Emergency Response Plan

Trans Mountain Pipeline

TRANSMOUNTAIN

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PLAN MAINTENANCE

Responsibility

Single point accountability for the Emergency Response Plan development and maintenance rests with the Manager, Emergency Management. This accountability is for:

- The development of the Emergency Response Plan and managing any future revisions,
- Ensuring the pre-plans are evergreen, i.e., review and modify as needed,
- Ensuring the systems (ICS) and response structure are in place and able to meet the requirements set out in the Plan, and
- Ensuring an annual review of the plan is conducted for completeness with all updates issued to Plan holders.

Manual holders are responsible:

- For keeping their copies current and ensuring that all revisions are appropriately filed
- Studying all new material issued and incorporating it into their work practice
- Suggesting changes to correct existing material and contributing new text material to improve the quality of the manual

PLAN REVISIONS

Initiating Revisions

All requests for change must be made through the Manager, Emergency Management using the Revision Request Form located in this section of the manual.

Revision Distribution

Plan revisions are issued with an Acknowledgement of Receipt Form and a brief description of the changes itemized by chapter. The Acknowledgment of Receipt form must be signed and returned to the Emergency Management Department as specified. Revisions to the Distribution List will be maintained in a secure Trans Mountain (electronic) location and will be distributed to confidential manual holders only. All other revisions will be distributed to manual holders in a timely manner. A revised date is shown at the bottom of each updated or new page. The original date of the manual is 07/2014, with a revision completed on 02/2023. All revisions will be tracked on the Control Sheet.

Revisions after Release or Exercise

In the event that Trans Mountain experiences a release (worst case or otherwise), or conducts an exercise or training session, the effectiveness of the plan will be evaluated and updated to include any learnings as necessary. Time frames for completing Plan updates after a release or exercise are provided within the Emergency Management Documentation Procedure and guided by applicable regulations.

Changes in Operating Conditions

If a new or different operating condition or information would substantially affect the implementation of the plan, Trans Mountain will modify the plan to address such a change. Time frames for completing Plan updates after a change in operating condition are provided within the Emergency Management Documentation Procedure and guided by applicable regulations.

REVISION REQUEST FORM

Requested by:	Date:
Dept/ Agency:	Phone No.:
Revision Type: ___ Addition ___ Deletion ___ Correction	
Manual Section:	Page:
Revision (attach separate sheet if necessary):	
Signature of Requestor:	
Send to: Manager, Emergency Management Trans Mountain 2700-300 - 5th Avenue S.W. Calgary, AB T2P 5J2 Canada Fax: (403) 514-6401	

To be completed by Manager, Emergency Management	
Date Received:	Comments:
Date Reviewed:	
Issued as Revision: Y/ N	
If No, reason for Rejection:	
Signature Manager, Emergency Management	

CONTROL SHEET

Revision Number	Date of Revision	Change(s)	Approval
1	July 2014	New Format Issued with minor updates to all sections.	K. Malinoski
2	October 2015	Minor updates to Preface, Section 2, Section 7 - New valve locations and access added, Section 10 – replaced Air Monitoring Plan & Section 16	K. Malinoski
3	September 2016	Updated minor wording throughout manual, updated Preface, Section 2 and Section 7 extensively. Removed Confidential information to Confidential Appendix.	K. Malinoski
4	September 2017	Updates to minor wording in the Preface and Introduction Section 2.1 Spill Verification, 2.13 Other Notifications, Section 6 all, Section 8.9 Unified Command, 8.13 Liaison Officer, 8.19 Incident Records, Section 9.6 Emergency Equipment and Response Times	K. Malinoski
5	January 2018	Updates to Section 2.13.4 Agency Contacts, Section 8.14.6 Alberta Health Services Addition of 8.14.7 Alberta Region Department of Indigenous Services Canada, First Nations and Inuit Branch	K. Malinoski
6	April 2018	Updated wording throughout manual including; Preface, Section 2.11 – Reporting Requirements, Section 2.13.4 – Agency Contacts, 3.1 – Site Assessment Guidelines, Section 4.0 – Spill Containment and Recovery, Section 5.0 – Protection of High Consequence Areas, Section 7. 1 – Trans Mountain Pipeline Overview, Section 7.2 – Response Zone Summary, Section 8.13 – Liaison Officer, Section 8.14 – Government Agency Representatives, Section 8.18 – Terminating/Downgrading the Response, Section 8.20 – Post Incident Reporting and Debrief, Section 9.4 Waste Management Plan, Section 9.5 – Emergency Response Equipment and Response Times, Section 9.6 – Decontamination Plan, Section 9.7 – Public Evacuation Plan, Section 10.3 – Sampling and Monitoring Plan, Section 10.4 – Demobilization, Section 10.7 – Air Monitoring Plan, Section 11.4 – Communications, Section 13.0 –	K. Malinoski

Revision Number	Date of Revision	Change(s)	Approval
		Supplemental Plans, Section 15.0 – Response Plan Certification, Section 16.3 – Regulatory Background Provincial – British Columbia, Section 17.0 – Training and Exercises	
7	Oct 2018	Rebranding from Kinder Morgan Canada to Trans Mountain: headers, footers and throughout the document.	K. Malinoski
8	April 2019	Updates to section 2.12, 9.0,9.2, 9.3, 9.5.2, 9.5.6, 9.5.7 9.7 and 15.1	K. Malinoski
9	April 2020	Updated wording throughout manual, including: ERL to TAS, NEB to CER. Updates to Section 2.5 – Incident Management Team Notification/Activation, Section 4.8 – Response Tactics for Non-Floating Oil, Section 7.2 – Response Zone Summary, Section 9.5 – Emergency Equipment & Response Times, Section 13 – Supplemental Plans and Section 16 – Regulatory Background	K. McLernon
10	April 2021	Minor wording updates to Preface and Introduction Sections Section 2.9 – updated CER Incident Reporting Line telephone number Section 2.11 – Updated Reporting Requirements language for EMBC and included BC EAO drinking water reporting Section 2.13.2 – addition of Landowner Notification procedure Section 8.13.1 – Added reference to On-Site Community Monitor procedure Section 13.8 – Added reference and link to Convergent Volunteer Management Plan Section 17.0 – additional detail added to descriptions of responder training and exercises Updated all E:\Manuals references to Trans Mountains internal Emergency Tool Kit	K. McLernon
11	April 2022	Annual Review Completed. Minor wording adjustments to Preface Sections 2.8 – Facility Contacts updates Section 2.14 – Industry Contacts updates	K. McLernon

Revision Number	Date of Revision	Change(s)	Approval
		Section 2.16 – Mutual Aid updates (remove reference to CEPA) Section 5.0 – revised language added to High Consequence Areas Section 7.0 – Minor wording to District descriptions Section 7.3 – Revised Products Summary Table Section 9.7 – Revised wording to Public Evacuation Section 10.7 – Addition of Common Operating Picture	
12	September 2022	Updates throughout to include Line 2 and the Trans Mountain Pipeline Systems *Introduction* Definition of Qualified Individual added; updated graphic to align with Plan section headings Scope Emergency Response Philosophy – Reordered and updated to identify appropriate PPE first Section 1.0 – Minor update to wording Section 2.1.4 – Updated to include Line 2 technology Section 2.1.5 – Updated to include Line 2 technology Section 2.4.1 – Minor update to wording Section 2.5 – Addition of Security Officer Section 2.8 – Addition of Black Pines Pump Station Section 2.9 - Minor update to clarify language Section 2.10 – External Notification Chart- addition of Security Officer Section 2.11 – External Notification Chart- editorial revisions; added Parks Canada dispatch number Section 2.13.5 – Added reminder to state purpose when calling; added Parks Canada dispatch number Section 2.15 – Specified that activation procedures are identified in the Confidential Appendix Section 2.17 – Updated title to “Community Support Centres” and added reference to evacuee reception and convergent volunteer coordination centres Section 3.1 – Minor update to wording Section 3.4.1 – Minor update to wording Section 4.8 – Added reference to Section 5.2 Section 6.1 – revised content Section 6.1.1 Wildfire/Grass Fires – Added reference to searching for missing persons	K. McLernon

Revision Number	Date of Revision	Change(s)	Approval
		Section 6.1.2. Earthquake – Added reference that seismic event data is received by Control Centre; and searching for missing persons Section 6.1.3 Floods – Added reference to searching for missing persons; gas & water shut off Section 6.1.4 Avalanche – Added reference to searching for missing persons Section 6.1.5 Tornado – Added reference to searching for missing persons; gas & water shut off Section 6.3.2 Pump Station Fire – Added reference to searching for missing persons Section 6.3.5 Right-of-Way Pipeline Fire – Added reference to searching for missing persons Section 6.4.1 Terrorism – Added reference to searching for missing persons Section 6.4.3 Bomb Threat – Added reference to searching for missing persons Section 7.0 – Updated to include Line 2 information and reserves that the ROW traverses; updated location of Control Centre Section 7.2.1, 7.2.2, 7.2.3, 7.2.4 – Updated to include Line 2 information; Maps updated Section 8.5 – Updated diagram; addition of Security Officer to Command Section 8.9 – Updated diagram; addition of Security Officer to Command Section 8.13 – New section with description of Security Officer Section 9.0 – Updated diagram Section 9.2 - Updated diagram; addition of positions in the Pipeline Protection Branch Section 9.5 – Added information on 24-hour access to emergency response equipment Section 9.5.4 – Updated to identify placement of WMT secondary containment boom independent of other activities Section 9.5.6 –Updates to equipment list Section 9.5.7 – Updates to equipment list Section 9.7 – Updated including outlining authority to evacuate and summarizing legislated roles in ordering and conducting evacuation	

Revision Number	Date of Revision	Change(s)	Approval
		Section 10 Planning Section- Addition of Qualified Professional Section 10.2 – Updated diagram Section 11.2 - Updated diagram; removed Security Unit Leader Section 13.11 Terminal Evacuation Plan – new section added Section 13.1 Safety Data Sheets- content added regarding sharing of SDS with responders Section 15.1 -Table 1 –updated Section 16.1- Regulatory Background – Federal – Updated language Section 18 – New Section- Planning Standard Compliance information moved from Section 7 to own section	
13	April 2023	Section 2.13 Other Notification – language updated Section 2.13.5 Agency Contacts – table format updated Section 2.14 Industry Contacts - new section added Section 2.17 Incident Command Post and Staging Area Locations - minor edit for consistency among plans Section 2.18 Community Support Centres— description clarified Section 4.1 Initial Containment Actions—title of section revised Section 4. 3 Station- Primary Recovery/Removal- Spills – new section Section 4.6.2 J-Booming – new section added Section 4.7.1 Common Types of Outfall – section removed Section 4.7.2.2 Water-Gate Dam – table removed Section 4.7.2.3 Hard Containment Boom – table removed Section 4.7.3.1 Pipe Outfall Block – table removed Section 4.7.3.2 Inverted Weir / Underflow Dam – table removed Section 4.7.4 Response Tactics for Receiving Watercourse – updated language Section 4.13.7 Aquifers – revised section Section 6.1.4 Landslides – new section	K. Malinoski

Revision Number	Date of Revision	Change(s)	Approval
		Section 6.2.2 Responding on Ice Covered Waterbody – updated language Section 6.2.5.1 Right of Way Pipeline Fire Response Checklist – language updated Section 6.3 Trans Mountain Pipeline Fire Hazards – section removed Section 7.2.1 Alberta District – table updated Section 7.2.2 North Thompson District – table updated Section 7.2.3 Kamloops District – table updated Section 7.2.4 Sumas District – table updated Section 8.5 Response Team Organization- New diagram; addition of Security Officer to Command Section 9.0 Operations Section – updated chart Section 9.5.6 Mobile Spill Equipment List – updated equipment list 9.5.7 Mobile Fire Equipment List – updated equipment list Section 13.12 Groundwater Assessment Plan – new section Section 15.1 Declaration of Contingency Plan – updated language, updated table Section 18.0 Planning Standard Compliance – updated language	

DISTRIBUTION

As of September 2016, the Emergency Response Plan is available online to all external agencies and members of the public. Material that has been placed in a confidential appendix has been protected in accordance with CER Board Order MO-006-2016. A description of the nature of the protected information and a statement explaining why it has been protected is included in all cases. Controlled copies are distributed as below; however, the distribution list may change from time to time. A new version of the Emergency Response Plan will not be issued for a revision to the distribution listing.

No.	Issued To
Controlled Copies - External	
1000	Canada Energy Regulator
1001	Canada Energy Regulator – Vancouver Office
Controlled Copies - Internal	
1100	Control Centre – Edmonton
1101	Back-up Control Centre – Edmonton
1102	Central Region Office
1103	Western Region Office
1104	Director, Emergency Management
1105	Manager, Emergency Management
1106	Fraser Room
1107	Alberta District Supervisor
1108	North Thompson District Supervisor
1109	Kamloops District Supervisor
1110	Sumas District Supervisor
1111	Manager, Ops. Burnaby & Westridge Terminals
1112	Puget Sound District Supervisor
1113	Edson Station
1114	Jasper Station
1115	Clearwater Office
1116	Blue River Station
1117	Kamloops Station
1118	Hope Station
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1224	Environment Canada – NEEC
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1226	Vancouver Fraser Port Authority

INTRODUCTION

Initial Incident Actions

The initial responder to arrive at a spill site will take some immediate actions to ensure responder safety as well as the public and protect the environment. The initial responder will complete the following things, if appropriate and safe to do so while waiting for the Qualified Individual.[1]

1. Ensure the safety of all workers and public in the area of the spill
2. Assess the situation (i.e., incident size, severity, likely impacts)
3. Notify the Control Centre and/or Operations Supervisor/Manager immediately to activate the Trans Mountain Alert System (TAS) as outlined in Section 2.0 Internal and External Notification.
4. Take appropriate action to mitigate the impacts to life, safety, the environment, and property prior to the arrival of the Qualified Individual (QI)

Note: the initial responder will begin documentation on an ICS 201 form, and/or notes on other paper, or will relay the information to personnel at the Control Centre or District Supervisor who will initiate an ICS 201 form. This initial documentation will be kept with all other incident documentation.

How to use this Plan

This Plan is divided into 3 sections:

[1] The person who has been given authority to fund response efforts without consulting Trans Mountain leadership for further authorization and knows how to commence the response procedures identified in the pertinent response plans.

Purpose of the Plan

This is the Emergency Response Plan for the assets associated with the Trans Mountain Pipeline System operated by Trans Mountain. These entities are all referred to as “Trans Mountain”. “Trans Mountain Corporation” or "The Company”.

The purpose of this Plan is to provide guidance for quick, safe, and effective response to an emergency, in order to protect the public, personnel, environment and company property.

Scope of the Plan

This Emergency Response Plan (ERP) covers emergencies that originate along the Trans Mountain Pipelines and its associated facilities in Alberta and British Columbia. As part of the Emergency Response Plan maintenance practice, Trans Mountain implements a Hazard Assessment Process in order to generate an all-encompassing hazard inventory list. This list identifies potential emergency conditions that result from hazards associated with the Trans Mountain Pipeline.

Emergency Conditions may be defined as the result of a hazard negatively impacting people, property and/or the environment. Through the evaluation of hazards and their subsequent consequences, the Emergency Management Department develops and maintains plans and procedures to assist in mitigation, planning and response efforts for all real or potential emergencies.

The hazard inventory list is reviewed on an annual basis to ensure that new hazards are identified and evaluated against their potential emergency condition. This assessment is also used to determine if existing plans and procedures continue to meet the response requirements for all identified hazards and their associated risks. The Emergency Management Department maintains the hazard inventory evaluation internally.

The response zones in this plan all contain large diameter pipelines and associated storage facilities carrying refined and crude oil products as outlined in Section 7.0 Site Information. The potential effects of those products are outlined within the Safety Data Sheets for each product with information provided in Section 14.0 Safety Data Sheets. At least one section of pipeline in each response zone crosses a major waterway or comes within five kilometers of a public drinking water intake, as outlined in Section 7.0. An incident involving the pipeline has the potential to cause harm to the environment and/or people.

This plan will not cover the tactical response techniques to be implemented for a fire. Detailed response actions including tactical information for fires can be found in the site-specific Fire Pre-Plan.

Plan Implementation

This Emergency Response Plan (ERP) will be implemented for any emergency or drill (exercise) within Alberta or British Columbia that results from the Trans Mountain Pipeline System. If a different plan is identified as more applicable it may be used if the decision to use an alternate plan is first approved by Unified Command.

Emergency Definition

An emergency is defined as any condition that results in or may result in:

- Death or injury requiring hospitalization
- Explosion or fire
- Leak, rupture or spill
- Any significant event such as: earthquake, flood, severe storm or bomb threat that may threaten the Trans Mountain Pipeline System

Emergency Levels

The Trans Mountain Emergency Response Organization is based on a three-tiered response structure. Incidents are identified and categorized into one of the three tiers. Each Tier is managed by an escalating degree of management seniority and authority, and assistance from outside the initial response organization. The standardization of the ICS Structure and Incident Management Process provides the flexibility to tailor the size of the response organization to the specifics of the incident and allows for rapid adjustments as an incident evolves. Where appropriate, the Trans Mountain Incident Commander will invite the participation of federal, provincial and local agencies to form a Unified Command.

Level	Definition	Examples
1	The Company has the capability to manage and control a Level I emergency using company resources available within the area. The District Supervisor will assume the Incident Commander position.	• Oil spills confined to company property (pipeline station, terminal, or scraper trap) • Public, contractor, or employee safety not endangered • Public property not endangered • Local response handled by district personnel • Notification may not be required to regulatory authorities • Little or no media interest
2	The Company has the capability to manage and control a Level II emergency using company resources and expertise, with some assistance from local contractors. The Region Director or designate may assume the Incident Commander position.	• Oil has migrated beyond company property (pipeline station, terminal, or scraper trap) but not into a waterway • Emergency services may be required (e.g., fire, police, ambulance) • Public, contractor, or employee safety and/or property may be endangered • Notification required to regulatory authorities • May use a unified command organizational structure in the emergency • Local media interest

3	The Company may request assistance from other industry, municipal, or state agency personnel to support the response to the incident. The Region Director will assume the Incident Commander position.	• Major emergency condition such as:
		  ○ uncontrolled leak
		  ○ spill on a watercourse
		  ○ large fire at an operating facility or office building
		  ○ fatality or serious injury to an employee, contractor, or the public
		  ○ spill of hazardous substances
		• Major off-site environmental impact has occurred
		• Public, contractor, or employee safety and/or property is endangered
		• Emergency services are required (e.g., police, fire, ambulance)
		• Notification required to regulatory authorities
		• Use of a Unified Command organizational structure in the emergency, as required, to facilitate coordination of company, government and other agency response to the emergency.
		• Local, provincial/state, and/or national media interest.

