westridge rupture was caused by a third party excavator striking the Westridge delivery line. It occurred at 12:31pm and an emergency call was made to the KMC Control Centre at 12:33pm. The line was shut down immediately after the call, and 24 minutes after the rupture the Westridge delivery line was fully isolated and drain down initiated. KMC staff, along with WCMRC and others, worked diligently until the spill was remediated.</li> <li>Kinder Morgan Canada's Emergency Management Program (EMP) provides a structured framework for management and continuous improvement to the EMP in the future. In the event of an emergency at any of our facilities, we want to ensure a prompt response to minimize impact to the public and environment.</li> <li>Volumes 7 and 8 of the Facilities Application reviews in detail the risks related to oil spills, measures to prevent oil spills and emergency response in the event of a spill. Sample oil spills of varying sizes have been modeled using computer-based simulations. Spill response in the region is also currently the subject of review by the Federal and Provincial governments Canada. We expect the outcome of the spill response regime will be improved by dedicated resources staged within a study area.</li> <li>Marine spill response is one part of an overall safety regime that also includes prevention. To mitigate the effect of increased tanker traffic a number of enhancements are recommended in Volume 8 of our application which, if implemented, will raise the level of care and safety in the Salish Sea to well above globally accepted shipping standards. As part of these measures, Trans Mountain is proposing significant improvements to the oil spill response regime for the area.</li> <li>These recommendations for prevention and response enhancements were informed by a quantitative risk assessment that has been prepared to meet both the requirements of the NEB review as well as a voluntary review of marin</li></ul>	Comments were considered by the Project Team



Event/Date	Attendees	Comments/Concerns Expressed and addressed in Table 1.1 - Common Issues/Responses	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
Public Open House, Burnaby Mountain held on November 26, 2012  Public Open House, Burnaby held on June 27, 2013	56 total attendees; including 24 attendees who did not sign in	Concern about marine impact due to 2007 Inlet Drive Oil Spill (See 1.E.3 long term effects on water quality) Suggestion to move the terminal west (to Shell property), and route pipeline along Kensington (See 2.A: alternate terminal locations)	Concern about environmental impact to ravine west of Cliff Avenue	<ul> <li>The enhanced planning standards for marine spill response described by WCMRC will result in a response capacity that is double and a delivery time that is half the existing planning standards. These enhancements will reduce times for initiating a response to a maximum of two hours for the harbour and six hours for the remainder of the study area and parts of the West Coast of Vancouver Island. The WCMRC study serves as a practical example of how response capacity could be enhanced to better accommodate the Project. While recognizing that there are alternative means to achieve similar results, that further review and consultation is required, Trans Mountain is supportive of the enhanced capacity and the general means of implementation described by WCMRC.</li> <li>Kinder Morgan Canada is also supportive of WCMRC's efforts to refine their geographic responses plans. Trans Mountain helped fund a project to gather current information about the surrounding the Westridge Marine Terminal as part of a program to update local Shoreline Clean Up Assessment Technique (SCAT) information. SCAT information forms part of the emergency response plans for both Kinder Morgan Canada and WCRMC.</li> <li>Trans Mountain is confident that this work will align with the Province's requirements, specifically to provide world leading marine oil spill response prevention and recovery systems for the BC coastline and ocean to manage and mitigate the risks and costs of heavy oil pipelines and shipments.</li> <li>Every effort is made to minimize impact to wildlife, watercourse and key wildlife biodiversity zones. A detailed Environmental Protection Plan will be submitted to the NEB as part of the draft NEB Conditions for Approval which states EPP is to be submitted 90 days prior to construction start. Application which will document every linear metre</li> </ul>	Comments were considered by the Project Team
		<ul> <li>Concern about lights (from terminal and ships at berth/anchor) (See 2.C: impacts from terminal construction and operations on neighbours, 3.C.4 noise, lights of tankers at anchorage and during transit))</li> <li>Concern about noise (from construction and operation) (See 2.C: impacts from terminal construction and operations on neighbours)</li> <li>Concern about fumes (from construction) (See 1.D.1 emissions from loading operations)</li> <li>Suggestion for trees to screen terminal from residential neighbours (Westridge neighbourhood) (See 2.C: impacts from terminal construction and operations on neighbours)</li> <li>Concern about impact to views (Westridge neighbourhood) (See 2.C: impacts from terminal construction and operations on neighbours)</li> <li>Concern about property devaluation (loss of view). (See 2.K: Compensation for property devaluation).</li> </ul>		of the construction right-of-way and mitigation strategies to help avoid or minimize environmental impacts from construction (See Volume 5A – ESA Biophysical). (See also 1.A.3: Effects on Marine Birds (resident and migratory)	



Event/Date	Attendees	Comments/Concerns Expressed and addressed in Table 1.1 - Common Issues/Responses	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
Public Open House, Burnaby Terminals held on September 25, 2013	88 total attendees; including 33 attendees who did not sign in	<ul> <li>Concern about odours (how will they be controlled) (See 1.D.1 emissions from loading operations)</li> <li>Concern about noise impact to residential neighbours (construction and operations of terminals) (See 2.C: impacts from terminal construction and operations on neighbours)</li> <li>Concern about view impact for neighbours of Westridge Marine Terminal (See 2.C: impacts from terminal construction and operations on neighbours)</li> <li>Concern about adequate fire protection and emergency response (See 2.E fire suppression systems at the terminal, See 8.4 ERPs / capabilities for Westridge, See 8.3 emergency response capability of WCMRC)</li> <li>Concern about property devaluation with construction of Westridge Marine Terminal. (See 2.K: Compensation for property devaluation).</li> <li>Concern about odours (health impacts). (See 5.A.1: Human health impacts related to noise, air quality (normal operations and accidents) at Westridge Marine Terminal)</li> </ul>		• N/A	Comments were considered by the Project Team
Public Open House, Burnaby Routing Open House held on April 3, 2014	<ul> <li>146 total attendees; including 24 attendees who did not sign in</li> </ul>	Concern about marine impact due to 2007 Inlet Drive Oil Spill (See 1.E.3 long term effects on water quality)     City of Burnaby asked whether TMEP has control over noise and emissions on ships (See 3.C.4 noise, lights of tankers at anchorage and during transit)	• N/A	• N/A	Comments were considered by the Project Team
Marine Fisheries Offset Workshop held on July 14, 2014	<ul> <li>Pacific Wildlife Foundation</li> <li>Village of Belcarra</li> <li>Vancouver Aquarium</li> <li>District of North Vancouver</li> <li>Pacific Salmon Foundation</li> <li>Vancouver Aquarium</li> <li>Pacific Salmon Foundation</li> <li>Marine Mammal Research Unit –         <ul> <li>Open Water Research Station, UBC</li> </ul> </li> <li>City of Port Moody</li> </ul>	• N/A	<ul> <li>Contaminated sediments – how handled?</li> <li>Marine traffic data, how maintained for commercial and all other vessels including recreational.</li> <li>Dredging required for dock site?</li> <li>How much infill will there be?</li> <li>Does the design of the new Westridge Marine Terminal involve navigational aids?</li> <li>Why three berths for the new terminal?</li> <li>Depth of piles for the berths</li> <li>Anything in the biophysical survey that jumped out at you?</li> <li>Are there other areas like this in the inlet? What are the oceanographic processes at this location?</li> <li>Total square meters of the fisheries offset required?</li> <li>Is Trans Mountain restricted to how big they can make the proposed rock fish reefs [that will act as primary compensation]?</li> <li>Are there negative impacts to juvenile salmon if rock fish reefs proceed?</li> <li>Can you use the dock to create herring habitat?</li> <li>Who is responsible for the reef?</li> <li>Would you consider investing in recolonization of eel grass?</li> <li>Would you consider offsetting intertidal as well, marine riparian areas?</li> <li>Look for opportunities to coordinate with a larger plan to rehabilitate the inlet. With BIEAP gone there is a gap. Coordinate with PMV who has same issues, and habitat banking program.</li> </ul>	<ul> <li>complete (2014) then Trans Mountain will make determination of how to dispose of sediment – on land or at sea. Disposal at Sea requires that sediments meet specific concentration thresholds. Copy of the marine sediment and water quality report for Westridge was shared with participants following the workshop</li> <li>TMEP obtains commercial marine traffic data from marine exchange in Seattle, but that only captures vessels with Automatic Identification System (AIS), Trans Mountain has reached out to PMV and others to get a better sense of how the marinas are operating, this includes recreational boat counts.</li> <li>A limited amount of dredging may be required for dock footings, we are waiting for geotechnical studies to help determine.</li> <li>Infilling of intertidal habitat will results in an estimated loss of 5,470 m2 of fish habitat; however the estimated creation (fill slope) of new habitat due to infill is 3,770 m2</li> <li>Workshop participants were notified when the draft fisheries offset plan was filed with the NEB in August 2014.</li> <li>Navigational s sitting with TC TERMPOL review committee and Canada Coast Guard (CCG) sits on that committee. All navigational aids would be squared off with them before moving forward.</li> </ul>	Comments were considered by the Project Team



Event/Date	Attendees	Comments/Concerns Expressed and addressed in Table 1.1 - Common Issues/Responses	Additional Comments/Concerns Expressed	TMEP Response	Commitments/ Follow-up Actions
Marine Fisheries Offset Vorkshop held on July 14, 2014 See ab	oove	See above	See above	<ul> <li>Habitats around the Westridge Marine Terminal are typical of Burrard Inlet. There has been little oceanographic work done in this area. MacLaren 1994 is a good reference, and it suggests that sediments at WMT are in dynamic equilibrium. To the east of WMT toward the Shellburn Jetty there is a large mudflat, which is a depositional area. More depositional toward Port Moody Arm. As you move around the Central Harbour there are areas of erosion and deposition, but overall there is quite a large amount of sediment input due to runoff.</li> <li>The total amount of fisheries offset required will be dependent on area of fisheries habitat loss which will be discussed with the NEB/DFO.</li> <li>There is no restriction on size for the proposed rock fish reefs but there are offsetting ratios, depends on the habitats you are effecting vs what you are creating, and the relative value of those habitats. PMV will also need to evaluate rom a navigational safety perspective</li> <li>Rockfish are generally omnivorous, consuming benthic invertebrates (e.g., crabs, snails) and also small fish, but salmon are not necessarily common. There are however sea lions in the area.</li> <li>As authorized under the fisheries act, the offsetting habitat must be in place for the duration of the project. Typically there are monitoring requirements with criteria to be met also.</li> <li>Trans Mountain can look at eel grass projects; however success rate of eel grass recovery has been quite low.</li> <li>Trans Mountain considered riparian zones, currently not the focus of this fisheries offset proposal.</li> <li>Trans Mountain has met with PMV's habitat banking program staff and will continue to exchange information in case there is an opportunity to work cooperatively on that program for TMEP</li> </ul>	pove

APPENDIX B – METRO VANCOUVER REGIONAL DISTRICT, AUGUST 12, 2013



August 12, 2013

Metro Vancouver Regional District 4330 Kingsway Burnaby, BC V5H 4G8

Dear Chair Moore,

Thank you for your letter dated July 30, 2013 to Mr. Anderson expressing Metro Vancouver's support for Mayor Drew's call for an Emergency Preparedness Study in Burrard Inlet.

In particular, Mayor Drew recommends:

- (a) inclusion of a post-mortem examination of the environmental monitoring and impact assessment of the 2007 pipeline oil spill, by a third party, that reached Burrard Inlet via storm sewers, and
  - (b) that baseline data is needed regarding the aquatic life in Burrard Inlet.

#### Summary of 2007 Spill: Incorporating Impact Assessment Data

Since the 2007 strike to the Kinder Morgan Canada owned and operated Trans Mountain pipeline by another party, we have cleaned up and remediated the area impacted by the oil spill. The attached "Summary of Clean up and Effects of the 2007 Spill of Oil from the Trans Mountain Pipeline to Burrard Inlet," describes the clean up, effects, and long-term monitoring program results.

This work was incorporated during the review of Kinder Morgan Canada's Emergency Response Plans (ERPs) for existing operations, and is being used by our Trans Mountain Expansion Project team to update ERPs for the proposed Trans Mountain Expansion Project; including the proposed Westridge Marine Terminal Expansion. In addition, this information was used in framing the geographic extent of the Central Burrard Inlet Westridge Terminal Emergency Preparedness Study as described in the notice you received. There are many aspects to spill response preparedness. The Central Burrard Inlet Emergency Preparedness Study addresses one such aspect related to application of the Shoreline Cleanup Assessment Technique used in spill response to guide shoreline treatment decision making and operations. Therefore, it primarily focuses on physical characteristics of the foreshore and backshore and does not collect new baseline biological data.



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#### **Trans Mountain Expansion Project Marine Assessment**

Even though tanker traffic is not regulated by our regulator, the National Energy Board (NEB,) the potential effects from the proposed incremental increase in tanker traffic from our proposed project is assumed to be directly linked to the project. Therefore, from a marine perspective, we plan to assess the potential effects that could result from the proposed expansion of the pipeline from its current capacity (300,000 barrels per day (bpd)) to a proposed capacity of 890,000 bpd. The marine assessment team plans to investigate two primary project components including:

- 1) the Westridge Marine Terminal located in Burnaby, and
- 2) Marine transportation (incremental increase of vessel traffic from approximately five tankers per month up to about 34 tankers per month.)

We have and continue to execute environmental and socio-economic field studies in the vicinity of Westridge Marine Terminal. As appropriate, field results including marine riparian vegetation, marine algae, marine invertebrates, marine fish and marine mammals will be used for the development of the marine terminal ERP.

For marine transportation, we plan to undertake an assessment based on a substantive body of existing information related to the below referenced Environment and Socio-economic Assessment (ESA) elements. This includes baseline information on indicator species and habitats that will be used to assess potential project-related and cumulative effects on marine resources and to provide recommendations on mitigation measures that could be implemented to reduce or eliminate potential adverse effects from increased tanker operations.

The ESA Elements for Normal Operations and Accidents and Malfunctions (Spills) include:

- Common Terrestrial Elements (Soil, Water, Wetlands, Vegetation, Wildlife, etc.)
- Marine Sediment and Water Quality
- Marine Air and GHG Emissions
- Marine Noise (Abovewater & Underwater)
- Marine Fish and Fish Habitat
- Marine Mammals
- Marine Birds
- Marine Species at Risk
- Aboriginal Marine Resource Use
- Marine Aboriginal Traditional Knowledge
- Marine Commercial, Recreational and Tourism Use
- Marine Heritage Resources



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Ecological Risk Assessment & Human Health Risk Assessment

#### Trans Mountain Expansion Project Field Studies: Incorporating Local Input

We agree with Mayor Drew that emergency preparedness is founded on thorough knowledge and understanding, and we are committed to gathering and utilizing existing and new information to support our application to the NEB. Because we know that a wealth of existing information is available, we have been in contact with Wild Bird Trust, Pacific Wildlife Foundation and other local maritime stewardship groups. Some of these organizations have sent representatives to attend our engagement sessions, or we have arranged meetings to learn more about their insights and concerns about our proposal.

Our field program is well underway, and we will continue our studies through the end of 2013. Results of studies completed after August 1, 2013 will be included supplementary filings we anticipate submitting to the NEB in 2014. However, because much of our baseline data is gathered from existing sources, we are confident in the complementary approach we are taking to the timing of the field studies. For example, data obtained about marine birds in our study area was sourced from Bird Studies Canada, the Breeding Bird Atlas, the Pacific Seabird Group, etc. Attached is a list of references from the Trans Mountain Expansion Project Preliminary Marine Birds Technical Report.

The ESA will be available on the NEB website once it is filed later this year. The shoreline assessment data will be incorporated into the Trans Mountain Emergency Response Plan for the marine terminal. If following your review of materials filed with the NEB, Metro Vancouver would like further details, we would be pleased to discuss your needs and provide further details that may be available at that time.

Should you have any questions about this information or wish to discuss, please contact Lexa Hobenshield at 604.809.9869 or lexa hobenshield@kindermorgan.com.

Sincerely,

**Margaret Mears** Environment Lead, Trans Mountain Expansion Project Kinder Morgan Canada



Email: info@transmountain.com | Phone: 1.866.514.6700 | Website: www.transmountain.com

.cc Ian Anderson, Kinder Morgan CanadaLexa Hobenshield, Kinder Morgan CanadaRalph Drew, Village of Belcarra

Attachments

# APPENDIX C – LETTER TO CITY OF PORT MOODY, JULY 25, 2013



July 25, 2013

City of Port Moody 100 Newport Drive, Box 36 Port Moody, BC V3H 3E1

Dear Mayor Clay and Council,

Thank you for your letter dated July 3, 2013 to Mr. Anderson expressing the City of Port Moody's support for an Emergency Preparedness Study in Burrard Inlet as well as support for concerns and suggestions noted in the letter received from Mayor Ralph Drew of the Village of Belcarra (dated June 26, 2013.)

In particular, Mayor Drew recommends:

- (a) inclusion of a post-mortem examination of the environmental monitoring and impact assessment of the 2007 pipeline oil spill, by a third party, that reached Burrard Inlet via storm sewers, and
  - (b) that baseline data is needed regarding the aquatic life in Burrard Inlet.

We are also pleased to note your support for the Trans Mountain Expansion Project to work with local maritime stewardship groups to ensure robust field data is part of our project assessment.

#### Summary of 2007 Spill: Incorporating Impact Assessment Data

Since the 2007 strike to the Kinder Morgan Canada owned and operated Trans Mountain pipeline by another party, we have cleaned up and remediated the area impacted by the oil spill. The attached "Summary of Clean up and Effects of the 2007 Spill of Oil from the Trans Mountain Pipeline to Burrard Inlet," describes the clean up, effects, and long-term monitoring program results.

This work was incorporated during the review of Kinder Morgan Canada's Emergency Response Plans (ERPs) for existing operations, and is being used by our Trans Mountain Expansion Project team to update ERPs for the proposed Trans Mountain Expansion Project; including the proposed Westridge Marine Terminal Expansion. In addition, this information was used in framing the geographic extent of the Central Burrard Inlet Westridge Terminal Emergency Preparedness Study as described in the notice you received. There are many aspects to spill response preparedness. The Central Burrard Inlet Emergency Preparedness Study addresses



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one such aspect related to application of the Shoreline Cleanup Assessment Technique used in spill response to guide shoreline treatment decision making and operations. Therefore, it primarily focuses on physical characteristics of the foreshore and backshore and does not collect new baseline biological data.

#### Trans Mountain Expansion Project Marine Assessment

Even though tanker traffic is not regulated by our regulator, the National Energy Board (NEB,) the potential effects from the proposed incremental increase in tanker traffic from our proposed project is assumed to be directly linked to the project. Therefore, from a marine perspective, we plan to assess the potential effects that could result from the proposed expansion of the pipeline from its current capacity (300,000 barrels per day (bpd)) to a proposed capacity of 890,000 bpd. The marine assessment team plans to investigate two primary project components including:

- 1) the Westridge Marine Terminal located in Burnaby, and
- 2) Marine transportation (incremental increase of vessel traffic from approximately five tankers per month up to about 34 tankers per month.)

We have and continue to execute environmental and socio-economic field studies in the vicinity of Westridge Marine Terminal. As appropriate, field results including marine riparian vegetation, marine algae, marine invertebrates, marine fish and marine mammals will be used for the development of the marine terminal ERP.

For marine transportation, we plan to make an assessment based on a substantive body of existing information related to the below referenced Environment and Socio-economic Assessment (ESA) elements. This includes baseline information on indicator species and habitats that will be used to assess potential project-related and cumulative effects on marine resources and to provide recommendations on mitigation measures that could be implemented to reduce or eliminate potential adverse effects from construction and operations.

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The ESA Elements for Normal Operations and Accidents and Malfunctions (Spills) include:

- Common Terrestrial Elements (Soil, Water, Wetlands, Vegetation, Wildlife, etc.)
- Marine Sediment and Water Quality
- Marine Air and GHG Emissions
- Marine Noise (Abovewater & Underwater)
- Marine Fish and Fish Habitat
- Marine Mammals
- Marine Birds
- Marine Species at Risk
- Aboriginal Marine Resource Use
- Marine Aboriginal Traditional Knowledge
- Marine Commercial, Recreational and Tourism Use
- Marine Heritage Resources
- Ecological Risk Assessment & Human Health Risk Assessment

#### Trans Mountain Expansion Project Field Studies: Incorporating Local Input

We agree that emergency preparedness is founded on thorough knowledge and understanding, and we are committed to gathering and utilizing existing and new information to support our application to the NEB. Because we know that a wealth of existing information exists, we have been in contact with Wild Bird Trust, Pacific Wildlife Foundation and other local maritime stewardship groups. Some of these organizations have sent representatives to attend our engagement sessions, or we have arranged meetings to learn more about their insights and concerns about our proposal.

Our field program is well underway, and we will continue our studies through the end of 2013. Results of studies completed after August 1, 2013 will be included in one of two supplementary filings we anticipate submitting to the NEB in 2014. However, because much of our baseline data is gathered from existing sources, we are confident in the complementary approach we are taking to the timing of the field studies. For example, data obtained about marine birds in our study area was sourced from Bird Studies Canada, the Breeding Bird Atlas, the Pacific Seabird Group, etc. Attached is a list of references from the Trans Mountain Expansion Project Preliminary Marine Birds Technical Report.

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We have met with Pacific Wildlife Foundation in the past, and would be pleased to meet again to continue the dialogue. In addition, we also welcome information about other local organizations that we should be reaching out to ensure we have as complete a picture of the existing resources on the Inlet as possible.

Should you have any questions about this information or wish to discuss, please contact Lexa Hobenshield at 604.809.9869 or lexa hobenshield@kindermorgan.com.

Sincerely,

Margaret Mears

Environment Lead, Trans Mountain Expansion Project

Kinder Morgan Canada

.CC Ian Anderson, Kinder Morgan Canada

Lexa Hobenshield, Kinder Morgan Canada

Attachments

APPENDIX D – LETTER TO MAYOR, VILLAGE OF BELCARRA, MARCH 15, 2014



March 15, 2014

Ralph Drew Mayor, Village of Belcarra 4084 Bedwell Bay Road Belcarra, BC V3H 4P8

Dear Mayor Drew,

As you are aware, on December 16, 2013 Trans Mountain Pipeline ULC submitted an application to the National Energy Board (NEB) seeking authorization to build and operate the Trans Mountain Expansion Project.

The Facilities Application includes environmental and socio-economic assessments, engineering studies and field studies. It also includes feedback attained from diverse groups of people interested in the project; presenting the ideas, observations and concerns of First Nations, stakeholders and government representatives who engaged with us.

Our work will continue, and we look forward to the opportunities for continued dialogue as the project moves through the NEB process. The NEB will conduct a regulatory review of the project, including a public hearing on the Application before it makes a decision on the proposed project. The hearing will allow people or groups who have been granted permission to participate by the NEB a chance to raise issues, present evidence, test evidence, and provide their input. Information how to participate in this process is available on the NEB website <a href="www.neb-one.gc.ca">www.neb-one.gc.ca</a>.

The purpose of this letter is to confirm some of our mutual interests in developing our proposed expansion project, and specifically as it relates to our Westridge Marine Terminal and Burrard Inlet.