Emergency Response Philosophy

On all emergency incidents, Trans Mountain will follow the following basic response approach:

- **Select and Don Personal Protective Equipment (PPE)**
    - All incident responders must be protected with the PPE appropriate to the hazards present:
        - Approved fire-resistant coveralls
        - Hard Hats (where overhead hazards are present)
        - Gloves
        - Splash goggles
        - Rubber steel-toed boots
    - Also:
        - PPE must be worn properly in order to fully protect responders.
        - Damaged or heavily oiled PPE should be replaced as soon as possible.
        - All responders leaving the *Hot Zone* must go through a decontamination zone *(Warm Zone)* to ensure that contamination is not spread into the *Cold Zone.*
- **Control the Incident Site**
    - The incident scene must first be controlled to ensure a safe and effective response to any incident:
        - Don't rush in; hazards must first be fully assessed
        - Conduct vapour monitoring and confirm levels (H_2S, LEL levels) are safe as approaching the incident site
        - Establish and maintain an isolation perimeter, with hot, warm and cold zones
        - Establish communications with the Control Centre; request information regarding the situation (e.g., alarms, product, pipeline readings, shutdown actions and other relevant information)
        - Establish and announce command at the ICP, either at the incident scene location or, if necessary, at a remote location
        - Establish staging area(s)
- **Size up the Situation**
    - A site assessment will identify the scope and nature of the incident, as well as any potential hazards to responders:
        - Assess whether visual alarms have been activated
        - Recognize and identify any hazardous materials involved
        - Source of any releases
        - Potential exposures
- **Evaluate the Hazards and Risks**
    - An assessment must be conducted to evaluate the level of risk to responders and the public:
        - Assess health, physical and chemical hazards
        - Gather technical data (SDSs, etc.)
        - Conduct vapour monitoring

- **Establish Initial Objectives**
    - After the potential hazards have been identified, the Incident Commander(s) can establish the initial objectives for the response. Typical initial objectives include:
        - Control the incident Scene
        - Ensure the safety of responders and the public
        - Establish Incident Command Post
- **Manage Information and coordinate Resources**
    - It is essential that information flows quickly and freely to all resources to ensure a safe and coordinated response:
        - Expand the ICS as needed, especially if a Unified Command is established
        - Ensure that all (internal and external) notifications are made
        - Conduct briefings
        - Confirm all communications to ensure that they are fully understood and implemented
- **Implement Response Objectives**
    - Once initial objectives have been established, it will be possible to develop, and implement, strategies and tactics to achieve these objectives. These may be:
        - Offensive (i.e., emergency rescue, firefighting, spill source control)
        - Defensive (i.e., protecting the public, fire control, spill response)
        - Non-intervention (protecting the public)
- **Manage the Incident**
    - On larger incidents, it will be necessary to operate over a number of Operational Periods. In these cases, it will be necessary to fully staff the Incident Management Team, especially the Planning Section:
        - Establish Incident Objectives for each Operational Period
        - Conduct Tactics and Planning Meetings
        - Develop and approve Incident Action Plans
        - Conduct Operations Briefings
- **Terminate the Incident Response**
    - Once the emergency phase of the incident is over, the Incident Commander will stand down the Incident Management Team and ensure that all post-incident activities are completed:
        - Transition to, and conduct the post-emergency phase of the response
        - Conduct an incident debrief
        - Ensure that all incident documentation is completed
        - Ensure that all equipment, PPE and ICP supplies are replenished
        - Transition from Emergency Phase to Project Phase with adequate documentation and continue any required project phase activities, i.e., site remediation, repair to terminal assets

1.0 RESPONDER HEALTH AND SAFETY

It is important to understand that the different hydrocarbon products handled pose different hazards when spilled, and/or are on fire, depending on their chemical composition. Therefore, the primary hazards, and the need for vapour monitoring, and the cleanup techniques will depend on the characteristics and volume and type of product.

Many crude oils (including “sweet” crudes) can emit potentially dangerous levels of H_2S, and most crude oils also contain Benzene. Typically, the risks associated with the concentration of potentially dangerous vapours will diminish with time, due to reduced vapour production as the lighter components volatize, and vapours disperse. There are exceptions to this however, i.e., in some cases, where crude oil pools into thick layers, a skin may develop on the surface, trapping vapours. Later, if the skin is broken and the oil disturbed, the oil might emit vapours normally associated with freshly spilled oil. Some crude oils have low flash points, especially during the initial hours after being spilled, when hydrocarbons burn there are other risks to consider, such as the combination of chemicals in the smoke plume and radiant heat emitted by the fire. In all of these cases, the risk of accidental ignition and/or the inhalation of toxic vapours must be mitigated, and a detailed site assessment (see Section 3.0 Spill/Site Assessment) must be completed before on-scene operations are initiated. This assessment will be made by the Safety Officer. In all cases, the results of the initial site assessment should be used to develop a Health and Safety Plan.

The Initial Site Health & Safety Plan (ISHSP) should be completed as soon as possible by one of the initial responders and updated as required. When completing the ISHSP some of the information may not apply during the initial stages of the response, but may change within a short period, thereby altering the PPE and/ or other requirements.

The ISHSP:

- Aids the initial responders in assessing hazards related to the incident
- States the required PPE to be used
- Documents important health and safety information
- Serves as an interim "Plan" until the Site Health & Safety Plan (Section 1.3) is developed
- Assigns responsibilities, i.e., completion of the ICS 201 and notification
- Identifies "site set-up" features that may be required
- Authorizes work to be completed (in lieu of a Safe Work Permit)

Upon the completion and delivery of the Site Health & Safety Plan, the Initial Site Health & Safety Plan becomes void.

1.1 Safety Guidelines

1.1.1 Skin Contact

The accidental absorption of toxins through skin/eye contact can be greatly reduced through the wearing of oil-resistant personal protective equipment (PPE). These include:

- Approved fire-resistant coveralls
- Hard hats (where overhead hazards are present)
- Gloves
- Splash goggles
- Rubber steel-toed boots

Also:

- PPE must be worn properly in order to fully protect responders.
- Damaged or heavily oiled PPE should be replaced as soon as possible.
- All responders leaving the *Hot Zone* must go through a decontamination zone *(Warm Zone)* to ensure that contamination is not spread into the *Cold Zone.*

1.1.2 Inhalation of Vapours

The need for respiratory protection will be determined by the Safety Officer after a review of the SDS and data retrieved from the initial site assessment (see Section 3.0 Spill/Site Assessment). If toxic vapour levels are determined to exceed safe working limits (see Section 3.3 Vapour Monitoring Flowchart for details), it might be possible for responders to work while wearing half-face respirators fitted with organic cartridges, or SCBA. In this case, on-going vapour monitoring is essential to ensure that vapour levels do not exceed safe working limits.

1.1.3 Fire/Explosion

All hydrocarbon products are capable of ignition if certain conditions are met. It is important to review the SDS to determine the flash point of the material spilled and perform vapour monitoring (for LEL). Whenever vapour levels are approaching 10% of the LEL for any spilled product, responders will leave the area immediately. In the event of a fire and response efforts are required the responders will have radiant heat protection.

1.1.4 Other Hazards

There are a number of additional potential hazards faced during spill response including slips, trips and falls, and working around water and equipment. Special care should be taken when walking on oiled surfaces, especially during night-time operations. The Site-Specific Health and Safety Plan shall identify these potential hazards, and they must be clearly communicated to responders.

1.2 Initial Health and Safety Plan

The Initial Health and Safety Plan form is available on the intranet site in the Emergency Toolkit.

1.3 Health and Safety Plan

The Health and Safety Plan form is available on the intranet site in the Emergency Toolkit.

2.0 INTERNAL AND EXTERNAL NOTIFICATION

Immediate notification is a key element of any emergency response action. The health and safety of employees and the public is paramount and, as a result, immediate notification is essential. This section describes both the internal and external notification processes, and includes the contact information for Trans Mountain resources, and external resources.

2.1 Incident Verification

The first step in many incidents is to confirm that an emergency condition exists. Reports may come from a number of sources including automated detection systems, on-site Trans Mountain or other personnel, and members of the public and/or emergency services (police, ambulance, fire).

2.1.1 Trans Mountain Personnel Detection

Trans Mountain employees and contractors conduct routine maintenance and inspection work along the Trans Mountain Pipeline, associated facilities and the pipeline right-of-way on a regular basis. In the course of this work Trans Mountain employees and contractors may come across signs of a pipeline release. In the event that a Trans Mountain employee or contractor identifies or suspects that a pipeline release has or may occur they are to follow the internal notification procedure as outlined in section 2.4 Internal Notification Procedure of this Emergency Response Plan.

2.1.2 Member of the Public

Pipeline releases, both real and/or suspected, may be identified by a member of the public. Signs of a pipeline release may include:

- A strong petroleum odour (like gasoline or diesel fuel)
- Strong sulphur smell (like rotten eggs)
- Dead or discoloured vegetation
- Pools of liquid when the rest of the right-of-way is dry
- Petroleum sheen on water
- Unusual hissing or roaring sound

In the event that a member of the public identifies or suspects a pipeline release from a Trans Mountain operated pipeline, they are to call the Emergency Number at **1-888-876-6711**. This number connects directly to Trans Mountain's Control Centre and is monitored on a 24/7 basis.

2.1.3 Emergency Services

In the event that an emergency services agency (police, fire, EMS) is notified of, or suspects, a pipeline release from a Trans Mountain owned pipeline, they are to call the Emergency Number at **1-888-876-6711**.

2.1.4 Automated -Spill Detection

The pipeline is equipped with pressure and flow monitors, which exercise local control and transmit data to the Control Centre. These systems are set to alarm or shut down on pre-set deviations of pressure flow.

Engineering Operating Limits establish the alarm thresholds for mainline pressures and flow rates for all operating line segments.

The Trans Mountain pipeline system is continuously monitored by four types of protective monitoring systems:

- Distributed Fiber Optic Sensing System
- Real-Time Transient Hydraulic Modeling Leak Detection
- Statistical Pressure Deviation Leak Detection
- Statistical Flow Imbalance Pipeline Leak Detection

Trans Mountain has flexibility and redundancy in the manner in which data is transmitted to the Control Centre. Network configuration and transmission protocols provide the flexibility to establish guaranteed delivery transmissions as required. Communication system redundancy provides accurate and reliable data to pipeline operators. The SCADA system acquires data primarily via a dedicated fibre-optic network. Fiber optic Satellite communications allow large volumes of data to be transmitted both to and from all field locations very rapidly. Fibreoptic connectivity via a fibre line exclusive to Trans Mountain provides the primary telecoms and secondary telecoms are provided by a third party.

In case of an alarm, the Control Centre personnel will take the appropriate actions in accordance with operating procedures. The following are a summary of the operating procedures for automated spill detection:

- SCADA System 5-Second Data Access – Control Centre monitor and control pipeline operations with the SCADA system in the Control Centre. The ultimate decision on leak detection lies with the Control Centre.
- Operating Limits Alarms – is a parameter alarm which is programmed in the station PLC to alert upset conditions regardless of whether the Operator is actively monitoring the data point in question.
- Tank Gauging with Parameter Alarms – tank gauge data is available to Control Centre. The systems are gauged automatically by the SCADA System. Operating Limit Parameter alarms are also available for tank levels to ensure no potential tank discharge.
- Operating Limits Alarms Parameter alarms, in combination with five-second data acquisition rates, provide near-instantaneous notification of potential upset conditions on all operation mainlines.
- Terminal and Pump Stations Hydrocarbon monitors – detection of hydrocarbons at the Terminals and Pump Stations alarm in the Control Centre and the local Terminal control room.
- Trending – the SCADA system and the protective monitoring systems includes a trending facility which graphically displays pressures, temperature, and flow rate data for each mainline pump and oil receiving location on the system. This system can provide valuable insight into operations history and can help the operator proactively address potential upset conditions.

2.1.5 Automated/Complaint Detection Verification

If the detection method comes from alarms to the Control Centre Operator (CCO) or a member of the public the potential incident must then be visually verified by Trans Mountain personnel. If a leak, fire or other emergency event is confirmed the on-site operator will inform CCO of the incident and CCO will initiate the internal notification procedure.

2.1.6 Early Detection Methods

Aerial patrol flights are made on a regular basis along the right-of-way. The intent of the patrol is to observe the area directly over the pipeline right-of-way for leaks, exposed pipes, washes, missing

markers and other unusual conditions. Construction on the right-of-way, or adjacent to the right-of-way is also closely monitored.

Discharge to the land and/or surface waters may also be detected by company personnel when employees perform daily scheduled inspections of the site.

Right-of-way marker signs are installed and maintained at road crossings and other noticeable points and provide an emergency telephone number for reporting emergency situations. The company also participates in the “call before you dig” or “One Call” utility notification services which can be contacted to report a leak and determine the owner/operator of the pipeline.

If a notification is made to a local office or pump station, the Trans Mountain representative receiving the call will generally implement the following actions:

- Notify the Control Centre and regional office/Qualified Individual
- Dispatch field personnel to the site to confirm discharge and conduct preliminary assessment
- Notify their immediate supervisor and provide assessment results

2.1.7 Detection in Adverse Weather

Line ruptures that cause worst case spills in adverse weather conditions would normally be detected and acted upon within 5 minutes by the Control Centre Operator. In the event of detection by a member of the public, or where a leak is suspected, it must be visually verified. If adverse weather is preventing visual detection, the pipeline will be shut down for safety reasons, until visual detection occurs. Additional equipment may be used in these situations which includes vapour detection, and thermal/infrared imagery.

2.1.8 Detection of Spills to Groundwater

In an area where a spill occurs that is not on impermeable ground a contractor will be used to assist with the detection and ongoing evaluation of a spill that may impact groundwater.

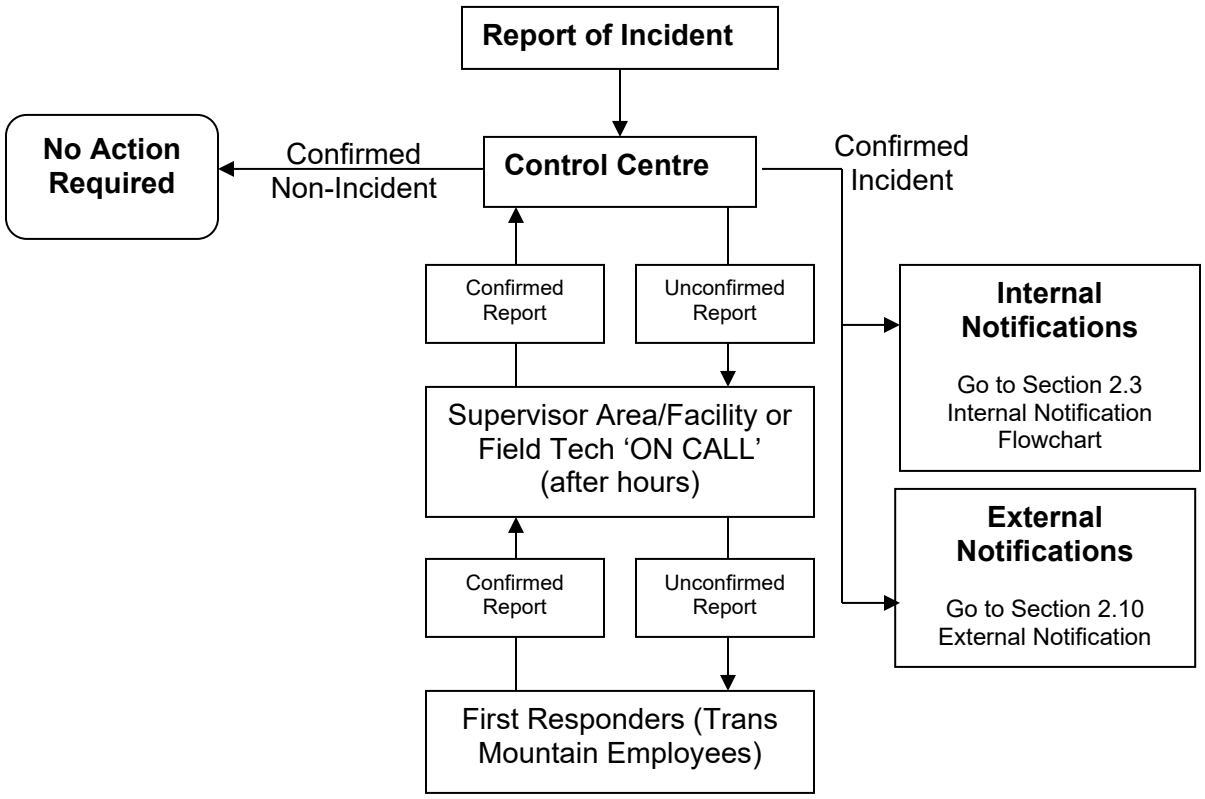
2.1.9 Shutdown Events

If abnormal conditions exist, the Control Centre will take the appropriate actions to ensure that a release does not occur. If a discharge has occurred, the Control Centre will take actions to limit the magnitude. In either case appropriate actions taken by the Control Centre may include, but are not limited to:

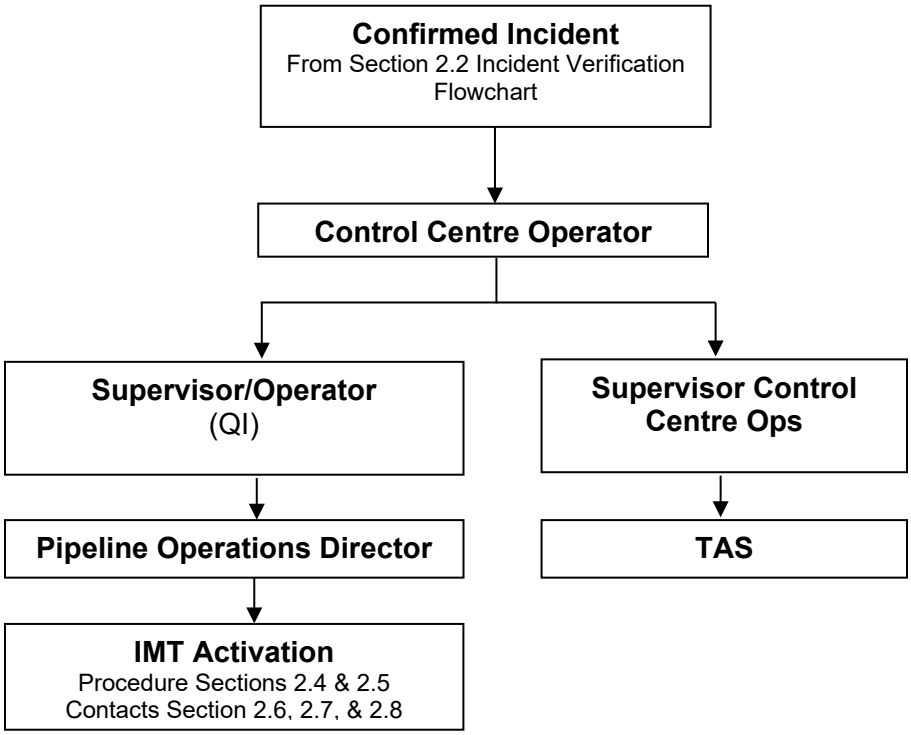
- Shut down affected line segment if there is an indication of a leak
- Isolate line segment
- Depressurize line
- Start internal and external notifications
- Mobilize additional personnel as required

2.2 Incident Verification Flowchart

The first step in many incidents is to confirm that a spill has actually occurred. Spill reports may come from a number of sources including the public and first responders (police, fire and ambulance). Once a report is received the following flowchart shows the direction of communication to verify an incident.