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#### **BURRARD INLET IS A SPECIAL PLACE**

Across our organization and in all aspects of our daily work, we are committed to public safety and protection of the environment. With respect to Westridge Marine Terminal, our objective remains to operate safe and reliable facilities, and to protect Burrard Inlet from an oil spill.

As it relates to our proposed expansion, Volume 8B of our Facilities Application presents technical reports on the marine environment including: transportation; commercial aspects; recreational and tourism use; acoustic environment; ecological spill risk assessment; and human health risk assessment.

#### MINIMIZE IMPACT ON OUR NEIGHBOURS

We also believe our neighbours, governments and Aboriginal communities play an important role in how we conduct our business. Our success depends on earning the trust, respect and cooperation of all community members. For this reason we have held more than 750 meetings, 63 open houses, 24 workshops and provided extensive communication on multiple platforms to encourage discussion and education. This effort has brought forward many ideas, comments and concerns about potential impacts from Trans Mountain's proposed expansion. This feedback has supported development of studies, plans and design for the project. Volume 3A of the Application explains Trans Mountain's engagement to date with stakeholders, including key topics of interest or concern.

For example, based on concerns expressed by your community, we have modified our vessel acceptance criteria to require commitment from vessels calling at Westridge to make efforts to reduce noise and lighting disturbances. Similarly we have encouraged Port Metro Vancouver to develop a similar program for vessels at anchor off the terminal.

#### **EMERGENCY RESPONSE TIME IS CRITICAL**

Kinder Morgan Canada's Emergency Management Program (EMP) provides a structured framework for management and continuous improvement to the EMP in the future. In the event of an emergency at any of our facilities, we want to ensure a prompt response to minimize impact to the public and environment.

Volumes 7 and 8 of the Facilities Application reviews in detail the risks related to oil spills, measures to prevent oil spills and emergency response in the event of a spill. Sample oil spills of varying sizes have been modeled using computer-based simulations. Spill response in the region is also currently the subject of review by the Federal and Provincial governments of



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Canada. We expect the outcome of the spill response regime will be improved by dedicated resources staged within a study area.

Marine spill response is one part of an overall safety regime that also includes prevention. To mitigate the effect of increased tanker traffic a number of enhancements are recommended in Volume 8 of our application which, if implemented, will raise the level of care and safety in the Salish Sea to well above globally accepted shipping standards. As part of these measures, Trans Mountain is proposing significant improvements to the oil spill response regime for the area.

These recommendations for prevention and response enhancements were informed by a quantitative risk assessment that has been prepared to meet both the requirements of the NEB review as well as a voluntary review of marine safety that Trans Mountain has requested of Transport Canada.

The risk assessment considered regional traffic growth, navigational hazards, vessel construction, and risk controls provided under the existing safety regime. The assessment quantified the risk of spills from tankers in terms of probable spill volume. Further work was conducted to assess the fate and behavior of oil in the local marine environment. This included testing of diluted bitumen weathering and spill trajectory modelling to establish the extent of potential oil spill effects including those on the environment and human health. This process was used to identify the recommended enhancements to the safety regime that will reduce the potential for oil spill accidents and mitigate the risk presented by increased tanker traffic. It was also used to assess the adequacy of the existing marine spill response planning standards and recommend enhancements.

Trans Mountain engaged WCMRC to review this work and to describe enhancements to the existing planning standards that would better accommodate the Project.

The enhanced planning standards for marine spill response described by WCMRC will result in a response capacity that is double and a delivery time that is half the existing planning standards. These enhancements will reduce times for initiating a response to a maximum of two hours for the harbour and six hours for the remainder of the study area and parts of the West Coast of Vancouver Island. The WCMRC study serves as a practical example of how response capacity could be enhanced to better accommodate the Project. While recognizing that there are alternative means to achieve similar results, that further review and consultation is required, Trans Mountain is supportive of the enhanced capacity and the general means of implementation described by WCMRC.

Kinder Morgan Canada is also supportive of WCMRC's efforts to refine their geographic responses plans. We helped fund a project to gather current information about the shorelines



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surrounding the Westridge Terminal as part of a program to update local Shoreline Clean Up Assessment Technique (SCAT) information. SCAT information forms part of the emergency response plans for both Kinder Morgan Canada and WCRMC.

We are confident that this work will align with the Province's requirements, specifically to provide world leading marine oil spill response prevention and recovery systems for the BC coastline and ocean to manage and mitigate the risks and costs of heavy oil pipelines and shipments.

We encourage you to continue your discussions with WCMRC about maximum response times and ideas such as developing detailed local area response plans including pre-staging equipment around the Inlet, which we are very supportive of.

I also want to thank you for your recent constructive feedback about WCMRC's lack of on-water home base. We are supportive of ensuring the most efficient response possible, and agree that water access is an important consideration. We are working with WCMRC to augment their existing capacity. As part of the solution we will provide them dedicated storage and moorage space at our expanded Westridge Marine Terminal.

In addition to these initiatives, as the design of the Westridge Marine Terminal is refined in the coming months detailed specifications for response equipment will be developed. Ensuring efficient and immediate response is a mutual objective and important part of safe operations. The type of boom considered for the Westridge Terminal will meet high global standards for emergency response.

#### **POSITIVE LEGACY**

We recognize that our proposed expansion project will impact many communities. From the start of our project, we set out several principles for stakeholder engagement. One of these is mutual benefit. We seek solutions to challenges that result in shared benefits for all interests. Through our engagement to date, we have sought input from stakeholders about environmental and socio-economic effect and meaningful local benefits in those communities our project will impact. Based on input to date, among other things, future engagement plans will include sharing detailed information on economic impact and community opportunities.



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Thank you for your continued interest in our proposed project. We look forward to continuing to work collaboratively with your community.

Should you have any questions or wish to discuss further, please contact Lexa Hobenshield at 604.809.9869 or lexa hobenshield@Kindermorgan.com.

Sincerely,

**ORIGINAL SIGNED BY** 

Mike Davies Senior Director, Marine Development

.cc Kevin Gardner, WCMRC



#### Reference:

On December 1, 2014, the City of Coquitlam requested that Lexa Hobenshield, Trans Mountain Expansion Project (TMEP), provide a summary of consultation related to businesses in the United Boulevard area of Coquitlam.

#### Request:

A summary of consultation for the Trans Mountain Expansion Project (TMEP) related to businesses in the United Boulevard area of Coquitlam. Trans Mountain agreed to provide the summary of consultation as requested.

# Response:

Trans Mountain's engagement and communications activities have been ongoing since the Project was announced in May 2012. Trans Mountain introduced the Project to the City of Coquitlam on June 19, 2012. Early conversations focused on the route as proposed in the Application filed in December 2013. During March and April 2014, Trans Mountain continued its work to optimize the route and reduce impacts to neighbours, people, communities and the environment.

A comprehensive listing of issues and concerns raised since Trans Mountain began its engagement activities is provided in Trans Mountain's Volume 3 of the Application filed on December 16, 2013, Consultation Update No. 1 filed on March 20, 2014, and Consultation Update No. 2 filed on August 1, 2014. Trans Mountain will file Consultation Update No. 3 with the National Energy Board (NEB) in Q1 2015.

Table 1-1 below provides a summary of only those stakeholder interactions, where issues or concerns were raised related to routing and impacts to local businesses in the United Boulevard area of the City of Coquitlam.



TABLE 1-1
ISSUES, CONCERNS RAISED RELATED TO UNITED BOULEVARD ROUTING

Stakeholder/ Group Name	Communication Date and Method	Stakeholder Comments/Concerns Expressed	TMEP Actions
City of Coquitlam	Meeting, January 16, 2013	City of Coquitlam elaborated on the geotechnical concerns associated with the Fraser Mills area. City of Coquitlam suggested studying the possibility of laying pipe within United Boulevard. Lack of residential area nearby would mean fewer working hour restrictions and impacts to individual water and sewer services. Advised work would not be permitted during peak hours and this would apply to any in-street construction.	Trans Mountain discussed proposed routing of the pipeline through City of Coquitlam. Various pinch points were discussed. The options for the alignment of the pipeline across the Fraser River between Surrey and Coquitlam were discussed.
City of Coquitlam Burke Mountain Naturalists Coquitlam School District No. 43 Tri-Cities Chamber of Commerce	Coquitlam Community Workshop, June 25, 2013	Community Routing Workshop issues raised included:  Concerned about impact on United Boulevard businesses, following recent significant impacts due to Port Mann Highway 1 Project re-development. Businesses on United Boulevard have already lost business due to Port Mann Highway 1 Project construction. Going to be impacted again with proposed pipeline routing.  Construction fatigue in United Boulevard area. Concerns construction may affect local traffic. Degradation of roads through construction (heavy) truck traffic.	Trans Mountain provided concerns to Project Team for consideration.
City of Coquitlam	Meeting, January 30, 2014	United Boulevard business owners will be sensitive due to the amount of business disruption in recent years.  The sale of the transfer station on United Boulevard will be completed with Beedie Group June 2015. The agreement states the transfer station will be at that location until 2016.	Team members met with City of Coquitlam to discuss routing.
Tri-Cities Chamber of Commerce	Email, February 27, 2014	Executive Director indicated businesses in the United Boulevard area are still recovering from the effects of the Port Mann Highway 1 Project and suggested that team member should meet with Vice President, Stakeholder Relations and Responsible Gaming for Great Canadian Casino to discuss the situation moving forward. Suggested a meeting with the businesses in the area maybe the next step and the Chamber is willing to coordinate.  Identified the following:  Businesses are very concerned about business losses if a pipeline is to be installed along United Boulevard.	Trans Mountain provided concerns to Project Team for consideration.



Stakeholder/ Group Name	Communication Date and Method	Stakeholder Comments/Concerns Expressed	TMEP Actions	
		Businesses are just/still recovering from the losses experienced during the Port Mann Highway 1 Project.		
		Businesses want to meet with Trans Mountain.		
		<ul> <li>There is no local business association, the Chamber acts on behalf of United Boulevard businesses.</li> </ul>		
Tri-Cities Chamber of Commerce	Email, February 27, 2014	Executive Director, Tri-Cities Chamber of Commerce emailed Trans Mountain providing Vice President, Stakeholder Relations and Responsible Gaming for Great Canadian Casino contact information, suggesting the Tri-Cities Chamber host a meeting between the two parties to discuss proposed pipeline corridor through the United Boulevard area and discuss concerns about impact to the Casino.	Trans Mountain indicated it would be pleased to meet with the Casino. Through subsequent correspondence, a meeting date was set for March 14, 2014.	
Great Canadian Gaming Corporation Hard Rock Casino Vancouver Rhema Health Products Ltd.	Meeting, March 14, 2014	Rhema Health Products Ltd. has a manufacturing business in United Boulevard area. Access is not directly blocked by proposed alignment, however concerned about time of day construction. Business operates 24 hours a day, seven days a week. Business had high staff turn-over during Port Mann Project, due to reduced bus service, particularly at night. Construction creates transportation challenges.	Trans Mountain provided background information and an update on the proposed Project. It included the routing principles of aligning with existing linear infrastructure. Trans Mountain provided information about the NEB Hearing Process. There is a comprehensive notification process associated with this prior to receiving approval for routing and before construction could commence.	
Tri-Cities Chamber of Commerce Business		Great Canadian Gaming Corporation also has a business that operates 24 hours a day, seven days a week, with similar concerns about construction disruption. Casino has recently rebranded and repositioned itself with high expectations to generate momentum leveraging its new brand. They have a Phase Two hotel construction planned for 2016/17 and are sensitive to any potential	Disruption due to construction is estimated at 90 days, based on preliminary estimates from a civil contractor using two installation crews. Anticipate one lane east and one lane west on United Boulevard would remain open. Trans Mountain could also modify Casino entrances and exits. Anticipate two lanes of traffic would merge onto one lane through Schooner Street.	
		The the builder	business disruptions.  The Casino generates both provincial and municipal benefits, and therefore the Casino is very sensitive to any disruption to its business.  Identified the following:  If Trans Mountain cannot keep out of the area completely, how will construction be done with the least impact?	A crew would work on one pipe joint section at a time resulting in a smaller footprint than is typical when stringing multiple joints at a time. How fast construction moves depends on conflicts with other utilities in roadway. Under good circumstances, estimate a crew could complete two joints per day, including excavation, coating, and placing pipe in ground with backfilling. Trans Mountain indicated that these are estimates only and more work would need to be done to better predict timeframes.
			What about service disruptions (i.e., electricity)? If businesses have enough notice, they can make alternate arrangements.  Levyland and we estimate a disruption in the arrangements.	Trans Mountain looked at Brigantine Drive but felt it had too many underground services and approximately 20 business driveways would be impacted.
		<ul> <li>How long can we anticipate a disruption in the area? What would disruption look like?</li> <li>The most problematic intersection is Schooner Street and</li> </ul>	Trans Mountain indicated that there are seismic concerns with routing in close proximity to the banks of the Fraser River.	



Stakeholder/ Group Name	Communication Date and Method	Stakeholder Comments/Concerns Expressed	TMEP Actions
		United Boulevard. What would disruption look like at Schooner Street and United Boulevard?	
		What does one crew look like?	
		Why not choose Brigantine Drive and stay off United Boulevard, which is a busier road?	
		Is there a reason you cannot run along the shore?	
Great Canadian Gaming Corporation	Email, March 17, 2014	Requested a follow-up meeting between Trans Mountain and Great Canadian Gaming Corporation's Vice President of Planning and Development. Felt it would be helpful for him to hear first-hand about the details pertaining to the proposed Project.	Trans Mountain agreed and suggested mid-April 2014 for the meeting.
Great Canadian Gaming Corporation	Meeting, April 14, 2014	Prefer existing TMPL alignment. Concerns with proposed corridor: Casino is accessed from Hartley Avenue, Schooner Street and United Boulevard. The proposed corridor restricts access to two of these entrances. There are approximately 6,000 trips per day to the Casino, so access to parkade off Hartley Avenue is critical. Restriction to one lane in and out of United Boulevard will be a problem.  Most customers come from King Edward Street (from west to east along United Boulevard). Impact could be minimized if Trans Mountain completed United Boulevard construction first. There are already existing easements along front. The Casino indicated it is willing to work with Trans Mountain.  What is in the south side of Hartley? Are there any disruptions to City utilities? The Casino has two pump stations and there are city services from both sides. Has Trans Mountain done any assessment of utilities yet?  If Schooner Street or Fawcett Road are impacted, we can work with signage, etc. If either street is down, we can route around Hartley Avenue.  Can you be on the boulevard to the west of Schooner If Schooner Street or Fawcett Road are impacted, we can work with signage, etc. If either street is down, we can route around Hartley Avenue?  Casino's least busy time during the day is between 2:00 am and 6:00 am. Best time for construction.  Can talk about bypass routes to allow easier access to our site. There are a couple of additional exits off the highway that are supposed to be for trucks. Perhaps allowing vehicles to access	Trans Mountain asked what the impact would be if it looked at routing along United Boulevard? (In front of Casino)  TMEP has not looked at detailed services in the area. TMEP still needs to look at this. TMEP is looking at using the Boulevard (grassy area) on the south side of Hartley Avenue.  Trans Mountain asked what the impact of the corridor on Schooner Street would be?



Stakeholder/ Group Name	Communication Date and Method	Stakeholder Comments/Concerns Expressed	TMEP Actions
		better ways to route customers.	
Insurance Corporation of British Columbia (ICBC)	TMEP Phone Outgoing, May 5, 2014	Will provide the name of a contact person regarding access.	Trans Mountain left a voice message seeking access permission onto ICBC site off Hartley Avenue, Coquitlam. Followed with email on May 6, 2014.
City of Coquitlam	TMEP Email, June 9, 2014	N/A	Trans Mountain advised City of Coquitlam of recent route optimizations and provided a link to an interactive map for reference.
			In TMEP's response to NEB Information Requests Round 1 (NEB IR No. 1) submitted on May 14, 2014 followed by a Clarification and Errata to NEB IR No. 1 on May 23, 2014, TMEP formally updated the NEB on some routing deviations no longer being considered by Trans Mountain as a result of ongoing studies, fieldwork and feedback received from the public at recent routing focused workshops and open houses. In Coquitlam, these are: Fraser River Crossing/Port Mann Bridge (RK 1166.8 to RK 1169.4) - The previously proposed pipeline corridor which crossed the Fraser River west of the Port Mann Bridge is no longer being considered and the east corridor deviation is now selected as the proposed revised pipeline corridor.
City of Coquitlam	Tri-Cities Joint Council Event, July 24, 2014	Coquitlam Councillors and CAO expressed concern about route in United Boulevard area and stressed the importance of Casino to City.	Team members met with representatives of the Tri-Cities Joint Council to partake in a harbour tour and discuss key concerns and interests.
City of Coquitlam	TMEP Email, July 28, 2014	N/A	Trans Mountain inquired with the City of Coquitlam regarding plating the streets. United Boulevard is of mutual importance between the organizations. Trans Mountain indicated its desire to understand City requirements around this aspect in order to best determine how long construction will take in the United Boulevard area.  Shared initial plans for an event with United Boulevard businesses to share Project information and gather feedback, tentatively planned for the last week of August 2014.
City of Coquitlam	TMEP Email, August 2, 2014	N/A	Trans Mountain informed stakeholders about filing updates to the National Energy Board on August 1, 2014, which included: Part 1: Routing Update expands on the corridor revisions under consideration since filing the Application in December 2013, and as identified in NEB IRs No. 1.12, 1.40 and 1.84. Corridor revisions include 3 in Alberta, 3 in BC Interior (Hargreaves to



Stakeholder/ Group Name	Communication Date and Method	Stakeholder Comments/Concerns Expressed	TMEP Actions
			Hope) and 10 in BC Lower Mainland (Hope to Burnaby). This included the following revision related to the United Boulevard area:
			<ul> <li>December 16, 2013 Facilities Application: preferred Fraser River crossing from Surrey to the Lafarge site in Coquitlam, alternate crossing east of Port Mann Bridge.</li> </ul>
			<ul> <li>August 1, 2014 Technical Update #1: revised preferred Fraser River crossing to location east of Port Mann Bridge, alternate the crossing onto Lafarge site.</li> </ul>
			Part 5: Consultation Update No. 2 provides an update to Public Consultation, Aboriginal Engagement and Landowner Relation activities for the period of January 1 to April 30, 2014. Our next consultation update is planned for Q1 2015.
City of Coquitlam	Meeting, August 11,	Good to be able to avoid Schooner Street.	Trans Mountain provided an update on routing, discussed a
	2014	Schooner Street intersection is one of busiest off United Boulevard. It would be good to avoid.	couple of potential deviations and sought input from the City.  Trans Mountain borrowed the following reports from the City:
		The corner of Brigantine where Tim Horton's is located is the other	Reach Business Mitigation Report (1991)
		busiest area.  City's concern is depth of pipe for future works its system. Storm sewer is quite deep. Due to sediment issues, at some point the City will need to reconstruct United Boulevard and some of the side streets (i.e., Fawcett). Typically all utilities would come out, then be put back. Alternate is to preload it but that means shutting down the road for two years. If TMPL were deeper it would be better.	Fraser Mills Industrial Park Geotechnical Assessment (1990)
			Trans Mountain identified impacts with construction on traffic flow in the United Boulevard area. Trans Mountain acknowledged the City had requested TMEP explore routing down Hartley Avenue as far as possible and TMEP has been looking at some alternatives.
		Discussion about routing further west down United Boulevard, where the route will cross just west of King Edward Street.	Trans Mountain discussed a potential routing option to United Boulevard concern. Schooner Street has a lot of utilities (i.e., gas, water, sanitary, hydro, existing TMPL) and as a result is a bit
		Discussed route and placement through Lafarge on the west side.	challenging.
		United Boulevard needs some repairs and the City has been holding off for Port Mann Highway 1 Project to finish. City is looking	TMEP Alternative Route under consideration:
		at repaying in 2015-2016. So doing this section earlier rather later is preferred.	<ul> <li>Hartley Avenue to the existing TMPL right of way (abandoned pipeline), through the ICBC parking lot. This would only involve one new land owner.</li> </ul>
		Identified the following questions:	This has the potential to eliminate some of the Casino's
		<ul> <li>Do you plate and backfill at end of each working day?</li> </ul>	concerns about construction on both Hartley and Schooner
		<ul> <li>Can you provide a rough estimate of the length that would be open at one time?</li> </ul>	Street. With Hartley closed, access to the Casino is still possible via Schooner.
		How long are pipe lengths?	Potential challenge on the north side of corridor along United Boulevard with hydro utility. The southern boulevard has



Stakeholder/ Group Name	Communication Date and Method	Stakeholder Comments/Concerns Expressed	TMEP Actions	
		Stakeholder Comments/Concerns Expressed  What is the length of two lane closure through the United Boulevard area?  When will construction happen?	challenges with trees and business properties.  Could build along United Boulevard section and leave alternate route for cars to travel around Hartley Avenue.  TMEP Second Alternate (significantly less desirable):  Continue even further along Hartley Avenue to Brigantine Drive.  Potential challenge crossing storm sewer at United Boulevard. Looking at going under the storm sewer which is quite deep. Would require major excavation and would mean major road traffic impacts.  Responses to Questions:  Trans Mountain can consider plating as a safety precaution but would not be reopening roads with plated ditch between shifts. We will maintain access to businesses.  Working segments are anticipated to be approximately 200-300 m in length. The intent will be to ideally trench, lay pipe and backfill with only the last 50 m left open enabling Trans Mountain to move to the next section.  Lane closures could be approximately two to three weeks from start to finish per work segment. Construction would be in stages.  With respect to traffic disruption along United Boulevard it would be a two-lane closure, still allowing single lane traffic flow in each direction. Lane closures would progress on a rolling/sequential basis per work segment.  Other roads will typically be full-closures although it will be sequenced in areas such that detours are easier to manage. Trans Mountain will be constructing in the area for months but only directly disrupting particular areas for a matter of	
			several weeks. The closures would comply with City of Coquitlam traffic and noise bylaws.  Trans Mountain is looking at preliminary construction activity starting mid-2016 and would welcome input from the City and local business community to determine best timing.	
Oppenheimer Group	Meeting, September 8, 2014	Site is busy from very early in the morning (i.e., trucks arrive and drivers rest until Oppenheimer staff arrive). Suggested there would be benefits of a communication system to notify business of road during construction.	To introduce and discuss the Trans Mountain Expansion Project Concerns noted by routing and engineering team members at the meeting  TMEP will investigate trenchless technology through this area	



Stakeholder/ Group Name Communication Date and Method Stakeholder		Stakeholder Comments/Concerns Expressed	TMEP Actions
		Any construction in area has potential to slow traffic to and from site and delays can be costly.  Proposed alignment shows routing through Oppenheimer loading bay. The loading bay is extremely tight under normal circumstances. There is no room for traditional construction across this site without significant disruption to business.	
City of Coquitlam United Boulevard area Businesses	TMEP Email, September 9, 2014	N/A	Trans Mountain invited the City of Coquitlam to attend an event for local businesses along United Boulevard to be held on September 17, 2014. The event will allow Trans Mountain to share information about its Project and gather input during engineering and construction plan developments.  • DATE: September 17, 2014  • LOCATION: The Theatre at the Hard Rock Casino, 2080 United Boulevard, Coquitlam
			TIME: Drop in any time between 4:00 pm and 7:00 pm Note: There will be a short presentation at 6:00 pm.
Great Canadian Gaming Corporation Hard Rock Casino Vancouver	Meeting, September 10, 2014	Hard Rock Casino is still recovering its business following other construction impacts in the area. Disruption resulting from TMEP route may result in additional hardship for the business.  Hotel proposal pending with potential construction to begin in late 2015/2016. Construction timeline of 16 months.  The quietest time of year for the Casino annually is in July and August.  Will discuss the possible deviation further west along Hartley Avenue and advise TMEP of our position before September 17, 2014.  Home Depot has a large presence in the area. Suggested that TMEP meet with Home Depot representative.  What side of Hartley Avenue would you construct in? Would the whole street be out of commission? When would you break ground along Hartley Avenue?	Provided a routing update. TMEP has investigated different routes to address stakeholder concern regarding access to business. Advised the corridor submitted to the NEB will remain, however, should local businesses desire a deviation further west along Hartley Avenue to connect with TMPL existing right-of-way that runs north across ICBC parking lot. This deviation would avoid Schooner Street. Stakeholders could submit this as an option the NEB through its regulatory process.  TMEP would support a deviation further west along Hartley Avenue to avoid Schooner Street.  TMEP would likely construct for three to four months on the south side of Hartley Avenue and impacts would be along the whole street. Work would be segmented and would likely only be a week in front of any individual business. TMEP is seeking stakeholder feedback in order to minimize impacts.
Home Depot	Incoming Phone, September 16, 2014	Wondering about impacts to property	Trans Mountain provided concerns to Project Team for consideration
Shato Holdings (White Spot)	Meeting, September 16, 2014	Prefers any alternate route. Business lost 15 per cent of traffic due to the Port Mann Highway 1 Project construction.	Trans Mountain provided information regarding route option along Schooner Street.



Stakeholder/ Group Name	Communication Date and Method	Stakeholder Comments/Concerns Expressed	TMEP Actions
Insurance Corporation of British Columbia (ICBC)	Meeting, September 16, 2014	N/A	Discuss Project and onsite inspection at property.
City of Coquitlam United Boulevard businesses	United Boulevard Information Session, September 17, 2014	Ten people attended the information session.  The City of Coquitlam expressed support for the option along Hartley Avenue, past Schooner Street to the existing TMPL easement, through the ICBC parking lot to reconnect with United Boulevard. This option is outside the proposed corridor and contains new landowners but would eliminate a challenging crossing at the intersection of United Boulevard and Schooner Street, as well as avoid construction on two sides of Hard Rock Casino.  City of Coquitlam inquired about the impacts regarding a 3-4 metre burial depth for the pipeline so future utility/road upgrades could be done above it. City of Coquitlam also inquired about using the current corridor to the north of United Boulevard businesses.  Participants raised the following:  Impact to businesses - even minimal disruption will be negative  Need to ensure that they are kept apprised of any road closures, as they have significant truck traffic to and from their facility.  Access is largest concern for facility with complicated logistics.  Construction techniques/timing; duration of construction directly in front of business and along the corridor. Concern that traffic delays will reduce business.  Suggest TMEP complete engineering assessment on all buildings prior to construction commencing, which could reduce damage claims later.  Concerns regarding methane gas and excavation. Suggested gas sampling before excavating.	Trans Mountain invited more than 300 businesses in the United Boulevard area to participate in an Information Session to seek input into routing alternatives under consideration in the area.  Trans Mountain explained that a 3-4 m burial depth is significantly deeper than planned and might not even be feasible in some areas. This would have a significant impact to construction and durations stated earlier would be much longer.  The corridor north of United Boulevard is too congested.
United Boulevard area businesses	Mail letter dated September 26, 2014 distributed by Canada Post to 305 businesses (Note: feedback indicates delivery may have	There were four surveys completed online yielding the following comments:  Concern about impacts to business operations during construction: area was heavily impacted during Port Mann Highway 1 Project  Deliveries, maintaining vehicle access and parking restrictions	Trans Mountain invited United Boulevard businesses to participate in an online survey aimed at ensuring TMEP had current business contact information, and to gather information about relevant businesses to be incorporated into planning and minimize business disruption where possible. The survey was available to United Boulevard businesses invited to the event plus a few additional key businesses from September 17, 2014



Stakeholder/ Group Name	Communication Date and Method Stakeholder Comments/Concerns Expressed		TMEP Actions
City of Coquitlam United Boulevard area businesses:  Canadian Tire Gescan  Natural Factors  BFI/Progressive Waste Solutions	been delayed by two weeks) TMEP Email to additional businesses as recommended by City of Coquitlam staff  TMEP Email, September 26, 2014	<ul> <li>are of most concern to businesses.</li> <li>Best time for construction activities is during slower summer months (July – September)</li> <li>Email and direct mail are preferred communication methods for receiving ongoing notification</li> <li>There is interest in additional information on the topics of emergency response and pipeline safety</li> <li>Based on Coquitlam's experience with communications around the Port Mann Highway 1 Project, City staff recommended Trans Mountain reach out to some additional key businesses. The following concern and interests were identified:</li> <li>Canadian Tire expressed an interest in meeting Trans Mountain and offered to host a multi-stakeholder workshop with several key businesses in the area (Note: Meeting is pending, awaiting response from Canadian Tire).</li> <li>Gescan (a wholesale facility) were relieved to learn the route does not directly impact the front of their business, however</li> </ul>	Until December 4, 2014.  Trans Mountain followed up by calling key businesses on the list to introduce TMEP and proposed corridor along United Boulevard, document feedback and contact information for future communication. TMEP shared online survey information in follow up conversations.
Smithrite     Waste     Management		access along United Boulevard during construction is still a concern.	
City of Coquitlam	TMEP Phone Outgoing, October 7, 2014	What are the future city costs of having the Trans Mountain pipeline in the streets? There is a potential conflict related to road work planned for the area. The City may ask TMEP to locate the pipeline deeper in the road along United Boulevard to prevent having to relocate the pipeline in the future. A request may be directed to TMEP through the NEB process.	Trans Mountain follow-up to City of Coquitlam routing question raised at Information Session. Trans Mountain advised the CN corridor was not chosen due to congestion in the area (i.e., Metro Vancouver infrastructure and BC Hydro powerlines).

February 2015

## **APPENDIX D**

# **SCHOOLS ENGAGEMENT**

## October 17, 2014 Letters

- Abbotsford School District (No. 34)
- Burnaby School District (No. 41)
- Chilliwack School District (No. 33)
- Langley School District (No. 35)
- Grande Yellowhead Public School Division No. 77

## October 24, 2014 Letters

- Abbotsford Christian Elementary School
- Langley School District (No. 35)



🔀 Email: info@transmountain.com | 🕿 Phone: 1.866.514.6700 | 🖵 Website: www.transmountain.com | 📴 @TransMtn

October 24, 2014

Abbotsford Christian Elementary School 3939 Clayburn Road Abbotsford, BC V3G 1J9

Roy Van Eeerden, Principal, Abbotsford Christian Elementary School

#### RE: **Proposed Trans Mountain Expansion Project**

Dear Roy,

In December 2013, Trans Mountain applied to the National Energy Board (NEB) to expand its current 1,150-kilometre pipeline between Strathcona County, Alberta and Burnaby, British Columbia. The proposed expansion, if approved, would create a twinned pipeline that would increase the capacity of the system from its current 300,000 barrels per day, to 890,000 barrels per day.

As part of the Application, Trans Mountain has applied to the NEB for a pipeline corridor (which in some areas includes both a proposed and an alternate corridor) for the pipeline expansion. This up to 150m wide corridor was used to identify potential environmental impacts, socio-economic impacts, geotechnical conditions and constructability factors to ensure the proposed new pipeline can be built and operated safely. The final right-of-way will be 18m wide or less once construction is complete.

We are contacting you because we have identified Abbotsford Christian Elementary School is located within 300m of our proposed pipeline corridor for the Expansion Project.

For your reference, we have attached a map of which identifies the location of the proposed pipeline corridor within Abbotsford.

If you are interested, we would be happy to set up a meeting with you, as well as any representatives from the schools within your district, to discuss the proposed Project and to answer any questions you and or others may have. Additional information regarding the proposed Project, including a copy of the Facilities Application can be found on our project website at www.transmountain.com.





Please don't hesitate to contact Lexa Hobenshield at <u>Lexa\_Hobenshield@kindermorgan.com</u> or (604) 809-9869 for more information and or to set up a meeting.

Sincerely,

Lizette Parsons Bell

L. M. Parsonsfell

Lead, Stakeholder Engagement and Communications

Trans Mountain Expansion Project

Encl. Abbotsford School District map





🔀 Email: info@transmountain.com | 🕿 Phone: 1.866.514.6700 | 🖵 Website: www.transmountain.com | 📴 @TransMtn

October 17, 2014

Burnaby Schoold District (No. 41) 5325 Kincaid Street Burnaby, BC V5G 1W2

Kevin Kaardal, Superintendent, Burnaby School District

#### RE: **Proposed Trans Mountain Expansion Project**

Dear Kevin,

In December 2013, Trans Mountain applied to the National Energy Board (NEB) to expand its current 1,150-kilometre pipeline between Strathcona County, Alberta and Burnaby, British Columbia. The proposed expansion, if approved, would create a twinned pipeline that would increase the capacity of the system from its current 300,000 barrels per day, to 890,000 barrels per day.

As part of the Application, Trans Mountain has applied to the NEB for a pipeline corridor (which in some areas includes both a proposed and an alternate corridor) for the pipeline expansion. This up to 150m wide corridor was used to identify potential environmental impacts, socio-economic impacts, geotechnical conditions and constructability factors to ensure the proposed new pipeline can be built and operated safely. The final right-of-way will be 18m wide or less once construction is complete.

We are contacting Burnaby School District (No. 41) because we have identified schools in your district that are within 300m of our proposed pipeline corridor for the Expansion Project. They are:

- **Burnaby Mountain Secondary**
- Forest Grove Elementary
- Westridge Elementary

For your reference, we have attached a map of your region which identifies the location of the proposed pipeline corridor within your school district.

If you are interested, we would be happy to set up a meeting with you, as well as any representatives from the schools within your district, to discuss the proposed Project and to answer any questions you and or others may have. Additional information regarding the proposed Project, including a copy of the Facilities Application can be found on our project website at www.transmountain.com.





Please don't hesitate to contact Lexa Hobenshield at <u>Lexa\_Hobenshield@kindermorgan.com</u> or (604) 809-9869 for more information and or to set up a meeting.

Sincerely,

Lizette Parsons Bell

Lead, Stakeholder Engagement and Communications

Trans Mountain Expansion Project

Encl. Burnaby School District map

.cc Greg Frank, Secretary-Treasurer, Burnaby School District





🔀 Email: info@transmountain.com | 🕿 Phone: 1.866.514.6700 | 🖵 Website: www.transmountain.com | 📴 @TransMtn

October 17, 2014

Chilliwack School District (No. 33) District Office 8430 Cessna Drive Chilliwack, BC V2P 7K4

Evelyn Novak, Superintendent, Chilliwack School District

#### RE: **Proposed Trans Mountain Expansion Project**

Dear Evelyn,

In December 2013, Trans Mountain applied to the National Energy Board (NEB) to expand its current 1,150-kilometre pipeline between Strathcona County, Alberta and Burnaby, British Columbia. The proposed expansion, if approved, would create a twinned pipeline that would increase the capacity of the system from its current 300,000 barrels per day, to 890,000 barrels per day.

As part of the Application, Trans Mountain has applied to the NEB for a pipeline corridor (which in some areas includes both a proposed and an alternate corridor) for the pipeline expansion. This up to 150m wide corridor was used to identify potential environmental impacts, socio-economic impacts, geotechnical conditions and constructability factors to ensure the proposed new pipeline can be built and operated safely. The final right-of-way will be 18m wide or less once construction is complete.

We are contacting Chilliwack School District (No. 33) because we have identified schools in your district that are within 300m of our proposed pipeline corridor for the Expansion Project. They are:

- Unsworth Elementary School
- Vedder Middle School
- Watson Elementary School
- John Calvin School
- Mount Slesse Middle School

For your reference, we have attached a map of your region which identifies the location of the proposed pipeline corridor within your school district.

If you are interested, we would be happy to set up a meeting with you, as well as any representatives from the schools within your district, to discuss the proposed Project and to answer any questions you and or others may have. Additional information regarding the proposed Project, including a copy of the Facilities Application can be found on our project website at www.transmountain.com.





Please don't hesitate to contact Lexa Hobenshield at <u>Lexa\_Hobenshield@kindermorgan.com</u> or (604) 809-9869 for more information and or to set up a meeting.

Sincerely,

Lizette Parsons Bell

Lead, Stakeholder Engagement and Communications

Trans Mountain Expansion Project

Encl. Chilliwack School District map (1 of 2), Chilliwack School District map (2 of 2)





🔀 Email: info@transmountain.com | 🕿 Phone: 1.866.514.6700 | 🖵 Website: www.transmountain.com | 📴 @TransMtn

October 17, 2014

Langley School District (No. 35) 4875 - 222nd Street Langley, BC V3A 3Z7

Suzanne Hoffman, Superintendent, Chilliwack School District

#### RE: **Proposed Trans Mountain Expansion Project**

Dear Suzanne,

In December 2013, Trans Mountain applied to the National Energy Board (NEB) to expand its current 1,150-kilometre pipeline between Strathcona County, Alberta and Burnaby, British Columbia. The proposed expansion, if approved, would create a twinned pipeline that would increase the capacity of the system from its current 300,000 barrels per day, to 890,000 barrels per day.

As part of the Application, Trans Mountain has applied to the NEB for a pipeline corridor (which in some areas includes both a proposed and an alternate corridor) for the pipeline expansion. This up to 150m wide corridor was used to identify potential environmental impacts, socio-economic impacts, geotechnical conditions and constructability factors to ensure the proposed new pipeline can be built and operated safely. The final right-of-way will be 18m wide or less once construction is complete.

We are contacting Langley School District (No. 35) because we have identified schools in your district that are within 300m of our proposed pipeline corridor for the Expansion Project. They are:

- Les Voyageurs
- Topham Elementary School

For your reference, we have attached a map of your region which identifies the location of the proposed pipeline corridor within your school district.

If you are interested, we would be happy to set up a meeting with you, as well as any representatives from the schools within your district, to discuss the proposed Project and to answer any questions you and or others may have. Additional information regarding the proposed Project, including a copy of the Facilities Application can be found on our project website at www.transmountain.com.





Please don't hesitate to contact Christie Libby at 604.444.6822 or <a href="mailto:Christie\_libby@transmountain.com">Christie\_libby@transmountain.com</a> for more information and or to set up a meeting.

Sincerely,

Lizette Parsons Bell

Lead, Stakeholder Engagement and Communications

Trans Mountain Expansion Project Encl. Langley School District map

L. M. Karsonsfell





Email: info@transmountain.com | Phone: 1.866.514.6700 | Website: www.transmountain.com

<<DATE>>

Grande Yellowhead Public School Division 3656 1st Avenue Edson, Alberta T7E 1S8

Attn: Ken Baluch, Director Facilities Services

#### RE: **Proposed Trans Mountain Expansion Project**

Dear Ken.

In December 2013, Trans Mountain applied to the National Energy Board (NEB) to expand its current 1,150kilometre pipeline between Strathcona County, Alberta and Burnaby, British Columbia. The proposed expansion, if approved, would create a twinned pipeline that would increase the nominal capacity of the system from its current 300,000 barrels per day, to 890,000 barrels per day.

As part of the application, Trans Mountain has applied to the NEB for a pipeline corridor (which includes both a preferred and an alternate corridor) for the pipeline expansion. This corridor was used to identify potential environmental impacts, socio-economic impacts, geotechnical conditions and constructability factors to ensure the proposed new pipeline can be built and operated safely.

We are contacting Grande Yellowhead Public School Division because we have identified 1 school in your district that is within 300m of our proposed pipeline corridor for the expansion project. The school is:

- École Pine Grove School
- Parkland Composite High School

For your reference, we have attached a map of your region which identifies the proposed pipeline corridor.

If you are interested, we would be happy to set up a meeting with you, as well as any representatives from the schools listed, to discuss the proposed project and to answer any questions you may have. Additional information regarding the proposed project, including a copy of the Facilities Application can be found on our project website at transmountain.com

Please don't hesitate to contact Garrath Douglas at (403) 930-8117 or garrath.douglas@ch2m.com.

Sincerely,

1



Email: info@transmountain.com | Phone: 1.866.514.6700 | Website: www.transmountain.com

Lizette Parsons Bell Lead, Stakeholder Engagement and Communications Trans Mountain Expansion Project Encl. xxxxxxx map



Email: info@transmountain.com | Phone: 1.866.514.6700 | Website: www.transmountain.com

October 23, 2014

Abbotsford Christian Elementary School 3939 Clayburn Road Abbotsford, BC V3G 1J9

Roy Van Eeerden, Principal, Abbotsford Christian Elementary School

#### RE: **Proposed Trans Mountain Expansion Project**

Dear Roy,

In December 2013, Trans Mountain applied to the National Energy Board (NEB) to expand its current 1,150-kilometre pipeline between Strathcona County, Alberta and Burnaby, British Columbia. The proposed expansion, if approved, would create a twinned pipeline that would increase the capacity of the system from its current 300,000 barrels per day, to 890,000 barrels per day.

As part of the Application, Trans Mountain has applied to the NEB for a pipeline corridor (which in some areas includes both a proposed and an alternate corridor) for the pipeline expansion. This up to 150m wide corridor was used to identify potential environmental impacts, socio-economic impacts, geotechnical conditions and constructability factors to ensure the proposed new pipeline can be built and operated safely. The final right-of-way will be 18m wide or less once construction is complete.

We are contacting you because we have identified Abbotsford Christian Elementary School is located within 300m of our proposed pipeline corridor for the Expansion Project.

For your reference, we have attached a map of which identifies the location of the proposed pipeline corridor within Abbotsford.

If you are interested, we would be happy to set up a meeting with you, as well as any representatives from the schools within your district, to discuss the proposed Project and to answer any questions you and or others may have. Additional information regarding the proposed Project, including a copy of the Facilities Application can be found on our project website at www.transmountain.com.

Please don't hesitate to contact Lexa Hobenshield at Lexa Hobenshield@kindermorgan.com or (604) 809-9869 for more information and or to set up a meeting.

Sincerely,

1





Email: info@transmountain.com | Phone: 1.866.514.6700 | Website: www.transmountain.com

Lizette Parsons Bell Lead, Stakeholder Engagement and Communications Trans Mountain Expansion Project Encl. Abbotsford School District map



🔀 Email: info@transmountain.com | 🕿 Phone: 1.866.514.6700 | 🖵 Website: www.transmountain.com | 🖪 @TransMtn

October 24, 2014

Langley School District (No. 35) 4875 - 222nd Street Langley, BC V3A 3Z7

Suzanne Hoffman, Superintendent, Langley School District

#### RE: **Proposed Trans Mountain Expansion Project**

Dear Suzanne,

In December 2013, Trans Mountain applied to the National Energy Board (NEB) to expand its current 1,150kilometre pipeline between Strathcona County, Alberta and Burnaby, British Columbia. The proposed expansion, if approved, would create a twinned pipeline that would increase the capacity of the system from its current 300,000 barrels per day, to 890,000 barrels per day.

As part of the Application, Trans Mountain has applied to the NEB for a pipeline corridor (which in some areas includes both a proposed and an alternate corridor) for the pipeline expansion. This up to 150m wide corridor was used to identify potential environmental impacts, socio-economic impacts, geotechnical conditions and constructability factors to ensure the proposed new pipeline can be built and operated safely. The final right-of-way will be 18m wide or less once construction is complete.

We are contacting Langley School District (No. 35) because we have identified schools in your district that are within 300m of our proposed pipeline corridor for the Expansion Project. They are:

- Les Voyageurs
- Topham Elementary School

For your reference, we have attached a map of your region which identifies the location of the proposed pipeline corridor within your school district.

If you are interested, we would be happy to set up a meeting with you, as well as any representatives from the schools within your district, to discuss the proposed Project and to answer any questions you and or others may have. Additional information regarding the proposed Project, including a copy of the Facilities Application can be found on our project website at www.transmountain.com.





Please don't hesitate to contact Christie Libby at 604.444.6822 or <a href="mailto:Christie\_libby@transmountain.com">Christie\_libby@transmountain.com</a> for more information and or to set up a meeting.

Sincerely,

Lizette Parsons Bell

Lead, Stakeholder Engagement and Communications

Trans Mountain Expansion Project Encl. Langley School District map

L. M. Parsons Bell



## **APPENDIX E**

#### **UNITED BOULEVARD**

- Invitations letter, September 2, 2014
- Exit Survey
- Follow-up letter, September26, 2014

#### **Display Boards**

- Economic Benefits Infographic
- Proposed Corridor United Boulevard
- Routing
- Damage Prevention
- Welcome
- Marine Safety
- Pipeline 101
- Pipeline Emergency Response
- Pipeline Integrity
- Alignment Map
- Timeline graphic
- Urban Pipeline Installation



🔀 Email: info@transmountain.com | 🕿 Phone: 1.866.514.6700 | 🖵 Website: www.transmountain.com | 🖪 @TransMtn

September 2, 2014

#### Dear Neighbour,

You are receiving this letter as a business located in the United Boulevard area in the City of Coguitlam. The existing Trans Mountain pipeline runs under the United Boulevard area and has been providing petroleum products, including to the west coast, for over 60 years.

We have been engaged in conversations with the City of Coquitlam, and its residents and businesses, since the proposed expansion project was announced in Spring 2012. These include numerous meetings, Open Houses, workshops, presentations and online dialogue.

We filed our Facilities Application with the National Energy Board (NEB) in December 2013. The Application included a proposed pipeline corridor through Coquitlam, in the United Boulevard area. As the Project proceeds through the NEB's regulatory review process, we will continue our technical and environmental studies, engagement activities and, detailed design and engineering of the project.

We invite you to attend and learn more about the Trans Mountain Expansion Project, ask questions and provide input into our plans at a special drop in event for businesses along United Boulevard. Details of the drop in event are as follows:

DATE: **September 17, 2014** 

LOCATION: The Theatre at the Hard Rock Casino

2080 United Boulevard, Coguitlam

TIME: Drop in anytime between 4:00pm and 7:00pm

Note: There will be a short presentation at 6:00pm

We look forward to your input on how we can complete construction activities with minimal disruption to you and your neighbours. If the Project is approved and upon receipt of a Certificate of Public Convenience and Necessity (CPCN) from the NEB, preliminary construction activities could commence as early as mid-2016. Understanding how potential construction activities may impact your business is important to us.





Although there have been and will continue to be a number of opportunities to learn more about and provide input into the proposed project, this event will focus on businesses in the United Boulevard area. To assist us in our planning and ensure timely access to project team and materials, please RSVP to <a href="mailto:info@transmountain.com">info@transmountain.com</a> and let us know you will be attending and if you could please bring this letter with you that would be appreciated.

If you are unable to attend in person, we can be reached by phone at 1-866-514-6700 or email to <a href="mailto:info@transmountain.com">info@transmountain.com</a> and would be pleased to speak with you. Additional information about our plans can be found at <a href="https://www.transmountain.com">www.transmountain.com</a>, where you can also register to receive updates about our proposed project.

We look forward to seeing you on September 17th.