2.3 Internal Notification Flowchart



2.4 Internal Notification Procedure

All spills, regardless of size, must be reported immediately to the Control Center, who will:

- Contact the District Supervisor to verify and assess the situation
- Determine the Response Level (i.e., Level 1, 2 or 3 - See Introduction for description of the 3 Response Levels)
- Initiate the notification of company and external personnel

2.4.1 Information to Report

Information about the spill should be as clear, concise, accurate and timely as possible. The minimum information required, for initial report and update reports, should be:

- Name and telephone number of the caller
- Date and time of the call
- Name of pipeline
- Location of the incident
- Type of incident
- Product(s) involved
- Estimated quantity
- Actions taken to-date
- Assistance required
- Injuries
- Weather conditions
- Reason for discharge (if known)

2.4.2 How to report

Call the Control Centre at 1-888-876-6711.

Note: The Control Centre number is monitored 24 hours a day and is voice recorded.

2.5 Incident Management Team Notification/Activation

Upon being notified of the incident, the Control Centre will issue a TAS. The TAS system is an online tool that delivers an automated group text message to designated Trans Mountain personnel when notification of an emergency or non-emergency event is required. The CCO fills in the Emergency Condition Report and issues a TAS call. Once received the mandatory call-in personnel will participate in a conference call to determine next actions, and the IMT members that need further contact/mobilization. An initial IMT will be set up using these individuals. The mandatory callers are as follows:

- Director, Pipeline Operations
- Director, Edmonton Terminal & Control Centre
- Director, Burnaby & Westridge Terminals
- Director, EHS (Calgary)
- Director, Emergency Management
- Director, Pipeline Integrity
- Director, Engineering and Facility Integrity
- Manager, Emergency Management
- Manager, Environment
- Public Affairs Representative
- Legal Representative
- Field Representative
- Security Representative

Other Active Participants:

- Chief Operating Officer
- VP, Operations & Engineering
- Manager/Supervisor Control Centre
- Impacted District Supervisor
- EHS, Regional Contact
- Shipper Services Representative

If the online system is not operational the CCO will begin a manual call down of the above individuals and request they join the conference call. If the conferencing telephone lines are not operational the flow of information will occur via individual telephone calls until an alternate conferencing solution is available.

The following positions will be assigned at a minimum during this call:

- Incident Commander
- Safety Officer
- Security Officer
- Information Officer
- Liaison Officer
- Legal Officer

- Operations Section Chief
- Planning Section Chief
- Logistics Section Chief
- Finance/Administration Section Chief

As core IMT members arrive at the site or are assigned, they are responsible for contacting the remaining members of their respective sections/units/groups/division, deemed necessary based on the size and nature of the incident.

2.6 Trans Mountain Contacts

“Trans Mountain Contacts” consist of a list of Trans Mountain personnel names and contact information, who have been trained in the use of the Incident Command System (ICS) and their applicable ICS roles. In the event of an emergency, these personnel would fill the ICS functional roles. This information has been removed from the manual following the requirements of the Personal Information Protection and Electronic Documents Act (PIPEDA) (federal legislation). The information is provided on a controlled basis within the confidential appendix of this manual.

2.7 Trans Mountain Alert System Contacts

The “Trans Mountain Alert System (TAS) Contacts” is a list of Trans Mountain business unit leadership including supervisors/managers/directors and their alternates contact information. If an event were to occur, these personnel participate in the initial emergency notification briefing and any follow-up calls, if required. This briefing normally occurs via a telephone conference call by way of a pre-designated emergency conference call telephone number but could occur in person, if all were in the same location at the same time. This information has been removed from the manual following the requirements of the Personal Information Protection and Electronic Documents Act (PIPEDA) (federal legislation). The information is provided on a controlled basis within the confidential appendix of this manual.

2.8 Facility Contacts

District	Facility	Phone
Edmonton Terminal	Edmonton Terminal	780-449-5950
Alberta District	Chip Pump Station	780-325-2575
	Edmonton Office	780-449-5900
	Edmonton PLP	780-449-5960
	Edson Station	780-723-4425
	Gainford Pump Station	780-797-3007
	Hinton Pump Station	780-866-2371
	Jasper Station	780-852-4225
	Jasper PLP	780-852-4233
	Niton Pump Station	780-795-3733
	Stony Plain Pump Station	780-963-2242
	Wolf Pump Station	780-723-3957
North Thompson District	Albreda Pump Station	250-566-9037
	Blackpool Pump Station	250-587-6459
	Blue River Station	250-674-6309
	Blue River Maintenance	250-673-8321
	Clearwater Office	250-674-6310
	Chappel Pump Station	403-514-6797
	Finn Pump Station	250-673-8301
	McMurphy Pump Station	250-678-5301
	Rearguard Pump Station	250-566-9734
Kamloops District	Black Pines Pump Station	250-371-4015
	Darfield Pump Station	250-672-5140
	Kamloops Office	250-371-4000
	Kamloops Station	250-371-4050
	Kamloops Central Stores	250-371-4093
	Kamloops Products Take-off	250-554-1955
	Kingsvale Pump Station	250-378-5473
	Stump Lake Pump Station	403-514-6798
	Suncor Take-Off Station	250-554-1955
Sumas District	Burnaby Terminal	604-268-3050
	Hope Station	604-860-4182
	Hope Maintenance	604-869-5993
	Port Kells Pump Station	604-888-7359
	Sumas Station	604-852-4008
	Sumas Terminal	604-861-7931
	Wahleach Pump Station	604-794-7637
	Westridge Marine Terminal	604-298-3612
Puget Sound	Ferndale Station	360-380-1945
	Laurel Station	360-398-1541

2.9 External Notification

2.9.1 External Notification – Potential Emergency Condition

In the case of a potential emergency condition[2] notification to the Transportation Safety Board of Canada (TSB), Canada Energy Regulator (CER), Emergency Management British Columbia (EMBC), and/or Alberta Emergency Management Agency is made by the on-call EHS Representative when any of the following conditions are met:

1. Emergency Shutdown – is an event or situation that could imminently be hazardous to persons, property or the environment. This includes but is not limited to component malfunction or personnel error that could cause a hazard to persons, property or the environment, an operational failure causing a hazardous condition, natural disaster, a terrorist threat, third party damage that could affect pipeline operations, leaks or spills, fires or a response to the activation of an emergency system.

2. Safety Shutdown – is a situation where a pipeline is shut down due to an emergency or abnormal operating condition along a pipeline, or at a terminal, station or other facility. The automated shutdown of a pipeline due to the activation of a protective device in response to an abnormal operating condition is also considered a Safety Shutdown.

3. Odour Complaint – in the event of multiple complaints and/or a single complaint in conjunction with available operating data, the CCO has a reason to suspect a release of product and decides to do a Safety Shutdown of the pipeline and/or station.

Canada Energy Regulator Online Event Reporting System (OERS)

Emergency Management British Columbia: 800-663-3456

Alberta Emergency Management Agency: 866-618-2362

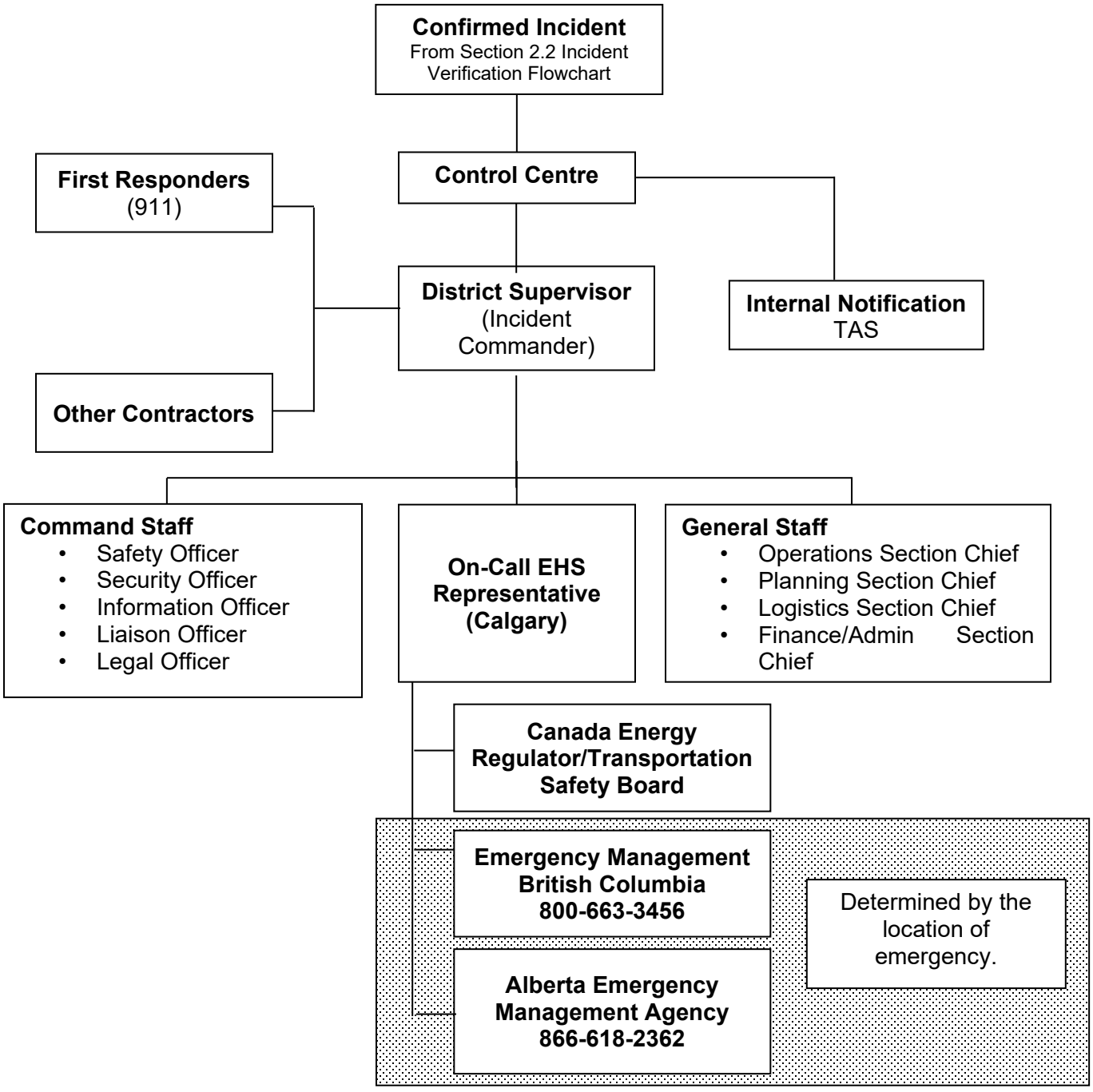
Notes: The CCO has the authority and the responsibility to shut down a pipeline, station, or terminal during an emergency or as a precaution when in their judgment, further operation is unsafe. The CCO will not be faulted for shutting down under these conditions.

A field technician or District Supervisor may request a shutdown as the result of local conditions in response to the investigation of a complaint or regular duties where a release or other abnormal operating condition is suspected. The CCO will comply with the request and initiate the Emergency Condition Response Procedures.

Notification to the Canada Energy Regulator OERS System is through the online portal https://apps.cer-rec.gc.ca/ers. CER Incident Reporting Line 403-299-2773 may also be used when there is a potential emergency situation. If there is some doubt as to whether an event should be reported or whether an event has occurred, a potential event will be reported at the very least.

[2] A potential emergency can be defined as a spill of unknown volume, unconfirmed and is adjacent to water or where there is a pathway to water, and the environmental conditions, such as rain events or known shallow groundwater make impacts to water likely.

2.10 External Notification – Confirmed Emergency Condition



Note: Notification to the Canada Energy Regulator/Transportation Safety Board is conducted through the one window Online Event Reporting System (OERS) https://apps.cer-rec.gc.ca/ers. Where an event qualifies as a significant incident[3] it must be reported immediately via the TSB Reporting Hotline, then the details are entered into OERS as soon as possible and within a minimum of three (3) hours after the incident occurrence.

[3] Significant incident is an acute event that results in: death, missing person (as reportable pursuant to the DPR under COGOA or OGOA), a serious injury (as defined in the OPR or TSB regulations), a fire or explosion that causes a pipeline or facility to

2.11 Reporting Requirements

Call Order	Agency	Notes
District Supervisor/Incident Commander Initial Calls		
1	**911 Call Centre** 911 or 9911 - from a company land line	The local 911 call centre will be notified of any incident to inform the call centre operators of the problem or potential problem, so they do not allocate additional unneeded resources to the event.
Trans Mountain On-Call EHS Representative – All Incidents		
1	**Canada Energy Regulator/ Transportation Safety Board** https://apps.cer-rec.gc.ca/ers **Significant Event TSB Reporting Hotline** (819) 997-7887	Reportable incidents must be reported through the one window Online Event Reporting System (OERS). Where an event qualifies as a *significant* incident it must be reported *immediately* via a call to the TSB Reporting Hotline; incident details then entered into OERS as soon as possible and within 3 hours.
District Supervisor/Incident Commander – Incident impacting Fraser River or Burrard Inlet		
1	**Canadian Coast Guard** 1-800-889-8852 ***or*** **Marine Communications and Traffic Services (MCTS)** Marine Channel 16 VHF ***and*** **Department of Transport Canada Marine Safety Office** Office: 604-666-3636 Fax: 604-666-5444	All marine spills must be reported verbally as soon as feasible. All marine spills must be reported in writing as soon as feasible. Form available in Section 2.12 External Agency Reporting Form.
2	**Vancouver Fraser Port Authority** 604-665-9086	For spills that impact the Fraser River (from approximately Darby Reach Regional Park to the mouth of the river) and/or Burrard Inlet.
3	**Western Canada Marine Response Corporation (WCMRC)** 855-294-9116	Primary Response Contractor to assist with equipment and personnel for spill that impact the Fraser River and/or Burrard Inlet.

be inoperative, a LVP hydrocarbon release in excess of 1.5 m^3 that leaves company property or the right of way, a rupture; or a toxic plume as defined in CSA Z662. For the purposes of this document, a “rupture” is an instantaneous release that immediately impairs the operation of a pipeline segment such that the pressure of the segment cannot be maintained.

Call Order	Agency	Notes
District Supervisor/Incident Commander/EHS Representative or Designate		
1	**Western Canada Spill Services (WCSS)** 866-541-8888	Equipment provider for spills that are in Alberta or on land in British Columbia. Note: caller to request a spill specialist.
Trans Mountain On-Call EHS Representative – Incident in Alberta		
1	**Alberta Emergency Management Agency** 866-618-2362	Coordinates the provincial government response.
2	**Alberta Environment & Parks and Alberta Energy Regulator** **Environment Canada** 800-222-6514 780-422-4505	Notifications for all environmental emergencies, including spills, can be made by one call to the Alberta Energy & Environment 24 Hour Response Line (1-800-222-6514). Alberta Environment & Parks makes notification to other provincial agencies as needed including Environment and Climate Change Canada (ECCC) and Fisheries and Oceans Canada.
3	**Parks Canada (Jasper) Dispatch** 780-852-6155	If incident occurs within Parks Canada (Jasper)
Trans Mountain On-Call EHS Representative – Incident in British Columbia		
1	**Emergency Management & Climate Readiness (EMBC)** 800-663-3456	Notifications for all environmental emergencies, including spills, can be made by one call to EMBC at (800) 663-3456. EMBC makes notifications to other provincial agencies as needed including BC Ministry of Environment, Lands & Parks, Environment Canada, Canadian Coast Guard, BC Oil and Gas Commission[4], and affected municipal governments.

[4]EMBC discretion to include BC Oil and Gas Commission on incident notification and updates list.

Call Order	Agency	Notes
2	**British Columbia Ministry of Environment & Climate Change Strategy (MoE)** 800-663-3456	Must report a spill that enters, or is likely to enter, a body of water, or the quantity of the substance spilled is, or is likely to be, equal to or greater than the listed quantity for the listed substance (BC Spill Reporting Regulation). In the event that a spill originating from the Trans Mountain Pipeline is confirmed to contaminate drinking water, the company must notify BC MOE within the following time periods: • As soon as practicable; • Within 72 hours, whichever is less. The 24-hour, toll free number connects with the Emergency Coordination Centre (part of EMBC).
3	**BC Environment Assessment Office (BC EAO)** 800-663-3456	In the event that a spill originating from the Trans Mountain Pipeline is confirmed to contaminate drinking water, the company must notify BC EAO within the following time periods: • As soon as practicable; • Within 72 hours, whichever is less. The 24-hour, toll free number connects with the Emergency Coordination Centre (part of EMBC).

2.12 External Agency Reporting Form

This form is to document incident information to be sent to external agencies.