Regards,

Lizette Parsons Bell

L. M. Parsonsfell

Lead, Stakeholder Engagement and Communications;

Trans Mountain Expansion Project





	8
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Phone:	1	.866.	.514	.6700
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# **Trans Mountain Expansion Project** United Boulevard Drop-In Meeting Exit Feedback Form – We Want To Hear From You

## 1. Please tell us about your business

Business Name:			
Address:			
(Street Address,			
City, Postal Code)			
Business hours:		Number of	
		Employees:	
First/Last Name:			
Title:			
ine.			
Business Phone:		Business Cell:	
Business Email:			
Property			
Management			
Company:			
Property Mgr. Name:			
Property Mgr.		Property Mgr.	
Phone:		Cell:	
Property Mgr. Email:			
Business Category:	MANUFACTURING	□RETAIL	OTHER
	□ WAREHOUSE	□WHOLESALE	





☐ DELIVERIES Hours of deliveries:		☐ VEHICLE ACCESS (for employees or customers, note which)
PARKING		☐ SPACE FOR LEASE/USE
☐ TRAFFIC RESTRIC	CTIONS	OTHER (Explain)
		tent practical. To aid us in our construction planning disruptive to you and your business? Please explain
vill create a communi	cations and notifica	ition program to ensure local businesses are aware o
rill create a communi otential construction rould you like us to	cations and notifica impacts. We have keep you informed	ation program to ensure local businesses are aware of made this commitment in our NEB Application. How d about the project and share construction planning
ill create a communi otential construction	cations and notifica impacts. We have keep you informed	posed expansion project, and prior to construction, we ation program to ensure local businesses are aware of a made this commitment in our NEB Application. How d about the project and share construction planning all that apply.
rill create a communi otential construction rould you like us to offermation in the more	cations and notifican impacts. We have keep you informed in the ahead? Check	ation program to ensure local businesses are aware of made this commitment in our NEB Application. How d about the project and share construction planning





	☐ Project Benefits	☐ Trans Mountain Facilities (storage terminals, pump stations,		
	☐ Pipeline Safety	marine terminal)		
	☐ Seismic/Geotechnical	☐ Other:		
	☐ Emergency Response			
6.	Please provide any comments on the above or other areas of interest:			
7.	Nould you like to receive emails with project updates and information about future opportunities for participation? You can withdraw your consent at any time.			
	☐ Yes ☐ No			
8.	Please take a moment to review the follo	owing terms and conditions:		
	application for the Trans Mountain Expansion P and/or submissions as well as the participant's province, and/or postal code, will be made publi provides Kinder Morgan Canada with the expres participant's comments, submissions and/or per	form may be used by Kinder Morgan, in its sole discretion, in its roject before the National Energy Board. If so, such comments personal information including full name, email address, city, ic. By agreeing to the terms and conditions, the participant is consent to, at Kinder Morgan's sole discretion, provide the resonal information to the National Energy Board for purposes of object application and the express consent to have such comments, de public.		
	<ul><li>☐ I agree to these terms and conditions.</li><li>☐ I DO NOT agree to these terms and conditions.</li></ul>	tions.		

Thank you very much for your comments, and for your interest in the proposed Trans Mountain Expansion Project. We can be reached at info@transmountain.com or 1-866-514-6700.





🔀 Email: info@transmountain.com | 🕿 Phone: 1.866.514.6700 | 🖵 Website: www.transmountain.com | 🖪 @TransMtn

September 26, 2014

#### Dear Neighbour,

You are receiving this letter as a business located in the United Boulevard area in the City of Coquitlam. The existing Trans Mountain pipeline runs underground through the United Boulevard area and has been providing petroleum products, including to the west coast, for over 60 years. In December 2013, Trans Mountain filed a Facilities Application with the National Energy Board (NEB) in order to seek approval for an expansion project to loop the exisisting Trans Mountain Pipeline running from the Strathcona area near Edmonton to the Westridge Marine Terminal in Burnaby, British Columbia. The NEB will provide a recommendation to the Federal Government in January of 2016.

On September 17, 2014 we hosted an information session specifically for local businesses in the United Boulevard area to learn more about our proposed pipeline corridor and to collect feedback. Understanding how potential construction activities may impact your business is important to us as we develop our detailed engineering and plan for construction, should the proposed project be approved.

If you were unable to attend this event, there is still an opportinuty to provide input and we would like to hear from you. We are hoping to learn more about your business operations to aid in our planning. We invite you to take a short online survey. The survey also provides an opportunity to let us know if you have any specific concerns about the proposed pipeline project and your preferred method for ongoing communications in the months ahead. This survey can be found at www.transmountain.com/survey and will be available to complete until October 15, 2014.

We have been engaged in conversations with the City of Coquitlam, its residents and businesses, since the proposed expansion project was announced in Spring 2012. These include numerous meetings, Open Houses, workshops, presentations and online dialogue. The Trans Mountain Expanion Project is currently in the regulatory review stage with the National Energy Board (NEB) as we continue to gather more information and conduct necessary studies. If the project is approved, construction activities may begin as soon as mid-2016.





We look forward to your input on how we can complete construction activities with minimal disruption to you and your neighbours. If you have any further questions please do not hesitate to contact Christie Libby at (604) 444-6822 or Christie Libby@transmountain.com

Regards,

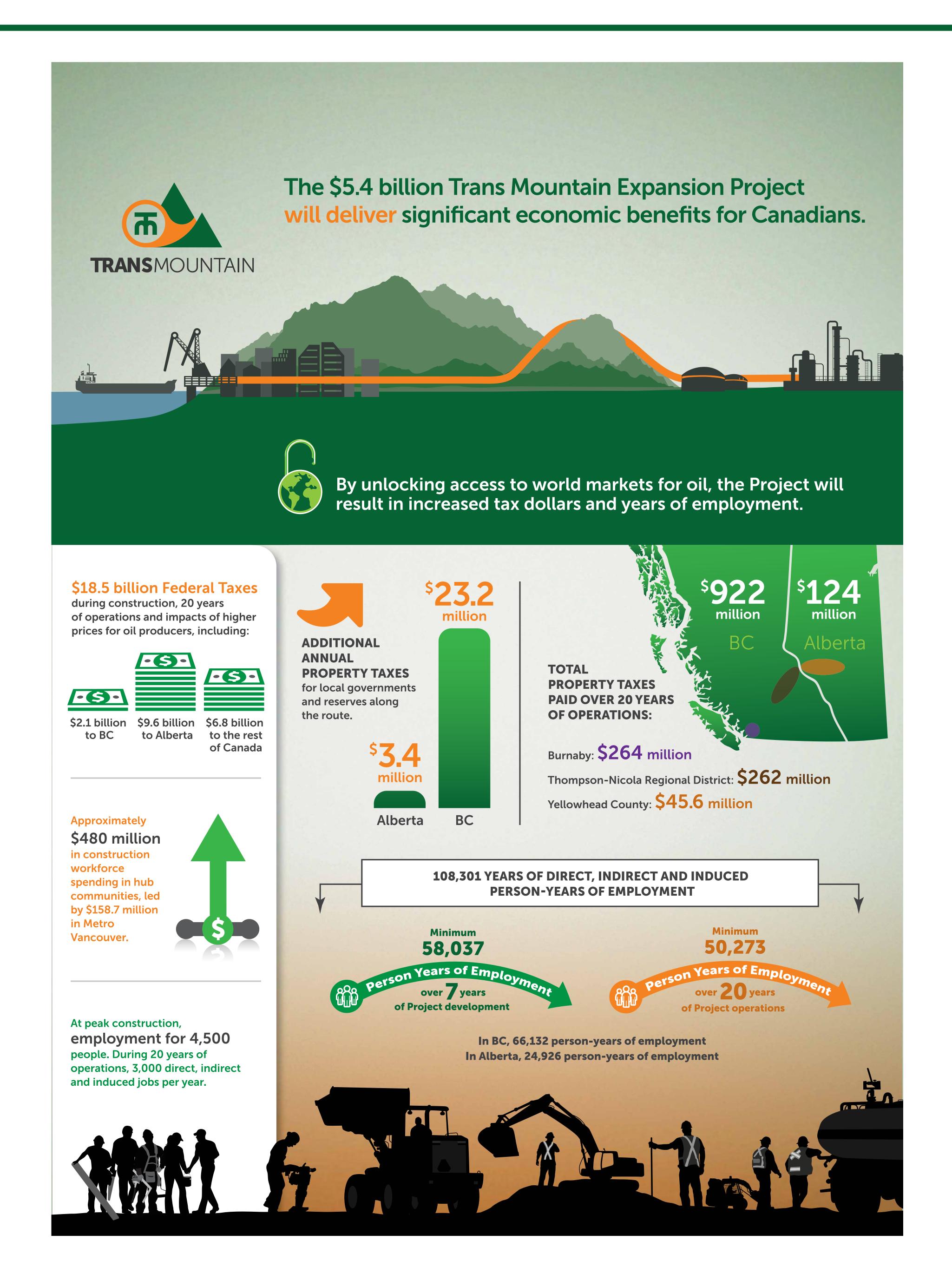
Ly Parsonspell

Lizette Parsons Bell Lead, Stakeholder Engagement and Communications Trans Mountain Expansion Project





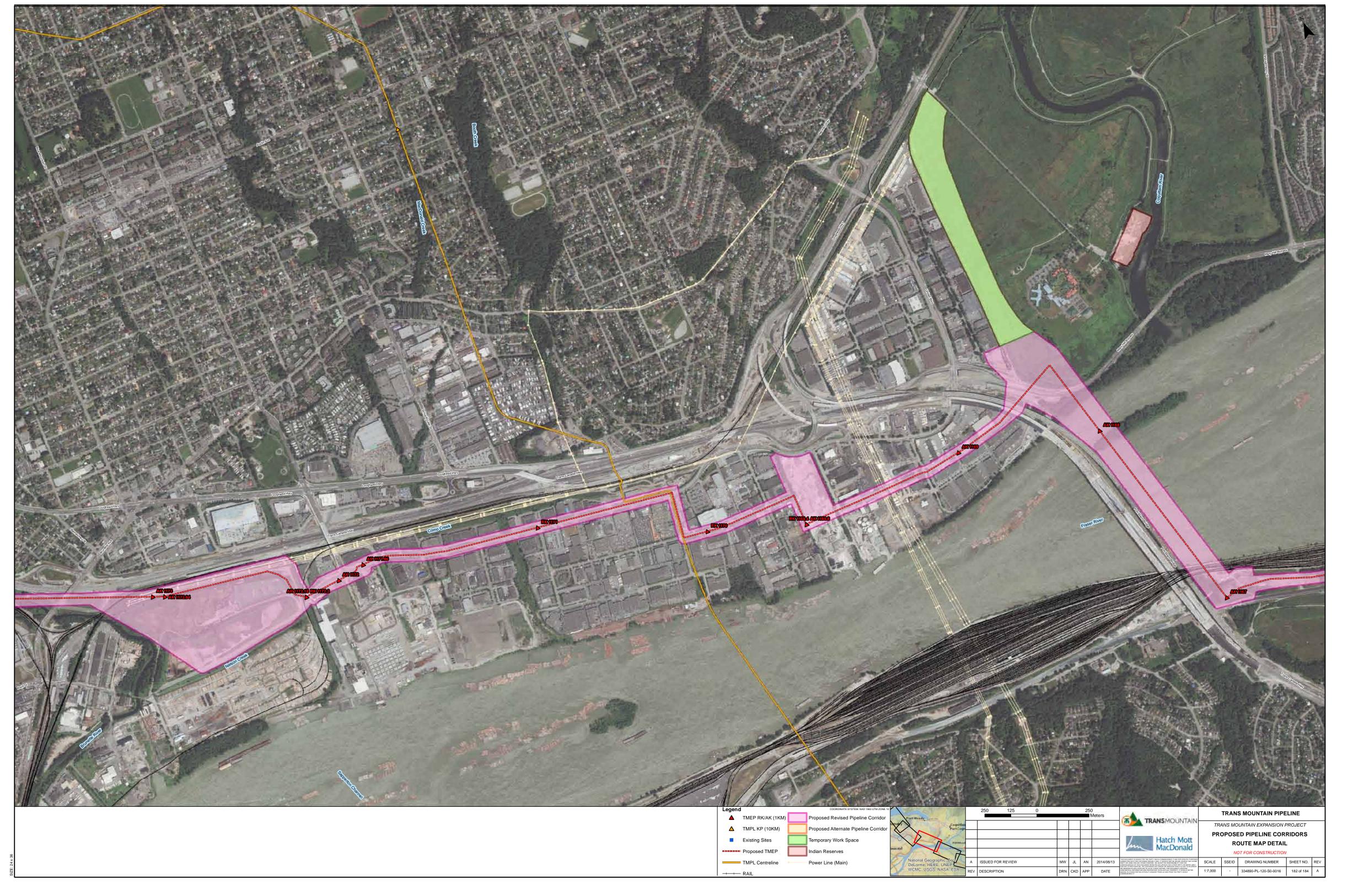
# ECONOMIC BENEFITS







# PROPOSED PIPELINE CORRIDORS





# IDENTIFYING ROUTE OPTIONS

# **Routing Studies**







- The route will be determined through studies and consultation with Aboriginal Peoples, landowners and communities
- In locations where routing options are required, studies will be conducted within a 150m assessment corridor to identify an 18m operational right-of-way
- Routing studies will consider
  - o Human Environment:
    - Land use: residences,
       commercial, recreation, parks
  - o Natural Environment:
    - Sensitive areas
    - Water crossings
    - Wetlands and wildlife
  - o Engineering:
    - Technical constraints/possible construction techniques
    - Geotechnical conditions
    - Pipeline length
    - Number and difficulty of crossings (highways, roads and other line crossings)
- Final, detailed routing will be determined during the design and construction planning stage



# DAMAGE PREVENTION



If you live or work near a pipeline there is important safety information you should know:

- Always call before you dig
- Know where pipelines are located near your home or business
- Report unusual or suspicious activities or unauthorized excavating

# "One Call" Program: Call Before You Dig

A central agency to call to find out what is buried on a site and where not to dig.

www.clickbeforeyoudig.com BC One Call 1.800.474.6886 AB One Call 1.800.242.3447





For more information, go to transmountain.com





# WELCOME





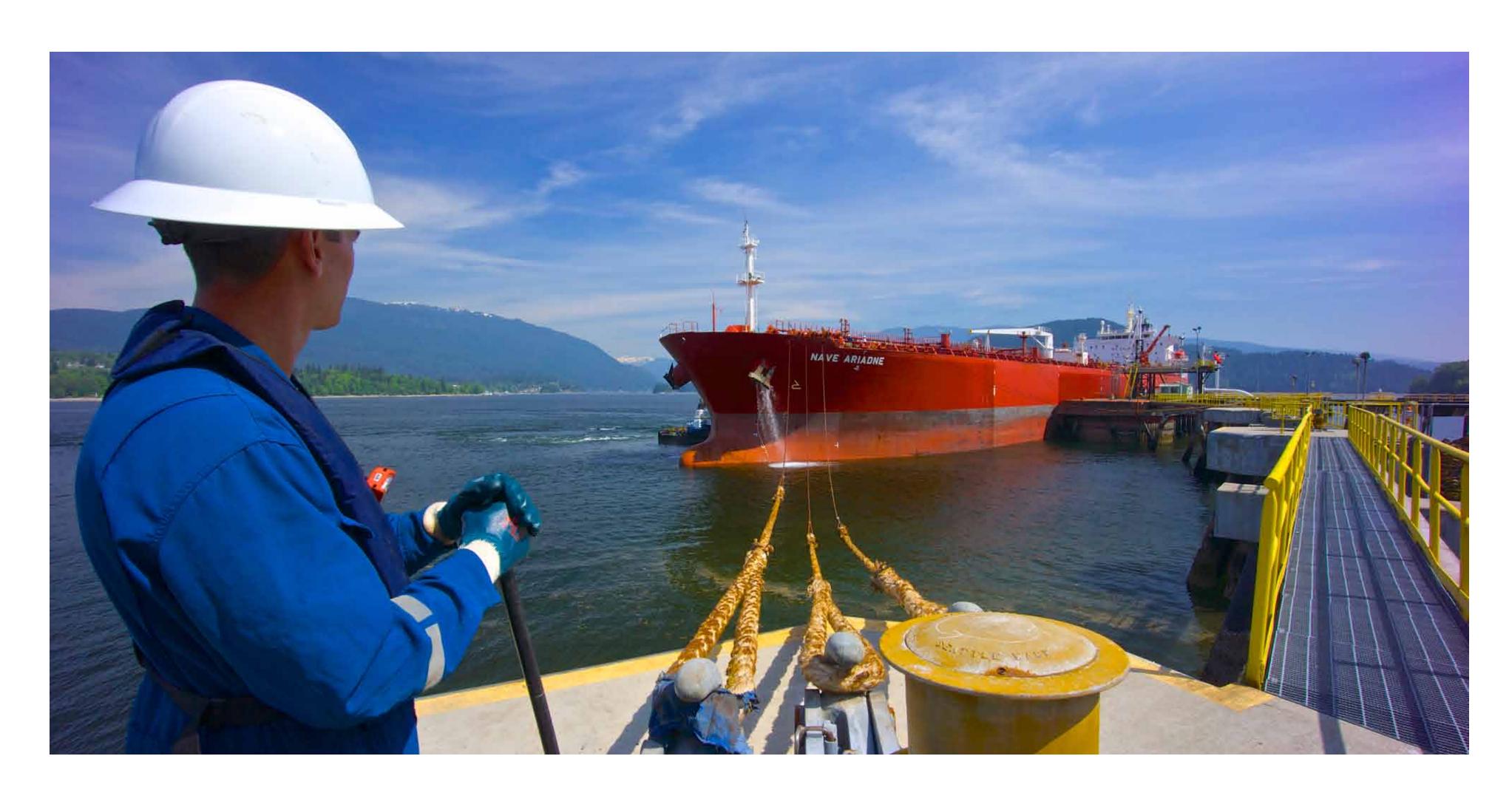
# We Want to Hear From You

- We are seeking your input on areas of the proposed project that are of interest or concern to you and your community
- We encourage you to review the materials and to speak with the project representatives at this session

HAVE YOUR SAY: transmountain.com



# MARINE SAFETY



Trans Mountain has been operating at Westridge Terminal for six decades without a single spill from vessel operations, due in part to the stringent precautions we put in place. Close collaboration between Pilotage Authorities, Transport Canada, the Canadian Coast Guard and Port Metro Vancouver ensures vessels navigate our waters safely, guided by highly-qualified local pilots.

- Tankers are held to strict, internationally accepted build and operating standards
- Any vessel proposing to visit Westridge must go through pre-screening and physical inspection
- Only double-hulled tankers of modern design are accepted
- The Canadian Coast Guard monitors every vessel's passage
- All employees are trained in operations,
   safety and emergency response procedures
- All vessels have a boom enclosure throughout loading operations
- Two local pilots are on board during every tanker movement
- Tug escorts are required to accompany all laden tankers
- A dedicated marine-based spill-response organization, WCMRC, ensures quick action in the event of a spill
- Marine spill response will be enhanced



# PIPELINE 101



Pipelines are the safest and most efficient method for transporting petroleum products. The Trans Mountain Pipeline which runs from Strathcona County, Alberta to Burnaby, British Columbia has been operating safely for more than 60 years.

- Inspection and 24/7 monitoring to ensure the pipe stays in working condition
- Integrity management to protect the pipe from external damage
- Emergency response in the event of a spill



Operating safely since 1953

# EMERGENCY RESPONSE



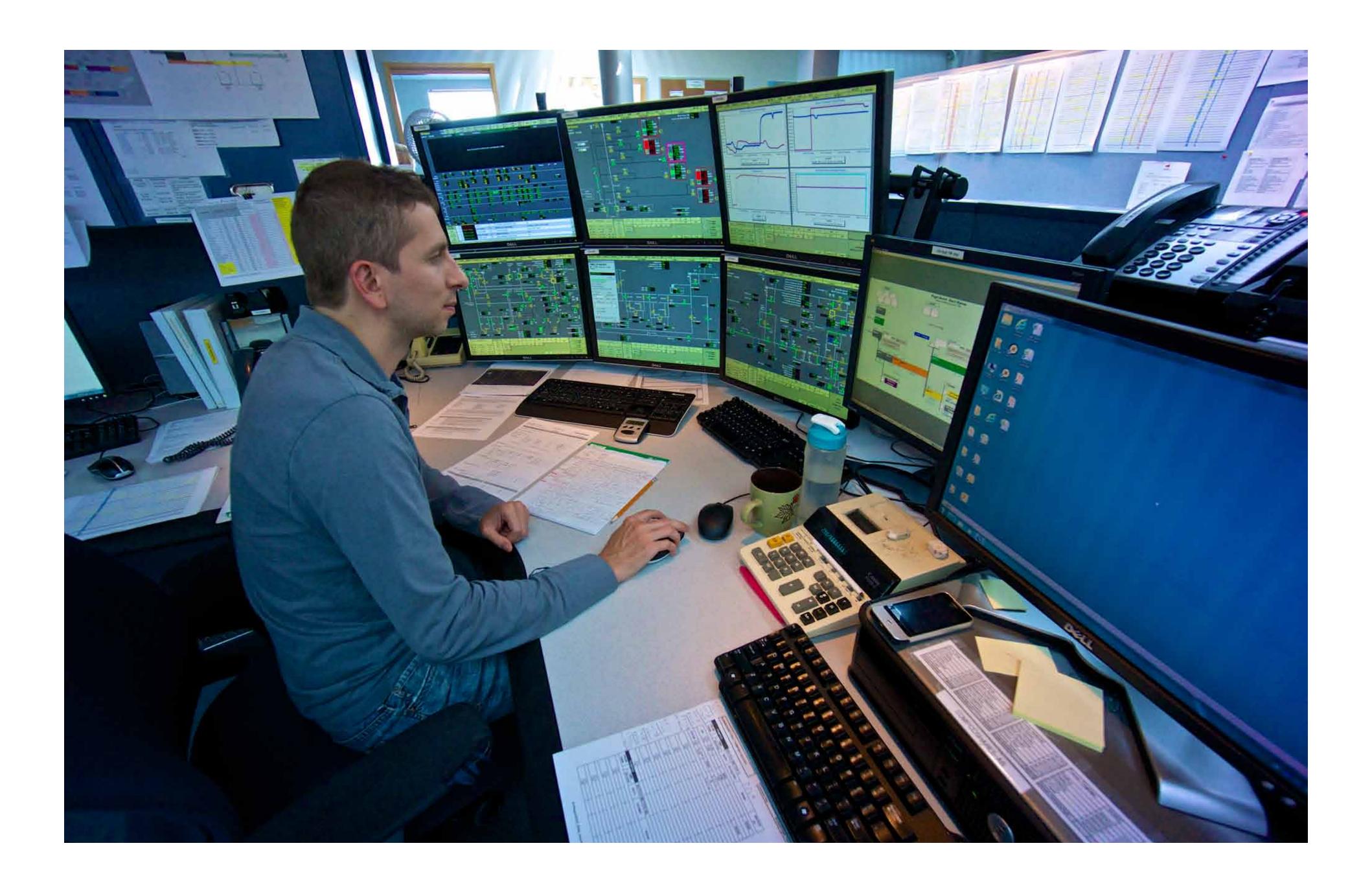
24 hours a day, 365 days a year, Kinder Morgan's goal is to ensure the safety of the public, our workers and the environment. Our Emergency Management Program is a well-trained, resourced and practiced program — one that, if we never need to put into action, means we're doing our jobs well.