Name and Address of Company/Oil Handling Facility
Name of Pipeline/Identity of Vessel Involved
Name and Position of On-Scene Commander/Person Responsible for Implementing ER Plan
Date and Time Discharge
Location of Discharge
What is the receiving environment? Land, Water, Wetland, Solid Surface (asphalt, concrete)
Name of Product Involved and associated SDS
Reason for Discharge (i.e., Material Failure, Excavation Damage, Corrosion)
Estimated Volume of Discharge
Weather Conditions On-Scene
Actions Taken or Planned by Persons On Scene

2.13 Other Notifications

2.13.1 Local Governments

Notification of the local government agencies may occur through 911 and on-scene coordination with emergency services. Alternately the impacted communities will be identified based on the location of the incident using the Geographic Information System mapping applications. Trans Mountain maintains a database of local contacts, including emergency managers, and will contact affected communities as soon as possible. The Liaison Office will be provided with all local contacts for additional notifications and follow-up as soon as possible, but within 24 hours of the immediately reportable incident occurring.

2.13.2 Landowners

Notification to landowners, including those whose land may be affected, occurs through the Affected Landowner Coordinator as part of the incident Liaison Office. The impacted landowners will be identified based on the location of the incident using the Geographic Information System mapping applications. Trans Mountain maintains a database of landowner contacts and will contact affected landowners with priority to those that are geographically closest to the incident.

2.13.3 Indigenous Communities

Notification of the Indigenous communities, including those whose traditional territories may be affected, occurs through the Indigenous Relations Coordinator as part of the incident Liaison Office. The impacted communities will be identified based on the location of the incident using the Geographic Information System mapping applications. Trans Mountain maintains a database of Indigenous community contacts and will contact affected communities as soon as possible, but within 24 hours of the immediately reportable incident occurring. Priority will be given to those that are geographically closest to the incident.

The Trans Mountain Indigenous Advisory and Monitoring Committee (IAMC) will be notified in accordance with the established protocol.

2.13.4 Other Government Contacts

Alberta and British Columbia have one window reporting which is to trigger call-down of additional resources if required. Trans Mountain recognizes that in some situations a provincial response may not be required, however the local authorities and/or other potentially impacted provincial agencies may wish to receive additional information regardless of the decision to respond from the Provincial Or Federal governments, therefore Trans Mountain is committed to making additional notification calls, as time allows and establish conference call solutions to ensure potential responders are aware of the situation. The following list is a list of agencies that may be contacted after all other mandatory reporting is complete.

2.13.4.1 Coordination Call

An inter-agency coordination call will be arranged by the Liaison Officer to provide an incident briefing, including confirming Unified Command membership and establishing an ongoing briefing schedule. The call's purpose is to:

- Provide a situation update utilizing verified information only (approved situation reports from previous or current operational period):
    - Incident situation: location, magnitude and potential impacts
    - Consequences (actual and potential) including communities affected; consequences could include:

- Contamination of water (drinking (human, livestock), irrigation, or agricultural watering)
- Air contamination
- Other actual or potential consequences

- Initial/ongoing response status including mitigation measures taken
- Activation (status and level) of the Emergency Response Plan(s)
- Agencies, stakeholders, and Indigenous communities who have been notified

2.13.5 Agency Contacts

The following list is a list of agencies that may be contacted after all other mandatory reporting is complete.

Agency	Contact
When contacting agencies be clear as to whether the call is for the purposes of awareness, or for the purposes of requesting support.	
Federal Government	
Department of Fisheries and Oceans	604-666-0384
Parks Canada (Jasper) Dispatch	780-852-6155
Provincial Government: Alberta	
Alberta Health Services Single Point of Contact	24/7: 1-844-755-1788 24/7 email: edp@ahs.ca
Alberta Occupational Health & Safety	866-415-8690
Alberta Ministry of Transportation	800-272-9600
Alberta Energy Regulator (AER)	800-222-6514
First Nations and Inuit Health Branch, Alberta Region, Department of Indigenous Services Canada	Regional MHO on call: 780-495-8430 Regional Environmental Health Offices: 780-719-8782
Provincial Government: British Columbia	
BC Oil & Gas Commission	800-663-3456 250-794-5200
BC Ministry of Transportation and Infrastructure	250-387-3198
Health Emergency Management BC (HEMBC)[5]	1-855-554-3622 (24 hour)
First Nations Health Authority	604-693-6500 (Daytime number) 844-666-0711 (After Hours)
Fraser Health Authority[6]	604-587-4600

[5] HEMBC should be contacted for all BC incidents, together with the appropriate regional health authority and BC First Nations Health Authority to invite them to participate in Liaison Office and/or Planning Section – Environmental Unit activities

[6] If an incident involves either the Westridge Marine Terminal or the Burnaby Terminal, then both Fraser Health and the Vancouver Coastal Health Authority should be contacted.

Provincial Government: British Columbia	
Interior Health Authority	250-469-7070
Northern Health Authority[7]	250-565-2150
Vancouver Coastal Health Authority[6]	604-736-2033
Worksafe BC	After Hours: 866-922-4357 M-F (8-4:30): 888-621-7233
Non-Government	
Simon Fraser University – Campus Safety & Security Services[8]	General Inquiries: 778-782-3253 Emergency 24/7: 778-782-4500
NAV Canada Flight Information Centre[9]	Kamloops FIC – 1-866-541-4101 Edmonton FIC – 1-866-541-4102

2.14 Industry Contacts

The industry contacts should be contacted after mandatory reporting is complete.

2.15 Support Services

"Support Services" consists of the names and contact telephone numbers of all entities that have been identified and pre-approved to supply services to Trans Mountain in day-to-day business or in the event of an emergency. Support Services information consists of primary response contractors, industrial firefighting and air monitoring providers, communications equipment and aviation providers, lodgings, equipment, etc. These are private entities with which Trans Mountain has a contractual relationship. The removal of this information follows the requirements of The Personal Information Protection and Electronic Documents Act (PIPEDA) (federal legislation). The information is provided on a controlled basis within the confidential appendix of this manual.

2.16 Mutual Aid Activation

Contact information and procedures for the activation of the mutual aid agreements is contained within the confidential appendix of this manual. In many cases these numbers are those of specific personnel or unpublished numbers. The removal of this information is consistent with the requirements of the Personal Information Protection and Electronic Documents Act (PIPEDA).

Mutual Aid Agreement	Activation Instructions
Mutual Emergency Assistance Agreement (MEAA)	• Contact the Emergency Management Department to identify nearby resources and request assistance in accordance with the procedures outlined in the MEAA.

[7] Northern Health Authority from BC border to just West of Valemount; Interior Health Authority thereafter to approximately midway between Merritt and Hope.

[8] Notification to SFU is required for all emergencies impacting, or that have the potential to impact Westridge Marine Terminal or Burnaby Terminal.

[9] In the event of a hazardous release into the atmosphere, including large amounts of smoke and/or toxic material, request issuance of Notice to Airmen (NOTAM) from NAV Canada. Provide location of the incident (coordinates), direction and altitude of plume (if known).

Mutual Aid Agreement	Activation Instructions
Strathcona District Mutual Aid Partnership (SDMAP)	• Provides assistance and equipment in the Edmonton Area for Terminal Operations. It is activated at the request of Strathcona County Emergency Services, or by directly calling a member company by the Terminal Supervisor. • Call 911 and request assistance from Strathcona Fire.
Kamloops Fire and Rescue	• Emergency Response support for incidents inside the City of Kamloops. Activation is by direct contact between Emergency Services and Trans Mountain Supervisor or the Emergency Management Department. • Call 911 and request assistance from Kamloops Fire Rescue.
Burrard Industrial Mutual Assistance Group (BIMAG)	• Requests for Assistance will be made in writing or through the requested 'Responding Member's emergency 24-hour numbers set out in Section 2, of the 'BIMAG' Mutual Aid Agreement.

2.17 Incident Command Post and Staging Area Locations

There are pre-designated potential Incident Command Post (ICP) and Staging Area locations along the pipeline corridor and in communities where its facilities are located. Access to these facilities, and the lead time required to establish them varies depending on the location and type of facility being used. Trans Mountain has agreements and protocols in place where appropriate with the service providers. All facilities meet the requirements for internet and telephone connectivity, food, lodging, meeting space, parking and security for a multi-agency response.

Incident Command Post facilities are private entities with which Trans Mountain may have contractual relationship. The information is provided on a controlled basis within the confidential appendix of this manual. The removal of this information follows the requirements of The Personal Information Protection and Electronic Documents Act (PIPEDA) (federal legislation).

2.18 Community Support Centres

"Community Support Centres" are locations, separate from the ICP, that can be utilized as media relations centres, evacuee reception centres, or convergent volunteer coordination centres.

The Media Relations Centre, in the event of an emergency, will be designated at the time of an emergency, based on the location of the ICP. The identification of a facility to be used for evacuees or other community support, such as convergent volunteer coordination centres, will be made, as appropriate and able, in collaboration with the community (Local Authority or First Nation).

These are private entities with which Trans Mountain has a contractual relationship. The removal of this information follows the requirements of The Personal Information Protection and Electronic Documents Act (PIPEDA) (federal legislation). The information is provided on a controlled basis within the confidential appendix of this manual.

3.0 SPILL/SITE ASSESSMENT

The primary purpose of a site assessment is to evaluate the presence of risk to both incident responders and the public. However, if it is safe to do so, information about the incident should be gathered as quickly as possible in order to evaluate the situation and develop an initial action plan. It might also be possible for the Site Assessment Team to take measures to reduce possible impacts.

NOTE: **Site Assessment Team members should wear all PPE (boots, FR coveralls, gloves, eye protection, hard hat and half-face respirators) while assessing the incident. This may include radiant heat protection. If vapour levels reach 10% of the LEL, Site Assessment Team members should leave the area immediately.**

3.1 Site Assessment Guidelines

When conducting the initial site assessment of the spill the following parameters must be documented:

- Identify and evaluate the immediate risks to and impacts on human health, environment, and infrastructure.
- Classify the spill according to the following factors:
  - Substance spilled
  - Quantity of the substance spilled
- The location and circumstances of the spill
- Assess:
  - What is to be done to protect the safety of response personnel and the public,
  - Whether or not an evacuation is necessary.

3.1.1 Safety Checklist

- Conduct vapour monitoring (see 3.3 Vapour Monitoring Flowchart)
- Conduct Pre-Entry Safety Checklist (ISHSP, or HSP)
- Remove all non-intrinsically safe radios, pagers, etc.
- Establish communications with the Control Centre
- Request information regarding the situation (e.g., alarms, product, pipeline reading, shutdown actions and other relevant information)
- Establish communications procedures/schedules
- Don appropriate PPE, as per health and safety plan
- Refer to SDS
- Determine wind speed and direction
- Determine current direction
- Approach spill from upwind/up current if possible
- Conduct vapour monitoring

3.1.2 Incident Intelligence checklist

- Determine status of any injured personnel
- Determine spill source
- Confirm spilled product (if different, leave the area)
- Determine if source is isolated
- Estimate spill rate/volume
- Determine if product has or will reach the water
- Determine if product has escaped local containment

3.1.3 Incident Mitigation Checklist

- Evacuate and attend to any injured personnel
- Isolate spill source
- Close all valves

3.2 Vapour Monitoring Site Assessment Procedure

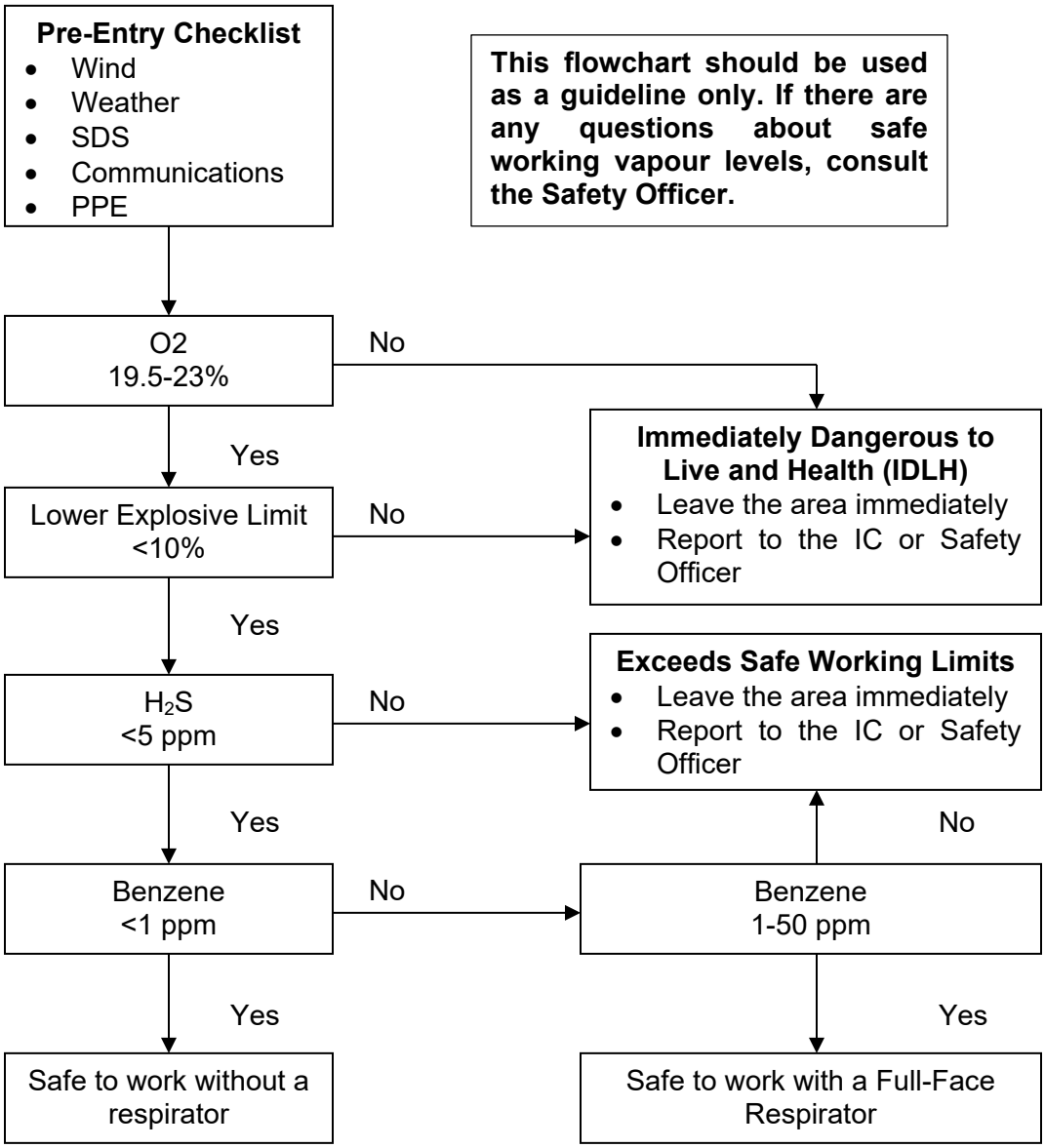
The team should move toward the area and stop at an acceptable location, preferably upwind, to make final preparations for assessment. The team must evaluate its options and decide the best approach route. Frequent reading of air monitoring instruments can ensure the safety of the survey party during the approach. The assessment team leader needs to exercise caution and use controls that will best protect the team.

The survey should continue as long as air monitoring instrument readings remain within acceptable limits, with the objective of (a) obtaining readings across the zone and (b) locating a significant accumulation to provide a detailed assessment. A safe and effective site assessment will require caution, persistence and field decisions.

The team leader must take immediate action if at any time the air monitoring instrument readings meet or exceed “evacuation” levels. If “evacuation” levels are met or exceeded, move upwind from the spill and halt the assessment. Notify the Incident Commander.

When sufficient representative locations have been recorded, the air-monitoring phase of the initial site assessment is complete. The identification of physical, environmental, or other hazards will complete the assessment.

3.3 Vapour Monitoring Flowchart



3.4 Spill Observation/Assessment/Estimation Factors

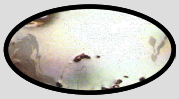
3.4.1 Spill Surveillance

The following guidelines should assist in spill surveillance:

- Surveillance of an oil spill should begin as soon as possible following discovery to enable response personnel to assess spill size, movement, and potential impact locations. Dispatch observers to crossings downstream or down gradient to determine the spills maximum spread.
- Efforts should be made to approach from an uphill/upwind direction.
- Clouds, shadows, sediment, floating organic matter, submerged sand banks or wind-induced patterns on the water may resemble an oil slick if viewed from a distance.
- Spill surveillance is best accomplished using drones, helicopters, or small planes; drones/helicopters are preferred due to their superior visibility and manoeuvrability.
- All observations should be documented in writing and with photographs and/ or videos.
- Record observations on detailed maps.
- Surveillance is also required during spill response operations to gauge the effectiveness of response operations; to assist in locating skimmers; and assess the spill's size, movement, and impact.

3.4.2 Estimating Spill Volume

If possible, the initial assessment should also include an estimate of the volume of oil spilled. Oil volumes can be estimated by multiplying the area of the slick by the average estimated thickness. The following chart applies when the oil is on the water. In the case of an impoundment area the spill can be estimated by multiplying the thickness by the area covered.

Appearance	Slick Thickness	Spill Volume
 Barely visible	0.05 µm	50 L/km^2
 Visible as silvery sheen	0.08 µm	80 L/km^2
 First trace of colours	0.15 µm	150 L/km^2
 Bright bands of colour	0.3 µm	300 L/km^2
 Colours begin to turn dull	1 µm	1,000 L/km^2
 Colours are much darker	2 µm	2,000 L/km^2

3.4.3 Rapid Methods for Estimating Spill Size

- Transfer operations: Multiply the pumping rate by the elapsed time that the leak was in progress, plus the drainage volume of the line between the two closest valves or isolation points (volume loss = pump rate [bbls/ min] x elapsed time [min] + line contents [bbls])
- Tank overfills: Elapsed time multiplied by the pumping rate
- Visual assessment of the surface area and thickness (note that this method may yield unreliable results):
    - Interpretation of sheen color varies with different observers
    - Appearance of a slick varies depending upon amount of available sunlight, sea-state/turbulence, and viewing angle
    - Different products may behave differently, depending upon their properties.

4.0 SPILL CONTAINMENT AND RECOVERY

4.1 Initial Containment Actions

Initial containment actions will focus on utilizing containment on site in the most effective manner to prevent oil from impacting water, thus reduce the surface area and shoreline to be cleaned; concentrate the oil (when safe to do so), making physical recovery more efficient; and limit the environmental impact to the immediate spill area.

The containment of spilled oil will:

- Reduce the spread of slicks and their impacts beyond the property
- Reduce potential impacts to the surrounding environment
- Reduce potential economic impacts
- Maximize the thickness of floating slicks
- Maximize the effectiveness of mechanical countermeasures (i.e., skimmers and sorbents)

Selection of the appropriate location and containment and recovery tactic method will depend upon:

- Length of time since the spill occurred
- Amount and type of spilled material
- Area of coverage
- Environmental factors such as wind speed and direction

The following sections outline spill mitigation procedures, and response options for containment and recovery of spilled oil. Refer to the specific Geographic Response Plan for detailed information on response tactics.

4.2 Spill Mitigation Procedures

Early actions implemented to reduce or eliminate harm to people, environment and property can alleviate the negative impact of an oil spill. Response actions and mitigation procedures undertaken at the time of a release can ultimately influence the duration, magnitude and extent of impacts. Trans Mountain personnel must ensure that spills are treated with great care and dealt with promptly to minimize the possibility of them becoming a major issue. The following table describes spill mitigation procedures.

Failure	Procedure
Failure of Transfer Equipment	• Personnel safety is the first priority. Evacuate nonessential personnel or personnel at high risk. • Terminate transfer operations and close block valves. • Drain product into containment areas if possible. • Eliminate sources of vapour cloud ignition by shutting down all engines and motors.
Tank/Cavern Overfill/Failure	• Personnel safety is the first priority. Evacuate nonessential personnel or personnel at high risk. • Shut down or divert source of incoming flow to tank. • Transfer fluid to another tank with adequate storage capacity (if possible). • Shut down source of vapour cloud ignition by shutting down all engines and motors. • Ensure that containment bay discharge valves are closed. • Monitor containment area for leaks and potential capacity limitations. • Begin transferring spilled product to another tank as soon as possible.
Piping Rupture/Leak (under pressure and no pressure)	• Personnel safety is the first priority. Evacuate nonessential personnel or personnel at high risk. • Shut down pumps. Close the closest block valves on each side of the rupture. • Drain the line back into contained areas (if possible). Alert nearby personnel of potential safety hazards. • Shut down source of vapour cloud ignition by shutting down all engines and motors. • If piping is leaking and under pressure, then relieve pressure by draining into a containment area or back to a tank (if possible). Then repair line according to established procedures.
Fire/Explosion	• Personnel safety is the first priority. Evacuate nonessential personnel or personnel at risk of injury. • Notify local fire and police departments. • Attempt to extinguish fire if it is in incipient (early) stage. • Shut down transfer or pumping operation. Attempt to divert or stop flow of product to the hazardous area (if it can be done safely). • Eliminate sources of vapour cloud ignition shutting down all engines and motors. • Control fire before taking steps to contain spill.
Manifold Failure	• Personnel safety is the first priority. Evacuate nonessential personnel or personnel at high risk. • Terminate transfer operations immediately. • Isolate the damaged area by closing block valves on both sides of the leak/ rupture. • Shut down source of vapour cloud ignition by shutting down all engines and motors. • Drain fluids back into containment areas (if possible).

4.3 Station – Primary Recovery/Removal - Spills

At the Stations, the primary recovery of product from the impoundment areas is via vacuum truck. Small spills in the compound may use sorbents or other manual removal techniques, whereas skimmers may be used in the remote impoundment areas or drainage ponds. For more significant spills within the impoundment areas that result in unsafe working conditions and/or offsite odours complaints, the use on-site foam application systems may be utilized at the discretion of the Safety Officer.

4.4 Containment Tactics in Land and Small Watercourse

The penetration of oil into soil depends on a number of factors, including oil viscosity, soil type, wetness, and permeability and ground temperature. Normally, the amount of oil in saturated soil will range from 15-40 litres/m^3, however, the amount may exceed 50 litres/m^3 in dry soils, i.e., beneath structures. Also, low viscosity products (gasoline, diesel) will tend to penetrate into coarse sediments. In homogenous soils, the deepest penetration will normally be located below pooled oil. In the unlikely event that oil reaches groundwater, the oil will typically move relatively slowly - typically 0.5 to 1 m/day.

Containment can prevent further spreading by concentrating the product to make it more efficient to recovery released oil. The following outlines the containment methods recommended.

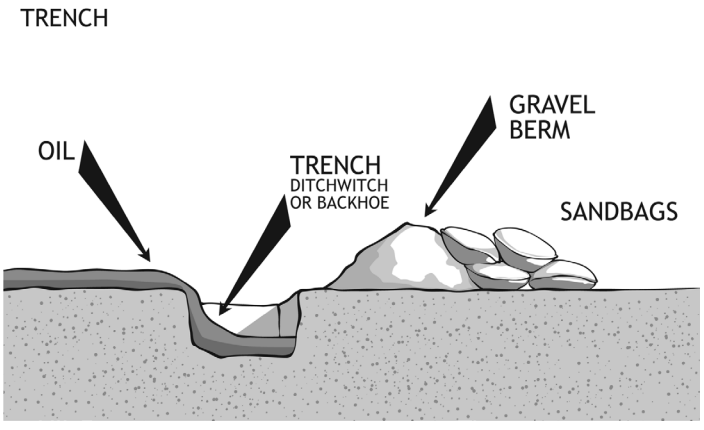
4.4.1 Earthen Berm and Bell Hole

An earthen berm and bell hole can be used to contain and/or divert released fluids and fresh water from high consequence areas (HCAs) (e.g., rivers, wetlands etc.). Both techniques can be used in conjunction with each other or on their own and are applicable for all types of released products and volumes.

Earthen berm should be construct of a non-porous substance (i.e., clay, wood, poly or metal) and can be built with mechanical (i.e., backhoe) or hand equipment (i.e., shovel). If a non-porous material is unavailable, sandbags and an impermeable liner can be used instead. Vegetation and other porous materials should be removed before constructing berm.

When constructing a bell hole in conjunction with a berm it should be created upslope of the berm to allow for additional fluid storage volumes. The material removed from the bell hole can be used to create the berm on the downslope side. Berms and bell holes can be used to separate areas of high impact from areas of low impact and aid in recovery efforts.

4.4.2 Earthen Trench

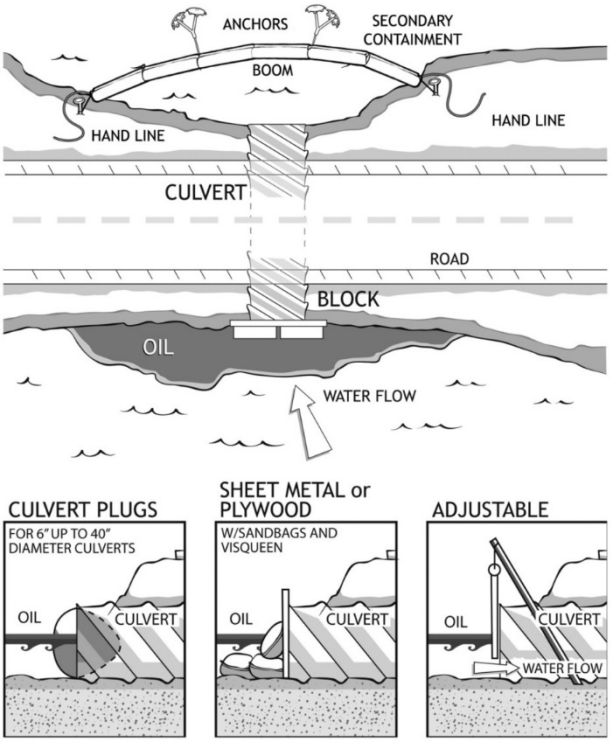


An earthen trench is used to recover and/or divert released fluids and fresh water from high consequence areas (HCAs) (e.g., rivers, wetlands etc.) and can be used to separate areas of high impact from areas of low impact. A trench will require constant monitoring and managing of inflow of water to maintain containment.

An earthen trench can be built in porous or non-porous material and can be built with mechanical (e.g., backhoe) or hand equipment (e.g., shovel). The trench should be built in a solid non-porous base (e.g., clay vs. grass/sand) to help prevent the migration of product. However, if a non-porous material is not available the trench can be constructed and lined with an impermeable substance (i.e., plastic sheeting, hard containment boom skirting etc.). When an earthen trench is constructed in a porous material, there is the potential to push impacts subsurface.

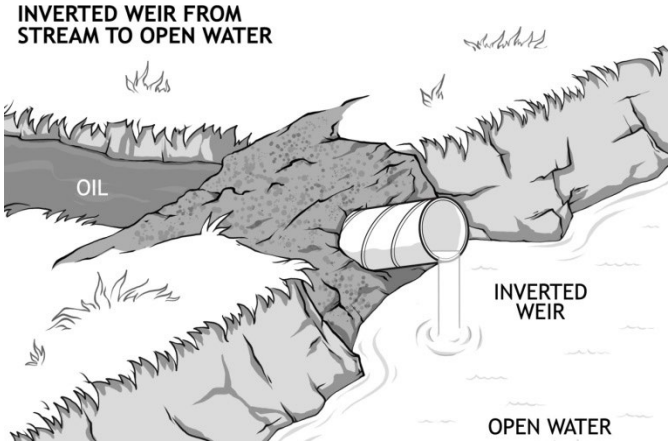
4.4.3 Culvert Block

Blocking a culvert will stop all fluids from traveling through the culvert. This will include any water entering the water system as well as any released product. The largest consideration for blocking a culvert is the amount of fluids entering the water system and the amount of storage available upstream of the culvert to allow backflow. If a gated culvert is available this will allow the fresh water to flow underneath and retain the release product upstream of the culvert. A full culvert block should only be utilized if water flow can be managed by pumps in order to maintain a stable water level. When blocking the culvert use an impermeable material (i.e., non-porous material, a culvert plug, sheet metal, clay etc.).



4.4.4 Inverted Weir / Underflow Dam

An inverted weir is designed to stop free product on surface while allowing freshwater to continue to flow downstream. An inverted weir can be used in conjunction with additional containment tactics, or it can be used to separate areas of low and high impacts. The inverted weir is made up of two components, a berm and a culvert.



The berm can be constructed out of any non-porous substance (e.g., clay, wood, poly or metal) and built with mechanical (e.g., backhoe) or hand equipment (e.g., shovel). If possible, the berm should be keyed into parent material as it provides the highest level of containment.

The culvert or culverts depending on the volume of flow should be designed for the current water flow x 150 percent to withstand any rain and/or melt events. This can be determined based on culvert sizes on engineered roads in the area. The top of the inflow end of the culvert must be lower than the bottom of the discharge end.

4.4.5 Water – Gate Dam

Water – Gate Dams are portable quick installation barriers that allow the depth of water upstream to be regulated. Keeping a consistent water depth ensures released product do not become stranded along the shorelines. Water – Gate Dams can be used in conjunction with additional containment techniques, or it can be used to separate areas of low and high impacts. Water - Gate Dams are largely used to increase the water depth to allow additional containment and recovery tactics to be more effective upstream of the dam.

4.4.6 Turner Valley Gate

Turner Valley Gates are rapidly deployed shallow water containment measures. The Turner Valley Gate consists of two components, a stand and a plastic skirt. The stand allows the watercourse to be spanned and supports the plastic skirt. The stand is composed of a material that will support the skirt but also allow water to flow past. The Skirt is composed of an oil resistant plastic skirting typically PVC fabric. The skirting deflects the product to a recovery area. The angle a Watergate is deployed spanning a watercourse is consistent with a typical boom angle. The Turner Valley Gate can be used alone or in conjunction with other containment tactics.

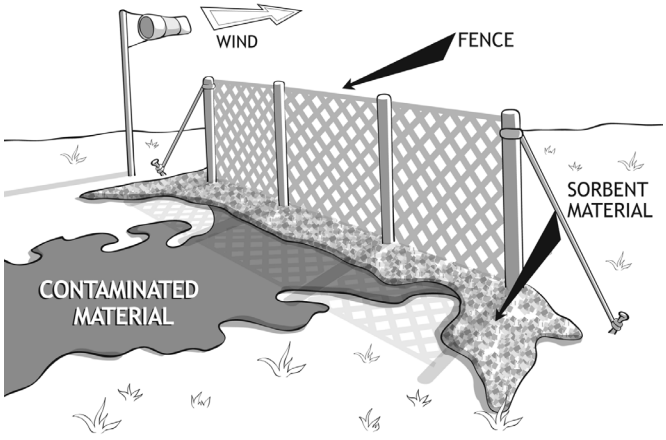
4.4.7 Aquadam / Waterbloc

An Aquadam / Waterbloc is a water filled inflatable bladder that impedes fluid movement downstream or downslope where installed. An Aquadam / Waterbloc can be used to contain product, divert freshwater or isolate an area of a waterbody or watercourse. Aquadams / Waterblocs are installed by pumping water into the rubber bladders to inflate the tubes and provide fluid control. Aquadams / Waterblocs come in numerous sizes depending on the application. Aquadams / Water blocks typically come in 50- or 100-foot sections and can be joined together to increase the length if required.

4.4.8 Sorbent Fence

A sorbent fence is a rapidly constructed containment technique. The largest advantage is the sorbent fence can be constructed very quickly with readily available materials. When constructing the sorbent fence it should be constructed from high ground to high ground or in a U shape for the most effective containment. The sorbent materials should be placed along the water's surface for the entire length of the fence creating a barrier. Once the sorbent material has become saturated, they should be removed and replaced with fresh sorbent material. The sorbent fence can be used in conjunction with other containment and recovery tactics.

USE OF SORBENT FENCE



4.5 Containment Tactics in Moving Watercourses

A moving watercourse is typically referred to as a river or stream. The watercourse has a current and is generally within a channel of some type. The amount of current will dictate the type of response option that is most effective.

4.5.1 Watercourse Boom Angle

The correct boom angle is critical for maintaining containment and to continue recovery operations. The slower the current, the greater the boom angle the faster the current, the smaller the boom angle. A tandem anchor set is the preferred method for installing instream hard containment boom.

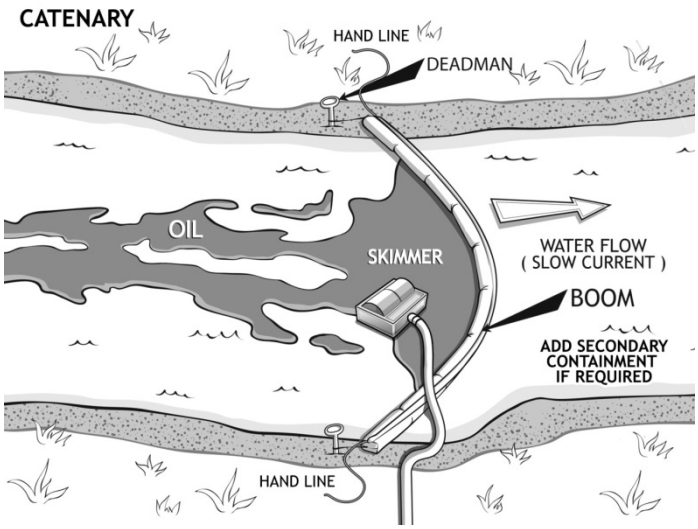
	Current Speed		
	Less than 4 km/hr.	**Greater than 4 km/hr.**	**Frozen Waterbodies**
Boom Angle (degrees to current)	30 degrees	10 degrees	15 Degrees

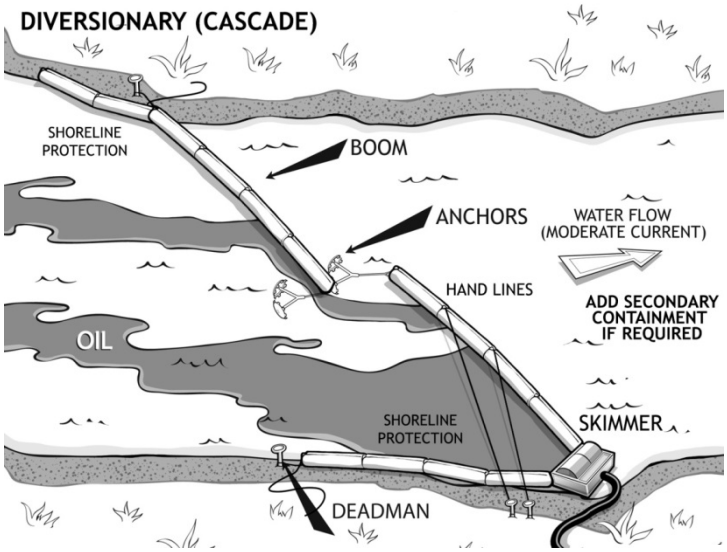
4.5.2 Exclusion Zone

An exclusion zone is characterized as an area you want to protect from being impacted by free product (e.g., sensitive ecosystems, residences, public beach). Boom is placed adjacent to the area and used as either shoreline protection or with instream anchor sets to deflect product from these areas. This tactic is most suited for use in slow to moderate currents and can be used along the banks of a watercourse at multiple high consequence areas. A series of smaller boom sets may be preferable to protect longer continuous sensitive areas as opposed to one large set.

4.5.3 Catenary Boom Deployment

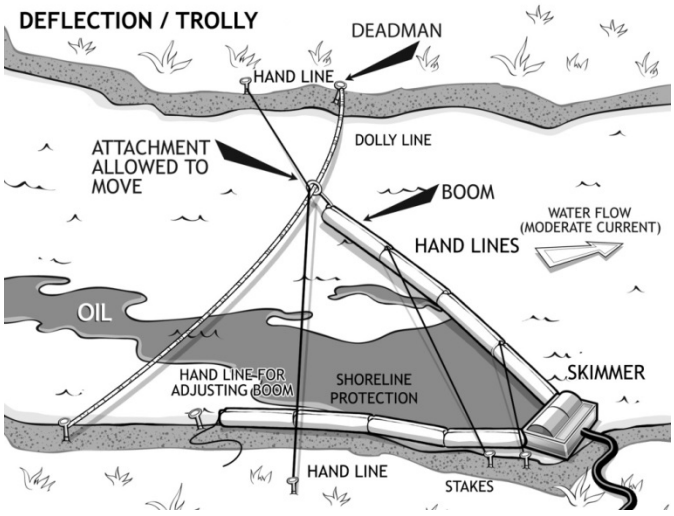
A Catenary culboom deployment is used in calm water where the channel width does not exceed 15 m. When choosing a deployment location pick area that will protect any identified priority zones (e.g., sensitive areas, areas that have logistical access issues etc.). This technique consists of one (1) hard containment boom length (50 feet) from shoreline to shoreline.