- Our Emergency Response Plans are designed to protect all of our terminals
- There is a dedicated Emergency Response
   Plan for the pipeline itself along the entire length
- Real time monitoring is ongoing 24/7 for the entire network
- We have an incident response management system that is recognized and used around the world
- Company employees at every level are trained in Emergency Response, while training is also given to community first-responders
- We are trained and prepared to respond to any incident that may affect our system
- We undertake an immediate and co-operative response regardless of size and nature of the incident
- Our robust Emergency Management Programs are developed with input from local communities, First Nations and regulatory bodies



# PIPELINE INTEGRITY

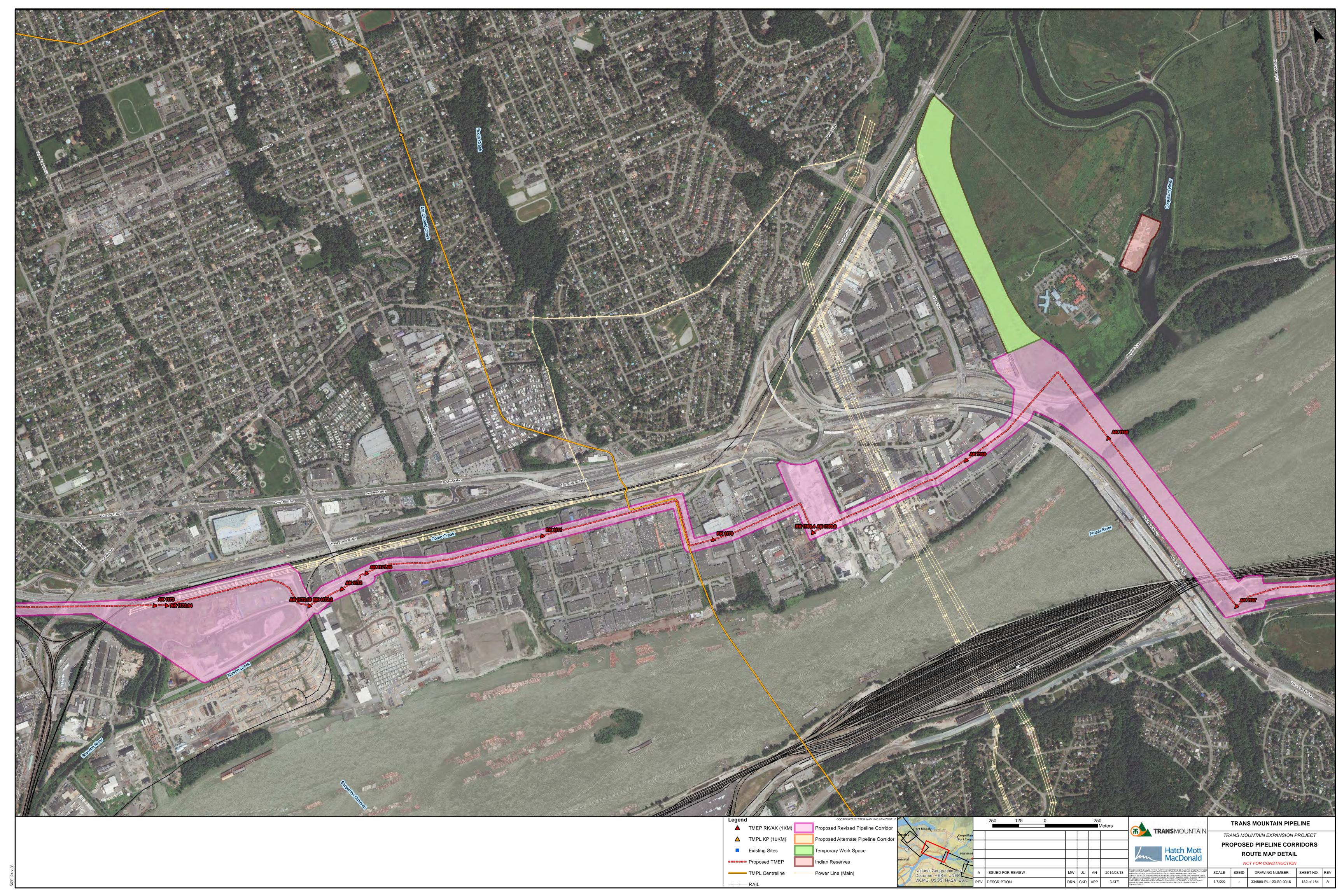


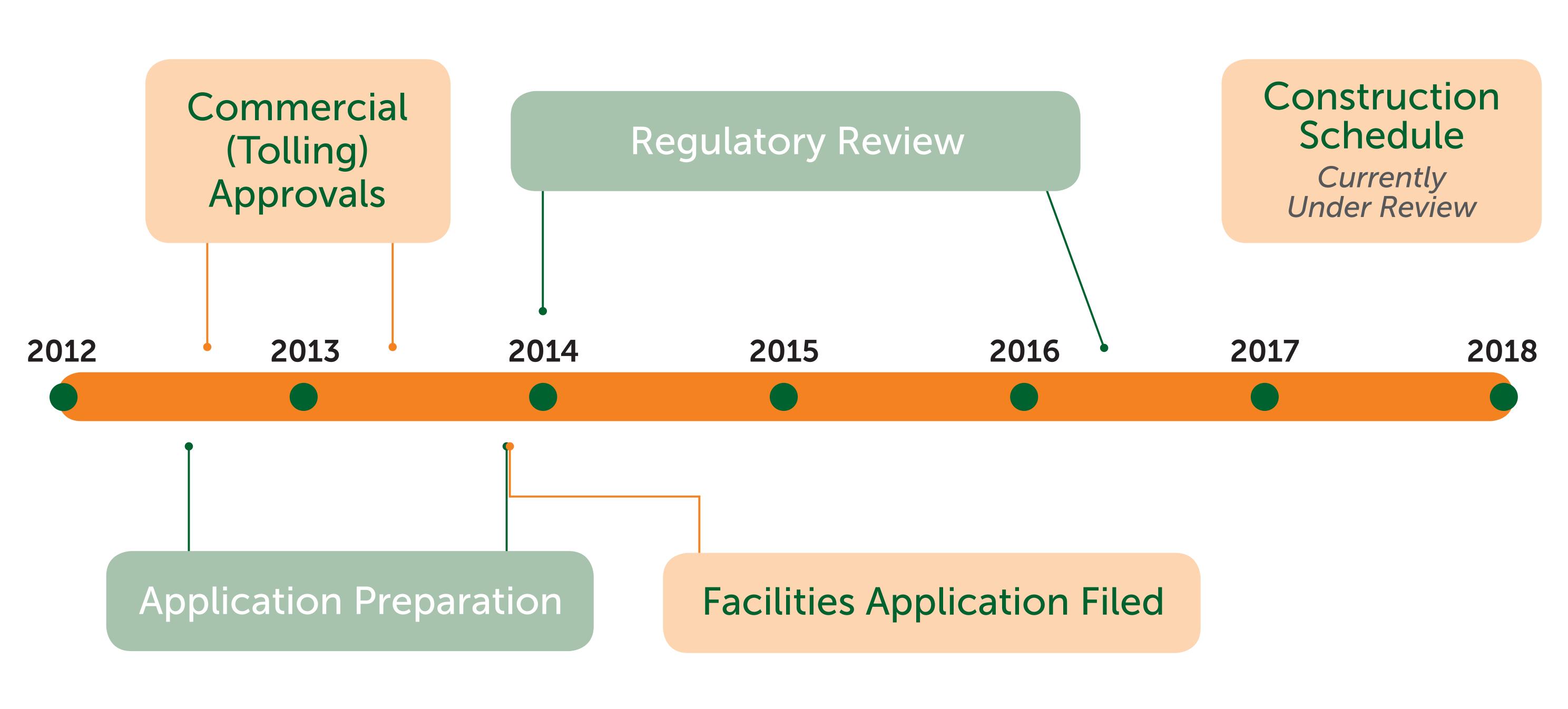
Safety is our number one priority. Trans Mountain employees are dedicated to continual improvement of pipeline and facility integrity to ensure the safest possible operation now and into the future. Key components of our Pipeline Integrity Program include hazard identification, hazard prevention, ongoing monitoring of hazards, as well as pipeline control and monitoring.

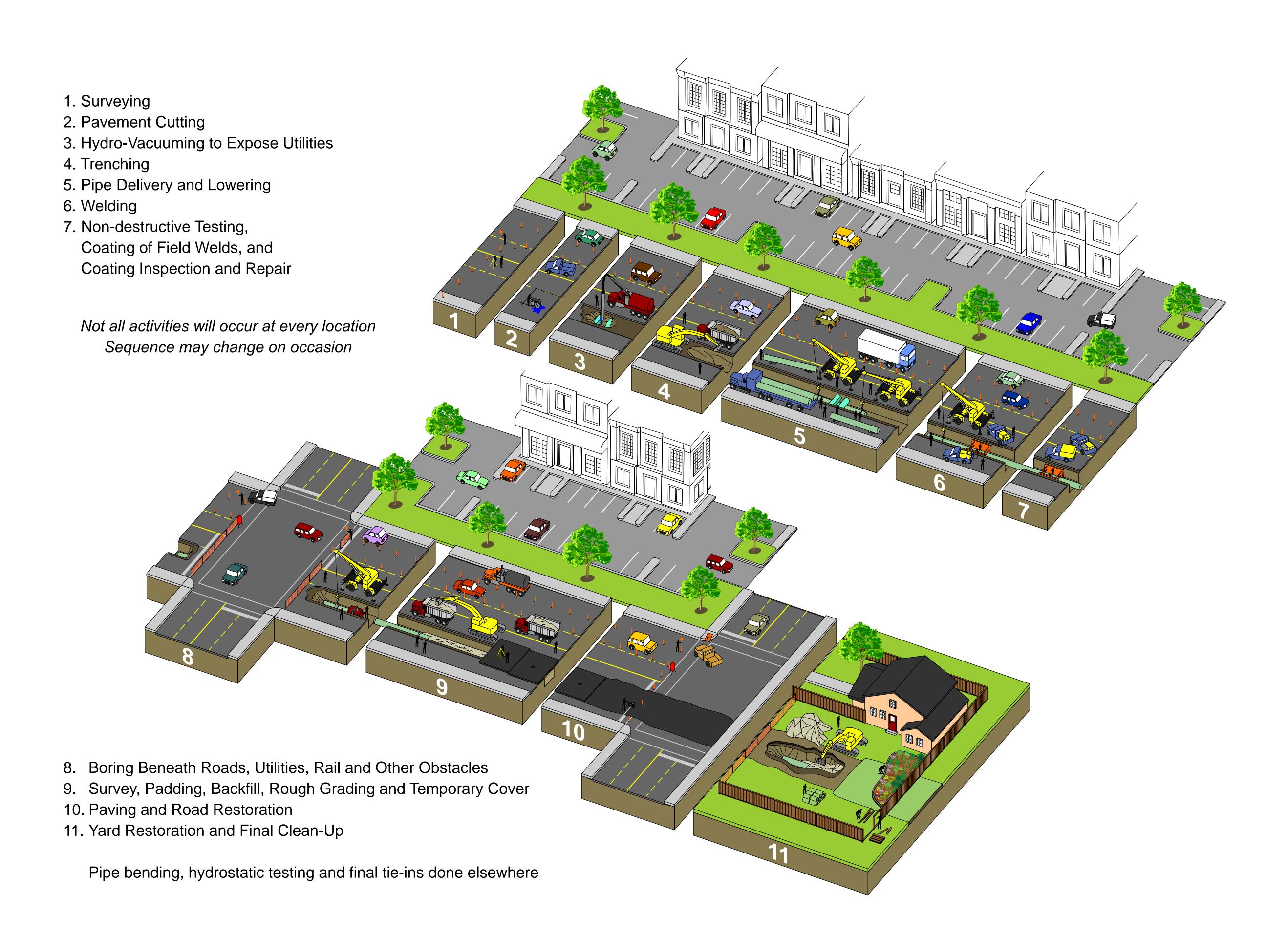
- Ongoing goal to protect the public, the environment and employees
- Constant monitoring of performance measures and risk assessments
- Proactive program to identify all hazards that could affect pipeline safety
- Rapid response to shutdown and isolate potentially damaged section of pipeline
- Sophisticated 24/7 monitoring and leak detection system
- Seismic assessments for earthquakes, avalanches and mudslides
- Pipeline Protection Program includes frequent aerial surveillance
- Pipeline must meet stringent construction, engineering and maintenance regulations



Operating safely since 1953







## **APPENDIX F**

# **WORKFORCE HOSTING**

Kamloops Hotel Association presentation, July 17, 2014



# Trans Mountain Expansion Project Kamloops Economic Impacts and Opportunities

Ian Anderson, President Kinder Morgan Canada July 17, 2014



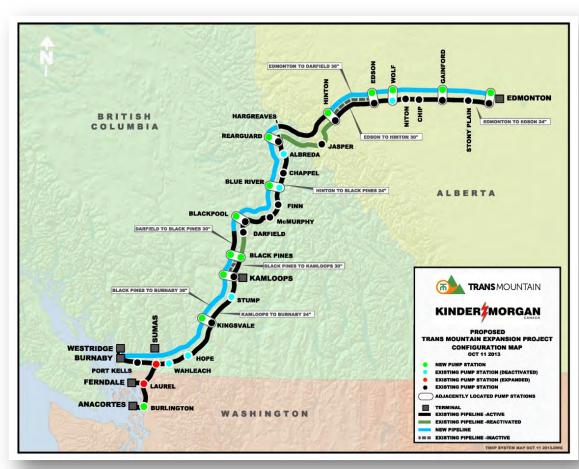




# Trans Mountain Expansion Project



- Based on long term commitments from 13 shippers
- Capacity increase to 890,000 bpd
- Projected capital cost: \$5.4B
- Dual-line operation
- 980 km of new 36" pipeline
- 12 new pump stations two north of Kamloops at Black Pines
- 21 new storage tanks
- Three loading berths plus one utility berth with spill response equipment



# **Economic Benefits**







Construction Spending to build the line to 2018

Operating Expenditures to operate for 20 years (2018-2037)





\$3.3 billion labour income across Canada from project development

EMPLOYMENT: up to 108,000 person years during construction & 20 years of operation = 4,300 JOBS 66,000 in BC + 25,000 in Alberta

Peak activity in July 2017, with 4,475 direct construction jobs in BC & Alberta

Expanded Operations: 40 New FT jobs in Alberta, 50 New FT jobs in BC

# Getting Full Value



For every  $^{\S}$  earned by oil producers, they pay approximately  $^{\S}$  in corporate tax and royalties.



Over 20 years, the Trans Mountain Expansion Project would generate roughly \$45B in additional profit for oil producers....



...that means approximately \$15B in corporate taxes and royalties for Canada.





# CITY OF KAMLOOPS ECONOMIC IMPACTS



# Kamloops Economic Impact



# Construction

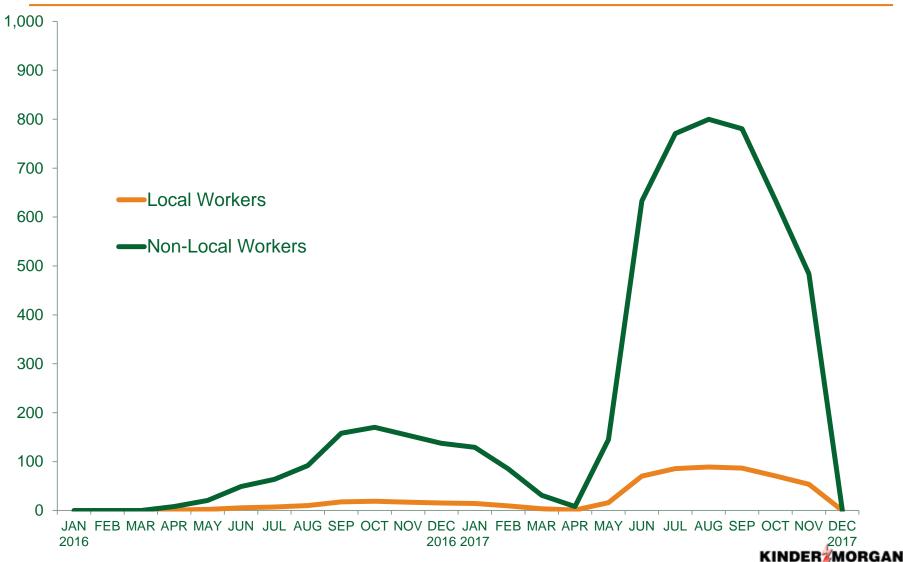
- Kamloops work force
  - Local worker spending
  - Non-local worker spending
- Construction employment direct, indirect and induced
- Procurement opportunities

# Operations – 20+ years

- Municipal tax increase of almost \$1.3M/yr
  - Increase from \$ 1,578,000/yr to \$ 2,856,000/yr
- Operations employment direct and indirect
- Community investments

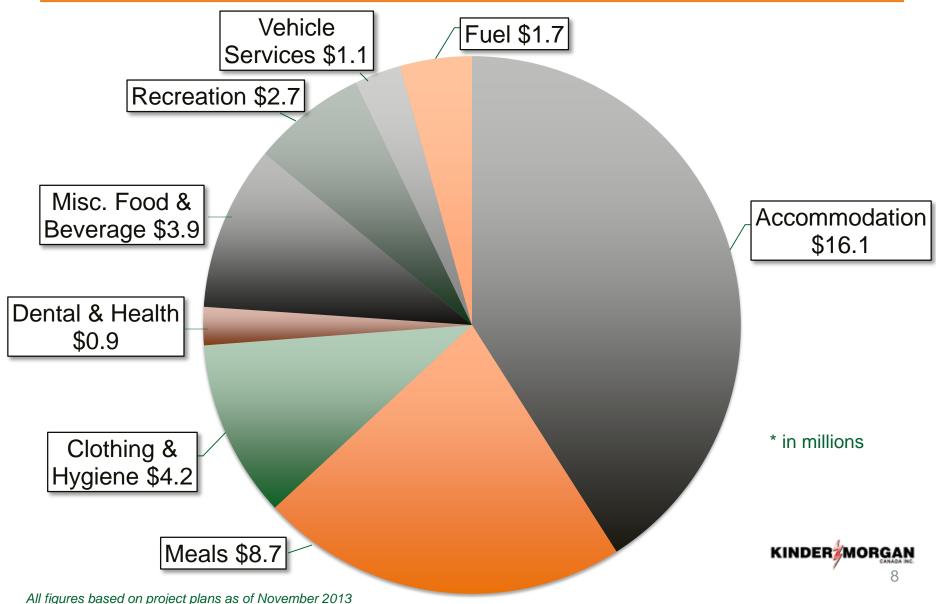
# Kamloops-Based Work Force





# Non-Local Worker Spending - \$39M





# Construction: Direct Employment



- Focus on local and Aboriginal employment
- Pipeline Spreads (450 workers) skilled and unskilled labour
  - Labourers
  - Drivers
  - Administration
  - Carpenters
  - Welders
- Pump Stations (30 workers) mostly skilled labour
  - Welders
  - Pipefitters
  - Electricians
  - Carpenters
  - Labourers



# **Procurement Opportunities**



- Pipeline
  - Traffic management
  - Administration
  - Trucking
  - Communications
  - Restoration and reclamation
- Pump station
  - Power line installation
  - Surveying
  - Health and Safety
  - Pre-fabricated buildings

# Long-Term Permanent Jobs



- 90 new permanent operations positions; 50 in BC
- 435 total Kinder Morgan Canada staff after construction
- Additional contracted staff to provide operation support
- 2700-3200 ongoing indirect jobs



# Next Steps – Work Force Planning



- Our goal is to maximize local economic benefits without disruption to seasonal business
- We anticipate accommodating the work force in community but know there are challenges
  - Low vacancy rates in rental units
  - High capacity in hotels but seasonal peaks of full occupancy
  - Concerns about displacement of low income housing residents
- Plan for the increased need for goods and services (meals/groceries/recreation)

# Stay in Touch



- Sign-up for ongoing procurement and / or jobs information
- Keep up-to-date through our website and e-newsletter

Register for NEB updates



# **CONTACT US:**

Trans Mountain Expansion Project



Email: info@transmountain.com



Phone: 1.866.514.6700



Website: www.transmountain.com



@TransMtn



2844 Bainbridge Avenue

PO Box 84028 Bainbridge Burnaby, BC V5A 4T9

## **APPENDIX G**

#### **JOBS ENGAGEMENT**

Valley Sentinel News Story

## **Handout Sheets:**

- Operations
- Administrative
- Camp Support
- Construction Management
- Construction Spread
- Engineers Engineering Technologists
- Environmental Safety Compliance
- Reclamation
- Semi-skilled Workers
- Technical Inspector
- Trades
- Truck Drivers

# http://www.thevalleysentinel.com/trans-mountain-and-tru-partner-to-host-jobs-and-training-information-session/

## Trans Mountain and TRU Partner to Host Jobs and Training Information Session

The Trans Mountain Expansion Project and Thompson Rivers University are holding a community Jobs and Training Information Session in Valemount on November 18<sup>th</sup> and Blue River on November 19<sup>th</sup>.

From planning and permitting, to clearing, digging trenches and testing the new pipe, building a new pipeline requires a variety of skilled workers. The majority of the potential jobs will be created during pipeline construction and span a wide variety of responsibilities, skill levels and trade specializations.

The proposed Trans Mountain Expansion Project, at its peak construction, will require a workforce of 4,500. It is important to talk with, and build community readiness for potential employment opportunities related to the project. Community residents, including skilled and unskilled workers, interested in knowing more about potential employment opportunities with the Trans Mountain Expansion Project are welcome to attend. The information session is also useful for community residents interested in speaking to a trades and training representative from Thompson Rivers University.

Trans Mountain will not be hiring or accepting resumes at this information session.

#### Where and when:

Drop in to one of the following locations between 5:30 and 7:30PM. There will be a brief presentation at 6:30PM.

- Valemount Tuesday, November 18, 2014 Eagleview Room, Best Western Plus Valemount Inn and Suites, 1950 Hwy. 5 South
- Blue River Wednesday, November 19, 2014 Blue River Community Hall, 885 Main Street

#### What is it about:

- An overview of the Trans Mountain Expansion Project, as well as provincial workforce predictions.
- Potential employment opportunities with the Trans Mountain Expansion Project. Attendees will hear from an employee who has worked on the pipeline for 33 years.
- Thompson Rivers University Training and Education opportunities to increase job qualifications.

For more information on the community employment information session:

Thompson Rivers University Wendy Blaskovic Wblaskovic@tru.ca

Trans Mountain Expansion Project <a href="mailto:info@transmountain.com">info@transmountain.com</a>
1-866-514-6700

# OPERATIONS ROLES 📄

#### All Skilled Positions

# OPERATOR TECHNICIANS (NOC 9232) ⚠ 🏂 🌣 🗥

Other Job Titles: Pipeline Operators, Field Operators, Terminal Operators

Essential Skills (Reading/Document Use/Numeracy): 3/3/3

Operator Technicians work along the pipeline and at pump stations and terminals. They perform oil quality and measurement tasks including tank gauging, sample collection and analysis, pipeline pigging and equipment inspections and maintenance. Operator Technicians operate pumps, valves and other facility equipment.