4.5.4 Deflection or Diversion Boom Deployment

A deflection or diversion boom deployment is used to direct product within the watercourse to your recovery area. Other uses also include protection for sensitive in stream structures (e.g., architectural in stream structures, islands) by deflecting the free product away from these areas. This can be achieved by instream anchor sets or through utilization of a boom vane. This tactic can be used in slow, moderate and fast currents.



4.5.5 Trolley Line Deflection

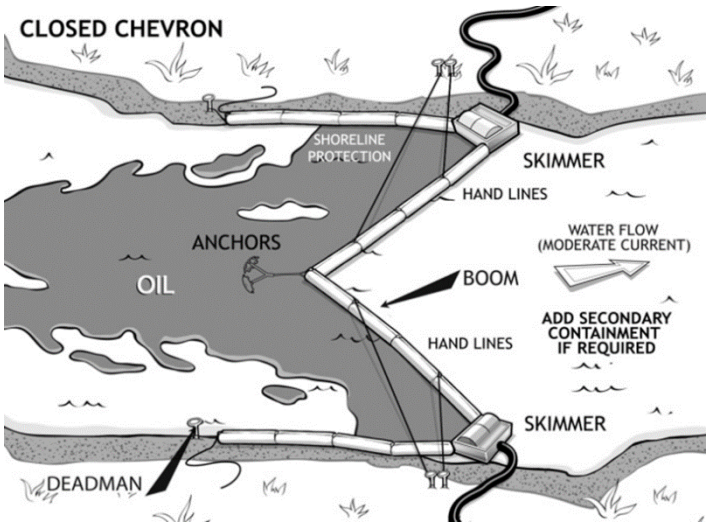
A trolley line is utilized to contain product on the surface of small to medium sized watercourses with moderate to strong currents where bank to bank deployment is not feasible and instream anchors can't be used. The boom angle can be adjusted along the trolley line allowing for a larger or smaller recovery area as required which can be beneficial in watercourses with variable flow speeds or a changing product plume size. This tactic can be used in slow, moderate and fast currents.

4.5.6 Cascade Boom Deployment

A cascading boom deployment is used to direct product to a recovery point using multiple smaller deflection booms. Cascading boom deployment is used when the flow speed or length of the waterbody is too great for a single boom to span from one bank to the other. Cascading boom deployment also allows for the continued passage of watercrafts within the waterbody. Cascading boom deployments can be achieved with instream anchor sets or through the use of a boom vane. This tactic can be used in slow, moderate and fast currents.

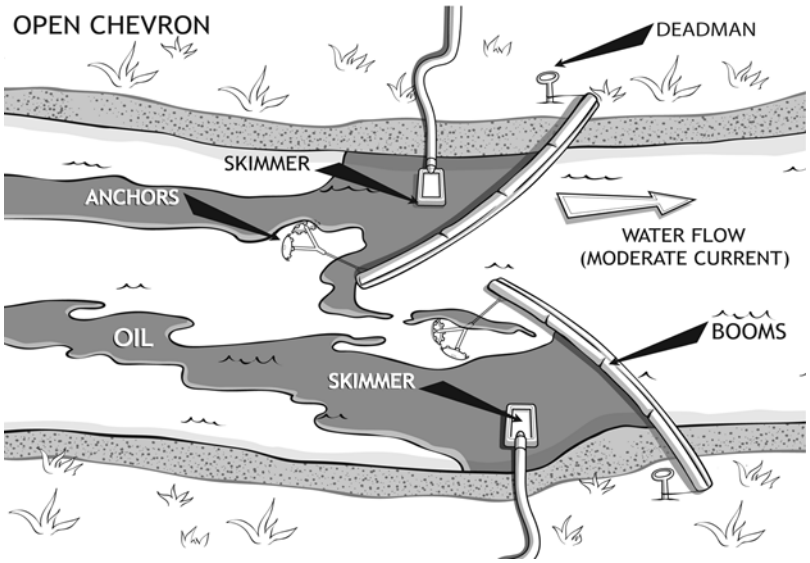
4.5.7 Closed Chevron Boom Deployment

A closed chevron deployment is used when in large straight watercourses when access is available to both banks. Product is contained and directed to both the left and right descending banks to recovery points. Closed chevrons are created off an instream anchor set and limit watercraft traffic as the entire reach of the watercourse is boomed. This tactic can be used in slow, moderate and fast currents.



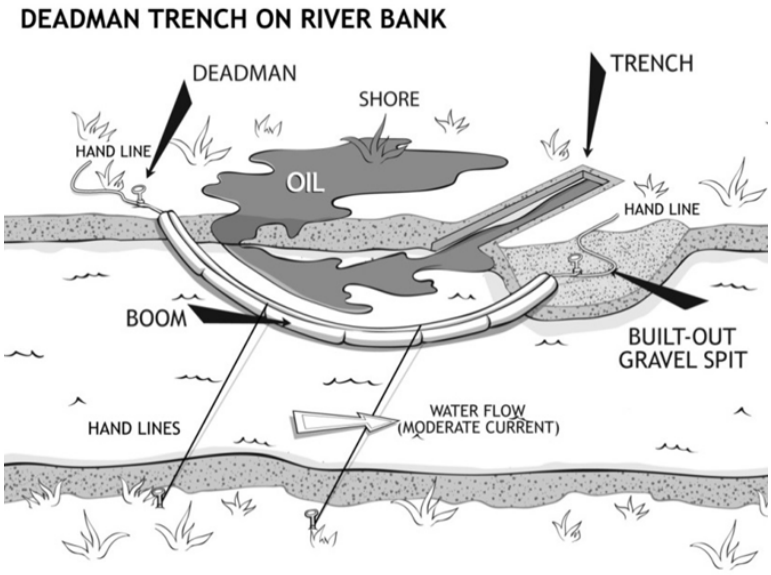
4.5.8 Open Chevron Boom Deployment

An open chevron deployment is similar to a closed chevron in that it's used in large straight watercourses when access is available to both banks; however, it allows you to maintain watercraft passage. Product is contained and directed to both the left and right descending banks to recovery points. Open chevrons are created off two instream anchor sets instead of one.



4.5.9 Deadman Trench

A Deadman Trench is used when a flow speed or product volume is too great for conventional recovery methods to work. Boom is used to deflect product into a trench created at the recovery point allowing for greater retention of released product. Flow speeds within the main body of the watercourse can hinder the effectiveness of mechanical and weir skimmers, a Deadman Trench allows for recovery in near stagnant water conditions greatly increasing skimmer efficiency. This technique requires regulatory approval due to alternation of riverbank / bottom.



4.6 Containment Tactics in Low Current Waterbody

A low current waterbody is generally referred to as a lake or other large body of water, with little to no current at the surface of the water. Hydrocarbon movement occurs in four (4) ways on low current waterbodies:

- Wind driven product movement
- Dispersion of product over the surface of the waterbody
- Watercraft movement and subsequent wave action
- Submersion and/or sinking of product

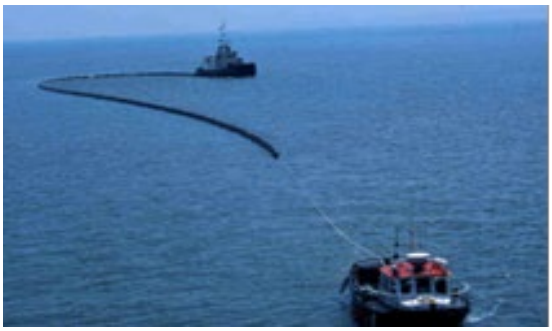
In cases where significant amounts of spilled oil enter a lake, it might be necessary to attempt to contain free-floating oil in open water using the V, U, or J-Boom techniques.

4.6.1 V-Boom

A V-Boom is utilized in open water where there is negligible flows and the product is located away from the shoreline requiring active oil recovery. A V-Boom is created between three work boats with the two leading boats each pulling a section of boom anchored to a third recovery boat in a triangular formation. The recovery boat located at the apex of the triangle is equipped with a bow mounted skimmer or other method to recover the free product from the surface. A V-Boom configuration allows for the active recovery of product in place rather than waiting for the product to migrate to a shoreline recovery area.

4.6.2 J-Boom

J-Booming is a suitable recovery tactic for lakes only. A single boom can be towed at a low speed (around 0.5 knots) allowing the oil to collect/concentrate in the apex. Once oil is collected, the second vessel drops back and deploys a skimmer into thew thickest patches of oil.

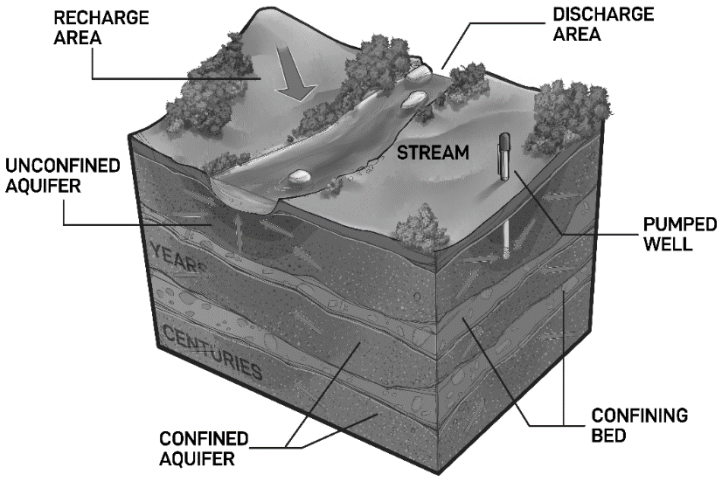


4.6.3 U-Boom

A U-Boom can be created when two workboats pull a section of boom attached to each in a horseshoe pattern or when one boat pulls a section of boom equipped with a Boom Vane to create drag and a horseshoe pattern. This method is effective for actively corralling free product in open water scenarios with negligible flow. On-water recovery can be completed via a bow skimmer equipped work boat or by ferrying the product to shore within the boom to a designated recovery area.

4.6.4 Aquifers

Aquifers are underground water-bearing formations that are composed of permeable rock, rock fractures or unconsolidated materials. The pore space of the material stores water and allows for water movement throughout. Aquifers vary greatly in depth and can be either confined or unconfined.



It is important to understand the properties of an aquifer to know how it may respond to contamination or other influencing factors such as withdrawals. The direction and speed of groundwater travel are two very important factors in understanding an aquifer. Assessment of hydrogeological conditions and identification of groundwater uses will be conducted by the Environmental Unit as a first step towards developing an appropriate response strategy.

Prompt product recovery and expedited mechanical removal of impacted overburden will be the top priority to minimize vertical migration of contaminants and retention time within soils over a potential aquifer. If an aquifer is impacted, the main recovery process can be the extraction of groundwater to both contain lateral spread of the subsurface plume and recover and treat the impacted groundwater. See 5.1.1 Vacuum Truck, Gator Vacuum Truck, Port-a-Vac Unit for guidance on extraction.

An incident specific approach will be generated; see the *Groundwater Assessment Plan*.

4.7 Stormwater Sewer Outfall Response

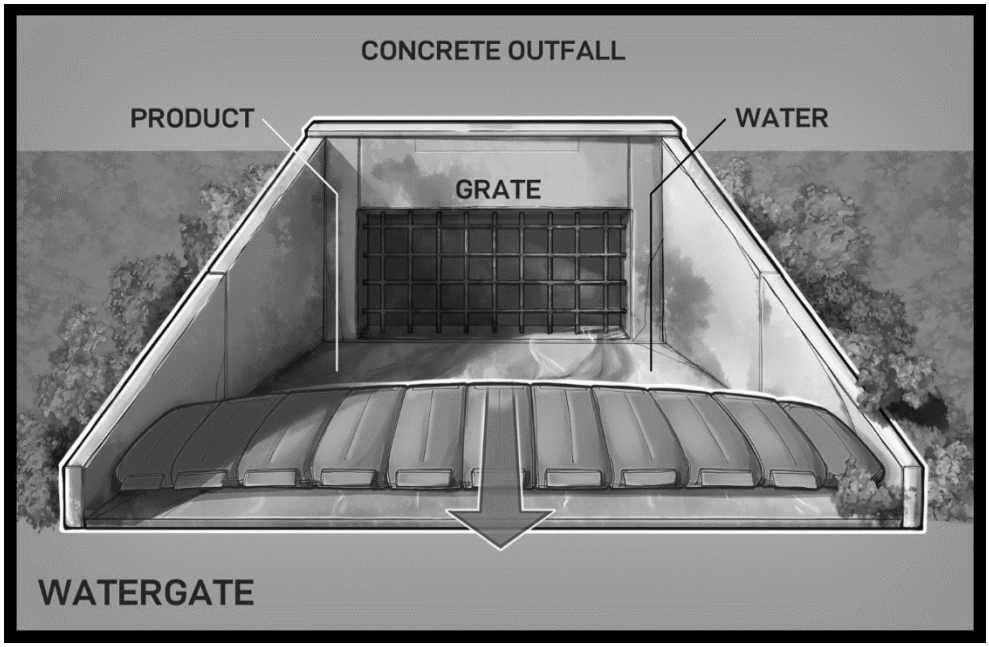
4.7.1 Response Tactics for Outfalls

4.7.1.1 Response Tactics for a Concrete Endwall Structure

When picking the most appropriate response tactic for a release that may travel through a concrete structure associated with a stormwater sewer system it is important to consider the environmental conditions. Conditions like location and terrain, obstructions, seasonality and forecasted weather and precipitation will play a key role in selecting the appropriate tactic. Some tactics that may be appropriate to contain released product within a concrete structure are listed below. It is important to note that it may be appropriate to incorporate multiple tactics during a response.

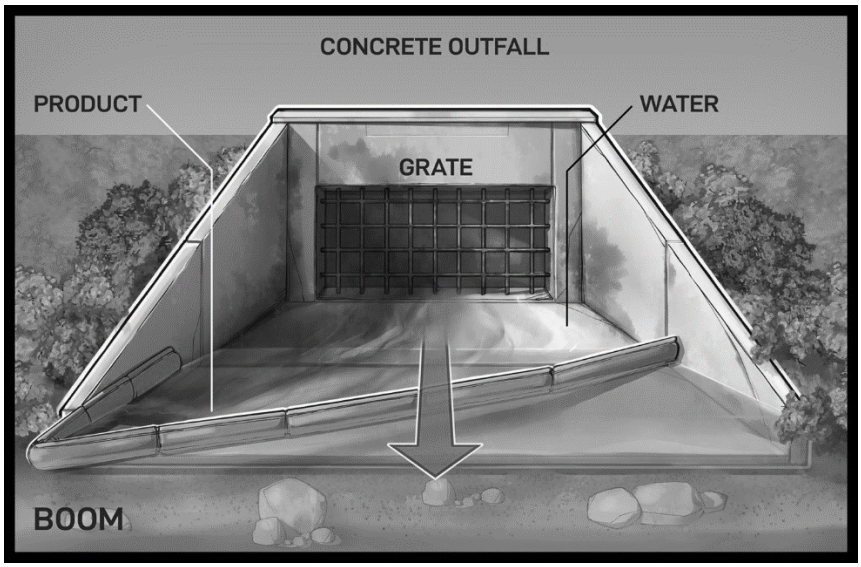
4.7.1.2 Water-Gate Dam

It may be possible to install a Water-Gate Dam within the concrete structure or directly downstream of the structure to increase water depth and facilitate recovery. Water-Gate Dams are portable quick installation barriers that allow the depth of water upstream to be regulated. Water-Gate Dams can be used in conjunction with additional containment techniques. Water-Gate Dams are largely used to increase the water depth to allow additional containment and recovery tactics to be more effective upstream of the dam. Hard containment boom and skimmers can be deployed upstream of the Water-gate dam if sufficient release volumes warrant. Alterations to a Water-Gate Dam include a sandbag berm constructed in the Endwall with culverts placed to allow subsurface flow (Inverted Weir). If flow is minimal and inflowing water can be fully recovered, a full berm can be placed to halt all surface flow. Recovery at the same rate of inflow will be required for this method, or you will need confirmation that the storage capacity of the stormwater sewer is adequate to manage the accumulated backed up fluid.



4.7.1.3 Hard Containment Boom

It may be possible to deploy hard containment boom directly at the outfall. This may be an option as long as there is sufficient water depth and room upstream of the receiving watercourse. In these situations, the base of the concrete outfall may be partially or completely submerged. It may be possible to recover product with skimmers or a vacuum truck depending on product volume and water depth. The velocity of the discharging water will need to be matched with an appropriate boom angle. Detailed booming information can be found in the Moving Watercourse Spill Response section including angle calculations.

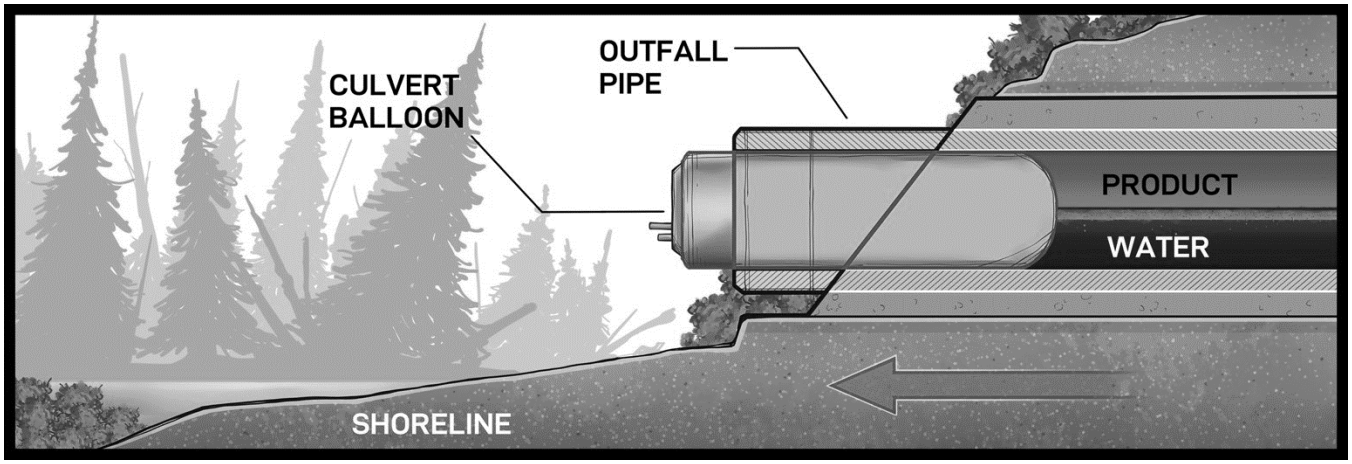


4.7.2 Response Tactics for a Pipe Outfall

4.7.2.1 Pipe Outfall Block

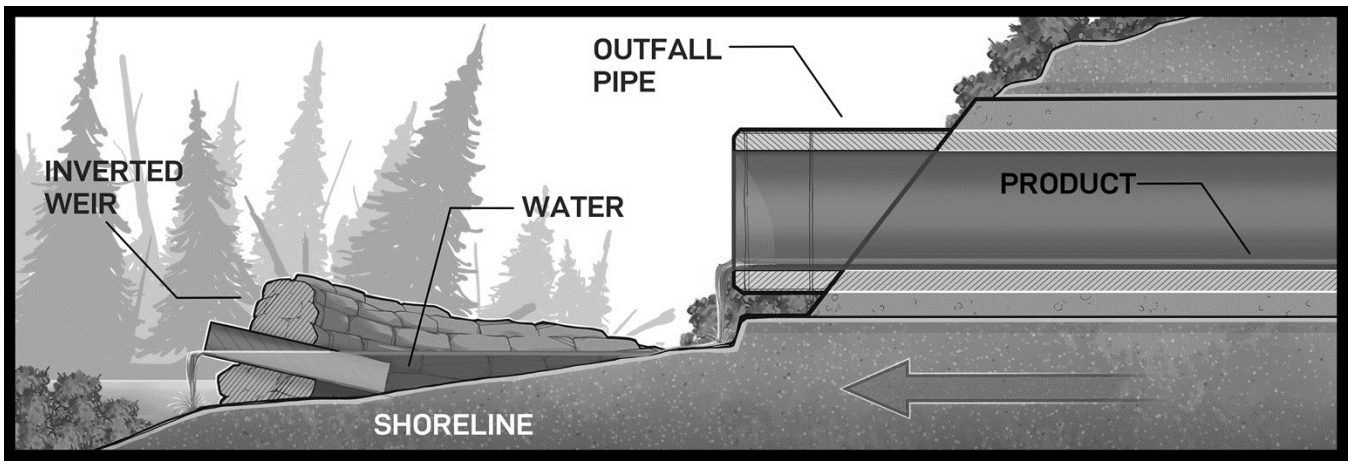
It may be possible to block the outfall pipe completely using an inflatable culvert plug or other non-porous material. A number of considerations must be taken into account in order for this strategy to be a viable option. The volume of flow or anticipated flow is one of the largest considerations. The culvert balloon is only a feasible option if the volume of flow and storage capacity of the stormwater sewer is adequate to manage the accumulated backed up fluid.

This may be an option in arid landscapes with little or no flow in the stormwater sewer systems. Another consideration must also be if there is access to the backed-up fluid to facilitate recovery without creating a dangerous atmosphere within a confined space. If a large volume of water does back up behind the culvert plug ensure the area is cleared as the head pressure on the plug may cause it to exit the pipe.



4.7.2.2 Inverted Weir / Underflow Dam

It may be possible to install an inverted weir between the outfall and the receiving watercourse. An inverted weir is designed to stop free product on the surface while allowing fresh water to continue to flow downstream. The inverted weir is made up of two components, a berm and a culvert. The berm can be constructed out of any non-porous substance (E.g. clay, wood, poly or metal) built with mechanical (E.g. backhoe) or hand equipment (E.g. shovel). When constructing the berm build a crescent shape from high ground to high ground with the culvert(s) at the center point of the arc. The culvert or culverts depending on the volume of flow should be designed for the current water flow x 150 percent to withstand any rain and/or melt events. The top of the inflow end of the culvert must be lower than the bottom of the discharge end. Typically, a 45-degree angle can be used as a baseline and adjusted based upon water flow, depth and culvert length.

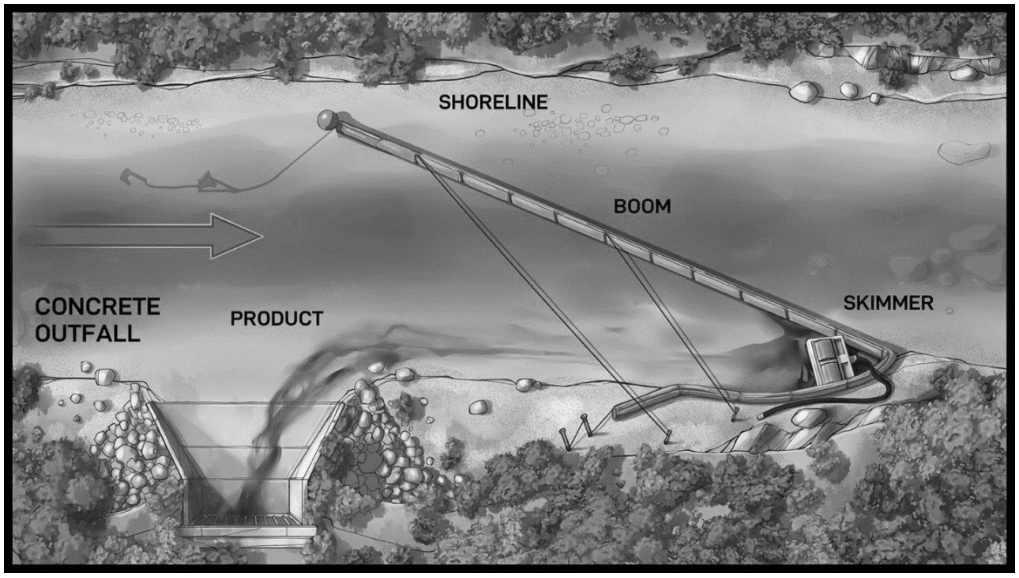


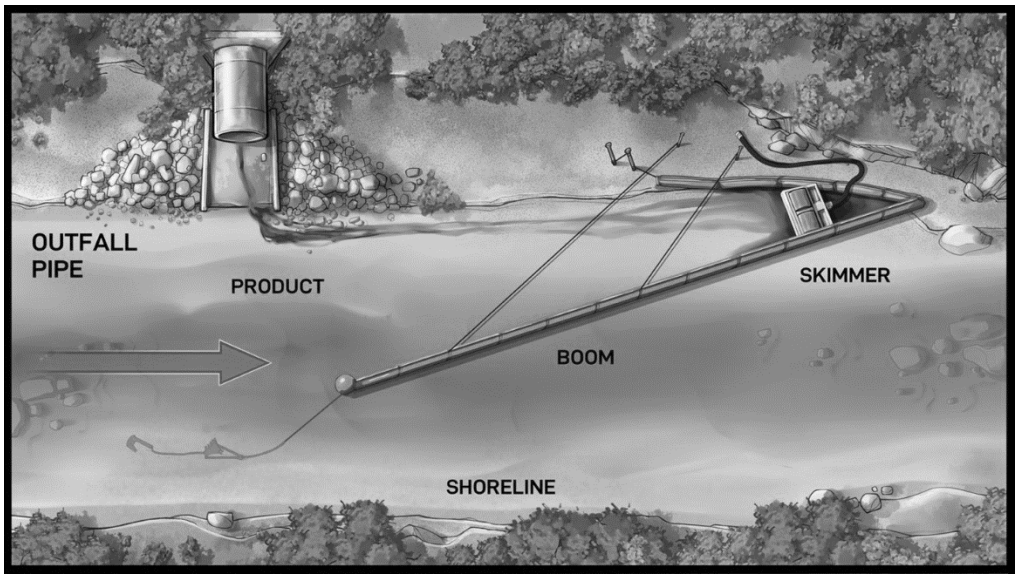
4.7.3 Response Tactics for Receiving Watercourse

It may not be possible to contain the released product before it discharges into a watercourse. This may be due to direct discharge into the watercourse, difficult terrain at the outfall or high flows that cannot be efficiently managed directly at the outflow. If this is the case, it will be critical to establish containment as close to the outflow as is possible while maintaining containment integrity and prevent further product entry into the waterbody. This tactic can be used in slow, moderate, and fast currents.

One of the most effective ways to establish containment is using hard containment boom. Depending on the size of the receiving watercourse and spread of the product within the watercourse, the hard containment boom can either be set up from bank to bank, off an instream anchor set or through utilization of a BoomVane. The hard containment boom should be anchored above the high-water mark to allow for fluctuating water levels using shoreline pins, screw, or natural anchors. The boom angle should be at 10 or 30 degrees depending on the current velocity.

Deploying containment in a receiving watercourse may also be used to add secondary containment to an installed containment measure at the outfall. If the receiving watercourse has minimal flow a horseshoe boom deployment strategy can be implemented around the outflow to capture released fluid and mitigate downstream migration. Additionally, a BoomVane can be used to collect product (on the upstream side) of the hard containment boom if work boats or adequate anchors are not available.





4.8 Winter Response Tactics

Cold weather will have a significant impact on the response. Loss of light ends (weathering) slows down at lower temperatures, which can offset some of the temperature effect on viscosity. The evaporation rate at 5ºC/41°F is approximately 1/3 of what it is at 30ºC/86°F. As a result, oils may remain amenable to treatment by recovery or burning for a longer period. Water is at or near its maximum density in near-freezing temperatures. Cold, viscous oil will spread slower providing additional time for response.

Snow can be used to contain oil and as an effective sorbent. Any available snow near a spill can be used by forming snow berms to help contain oil and minimize its spreading prior to removal by mechanical means. When using equipment such as pumps and hoses to remove snow, equipment must be thoroughly dried after use to minimize residual water that can freeze, causing damage or limiting use.

Biological recovery on shorelines may be slower, although many organisms grow well at near-freezing temperatures. Biodegradation is likely to stop if shorelines freeze solid. Also, vulnerable times for key sensitivities typically are shorter than in temperate settings. Therefore, planning protective strategies requires specialized teams, and tactics related to shoreline protection.

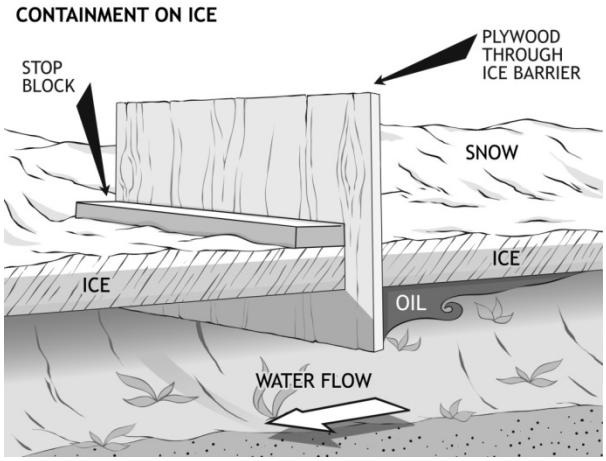
Frozen conditions on waterbodies can serve to facilitate recovery operations by providing a solid working platform over the oil and by creating natural barriers, which can be used to contain and immobilize oil. However, frozen conditions can also obstruct recovery operations. Downward-growing ice may quickly encapsulate oil under ice; additionally, there may be many under-ice pockets where oil can accumulate in natural depressions, providing access for recovery. Prior to commencing any activity over a frozen waterbody, the type, strength and thickness of the ice must be established. Refer to the specific Geographic Response Plan for detailed information on calculating type, strength and thickness of the ice.

4.8.1 Ice Slot ('J' slot)

The ice J slot can be used within waterbody's that exhibit flow when product is under the ice. The ice slot is created at an angle to the current (angle dependent on current velocity) resulting in the oil surfacing within the slot and being directed to the recovery area by the current. This tactic is used for accessing, containing and recovery of product underneath ice. An ice evaluation must be completed prior to response activities.

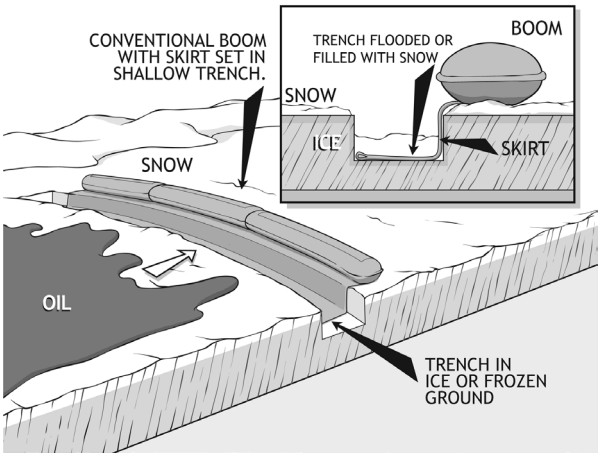
4.8.2 Ice Slot with a Barricade

The ice slot with a barricade is created in the same fashion as the J slot. A barrier is placed within the ice slot to allow for greater retention of free product within the surface water. The barrier is placed within the water profile as to allow for retention of only the surface water and product while permitting the subsurface water to continue unhindered. The Ice Slot with a Barricade is deployed for containment purposes only under ice. An ice evaluation must be completed prior to response activities.



4.8.3 Trench on Ice

An ice trench is the same concept as an earthen trench. Ice trenches are used to contain and recovery free product moving on the surface of a frozen waterbody or in situations where free product is trapped within layers of ice. This tactic is used for accessing and containing product on ice. Ice pits or bell holes can also be advanced for product containment and recovery. Ensure the ice depth is known before installing a trench or bell hole as not to advance the cut below the depth of the ice allowing product into the water below. Ice trenches can be used in conjunction with ice slots if the free product has impacted the flowing water beneath the ice.



4.8.4 Snow Covered Land Response

Response in snow covered environments can be equated to response on earthen material. Use shovels or heavy equipment, such as graders, loaders, bulldozers, or track hoes, to build a berm of either soil or snow to stop the flow of free fluids. Berms should be lined to prevent cross contamination of the berm materials. Snow can be disposed of in solid form or melted and disposed of as a liquid.

4.9 Response Tactics for Shorelines

Trans Mountain will conduct shoreline assessments and clean-up through the appropriate method on a site-specific basis using SCAT teams. The following table is a general summary of shoreline types and potential response tactics. See Section 5.2 High Consequence Areas Protection Techniques for additional details and techniques.

Type of Shoreline	Recommended Cleanup Activity
Developed (urban) or unforested Land	May require high pressure spraying: • To remove oil. • For aesthetic reasons.
Freshwater Flat	• These areas require high priority for protection against oil contamination • Minimal disturbance and low-impact cleanup is usually considered because of the likelihood of mixing oil deeper into the sediments during cleanup effort • Passive efforts such as sorbent boom can be used to retain oil as it is naturally removed.

Fresh marsh	• Marshes require the highest priority for shoreline protection.
	• Natural recovery is recommended when:
	  ○ a small extent of marsh is affected.
	  ○ as small amount of oil impacts the marsh fringe.
	• The preferred cleanup method is a combination of low-pressure flushing, sorption, and vacuum pumping performed from boats.
	• Any cleanup activities should be supervised closely to avoid excessive disturbances of the marsh surface or roots.
	• Debris may be removed by hand.

Swamp	• Natural recovery and monitoring recommended under light conditions. • Under moderate to heavy accumulations to prevent pollution of the surrounding areas placement sorbent along the fringe swamp forest may be effective under close scientific supervision. • Proper strategic boom placement may be highly effective in trapping large quantities of oil, thus reducing oil impact to interior swamp forests. • Oil trapped by boom can be reclaimed through the use of skimmers and vacuums.

4.10 Response Tactics for Non-Floating Oil

Floating oil describes oil that is on the surface of the water and remains buoyant; where as non-floating oil describes oil that has become either submerged (oil that is not floating at or near the surface) or sunken (oil that sinks to the bottom of the water column due to specific gravity and resides on the bottom of the waterbody). It is possible to have non-floating oil in marine and freshwater environments. The likelihood of oil becoming non-floating is low; rapid deployment of on-water recovery is the best strategy to prevent floating oil from becoming non-floating.

Non-floating oil poses detection, containment, and recovery challenges that floating oil does not. Floating oil is readily observable and forms into identifiable plume models that can be anticipated and tracked as well as recovered using conventional techniques. Non-floating oil is not readily observable, due to environmental factors that can contribute to the potential for the product to disappear from one area only to reappear in another. Due to the many challenges posed by non-floating oil, tactics for its containment and recovery require the integration of multiple techniques based on the site-specific environmental factors and the specific type of oil or oil-containing product released.

Once a spill occurs, it will be assessed for the potential of the product to become non-floating oil.. Responders must assess the situation and gather information to determine the best method for the detection, containment, and recovery of non-floating oils. The proposed recovery of non-floating oil requires a rational assessment of the environmental trade-offs associated with cleanup techniques is required. The Environmental Unit will initiate a Net Environmental Benefit Analysis (NEBA) request to vet counter-measure techniques. NEBA must proceed in a rapid systematic manner to be effective, given the time sensitivity of tracking and recovering non-floating oil.

Refer to the *Non-Floating Oil Assessment and Response Plan* for information on the detection, containment and recovery of non-floating oil.

4.11 Response Tactics for Urban Environments

Urban environments pose a challenge to response tactics due to varying surface materials including those that are impermeable such as asphalt and concrete. Initial response tactics should consider if a spill could enter the wastewater and/or urban subterranean networks. Possible methods of preventing the spread of a spill include the use of booms, cardboard, plywood, drainage covers, sorbents sandbags and other barriers to contain the spill and prevent entry of product to openings leading to subterranean municipal public works.

4.12 Recovery Tactics

The selection of the recovery method is dependent on the specific location and environmental conditions during the spill, the containment tactic used the characteristics of the product, the interaction of the product with sediments and finally the potential environmental impacts of implementing the recovery techniques particularly in sensitive environments. Wherever possible, spilled oil will be mechanically removed from the environment, using sorbents and/or oil skimmers.

4.12.1 Sorbents

On small spills, sorbent pads should be deployed into the thickest areas of the collected slicks. On heavy oil, the pads should be flipped over to maximize oil recovery. Oil-only pads will water-saturate if left in the water too long. Once pads are oil-soaked, they should be removed using pitch forks, pike poles or debris scoops. Care should be taken when recovering oiled sorbents, i.e., personnel should wear gloves, oil-resistance coveralls and splash goggles.


Courtesy WCMRC

Sorbent booms can also be used, either to sweep oil within the contained area to increase the oil thickness or they can be positioned, as a liner, inside skirted booms.