Operator Technician is a team-oriented position that requires multi-tasking and quick thinking. The role is physically demanding and requires bending, lifting and being outside for long periods of time. Operator Technicians are mechanically inclined and require a valid driver's license. They are able to adhere to required work schedules, focus attention on details and follow policies and procedures.

Pipeline, Pump Stations, Terminals

#### PIPELINE PROTECTION TECHNICIANS (NOC 2255)



Other Job Title: Geomatic Technicians

Essential Skills (Reading/Document Use/Numeracy): 3/3/3

Pipeline Protection Technicians are responsible for the implementation of damage prevention process, policies and procedures along the pipeline. This includes overseeing and inspecting activities occurring on the pipeline right-of-way to ensure compliance with pipeline protection zones and excavation conditions. Pipeline Protection Technicians are responsible for responding to potential issues reported by company employees, landowners, aerial and ground patrollers, etc.

Pipeline Protection Technicians require a valid driver's license. They need strong communication and problem-solving skills and are customer/landowner focused. They are able to adhere to required work schedules, focus attention on details and follow policies and procedures. Pipeline Protection Technicians typically work a 24-hour on-call rotation.

Pipeline, Pump Stations, Terminals

# PIPELINE MAINTENANCE TECHNICIANS (NOC 7442)

Other Job Title: PLM Technicians

Essential Skills (Reading/Document Use/Numeracy): All 3/3/3

Pipeline Maintenance Technicians assist in safe, efficient and environmentally sound pipeline, right-of-way and facility maintenance activities. They are responsible for right-of-way clearing using safe excavation practices and for checking and adjusting the equipment at pump stations and other related sites. Other duties include pipeline repair and replacement, co-ordinating operations with the Control Centre and responding to problems as they occur along the pipeline system.

Pipeline Maintenance Technicians are mechanically inclined and require a valid driver's license. They enjoy working in a team environment and have strong problem-solving skills. The role is physically demanding and requires being outside for long periods of time. Experience operating heavy equipment is considered an asset. *Pipeline, Pump Stations, Terminals* 

# ELECTRICAL TECHNICIANS (NOC 2241)

Other Job Title: Electricians

Essential Skills (Reading/Document Use/Numeracy): 4/4/4

Electrical Technicians are responsible for the repair and preventative maintenance of a wide variety of electrical equipment associated with pipeline, pump stations and terminals. They work closely with operations personnel and Mechanical and Instrumentation Technicians.

Electrical Technicians possess a journeyman Industrial Electrician trades certificate. Interprovincial Red Seal certification is preferred so Electrical Technicians can work between provinces. They are good troubleshooters and problem solvers.

Pipeline, Pump Stations, Terminals







## MECHANICAL TECHNICIANS (NOC 7311)



Other Job Titles: Millwrights, Heavy-duty Mechanics, **Mechanical Technologists** 

Essential Skills (Reading/Document Use/Numeracy): 4/4/4

Mechanical Technicians provide maintenance and technical support to pipeline, pump station and terminal operations. They are responsible for performing both repair and preventative maintenance on a wide variety of mechanical equipment such as valves, pumps and motors. Mechanical Technicians work closely with operations personnel and Electrical and Instrumentation Technicians. They typically use computerized maintenance management systems (CMMS) to track and manage maintenance activities.

Mechanical Technicians require journeyman certification in a millwright or heavy-duty mechanic trade. Interprovincial Red Seal certification is preferred so Mechanical Technicians can work between provinces. They are good troubleshooters and problem solvers and enjoy working in a team environment with operations and maintenance personnel.

Pipeline, Pump Stations, Terminals

# **INSTRUMENTATION TECHNICIANS (NOC 2243)**



Other Job Titles: Instrumentation Technologists, Instrumentation & Controls Technicians Essential Skills (Reading/Document Use/Numeracy): 4/4/4

Instrumentation Technicians provide maintenance and technical support to the pipeline, pump station and terminal operations. They install, calibrate, troubleshoot and maintain process instrumentation, communication networks and control equipment including flow meters, tank gauging systems, custody transfer metering, motor operated valves and control panels. They work closely with operations and Mechanical and Electrical Technicians to ensure safe and efficient operations. They typically use computerized maintenance management systems (CMMS) to track and manage maintenance activities.

Instrumentation Technicians require journeyman certification and Interprovincial Red Seal certification, as the role requires interprovincial mobility. They are good troubleshooters and problem solvers and enjoy working in a team environment with operations and maintenance personnel.

Pipeline, Pump Stations, Terminals

### CONTROL CENTRE OPERATORS (NOC 9232)



Essential Skills (Reading/Document Use/Numeracy): 4/4/4

Control Centre Operators monitor and control the pipeline activity from a centralized control room. They monitor the rate of flow and product quality in the pipeline, the storage tank levels and the leak detection systems. They often are first to detect potential operational issues and work closely with operations and maintenance staff to avert problems.

Control Centre Operators work in an office environment and do shift work. They are comfortable working with computers and have the ability to monitor a number of control panels at one time. Control Centre Operators work well under pressure, have excellent problem-solving skills and the ability to communicate precise information to others - most often over the phone. Control Centre Operators typically have related post-secondary training such as process operations or chemical or petroleum engineering technology. Pipeline, Pump Stations, Terminals



# Is an operations job right for you?

- I enjoy working in a highly technical work environment.
- ✓ I have post-secondary training or am interested in pursuing specialized training.
- ✓ I am willing to work shift/ rotational work.
- ✓ I am safety conscious and care about the well-being of others on the job site.
- ✓ My family and I are willing to permanently relocate for the job.
- ✓ I am looking for an opportunity with a single company.
- ✓ I enjoy working with a team.



# **ADMINISTRATIVE & ACCOUNTING**



#### PAYROLL CLERKS (NOC 1432)

Other Job Titles: Timekeepers, Paymasters Essential Skills (Reading/Document Use/Numeracy): 4/3/4 Skilled Position, Contract Work

Payroll Clerks compile employee time, production and payroll information from time sheets and other records. They enter data into computers to process and issue cheques and statements of earnings. They may require knowledge of provincial labour standards such as overtime rules so they can calculate wages and payroll deductions.

Payroll Clerks assist Field Office Administrators to ensure all aspects of the payroll department are performed accurately and in accordance with standard payroll policies.

Payroll Clerks are able to communicate effectively, both in person and on paper, and follow written and verbal instructions. They carefully analyze data and are comfortable working with numbers in a deadline-oriented environment. They have the ability to concentrate for extended periods of time and pay close attention to detail but also have extensive multi-tasking skills. This position requires strict adherence to confidentiality and may require working long or irregular hours. Payroll clerks often have accounting backgrounds.

Pipeline, Pump Stations, Terminals

#### PURCHASING AGENTS (NOC 1524)

Other Job Titles: Timekeepers, Procurement Co-ordinators, Supply Chain Specialists, Buyers

Essential Skills (Reading/Document Use/Numeracy): 4/4/4 Skilled Position, Full-Time & Contract Work

Purchasing Agents buy goods, materials, supplies and services required for the construction project and ensure supplies are of the quantity, quality, price and availability required. Purchasing Agents are able to communicate effectively both in person and on paper. They require negotiation skills and strong organizational skills and should work well under pressure. They are able to analyze a wide range of purchasing options and make sound purchasing decisions. Purchasing Agents must have good computer skills and be detail-oriented. Prior experience and supply chain management educational background are required.

Pipeline, Pump Stations, Terminals

### MATERIALS CO-ORDINATORS (NOC 1521) A 🗘 🜣 🛊



Essential Skills (Reading/Document Use/Numeracy): 3/2/4 Entry Level Position, Full-Time & Contract Work

Materials Co-ordinators receive and record the movement of parts, supplies, materials and equipment required for construction of the pipeline, pump stations and terminals. They control material inventory until it is turned over to the Project team. They may operate a forklift, hand truck or other equipment to load, unload, transport and store goods. Computer skills are generally required and applications include inventory control programs, word processing and spreadsheets. Attention to detail is required along with the ability to compile and organize information.

A Materials Co-ordinator works in a warehouse and outdoor setting and has knowledge of health and safety procedures, standards and regulations, security, customer service and basic mathematics. They are able to communicate effectively as they work with others to co-ordinate the movement of goods into and out of the warehouse. Materials Co-ordinators may require a driver's license and a forklift certificate. Some roles may require a supply chain management educational background.

Pipeline, Pump Stations, Terminals

# CLERKS/ADMINISTRATIVE SUPPORTERS (NOC 1241/1411)

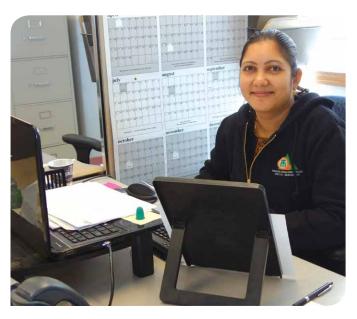
Essential Skills (Reading/Document Use/Numeracy): 3/3/3 Entry Level Position, Full-Time & Contract Work

Clerks assist the Field Office Administrator and operations and maintenance personnel with duties such as maintaining office procedures and supply inventories, data entry, reception and phone support, frontline technical support and training others on software use. In addition, they deliver work order completion reports and provide local support for updating materials transfers and sort, code and file records.

Clerks have good organizational and time management skills. They are able to work independently with minimal supervision and have the ability to handle confidential information. Clerks should have intermediate skills with Microsoft Office products and be able to communicate effectively with various contacts such as field staff, technical professionals and supervisors.

Pipeline, Pump Stations, Terminals







#### FIELD OFFICE ADMINISTRATORS (NOC 1221)

Other Job Titles: Office Managers, Administrative Officers Essential Skills (Reading/Document Use/Numeracy): 4/4/4 Skilled Position, Full-Time & Contract Work

Field Office Administrators plan, organize and direct the administrative services of the construction field office. They advise and oversee staff engaged in records management, security, finance, purchasing, human resources or other administrative services. They also plan, administer and control budgets for contracts, equipment and supplies and interview, hire and oversee training for field office staff.

Field Office Administrators require good oral and written communications skills and good organizational time management skills and enjoy working both independently and as part of a team. They pay close attention to detail and can multi-task. Field Office Administrators enjoy working with people and have exceptional interpersonal skills. They must be comfortable using computer applications such as Microsoft Office Word and Excel, compiling and organizing information and tracking budgets.

Most employers require Field Office Administrators to have a minimum high school diploma. An administration or accounting certificate or diploma and related experience are considered assets.

Pipeline, Pump Stations, Terminals

#### FIELD COST CONTROLLERS (NOC 1111)

Essential Skills (Reading/Document Use/Numeracy): 4/4/5 Skilled Position, Full-Time Work

Field Cost Controllers are responsible for construction site cost management and collecting, reviewing and reporting on daily construction costs. This involves examining accounting records, preparing financial statements, analyzing cost reports and reviewing internal control procedures. Field Cost Controllers may be involved in providing updates and reports to Construction Management personnel and advising on financial or cost management decisions. Other duties include periodic budget review of construction contracts and developing progress and cost reports.

Attention to detail and accuracy are important as well as proficiency in MS Office, especially Excel. Previous experience, training and education in accounting are necessary, preferably in a construction operations environment. Professional designations and provincial association memberships such as Certified General Accountant (CGA) or Certified Management Accountant (CMA) are generally required. A relevant university degree and related experience may also be considered. *Pipeline, Pump Stations, Terminals* 

#### FIELD CONTRACT ADMINISTRATORS (NOC 1225)

Essential Skills (Reading/Document Use/Numeracy): 4/4/4 Skilled Position, Full-Time Work

Field Contract Administrators interpret contracts associated with the construction phase, prepare correspondence, co-ordinate work orders and amendments and monitor progress. They complete and close out contracts including final payments and discharge of liens. Duties may include forming, reviewing, revising and analyzing contracts as well as using computerized tracking systems.

Field Contract Administrators are able to communicate effectively both in person and on paper, have strong negotiation skills and work well under pressure. They manage relationships with contractors and ensure obligations to contractors are met in accordance with agreements. They also investigate and resolve complaints. Field Contract Administrators must have good organizational and computer skills and be detail-oriented.

Previous experience, training and education in contract administration are required and relevant post-secondary education is preferred.

Pipeline, Pump Stations, Terminals



# Is a job in the construction industry right for you?

- ✓ I enjoy working with my hands.
- ✓ I am mechanically inclined.
- ✓ I do not mind working outdoors in all kinds of weather.
- ✓ I like to see what I've accomplished each day.
- ✓ I am okay being away from home for extended periods of time.
- ✓ I like working with others in a team environment.
- ✓ I am safety conscious and care about the well-being of others on the job site.
- ✓ I enjoy the challenge and opportunity to learn from moving from project to project.
- ✓ I am willing to pursue certifications required to work interprovincially.
- I have interests and relationships that I enjoy during downtime between projects.

## **CAMP SUPPORT**



#### CAMP MANAGERS (NOC 0632)

Other Job Title: Lodge Managers

Essential Skills (Reading/Document Use/Numeracy): 4/4/4 Skilled Position

Camp Managers supervise the safe and proper operation of the work camp while performing a range of administrative tasks. They are generally employees of camp companies.

Camp Managers direct the setup and shutdown of a camp and schedule and supervise camp staff and administration. Supervisory tasks include responding to client and staff inquiries, resolving issues and complaints, and the overall management of camp activities. This role involves inspecting and evaluating camp cleanliness, food quality, presentation and inventories and ensuring all camp staff are adhering to health, sanitation and safety standards.

Administrative tasks include ensuring the camp is operating in a cost-efficient manner, handling staff time sheets, reporting accidents, injuries and on-site equipment use. Camp Managers maintain an inventory of vacancies, reservations and room assignments.

Camp Managers require extensive experience and good oral communication, organizational skills and time management skills. They enjoy working both independently and as part of a team and must be comfortable using computer applications, organizing information and tracking budgets.

To work as a Camp Manager, individuals require post-secondary training related to hotel and/or food services management, several years of experience in large camps, WHMIS and First Aid certification, and previous managerial experience.

Pipeline, Pump Stations







#### COOK/KITCHEN MANAGERS (NOC 6321) A 👠

Essential Skills (Reading/Document Use/Numeracy): 4/4/3 Skilled Position

Cooks/Kitchen Managers plan, organize, direct, control and evaluate kitchen operations. They must be competent in the major techniques and principles used in cooking, baking and other aspects of food preparation. In addition to a sound set of cooking skills, Cook/Kitchen Managers at this level are able to plan and cost menus and recipes. They recruit staff and oversee staff training, set staff work schedules and monitor staff performance. They are also responsible for inventory control and monitoring budgets, supplier arrangements and adherence to health and safety regulations.

Qualifications may range from individuals with extensive experience as a Cook/Kitchen Manager, to the completion of a college program related to hospitality or food and beverage service management with several years of related experience or an experienced apprentice or journeyman Cook. In BC, a Professional Cook 3 must have met all requirements of the national Red Seal standard. In Alberta, a Cook is a designated trade.

Pipeline, Pump Stations

## COOK'S HELPERS (NOC 6711) 🛆 🖍

Other Job Title: Kitchen Helpers

Essential Skills (Reading/Document Use/Numeracy): 2/2/2 Entry Level Position

Cook's or Kitchen Helpers clear tables, clean kitchen areas, wash dishes and assist with basic food preparation. This includes tasks such as making sandwiches, hamburgers, salads and beverages and cleaning, peeling, slicing and trimming food items using manual and electric appliances. They may also portion and wrap food or put it on plates for service to patrons, stock refrigerators, cupboards and salad bars, and keep records of the quantities of food used. They clean and sanitize kitchen areas including work surfaces, cupboards and storage areas, as well as dispose of kitchen garbage.

Cook's Helpers enjoy working with people, have good interpersonal skills and must be comfortable working in a busy environment. They must have the ability to concentrate for long periods of time and pay close attention to detail while multi-tasking.

To work as a Cook's Helper, an individual must have WHMIS and Alberta/BC First Aid training and Food Safety Training.

Pipeline, Pump Stations

#### CAMP ATTENDANTS (NOC 6721) 🛝

Essential Skills (Reading/Document Use/Numeracy): 2/2/2 Entry Level Position

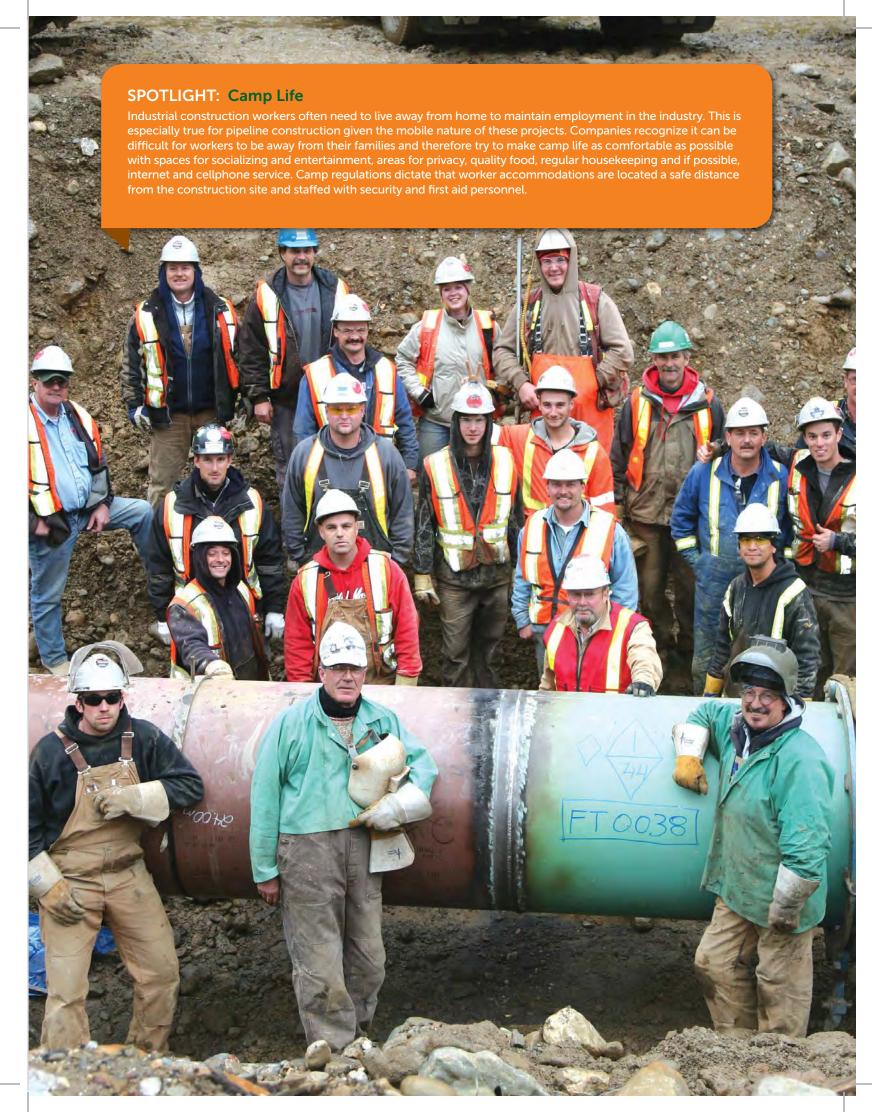
Camp Attendants are employees of the camp company and are responsible for kitchen and camp maintenance, housekeeping and the overall hygienic conditions of the bedroom, bathrooms, hallways, kitchen floors and dining area. Other duties include daily tasks to improve the camp's general appearance.

Camp Attendants must pay close attention to detail, be able to follow supervisory instruction and be comfortable multi-tasking.

Camp Attendants should have good oral communications, organizational and time management skills, and enjoy working both independently and as part of a team. They should be able to lift and be in good physical condition.

To work as a Camp Attendant, an individual must have WHMIS and Alberta/BC First Aid training.

Pipeline, Pump Stations



## **CONSTRUCTION MANAGEMENT**



#### Essential Skills (Reading/Document Use/Numeracy): 4/4/4 • All Skilled Positions

#### PROJECT MANAGERS (NOC 0711)

Project Managers are responsible for the overall management of a project. They estimate, tender and assign work, and review, revise and sign off on contract documents. They are responsible for making changes as needed, tracking project budgets and being the communication contact for all team members. Project Managers are also responsible for ensuring environmental responsibilities are integrated into all project activities.

Project Managers build teams for project success, motivate team members and establish and maintain excellent working relationships with employees at all levels. They must have excellent computer knowledge and skills, and generally have an engineering degree and many years of pipeline, facility or terminal construction experience. Project Managers spend significant time meeting with construction contractors both in offices and at the work site.

Project Managers ensure jobs are completed in a safe, timely and cost-efficient manner.

Project Managers possess excellent organization skills, have the ability to build productive, dedicated teams and are extremely detail-oriented. They have the ability to multi-task, think ahead and deliver projects on time and on budget. They are effective communicators that can motivate others and effectively resolve potential internal conflicts. They have extensive experience in the construction industry and a strong mechanical knowledge. They likely have project management training and experience using project management software programs. *Pump Stations, Terminals* 

## **SPOTLIGHT: Commitment to Hiring**

The proposed Trans Mountain Expansion Project will involve Kinder Morgan and contractor commitments to provide employment opportunities for Aboriginal and local community members. The majority of jobs will be created during pipeline, facility and terminal construction and span a wide variety of responsibilities, skill levels and trade specializations.

Trans Mountain will maximize Aboriginal, local and regional employment opportunities by working with communities, industry associations and construction prime contractors and sub-contractors.

#### CONSTRUCTION MANAGERS (NOC 0711) 🗥

Construction Managers oversee all construction activities and ensure the Project is completed to specifications, permit conditions, contracts and applicable codes and regulatory requirements.

Construction Managers play a key role ensuring environmental and safety objectives are met by working closely with the Environmental Compliance Manager and the Environmental Manager to evaluate and improve the Project's environmental and safety performance. They co-ordinate all environmental and technical inspection activities and consult with regulatory authorities as required.

The have the ability to multi-task, think ahead and work effectively with all company and contractor personnel. In addition to being effective communicators, Construction Managers have exceptional problem-solving skills. They have extensive industrial construction-related experience and knowledge, and likely have project management training and experience using project management software programs.

Pipeline, Pump Stations, Terminals

#### SUPERINTENDENTS (NOC 0711) 🗥

Project Superintendents are responsible for day-to-day operations of the construction project. This includes management of construction schedules, quality control and safety. Superintendents supervise, co-ordinate and schedule the work required to complete construction of the pipeline, facility or terminal project. They also are responsible for ensuring day-to-day construction activities are conducted in an environmentally responsible manner.

Superintendents are also responsible for making sure construction project employees are trained in their job duties and the company's policies and procedures. In addition, they must also hold daily meetings with owner and inspector representatives.

Project Superintendents are excellent leaders and have strong planning and negotiation skills. They have excellent written, verbal and listening communication skills and have the ability to develop a workforce that is focused on safety, reliability and compliance. Superintendents manage multiple priorities, make good decisions, possess a positive attitude and have the ability to motivate and lead others.

They have an excellent understanding of pipeline, pump stations or terminal construction techniques. Superintendents operate in field office environments and in camp settings and often work extended hours

Generally, Project Superintendents have 20 years of experience with 10 years in senior management.

Pipeline, Pump Stations, Terminals

#### ASSISTANT SUPERINTENDENTS (NOC 0711)

Assistant Superintendents are responsible for assisting the Superintendent fulfill his or her duties. The responsibilities of this position include managing construction schedules, quality control, environmental compliance and safety, and co-ordinating the activities of workers. Assistant Superintendents manage the ordering of materials and supplies, resolve work problems and recommend ways to improve productivity. They assist with worker training and also ensure the necessary equipment and machinery are on-site as required.

Assistant Superintendents must be flexible with regard to working in different environments, including in the office, in the outdoors and sometimes in isolated locations.

Assistant Superintendents are effective leaders with the ability to take direction from others, have excellent communications skills and are able to work with a wide range of team members. They have a strong knowledge of pipeline, facility or terminal construction techniques and can deliver assigned tasks on time and on budget. They also have experience monitoring and responding to employee performance. Typically, Assistant Superintendents have technical training related to construction and 10-15 years of experience.

Pipeline, Pump Stations, Terminals









# TECHNICAL & PROJECT SUPPORT SUPERVISORS (NOC 0211) ▲

Technical and Project Support Supervisors are responsible for leadership and supervision, providing measurement expertise and technical support throughout the development and implementation phases and evaluating the integrity of engineering designs and plans. They co-ordinate research and development projects to introduce effective oil measurement technologies.

In addition, they actively support and participate in industry committees in the development of new measurement technologies and standards, and provide leadership and coaching to staff including accountability for delivering on performance objectives.

Supervisors are Professional Engineers with 7-10 years of progressively complex and related technical experience or an equivalent of experience and education. They have excellent, oral, written and computer skills, and display outstanding leadership, project management and interpersonal skills. They are good at working under pressure and have proven ability to think strategically.

Pipeline, Pump Stations, Terminals

#### FOREMEN (NOC 0711) 🗥

Foremen supervise and direct on-site construction for all key construction functions. They are responsible for crews including hiring, training, scheduling, problem solving and monitoring. They must be adaptable to different environments and be able to lead a team and respond in a capable, controlled manner when emergencies arise. They are knowledgeable about construction methods, materials and regulations and have a solid understanding of environmentally responsible practices. Foremen must view safety as a main concern and have good communication skills.

Foremen are able to handle the pressure of deadlines in a fast-paced environment, possess excellent written and verbal communication skills, and have a proven track record as effective team leaders. They have good interpersonal skills, must be flexible with regards to working long and/or irregular hours and have the ability to maintain a positive attitude in a high-stress environment.

Foremen positions are filled based on the applicants' prior pipeline, facility or terminal construction work experience as well as trades certification/post-secondary education, safety and technical certifications and work references.

Each of the different Foremen are responsible to the Superintendent for cost-effective attainment of crew production goals set by the contract or the Superintendent. They include:

**Backfill Foremen** – direct and supervise the crew that completes backfill of the trench following lowering in of the pipeline. They may also be responsible for directing and supervising cleanup crews.

Pipeline, Pump Stations, Terminals

**Bending Foremen** – direct and supervise the crew that completes bending of pipe joints so the pipeline will follow the ditch centre-line and geographical contours.

Pipeline, Pump Stations, Terminals

Cleanup Foremen – direct and supervise the crew that completes cleanup and restoration of all areas disturbed or damaged by pipeline construction or related activities. They are responsible for the placement of previously stockpiled topsoil.

Pipeline, Pump Stations, Terminals

**Clearing Foremen** – direct and supervise the crew that completes the hand or machine clearing and disposal of trees and brush on the pipeline right-of-way prior to grading and subsequent construction operations.

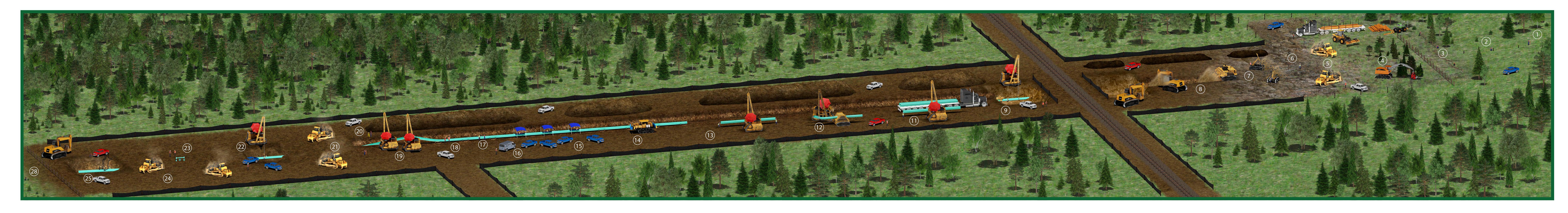
Pipeline, Pump Stations, Terminals

**Coating Foremen** – direct and supervise the crew that completes pipeline sandblasting activities and applies protective coating on girth welds and valve assembly in accordance with contract specifications. *Pipeline, Pump Stations, Terminals* 

**Ditch Foremen** – direct and supervise the crew that excavates the pipeline trench in accordance with contract specifications and the location stakes provided.

Pipeline, Pump Stations, Terminals

# Major Activities of a Typical Pipeline Construction Spread





# This graphic is a compressed view showing the main work activities over several kilometres during construction of a major pipeline project.

- Routing & Environmental Surveys
- 2. Staking for Construction
- . Temporary Fencing & Signage
- 4. Clearing
- . Grading & Topsoiling
- 6. Restaking Trench Centreline
- . Rock Trenching & Padding

- 8. Trenching
- 9. Boring Conventional
- 10. Boring Horizontal Directional Drill (not shown)
- 11. Stringing (ahead of or behind trenching)
- 12. Pipe Setup & Bending
- 13. Setup, End Preparation & Alignment (Pipelay)
- 14. Welding-Rootbead & Hot Pass (Pipe Gang)

- 15. Welding-Fill Passes & Cap (Firing Line)
- 16. NDE Examination (X-Ray or UT)
- 17. Field Weld Coating
- 18. Final Coating Inspection (Jeeping)
- 19. Lowering-In
- 20. As-Built Survey
- 21. Backfilling

- 22. Tie-Ins
- 23. Fabrication
- 24. Cleanup
- 25. Caliper Pigging & Hydrostatic Testing
- 26. Dewatering, Drying, Final Tie-Ins (not shown)
- 27. Commissioning (not shown)
- 28. Final Cleanup, Restoration & Revegetation





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# **ENGINEERS & ENGINEERING TECHNOLOGISTS**









#### All Skilled Positions

#### **ENGINEERS**

Essential Skills (Reading/Document Use/Numeracy): 5/5/5

Engineers are involved in the design and construction phases of the Project. They will ensure the detailed designs and activities associated with construction of the pipeline, pump stations and terminals are compliant with regulations, specifications and contract documents. Developing detailed designs for the Project is key to ensuring accurate procurement, fabrication, construction and installation of the pipeline, pump stations and terminals. Engineers may also oversee the work of Technologists and Technicians.

The minimum requirement for Engineers is a bachelor's degree in engineering. Most companies also require Engineers to become registered or licensed by a provincial or territorial association. This involves three or four years of supervised work experience in engineering and passing a professional practice exam. Registration is required to approve engineering drawings and reports and to practice as a Professional Engineer (P.Eng.). Unlicensed engineers must work under the direct supervision of a Professional Engineer.

All engineering disciplines work closely together to ensure all components of the construction Project meet specifications, regulations and contracts. They are good communicators and problem-solvers.

#### **Engineer Roles:**

Civil Engineers (NOC 2131) – Pipelines: prepare and interpret engineering designs, drawings and specifications for pipeline alignment and installation and crossings, bends and other details. Facilities: prepare and interpret engineering designs, drawings and specifications for the earthworks, foundations and structures for pump stations and terminals.

Pipeline, Pump Stations, Terminals

#### Electrical/Instrumentation Engineers (NOC 2133)

 prepare and interpret engineering designs, drawings and specifications for power and control systems, electrical and instrumentation equipment (such as transformers, switchgear, variable frequency drives, motor control centres, motors, meters, etc.), and cable, cable tray and grounding for pipelines (valve sites), pump stations and terminals.

Pump Stations, Terminals

Mechanical Engineers (NOC 2132) – prepare and interpret engineering designs, drawings and specifications for power and control systems, electrical and instrumentation equipment (such as transformers, switchgear, variable frequency drives, motor control centres, motors, meters, etc.), and cable, cable tray and grounding for pipelines (valve sites), pump stations and terminals.

Pipeline, Pump Stations, Terminals

Process Engineers (NOC 2134) – prepare and interpret engineering designs, drawings and specifications related to the operational function and performance of process and piping systems (including hydraulics, surge analysis, heat transfer, equipment capacities, pipe sizing, protective devices, etc.) for pipelines, pump stations and terminals.

Pump Stations, Terminals

Field Engineers (NOC 2131) – work directly with and report to the Project Manager and liaise closely with the KMC Technical Advisor. Field Engineers maintain continuous contact with the Construction Manager, Assistant Chief Inspectors, the Environmental Inspector, the Quality Lead and appropriate regulatory personnel as required.

Pump Stations, Terminals

#### **ENGINEERING TECHNOLOGISTS**

Essential Skills (Reading/Document Use/Numeracy): 4/4/4

Engineering Technologists provide technical support to engineers during the construction of pipelines, pump stations and terminals by preparing engineering designs, construction specifications, cost and material estimates, project schedules and reports. Most engineering designs are created using computer-aided design (CAD) software.

Engineering Technologists usually require post-secondary training and can also pursue professional technologist certification through supervised work experience. Engineering Technologists need to be comfortable using computers and CAD software.

Mechanical and Electrical/Instrumentation Engineering Technologists are also hired during operations to maintain mechanical and electrical/instrumentation equipment. Engineering Technologists can be involved in operations work from field locations.

#### **Engineering Technologist Roles:**

#### Drafting Technologists and Technicians (NOC 2253) -

prepare engineering designs and drawings from preliminary concepts, sketches, engineering calculations, specification sheets and other data using computer-aided design (CAD) and drafting programs.

Pipeline, Pump Stations, Terminals

**Civil Engineering Technologists (NOC 2231)** – prepare and interpret structural engineering designs, drawings and specifications for construction of the pipeline, pump stations and terminals.

Pipeline, Pump Stations, Terminals

#### Electrical/Instrumentation Engineering Techs (NOC 2241)

 design and oversee installation and testing of electrical components, electronic communications, instrumentation and control systems used to monitor pipeline, pump station and terminal operations.

Pipeline, Pump Stations, Terminals

### Mechanical Engineering Technologists (NOC 2232)

 prepare and interpret engineering designs, drawings and specifications for construction of mechanical installations required by the pipeline, pump stations and terminals including pumps, valves and flow meters.

Pipeline, Pump Stations, Terminals

### SURVEYORS (NOC 2154)

Essential Skills (Reading/Document Use/Numeracy): 5/5/5
Surveyors develop survey plans and conduct surveys to establish and mark legal boundaries of properties.

Surveyors set up and use specialized electronic equipment to obtain measurements of horizontal and vertical angles and calculate parallel offset lines when completing pipeline surveys. They use contour or elevation graphs to analyze the topography of an area and to plot it onto scale plans. They analyze, manage and display data using geographic information systems (GIS) and computer-aided design and drafting and record all measurements and other information obtained during survey activities.

Surveyors work outdoors in all types of weather and sometimes in isolated locations. They interact with co-workers and colleagues to discuss projects and co-ordinate job tasks.

Ideal candidates are registered as an Alberta or BC Land Surveyor with a diploma or degree from a recognized institution specializing in geomatics.

# **ENVIRONMENTAL COMPLIANCE ROLES**



#### **ENVIRONMENTAL COMPLIANCE MANAGERS (NOC 4161)**



Essential Skills (Reading/Document Use/Numeracy): 4/4/4 **Skilled Position** 

Environmental Compliance Managers develop, maintain and ensure implementation of the Project's Environmental Compliance Plan. They work closely with the Project Construction Field Management Teams and report to the Environmental Manager to ensure environmental commitments are understood, implemented and documented through all phases and locations of Project construction. Environmental Compliance Managers are responsible for the maintenance of the environmental commitment and issues tracking list which monitors environmental compliance issues to resolution, and informs the as-built report and post-construction monitoring process. Environmental Compliance Managers co-ordinate on-site environmental compliance audits and are responsible to communicate non-compliance issues and reportable spills to regulatory authorities.

Environmental Compliance Managers have full understanding of the Environmental Protection Plans and Project environmental commitments to regulatory authorities, government agencies, Aboriginal groups and the public, as well as understanding pipeline and facilities construction methods. The position requires excellent communication abilities to co-ordinate with all levels of construction management and to liaise with environmental regulatory authorities. Environmental Compliance Managers are required to have a background in the utilities industry and a bachelor's or graduate degree in a related scientific or technical discipline.

Pipeline, Pump Stations, Terminals



#### PERMITS & APPROVALS MANAGERS (NOC 4161)



Essential Skills (Reading/Document Use/Numeracy): 4/4/4 **Skilled Position** 

Permits and Approvals Managers oversee all elements of environmental permits and compliance necessary for Project construction and confirm understanding of permit requirements with the regulator and with construction and handle any permit-related issues. They work closely with Project Construction Field Management Teams to ensure all required permits are in place and advise when new or revisions to permits are necessary. Permits and Approvals Managers co-ordinate with Field Management to track that the conditions of permits are being met and ensure field office permit binders are kept up to date with all necessary permits.

Permits and Approvals Managers are experienced professionals with either technical construction or environmental training. They have knowledge of federal and provincial environmental laws and regulations and the requirements of the Project Environmental Protection Plan. The position requires skills at building strong work relationships, collaborating and negotiating and the ability to pay attention to detail while keeping the Project as a whole in mind.

Pipeline, Pump Stations, Terminals

#### **ENVIRONMENTAL INSPECTORS (NOC 2263)**



Essential Skills (Reading/Document Use/Numeracy): All 4/4/4 Skilled Position

Environmental Inspectors (EIs) are part of the Project Field Management Team and ensure the Project Environmental Protection Plans (EPP) are understood and met during all phases of construction. They monitor Project construction activities to ensure mitigation and contingency plans are being implemented to minimize environmental disturbance and that activities are in compliance with commitments of the EPP and regulatory permits and approvals.

They tour the right-of-way and visit site activities to monitor construction compliance to the EPP and go ahead of construction phases to ensure environmentally sensitive features are sufficiently signed and mitigation requirements are understood by each upcoming phase of construction. They support and advise Activity Inspectors and Construction Foremen in applying the EPP by reviewing the Environmental Alignment Sheets (EAS) to ensure environmental features and mitigation measures are incorporated into daily construction plans. Where necessary, Els halt work where non-compliant conditions exist and discuss how corrective solutions

Environmental Inspectors have extensive pipeline construction experience and full understanding of the Project EPP and regulatory commitments. They have a background in environmental field sciences and application. They are comfortable communicating environmental protection measures under all types of construction conditions. They must be physically prepared for the work and have good observation, documentation and reporting skills.

Pipeline, Pump Stations, Terminals

### **ENVIRONMENTAL ABORIGINAL MONITORS (NOC 2263)**



Essential Skills (Reading/Document Use/Numeracy): 4/3/3 **Skilled Position** 

Aboriginal Monitors are part of the Environmental Inspection team. They have knowledge of Project Environmental Protection Plans and support the Environmental Inspection team and Resource Specialists by contributing a traditional knowledge-based and stewardship perspective to protecting the land. They go ahead of construction to ensure environmental features, such as wildlife habitat, water and plant resources are being correctly identified and protected. They assist in collecting information and test samples on environmental conditions, including, water, wildlife habitat, vegetation and soils. They monitor daily construction activities and work closely with Environmental Inspectors. They assist in daily operations in maintenance and running of equipment related to environmental work.

Aboriginal Monitors have good observation and communication skills and provide reports on daily activities. They give guidance to the Project team on applying traditional land stewardship values during pipeline construction and reclamation.

They must enjoy working in a team-oriented environment, be physically prepared for the work and possess strong skills in diplomacy, conflict resolution and a willingness to exchange ideas and solve problems. They likely have Environmental Technologist education and/or experience.

### SAFETY COMPLIANCE ROLES



# **SPOTLIGHT: Safety**

Construction work is fast-paced, uses heavy equipment and hazardous materials and is conducted outdoors in all types of weather. Ensuring a safe work environment and responding with appropriate first aid procedures are expectations for all workers.

Proper safety training and following safety procedures can help reduce incidents on the construction site. Industry standards generally require all workers to have CSTS (Construction Safety Training System) or PCST (Pipeline Construction Safety Training) certification, WHMIS (Workplace Hazardous Materials Information System) and First Aid. In addition, supervisors require Leadership for Safety Excellence training.

### SAFETY CO-ORDINATORS (NOC 2263)



Other Job Title: Safety Officers

Essential Skills (Reading/Document Use/Numeracy): 4/3/3 **Skilled Position** 

Safety Co-ordinators play a key role in the development of a zero-injury safety culture. They are responsible for ensuring all construction contractors conduct themselves in a safe manner and in accordance with Project safety plans, equipment operating manuals and guidelines, as well as applicable federal and provincial safety and health regulations.

Safety Co-ordinators need a strong working knowledge of federal and provincial occupational health and safety regulations. An understanding of the construction site and equipment used is also beneficial. They require a driver's license and preference is given to Safety Inspectors with Construction Safety Officer (CSO) Certification or National Construction Safety Officer (NCSO) designation.

Pipeline, Pump Stations, Terminals

### SAFETY INSPECTORS (NOC 2263/2264)



Essential Skills (Reading/Document Use/Numeracy): 4/4/4 Skilled Position

Safety Inspectors serve as the primary interface between the company and the contractors at construction sites. They actively monitor contractor work progress to ensure compliance with health and safety expectations and applicable federal and provincial safety and health regulations.

Safety Inspectors inspect work sites as well as first aid facilities and emergency vehicles to ensure compliance with applicable federal and provincial safety and health regulations. They assist contractors in meeting their commitments and conducting regular inspections and audits of the work site on behalf of the company. They also have knowledge of construction practices and previous experience on industrial construction projects. They require a driver's license and preference is given to Safety Inspectors with Construction Safety Officer (CSO) Certification or National Construction Safety Officer (NCSO) designation or a Canadian Registered Safety Professional (CRSP) designation.

Pipeline, Pump Stations, Terminals

### SECURITY OFFICERS (NOC 6541) A 🔊 🗥 🛍







Other Job Titles: Guards, Watchmen

Essential Skills (Reading/Document Use/Numeracy): 3/2/3 **Entry Level Position** 

Security Officers conduct mobile and foot patrols at camp and construction sites. They check for signs of damage, theft or intrusions and report unusual activity or incidents to the Supervisor. They are responsible for vehicle and pedestrian access and clear visitors at the construction site or camp gate.

Security Officers also monitor work areas for hazards, enforce policies, regulations, applicable laws and site rules, respond to fire alarms and other emergencies, and issue or assign pass or permit numbers.

This role requires excellent physical condition, good vision, good eye-hand and hand-foot co-ordination, mechanical ability, a strong work ethic, good report writing skills and the ability to work alone.

Security Officers must be at least 18 years of age and preference will be given to candidates with an applicable provincial security guard certification, Alberta/BC First Aid, WHMIS training and Alberta/BC Pipeline Construction Safety Training (PCST) course. Security Officers require a driver's license and may be required to be licensed and bondable.

Pipeline, Pump Stations, Terminals

# EMERGENCY MEDICAL RESPONDERS - EMRs (NOC 3234)



Other Job Titles: Emergency Medical Technicians (EMT), Emergency Medical Assistants (EMAs), Occupational First Aiders Essential Skills (Reading/Document Use/Numeracy): 4/3/3 **Skilled Position** 

Emergency Medical Responders (EMRs) administer pre-hospital emergency medical care to patients with injuries or medical illnesses and, if necessary, transport them to hospitals or other medical facilities for further medical care. They assess the extent of injuries or medical illnesses to determine emergency medical treatment.

EMRs need to collaborate with ambulance dispatch centres, hospital staff, police, firefighters and family members to ensure relevant information is collected and proper treatment is administered. They also document and record the nature of injuries and illnesses and treatment provided.

Emergency Medical Responder is a physically and emotionally demanding job. Since services are provided 24 hours per day, weekend, evening and holiday work is required. EMRs work both in emergency transport vehicles or at fixed first aid room locations.

In BC and Alberta, EMRs are governed by a provincial licensing agency (in BC, the Emergency Medical Assistants Licensing Board; in Alberta the Alberta College of Paramedics) and must have valid certificates from a recognized training agency. EMRs may also require Occupational First Aid training and designations from WorkSafeBC or otherwise meet the requirements of Alberta Occupational Health and Safety requirements.



# **RECLAMATION SPECIALISTS**



### **Entry Level Positions**

Reclamation Specialist crew members are responsible for returning vegetation, drainage patterns, natural and human habitat back to disturbed areas of the pipeline corridor following construction.

#### Tasks will include:

- · Installing erosion control structures: silt fencing and fabric matting.
- Weed control measures: mechanical weed whacking, mowing and hand pulling.
- Seeding and fertilizer applications; by-hand broadcast, 4x4 ATV and tractor-pulled cyclone broadcasters, assisting with specialized methods such as fixed wing and helicopter seeding and hydro-seeding.
- Tree planting: installing tree and shrub planting plugs on foot with hand tools.
- Live willow staking: correct selection, harvesting, handling and installation of native live willow stakes to restore wetland, stream bank and seepage site vegetation.
- Plant care and irrigation: handling and care of nursery stock plants before, during and following planting.
- Watercourse reclamation: assisting to install structures, materials and plants to reclaim stream bank habitat at pipeline crossings
- Browse controls: installing fencing and other measures to protect reclamation plantings from animal browse.
- Access controls: installing fencing, gates, log structures and barriers to prevent vehicle and ATV access thereby protecting reclamation areas.
- Landscaping: residential area landscape installations of grass areas, tree and shrub plantings, fences and paths.

#### Beneficial Skills and Job Assets:

- Tasks will involve knowledge of how to safely operate and maintain hand tools, and power tools such as chainsaws (certification required), mechanical weed whackers, pumps etc.
- Driving: a current clean driver's license with abstract is required and ATV operator's certification.
- Experience and skill in operating farm and semi-heavy equipment such as tractors, skid-steers, forklifts and small backhoes.
- Plant identification: knowledge and ability to identify local native plants and invasive weed species would be beneficial.
- Organizational and logistical skills: the work entails planning ahead, ensuring all needed tools, fuels, materials, safety gear and plants are available, loaded and transported safely to work sites, which are often remote.
- Documentation: work will require recording amounts and coverage by area of seed, fertilizer and plants and maintenance of daily work logs and safety documentation.
- Safety: Construction Safety Training System (CSTS) or Pipeline Construction Safety Training (PCST), Workplace Hazardous Materials Information System (WHMIS) and First Aid training are considered assets.

#### Personal Skills:

- Reclamation specialists must work in teams where willingness to work and consideration for others will benefit the success and safety of the group.
- Health: good physical condition is needed as the work is demanding and takes place outdoors, often in challenging terrain and weather conditions.
- Personal care: to work as team members individuals will need to look after their own gear, which will include dry boots and gloves, rain gear, sufficient and suitable clothing, and pack enough food and water to sustain them over the workday.







### SEMI-SKILLED WORKERS



### Essential Skills (Reading/Document Use/Numeracy): 2/2/2 • Entry-Level Positions

Semi-skilled Worker positions are entry level and challenging. Semi-skilled Workers must be in excellent physical condition and have good vision, depth perception and co-ordination. A strong work ethic and an ability to learn and deal with a methodical work environment are needed. Semi-skilled Workers must like challenges and enjoy troubleshooting problems. They are comfortable working in remote work camps and in all types of weather and enjoy working as part of a team. Semi-skilled Workers are able to take direction, follow instructions and safety procedures, and work with caution and care.

Semi-skilled Workers may work in construction or operations but there is greater demand for Semi-skilled Workers during the construction phase. Construction and pipeline Semi-skilled Workers are involved in different supportive labour roles and assist skilled tradespersons on the construction site.

Typical Roles – There are a variety of Semi-skilled Worker roles required for the Trans Mountain Expansion Project.

#### GENERAL LABOURERS/PIPELINERS (NOC 7611)

The General Labourers/Pipeliners position is an entry-level job with duties usually performed by hand. It is a physically demanding job involved in various duties on the construction site, such as work site maintenance, hand digging to expose existing infrastructure and maintaining the site.

Pipeline, Pump Stations, Terminals

#### SWAMPERS (NOC 7611)

Other Job Title: Trades Helpers

Swampers assist Truck Drivers and Heavy Equipment Operators (HEO) with loading and unloading goods, attaching chokers and chains, and cleaning equipment. Swampers signal to HEOs to guide them in moving, cleaning and fuelling equipment. They travel with the transport and ensure the load is tied down properly.

Pipeline, Pump Stations, Terminals

#### **OILERS (NOC 7612)**

Other Job Titles: Labourers, Trades Helpers

Oilers ensure all mechanical equipment is properly lubricated in accordance with equipment service manuals.

**Pipeline** 

#### SURVEY HELPERS (NOC 7612)

Other Job Titles: Survey Helper Stickmen, Survey Interns, Rodmen

Survey Helpers assist with survey work for various construction activities such as right-of-way and facility boundary layouts, grading activities, foundation and piling layout, and gathering as-built information for existing facilities and structures and new piping and equipment installations.

Pipeline, Pump Stations, Terminals

#### MEASUREMENT (NOC 7611)

Other Job Titles: Labourers, Bending Crew Helpers

Measurement Labourers assist the Bending Engineer/Technologist with pipe measurements to ensure the proper bend is put into the pipe so it fits into the trench. They should be comfortable with calculations.

**Pipeline** 

## SANDBLASTERS (NOC 9612)

Sandblasters are responsible for sandblasting and hand-held high-pressure water jet operations used for cleaning and preparation of the pipe for welding, final buffing and application of protective pipe coating. There may be a potential for dusty work conditions.

Pipeline

### PIPELINE LABOURERS (NOC 7611)

Other Job Titles: Stringing, Jeeps & Lower-In Pipeliners
Pipeline Labourers assist in stringing pipe along ditch line and lowering

pipe in ditch and running testing equipment.

**Pipeline** 

#### TRADES HELPERS (NOC 7611)

Trade Helpers assist journeymen with equipment, tools and cleanup. They position materials, pipes, fittings and pumping equipment for trades workers. Basic knowledge of trades is helpful.

Pipeline, Pump Stations, Terminals

#### SPECIALIZED LABOURERS (NOC 7612)

Other Job Titles: Pump Operators

Specialized Labourers manage pumps and other equipment as required to handle surface and ditch water during construction, installation and removal of silt fencing and other erosion control measures.

Pipeline, Pump Stations, Terminals

#### TRAFFIC CONTROLLERS (NOC 7611)

Other Job Titles: Flagmen

Traffic Controllers control traffic using hand signals, flags, paddles, lights, signs, barricades, etc. while crews are working on or near highways or roadways. MOT certification is required.

Pipeline, Pump Stations, Terminals

#### FIRE WATCH LABOURERS (NOC 7611)

Other Job Titles: Labourers

Fire Watch Labourers burn brush piles for clearing operation and fire watch within existing facilities. They must be able to run chainsaws and operate gas-monitoring equipment.

Pipeline, Pump Stations

#### PAINTERS/COATERS (NOC 7294)

Essential Skills (Reading/Document Use/Numeracy): 3/3/3

Painters and Coaters apply pipe coating on the pipeline. Pipe coating prevents water from coming into contact with the steel and causing corrosion. They apply other finishes to interior and exterior surfaces of buildings, tanks, piping, structural steel and other permanent structures for protection.

Pipeline, Pump Stations, Terminals

Other Semi-skilled positions include Power Saw Operators, Flaggers and Rodmen.

Semi-skilled Workers require safety certifications that may include Construction Safety Training System (CSTS) or Pipeline Construction Safety Training (PCST) and Workplace Hazardous Materials Information System (WHMIS) training. First Aid certification is considered an asset. Other certificates may be required depending on the type of work such as: H2S Alive or Awareness; Fork Lift Operation, Wildlife Awareness, Confined Space Entry, All Terrain Vehicle (ATV), Chainsaw Safety, Fall Protection or Transportation of Dangerous Goods (TDG). A valid driver's license may also be required for some positions. Physical strength and stamina to work with heavy equipment and in cramped and awkward positions are also required.







SEMI-SKILLED JOBS ARE ENTRY LEVEL AND CHALLENGING. Semi-skilled Workers must be in excellent physical condition and have good vision, depth perception and hand-foot co-ordination. A strong work ethic and an ability to learn and deal with a methodical work environment are also needed. Semi-skilled Workers must like challenges and enjoy troubleshooting problems. They are comfortable working in remote work camps in all types of weather and enjoy working as part of a team. Semi-skilled Workers are able to take direction, follow instructions and safety procedures, and work with caution and care.







### **TECHNICAL INSPECTOR ROLES**









### Essential Skills (Reading/Document Use/Numeracy): 4/4/4 • All Skilled Positions

A variety of Technical Inspectors are associated with construction of the pipeline, pump stations and terminals to ensure compliance with all specifications, quality standards, codes and regulations. Technical Inspectors, Environmental Inspectors and Safety Inspectors ensure the Project is constructed safely with minimal environmental and socio-economic impacts. Before the pipeline is put into service it is tested to ensure it is fit for its purpose and that there are no defects in the pipeline. Two key testing activities are hydrostatic (pressure) testing and pigging (internal gauging).

Technical Inspectors are hired based on previous pipeline, pump station and/or terminal construction experience and certifications. Technical Inspectors require the technical and regulatory knowledge to proactively identify mitigative and corrective measures during the construction phase of the Project. They are familiar with the tools and equipment required to conduct inspection and testing. In addition to Construction Safety Training System (CSTS) or Pipeline Construction Safety Training (PCST), Workplace Hazardous Materials Information System (WHMIS) and First Aid, Technical Inspectors may require Line Locating Certification, Ground Disturbance Certification, Confined Space Entry Tickets and H2S Alive.

Technical Inspectors require good communication and problem-solving skills. They are comfortable working outdoors, are in good physical condition and have good vision.

#### CHIEF INSPECTORS (NOC 2264)

The Chief Inspector is the Senior Representative in the field and reports directly to the Construction Manager. All inspectors, including Safety Inspectors, Office Manager, Surveyors, Right-of-Way Agents and third-party consultants report to the Chief Inspector, either directly or indirectly. The Chief Inspector liaises on a daily basis with the Field Environmental Inspectors to determine whether environmental guidelines are being followed to the extent practical. The Chief Inspector's role is paramount in co-ordinating the efforts of the Field Inspection Team to ensure the conditions of the Contract Documents and the Regulatory commitments are met at all times.

While office-based, Chief Inspectors spend a good portion of their time in the field.

Pipeline, Pump Stations, Terminals

#### TECHNICAL INSPECTORS (NOC 2264/2261)

Technical Inspectors monitor and control construction practices to minimize potential adverse effects on the safety of work areas, the environment or the final technical performance requirements of the pipeline, pump stations and terminals. The intent of all inspection activities is to monitor, control and ensure the minimization of construction practices or procedures which could have adverse effects on the safety of work areas, the environment or the final technical performance requirements of the pipeline system. Recognition of the need for early implementation of mitigative and corrective measures is a key function and responsibility of all Inspectors.

### **Typical Roles:**

**Ground Disturbance Inspectors** – ensure all ground disturbance activities are completed in accordance with third-party permits and company pipeline and terminal protection and damage prevention plans and procedures.

Pipeline, Terminals

**Pigging and Hydrotest Inspectors** – oversee the hydrotesting and pigging of the pipeline to ensure it is fit for operation. **Pipeline** 

Senior Welding Inspectors – co-ordinate all welding activities throughout the Project and report on a daily basis to the Construction Manager. Senior Welding Inspectors are responsible for ensuring consistency of inspection procedures, consistency among NDT Contractors and welding consistency between all spreads.

Pipeline, Pump Stations, Terminals

**Pipeline Inspectors** – oversee various pipeline construction activities including preparation of right-of-way, installation of the pipeline and reclamation of the work site. They ensure compliance to Project specifications, drawings, codes, standards and regulatory requirements. Each phase of pipeline construction has its own Inspector. Pipeline Inspectors each have their own duties and responsibilities, however, working and communicating as a team is essential to minimize conflicts arising between phases of construction.

#### **Pipeline**

Pipeline Inspector roles may include:

- River Crossings Inspector
- Rock Blasting Inspector
- Trench Inspector
- String/Bend InspectorLower-in Inspector
- Tie-in Inspector
- Bore Inspector
- Fabrication Inspector
- Backfill Inspector
- Welding InspectorCleanup Inspector
- Horizontal Directional Drilling Inspector
   Buoyancy Control Inspector
- Buoyancy Control Inspecto
- Field Coating Inspector
- Topsoil Removal Inspector
- Grading Inspector
- Clearing Inspector
- Stockpile Inspector
- Buried Facilities Inspector
- NDT Inspector

Craft Inspectors – oversee various pump station and terminal construction activities. They ensure compliance to Project specifications, drawings, codes, standards and regulatory requirements. Each craft or discipline has its own Inspector. Craft Inspectors each have their own duties and responsibilities, however, working and communicating as a team is essential to minimize conflicts arising between phases of construction.

#### Pump Stations, Terminals

Craft Inspector roles include:

- Earthworks Inspector
- Piling Inspector
- Civil or Foundations Inspector
- Tank Inspector
- Structural Inspector
- Mechanical Inspector
- NDT Inspector

- Rotating Equipment Inspector
- · Piping Inspector
- Welding Inspector
- Coating Inspector
- Electrical/Instrumentation Inspector
- Operations Liaison



# SPOTLIGHT: Pre-Employment Medical & Drug Testing

Pre-employment medical and drug testing is commonplace in the industry. It is just one of the ways companies demonstrate their commitment to ensuring workers can do their job safely.











#### All Skilled Positions

Tradespeople are actively involved in the construction and fabrication of materials and equipment and ongoing maintenance of the pipeline, pump stations and terminals.

Pipeline, pump station and terminal construction sites are fast-paced, physically demanding and safety conscious work environments. Trades workers must enjoy working outdoors in a team environment and adhere to safety protocols. Trades workers have excellent manual dexterity, good hand-eye co-ordination and can concentrate on detailed work. They may be required to work within confined spaces or at heights.

#### **CARPENTERS (NOC 7271)**

Other Job Title: Industrial Carpenters

Essential Skills (Reading/Document Use/Numeracy): 4/4/4

Carpenters construct various temporary and permanent foundations and structures. They read and interpret blueprints and drawings to determine specifications and calculate material requirements. For pump station and terminal construction, carpenters also require a background in concrete, grout and masonry applications.

Carpenters assist with the setup and maintenance of construction camps and yard infrastructure.

Pump Stations, Terminals

#### PLUMBERS/GASFITTERS (NOC 7251)

Essential Skills (Reading/Document Use/Numeracy): 4/4/4 Plumbers and Gasfitters assist with setup and maintenance

of water, heating cooling and sprinkler systems at the construction camps.

Pipeline, Pump Stations, Terminals

#### HEAVY-DUTY MECHANICS (NOC 7312)

Other Job Title: Heavy-duty Technicians

Essential Skills (Reading/Document Use/Numeracy): 4/4/3

Heavy-duty Mechanics repair and maintain heavy transport and construction equipment such as bulldozers, side-boom tractors, trackhoes, etc. They need to be mobile and move along the pipeline. Good mechanical senses are an asset in order to assist with the diagnosis of mechanical problems.

Pipeline, Pump Stations, Terminals

#### PIPEFITTERS (NOC 7252)

Other Job Titles: Industrial Pipefitters, Pipefitters/Steamfitters, Pipeline Spacers, Pipeline Stabbers

Essential Skills (Reading/Document Use/Numeracy): 4/3/4

Pipefitters install high pressure industrial piping, prefabricated spools and valves used in pump stations and terminals. During pipeline construction, they bevel the ends of each pipeline section so it aligns for welding, ensure the joint of pipe to be welded is aligned and ensure the proper space between the pipe joints is maintained.

Pipeline, Pump Stations, Terminals

### WELDERS (NOC 7237)

Other Job Titles: B-Pressure Welders, Pipeline Arc Welders, Utility Welders

Essential Skills (Reading/Document Use/Numeracy): 4/4/4

Welders use manual or semi-automatic welding equipment to fuse pipe joints or structural metals together. They need to be certified as a B Pressure Welder to construct pipelines and tanks. All welds are tested using techniques that include MPI, x-ray and ultrasonics.

Pipeline, Pump Stations, Terminals

### **BOILERMAKERS (NOC 7234)**

Essential Skills (Reading/Document Use/Numeracy): 3/4/4

Boilermakers fit and weld metal parts or sections together to fabricate and assemble oil storage tanks. They work closely with others during fabrication, assembly and installation of heavy metal structures.

Terminals

#### **ELECTRICIANS (NOC 7242)**

Other Job Titles: Industrial Electricians, Pipeline Electricians, Maintenance Technicians

Essential Skills (Reading/Document Use/Numeracy): 4/4/4

Electricians install, maintain, test, troubleshoot and repair industrial electrical equipment. They are required to read and interpret electrical, mechanical and architectural drawings and electrical code specifications to determine wiring layouts.

Pump Stations, Terminals

#### INSTRUMENTATION TECHNICIANS (NOC 2243)

Other Job Title: Industrial Instrument Technicians
Essential Skills (Reading/Document Use/Numeracy): 4/4/4

Instrumentation Technicians install and calibrate the various instruments and technology used to monitor and control the pipeline, pump stations and tanks during the construction and operation phases.

Pump Stations, Terminals

### STRUCTURAL STEEL ERECTORS (NOC 7236)

Other Job Title: Structural Ironworkers

Essential Skills (Reading/Document Use/Numeracy): 3/3/3

Structural Steel Erectors, also called Structural Ironworkers, fabricate, erect, hoist, install, repair and service structural ironwork, precast concrete, concrete reinforcing materials and other metals used in the construction of buildings, piperacks, etc.

Reinforcing Ironworkers position and secure steel bars or metal mesh in concrete forms to reinforce concrete structures.

Pump Stations, Terminals

#### MILLWRIGHTS (NOC 7311)

Other Job Title: Industrial Mechanics

Essential Skills (Reading/Document Use/Numeracy): 4/4/4

Millwrights install, align and calibrate stationary and rotating industrial mechanical equipment such as valves, flow meters and pumps during the construction of pump stations and terminals. They read blueprints, diagrams and schematic drawings to determine work procedures.

Pump Stations, Terminals

#### INSULATORS (NOC 7293)

Essential Skills (Reading/Document Use/Numeracy): 4/3/4

Insulators apply insulation materials to tanks, piping, valves, equipment and other structures, to prevent or reduce the passage of heat, cold, sound or fire.

Pump Stations, Terminals

#### SHEET METAL WORKERS (NOC 7233)

Essential Skills (Reading/Document Use/Numeracy): 4/4/4

Sheet Metal Workers install sheet metal to insulate tanks, piping, valves, equipment and structures. They install metal cladding on buildings. They may need to work in confined spaces or at heights.

Pump Stations, Terminals





# **SPOTLIGHT: Apprenticeship**

Apprenticeship is the most common way to become a tradesperson.

An apprenticeship is a combination of on-the-job training and classroom learning that leads to a trade credential – or "ticket." Journey-certified trades workers oversee the work of apprentices, ensuring they receive practical, hands-on training that meets the needs of current and future employers. Once an individual has completed the apprenticeship and has received a ticket, the person is qualified to work in a skilled trade.

Apprenticeships and trades programs are regulated by provincial governments and may differ. The List of Compulsory and Optional Certification Trades in Alberta can be found here: http://tradesecrets.alberta.ca/SOURCES/PDFS/designated\_trades\_certification.pdf

Trades careers are regulated by the Industry Training Authority Act.

Apprenticeship in BC helps individuals get a Certificate of Qualification (CoQ) which is accepted across BC. A list of BC's trades programs can be found here: http://www.itabc.ca/discover-apprenticeship-programs/search-programs

About 50 trades offer an Interprovincial (IP) Red Seal, which certifies workers across Canada.

















### Essential Skills (Reading/Document Use/Numeracy): 2/2/2

Transport Operators and Truck Drivers are responsible for moving supplies, equipment and people to and from construction sites. They operate various types of equipment and vehicles including water trucks, fuel trucks, gravel trucks, dump trucks and other specialized vehicles. They operate in a wide variety of weather, traffic and general road conditions. Workloads and schedules vary depending on the goods being transported and the distances being travelled, with consideration for regulatory constraints regarding hours of work.

Transport Operators and Truck Drivers need to be physically fit and have good vision. They require the ability to learn how to manoeuver trucks in tight spaces and use on-board computer devices and other specialized equipment. They must load trucks to maximize the use of space, distribute weight accordingly and employ proper load securement procedures to ensure safety on the road. They conduct security checks and inspections enroute and, if necessary, make roadside adjustments and repairs. They must comply with National Safety Code provisions. A clean driver's abstract is required in addition to good paperwork skills in maintaining required log books.

Truck Drivers are able to remain alert and maintain a high level of concentration while driving safely and displaying courtesy on behalf of the Project. They have a customer service orientation and enjoy working with others. Truck Drivers remain calm in emergency situations and maintain good judgment while under pressure. Construction Safety Training System (CSTS) or Pipeline Construction Safety Training (PCST), Workplace Hazardous Materials Information System (WHMIS) and First Aid training are considered assets.

Typical Roles – Job titles generally reflect the types of trucks they operate.

# FLAT DECK/LOWBED OPERATORS; WATER TRUCK, PARTS TRUCK & GRAVEL TRUCK DRIVERS (NOC 7511)

Appropriate Provincial Class Licensing is required (Generally Class 1 or 3 with an Air Brake endorsement; dependent on vehicle configuration); potentially requiring a Transportation of Dangerous Goods (TDG) Certification.

Pipeline, Pump Stations, Terminals

#### **BUS DRIVERS (NOC 7511)**

Provincial bus license applicable to the passenger configuration; First Aid.

Pipeline, Pump Stations, Terminals

#### FUEL TRUCK & LUBE TRUCK OPERATORS (NOC 7511)

Provincial Class 3 license with air endorsement and TDG certificate; Workplace Hazardous Material Information System (WHMIS) training for the materials being dispensed.

Pipeline, Pump Stations, Terminals

#### **HYDROVAC TRUCK OPERATORS (NOC 7511)**

Provincial Class 3 license with air endorsement and TDG certificate; specialized training in the operation and maintenance of the unit.

Pipeline, Pump Stations, Terminals

#### PICKER TRUCK OPERATORS (NOC 7371 / 8241)

Other Job Title: Boom Truck Drivers

Picker Truck Operators run hydraulic lifting arms used to move machinery, materials and other large objects. Requires Provincial Class 1 or 3 license with an Air Brake endorsement; potentially a TDG certificate; provincial hoisting tickets and in Alberta, must be a registered apprentice or journeyman. In BC, Picker Truck or Boom Truck Operators must be certified or registered for assessment by the British Columbia Association for Crane Safety (BCACS).

### **HEAVY EQUIPMENT OPERATORS**



### Essential Skills (Reading/Document Use/Numeracy): 3/3/3 • All Skilled Positions

Heavy Equipment Operators (HEOs) operate one or more types of heavy equipment including bulldozers, trackhoes, excavators, side booms, loaders and graders. This position is responsible to excavate, move, load and grade earth, rock, gravel and other materials during construction. HEOs may also be responsible for basic maintenance of the equipment.

Typical Roles – Job titles generally reflect the types of machines they operate.

#### **BULLDOZER OPERATORS (NOC 7521)**

Bulldozer Operators run crawler-tractors equipped with large blades for moving soils and obstacles and rippers for loosening hard terrain. They clear and level land on the pipeline right-of-way and push other equipment to provide traction. Bulldozer Operators require steep slope winching experience.

Pipeline, Pump Stations, Terminals

#### TRACKHOE OPERATORS (NOC 7521)

Other Job Titles: Trenching Machine Operators, Trench Excavators

Trackhoe Operators use a variety of attachments to dig trenches, load heavy materials, vibrate and break rock or concrete, back-fill excavations and scoop and dump materials.

Pipeline, Pump Stations, Terminals

#### **GRADER OPERATORS (NOC 7521)**

Grader Operators spread and level earth, sand, gravel and rock, and plow snow. They use controls to adjust the height and angle of grader blades.

Pipeline, Pump Stations, Terminals

#### FELLER BUNCHERS (NOC 7521)

Other Job Title: Mulcher Operators

Feller Bunchers run crawler equipment used for clearing and processing of trees on the pipeline right-of-way.

Pipeline, Pump Stations, Terminals

Other HEOs include Skidder Operators, **Wood Processor Operators and Loader** Operators. HEOs require technical training for specific equipment types. For most HEOs, many construction employers will assess an operator's competency prior to hire. HEOs need to be physically fit, have good vision and depth perception, quick reflexes and good hand-eye co-ordination. TDG certification, Construction Safety Training System (CSTS) or Pipeline Construction Safety Training (PCST), Workplace Hazardous Materials Information System (WHMIS) and First Aid training are considered assets. Excavator operators will require a Ground Disturbance course.





### BENDING MACHINE OPERATORS (NOC 7521)

Bending Machine Operators run hydraulic pipe bender to fit the contours of the pipeline ditch and right-of-way.

**Pipeline** 

#### SIDE-BOOM OPERATORS (NOC 7371)

Side-boom Operators run side-boom tractors using hydraulically operated booms and lifting tackle to lift and manoeuver heavy items. Specialty skills will entail lifting and lowering the welded pipe into the trench as a concerted effort of a co-ordinated team.

**Pipeline** 

#### PILEDRIVERS (NOC 7521)

Piledrivers construct and install deep piles and caisson foundations for the dock and any other marine installations.

**Terminals** 

#### CRANE OPERATORS (NOC 7371)

Essential Skills (Reading/Document Use/Numeracy): 4/4/3

Crane Operators run mobile tower and boat/barge mounted cranes to lift, move, position or place equipment and materials. They may also operate pile driving cranes to drive pilings during the construction of terminals. Trade certification requirements differ depending on the type of crane being used.

**Terminals** 