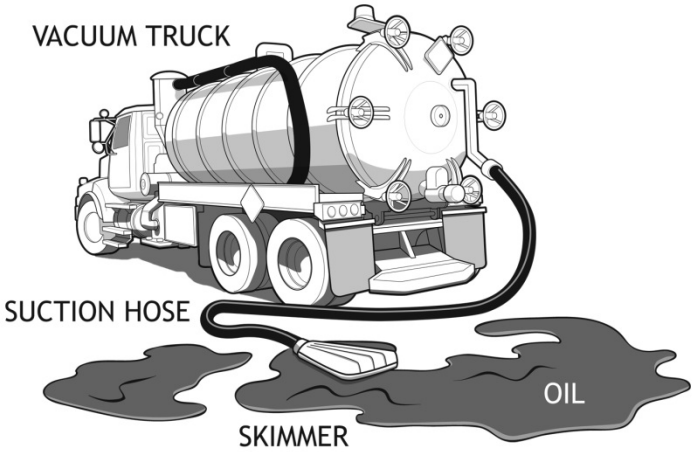
Recovered sorbents should be placed in 6 mil poly bags, with the bag weight limited to 25 - 30 lbs. Bags should then be sealed and then double-bagged and placed in lined bins to avoid secondary contamination.

4.12.2 Skimmers

Where pooled oil is concentrated in sufficient quantities, mechanical skimmers should be used. This activity would focus on areas where oil has collected, either in down-wind/current boom pockets or in near-shore boom pockets. Where possible, recovery efforts should be mounted where recovered oil could be stored temporarily on shore.

4.12.3 Vacuum Truck, Gator Vacuum Truck, Port – a – Vac Unit

Vacuum trucks are used to assist in the cleanup and transport of released product and waste material. These trucks are equipped with vacuum pumps and a cylindrical chamber capable of sustaining low internal pressures. Vacuum trucks use 2-4-inch (5-10 cm) diameter hose which is placed slightly below the surface of the oil slick for collection. Depending on the slick thickness and density, a mixture of oil and water will enter the chamber. Positioning the intake end of the hose is critical to minimize the amount of water that is collected.



4.12.4 Cleanup Techniques – Removal

Assessing the overall environmental impact must be considered when selecting a removal recovery technique. There are several variables that will influence the removal strategy used during a spill; such as product type and spilled area restrictions. A combination of removal cleanup methods will be used.

Technique	Description	Recommended Equipment	Applicability	Potential Environmental Impacts
Manual Removal	Hand tool (scrapers, wire brushes, shovels, cutting tools, wheelbarrows, etc.) are used to scrape oil off surfaces or recover oiled sediments, vegetation, or debris where oil conditions are light or sporadic and/ or access is limited.	Equipment misc. hand tools Personnel 10-20 workers	• Can be used on all habitat types • Light to moderate oiling conditions for stranded oil or heavy oils that have formed semi-solid to solid masses • In areas where roosting or birthing animals cannot or should not be disturbed.	• Sediment disturbance and erosion potential.
Mechanical Removal	Mechanical earthmoving equipment is used to remove oiled sediments and debris from heavily impacted areas with suitable access.	Equipment motor grader, backhoe, dump truck elevating scrapers Personnel 2-4 workers plus equipment operators	• On land, wherever surface sediments are accessible to heavy equipment • Large amounts of oiled materials.	• Removes upper 5 to 30 cm of sediments.
Sorbent Use	Sorbents are applied manually to oil accumulations, coatings, sheens, etc. to remove and recover the oil.	Equipment misc. hand tools misc. sorbents Personnel 2-10 workers	• Can be used on all habitat types • Free-floating oil close to shore or stranded on shore, secondary treatment method after gross oil removal • Sensitive areas where access is restricted.	• Sediment disturbance and erosion potential • Trampling of vegetation and organisms • Foot traffic can work oil deeper into soft sediments.
Vacuum/ Pumps/ Skimmers	Pumps, vacuum trucks, skimmers are used to remove oil accumulations from land or relatively thick floating layers from the water.	Equipment 1-2 50- to 100-bbl vacuum trucks w/ hoses 1-2 nozzle screens or skimmer heads Personnel 2-6 workers plus truck operators	• Can be used on all habitat types • Stranded oil on the substrate • Shoreline access points.	• Typically does not remove all oil • Can remove some surface organisms, sediments, and vegetation.

4.12.5 Recovery Techniques – Washing

Washing is often a viable method for removing stranded oil from hard surfaces, like large rocks and seawalls. However, while effective, when used incorrectly washing may drive oil to further contaminate clean areas and triggered additional environmental effects. Because of these considerations, responders need to be very cautious about the situations and habitats in which washing is employed. Washing techniques should normally be combined with an effort to contain and collect the mobilized oil.

Technique	Description	Recommended Equipment	Applicability	Potential Environmental Impacts
Flooding	High volumes of water at low pressure are used to flood the oiled area to float oil off and out of sediments and back into the water or to a containment area where it can be recovered. Frequently used with flushing.	Equipment 1-5 380- to 750-lpm pumping systems 1 100-ft perforated header hose per system 1-2 200-ft containment booms per system 1 oil recovery device per system Personnel 6-8 workers per system	• All shoreline types except steep intertidal areas • Heavily oiled areas where the oil is still fluid and adheres loosely to the substrate • Where oil has penetrated into gravel sediments • Used with other washing techniques.	• Can impact clean down gradient areas • Can displace some surface organisms if present • Sediments transported into water can affect water quality.
Flushing	Water streams at low to moderate pressure, and possibly elevated temperatures, are used to remove oil from surface or near-surface sediments through agitation and direct contact. Oil is flushed back into the water or a collection point for subsequent recovery. May also be used to flush out oil trapped by shoreline or aquatic vegetation.	Equipment 1-5 189- to 380-lpm/ 689 kpa pumping systems with manifold 1-4 30 m hoses and nozzles per system 1-2 60 m containment booms per system 1 oil recovery device per system Personnel 8-10 workers per system	• Substrates, riprap, and solid man-made structures • Oil stranded onshore • Floating oil on shallow intertidal areas.	• Can impact clean down gradient areas • Will displace many surface organisms if present • Sediments transported into water can affect water quality • Hot water can be lethal to many organisms • Can increase oil penetration depth.
Spot (High Pressure Washing)	High pressure water streams are used to remove oil coatings from hard surfaces in small areas where flushing is ineffective. Oil is directed back into water or collection point for subsequent recovery.	Equipment 1-5 1,200- to 4,000-psi units with hose and spray wand 1-2 30 m containment booms per unit 1 oil recovery device per unit Personnel 2-4 workers per unit	• Bedrock, man-made structures, and gravel substrates • When low-pressure flushing is not effective • Directed water jet can remove oil from hard to reach sites.	• Will remove most organisms if present • Can damage surface being cleaned • Can affect clean down gradient or nearby areas.

4.12.6 Recovery Techniques – In-Situ Treatment

When conducted properly, in situ treatment significantly reduces the amount of oil spilled and minimizes the adverse effect of the oil on the environment. Although, in-situ treatment is considered an infrequent recovery method because of widespread concern over atmospheric emissions and uncertainty about its impacts on human and environmental health.

Technique	Description	Recommended Equipment	Applicability	Potential Environmental Impacts
Sediment Tilling	Mechanical equipment or hand tools are used to till lightly to moderately oiled surface sediments to maximize natural degradation processes.	Equipment 1 tractor fitted with tines, dicer, ripper blades, etc. or 1-4 rototillers or 1 set of hand tools Personnel 2-10 workers	• Any sedimentary substrate that can support heavy equipment • Sand and gravel beaches with subsurface oil • Where sediment is stained or lightly oiled • Were oil is stranded above normal high waterline.	• Significant amounts of oil can remain on the shoreline for extended periods of time • Disturbs surface sediments and organisms.
In Situ Bioremediation	Fertilizer is applied to lightly to moderately oiled areas to enhance microbial growth and subsequent biodegradation of oil.	Equipment 1-2 fertilizer applicators 1 tilling device if required Personnel 2-4 workers	• Any shoreline habitat type where nutrients are deficient Moderate to heavily oiled substrates After other techniques have been used to remove free product on lightly oiled shorelines Where other techniques are destructive or ineffective.	• Significant amounts of oil can remain on the shoreline for extended periods of time • Can disturb surface sediments and organisms.
Log/Debris Burning	Oiled logs, driftwood, vegetation, and debris are burned to minimize material handling and disposal requirements. Material should be stacked in tall piles and fans used to ensure a hot, clean burn.	Equipment 1 set of fire control equipment 2-4 fans 1 supply of combustion promoter Personnel 2-4 workers	• On most habitats except dry muddy substrates where heat may impact the biological productivity of the habitat • Where heavily oiled items are difficult or impossible to move • Many potential applications on ice.	• Heat may impact local near-surface organisms • Substantial smoke may be generated • Heat may impact adjacent vegetation.
Natural Recovery	No action is taken and oil is allowed to degrade naturally.	None required	• All habitat types • When natural removal rates are fast • Oiling is light • Access is severely restricted or dangerous to cleanup crews • When cleanup actions will do more harm than natural removal.	• Oil may persist for significant periods of time • Remobilized oil or sheens may impact other areas • Higher probability of impacting wildlife.

4.13 Alternative Recovery Techniques

All non-traditional or alternative cleanup techniques require regulatory approval and a net environmental benefit analysis (NEBA) to be completed. This analysis will consider the specific treatment options appropriate to the response; the potential for successfully implementing those discrete options; the environmental trade-off attached to each technique; and, lastly, the types of treatments that can be authorized within the existing regulatory framework. Although each incident is unique, NEBA will conceptually develop a decision flow chart that asks the questions of:

- What recovery techniques should be executed?
- How long should the existing recovery techniques continue?
- Will certain areas within the response become later candidates for natural attenuation?
- Should sunken oil be left for remedial treatment?
- What is the regulatory process for permitting the remedial treatment?

NOTE: Dispersant, In-Situ Burning and Decanting all require regulatory approval.

4.13.1 Decanting

Large quantities of oily fluids can be generated during an oil spill response. These fluids include the products of skimming and vacuuming operations, and usually contain some amount of water. Oil recovery operations can only continue as long as there is a place to store the recovered fluids, as such when the field storage capacity is reached, skimming/recovery operations must then cease until additional storage is available.

Decanting is an option for increasing on-site storage capacity by removing the water once the liquids have separated. Separation may occur through the use of on-site vacuum trucks equipped with separator equipment or by allowing the collected fluids to sit in a quiescent state long enough to separate. The separated water can then be siphoned out back to the collection point thus freeing up storage capacity.

4.13.2 Dispersant

The decision to use dispersants must be made as soon as possible after a spill occurs before substantial weathering takes place or the oil has spread. Therefore, early in the spill response Unified Command may evaluate the potential use of dispersants. If Unified Command feels the potential for dispersant use exists, they should have their staff gather the information necessary to complete a review of dispersant use and action plan for approval by Unified Command.

4.13.3 In-Situ Burning

Burning is an alternative tactic to provide a rapid means to remove oil in the event of a spill from the pipeline or terminal operations. Advantages of in situ burning include rapid removal of oil from the water surface, requirement for less equipment and labour than many other techniques, significant reduction in the amount of material requiring disposal, significant removal of volatile oil components, and may be the only solution possible, such as for oil-in-ice situations and wetlands. Disadvantages of in-situ burning include creation of a smoke plume, residues of the burn may have to be removed, oil must be a sufficient thickness to burn quantitatively; and therefore, may require containment, and danger of the fire spreading to other combustible materials. Potential human health impacts may result from smoke plume and particulate generation so may not be suitable where public exposure will result.

5.0 PROTECTION OF HIGH CONSEQUENCE AREAS

The term High Consequence Areas (HCA) is used to define those areas where a spill incident can have a significant negative impact on, but not limited to:

- Populated areas
- Ecological areas
- Heritage resources
- Essential infrastructure

Sections of the Trans Mountain Pipeline right-of-way cross through, or are in proximity to, High Consequence Areas. Additionally, Trans Mountain has identified High Consequence Areas which could be impacted should a release of product migrate from the pipeline right-of-way.

The Environmental Unit, operating within the Planning Section, is responsible for identifying the incident-specific areas of concern (i.e., High Consequence Areas), and recommending response priorities. This includes locating sensitive areas, providing response recommendations, and determining the potential extent, fate, and effects of subsequent consequences. GIS specialists (Planning Section) have access to a variety of mapping layers, to prepare incident-specific maps with the information on High Consequence Areas required to support the response. Responders may also use remote electronic devices to access mapping layers for identification of HCAs.

In addition to this Emergency Response Plan, there are Geographic Response Plan (GRP) for each Trans Mountain Operating District. The GRPs identify tactics, control points and water body access locations (boat launches) to aid in the timely deployment of response equipment to limit and/or prevent migration of product.

5.1 High Consequences Areas

5.1.1 Populated Areas at Risk

Populated areas are located along and within the vicinity of the pipeline right-of-way and are subject to potential safety hazards if an incident were to occur. Populated areas are geographical regions where concentrations of people are located. Populated areas are separated into two categories:

- High Populated Areas: Urbanized areas, cities, towns, bands, villages, hamlets, or registered municipalities that fall within 8 km of Trans Mountain's pipelines.
- Low Populated Areas: Places with concentrated populations that fall outside of municipal boundaries, including towns, bands, villages, or unincorporated cities, within 8 km of Trans Mountain's pipelines.

5.1.2 Ecological Areas at Risk

Ecological Areas are located throughout Alberta and British Columbia and include ecosystems dedicated to achieving long-term conservation such as recreational areas and fish spawning areas. Ecological Areas at Risk are gathered from a combined dataset for Alberta and British Columbia. Datasets include, but are not limited to federal and provincial parks, bird sanctuaries, threatened or endangered species areas, and fish and important bird habitats.

5.1.3 Heritage Resources at Risk

Heritage resources are present throughout Alberta and British Columbia. These resources include archeological and paleontological sites, sites of cultural and historical significance to Indigenous communities, such as burial grounds, and sites of spiritual and ceremonial importance of Traditional Territory. Information regarding heritage resources is restricted to maintain confidentiality. Trans Mountain's Incident Management Team will collaborate with Indigenous communities' liaisons for additional information regarding the determination of, and assist in, the defining of the boundaries of the sites, if at risk from the spill.

5.1.4 Essential Infrastructure at Risk

Essential infrastructure is present throughout Alberta and British Columbia and includes Trans Mountain and other pipelines and related infrastructure, oil and gas production and refinery sites, utilities, telecommunication lines, and transportation routes (including railways).

Essential infrastructure also includes drinking water sources including private water wells and municipal water sources (including Regional Districts, Communities, and Indigenous Groups) which are subject to impact due to safety hazards, loss of use and damage claims. Water wells that are within 150 metres on either side of the centre of the pipeline right-of-way are inventoried to determine ownership and location. Municipal water sources, including water intakes and aquifers that are currently utilized, and sources identified for future potential use, are also inventoried regularly.

Navigable waterways are also considered essential infrastructure. Navigable waterways are bodies of water created or altered as a result of the construction of any work that is used or where there is a reasonable likelihood that it will be used by vessels for transport or travel for commercial or recreational purposes.

Essential infrastructure sites can be displayed via GIS mapping. If infrastructure is at risk from an incident, then infrastructure owners/operators will be asked to provide a liaison for information and coordination purposes with Trans Mountain.

5.2 High Consequence Areas Protection Techniques

Spills that impact a high consequence area are greatly compounded and may endure far more response actions than a spill elsewhere. If a spill were to impact an HCA, specific response practices should be followed to contain product and reduce the environmental impact. When responding to spills in an HCA, the following measures should be considered:

- Minimize the number of personnel working at each response site
- Minimize use of heavy equipment at each response site
- Eliminate warm/hot water flushing tactics at response sites.

5.2.1 Low Impact Response Activities

Low impact activities involve accessing and completing response actions in a manner which limits the overall response footprint. The response is still effective and efficient, but care is taken in cultural, historical, or ecologically sensitive areas such as wetland complexes, waterbodies, and watercourses.

These activities tend to represent an increased requirement for personnel and equipment during the initial stages of a response. The final reclamation requirements may be reduced due to the minimized disturbance.

Techniques that can be used to maintain the structural integrity of sensitive areas include:

- Accessing areas by foot traffic only.
- Establishing pallet or plywood walkways for access.
- Restricting travel to the established pathways.
- Staging matting for heavy equipment access into sensitive areas.
- Using Low Ground Pressure (LGP) heavy construction equipment to reduce soil compaction, rutting, and overall disturbance.
- Using specialized tracked equipment.
- Utilizing portable vacuum units.
- Deploying helicopters and long lines to transport supplies and personnel in and out of worksites.
- Establishing staging areas in appropriate areas to prevent damage to the ecosystem.

The use of pre-existing trails, roads, or disturbed areas should always be the preferred access point(s). By using these previously disturbed areas we can reduce the overall impact that occurs to the environment during the initial response.

5.2.2 Exclusion Booming

Boom is deployed across or around sensitive areas and anchored in place. The approaching oil is deflected or contained by boom. This method is often used across small bays, harbor entrances, inlets, river, and creek mouths with currents less than 1 knot (0.5 m/s) and breaking waves of less than 1.5 ft (0.5 m) high. Typically, environmental effects are limited to minor disturbance to substrate at shoreline anchor points.

5.2.3 Deflection Booming

Boom is deployed at an angle to the approaching slick. Oil is diverted away from the HCA to a less sensitive location for recovery. This technique is often used across small bays, harbor entrances, inlets, river and creek mouths with currents exceeding 1 kt (0.5 m/s) and breaking waves of less than 1.5 ft (0.5 m). It should be used only on straight coastline areas to protect specific sites, where breaking waves are less than 1.5 ft (0.5 m). Typically, environmental effects are limited to minor disturbance to substrate at shoreline anchor points; however, diverted oil may cause shoreline oil contamination down-wind and down-current. A Net Benefit Analysis should be conducted to determine if deflection booming should be conducted.

5.2.4 Along-Shore Booming

Boom is positioned along the shoreline to provide a barrier to floating oil. Oil is diverted away from the sensitive area to a less-sensitive location for recovery. Along-shore booming might be difficult during a falling tide because constant attention is required to ensure the boom doesn't strand. This technique can be used in quiet areas with breaking waves of less than 1 ft (0.3 m). Typically, environmental effects are limited to possible shoreline oil contamination down-wind and down-current.

5.2.5 Shore-Seal Booming

Specially designed, shore-sealing boom is positioned in the inter-tidal zone to deflect oil. This technique can be used in a wide range of substrates but is most often used on mud and sand flats. Typically, environmental effects are limited to minor disturbance to substrate at shoreline anchor points.

5.2.6 Use of Passive Sorbents

Sorbents are positioned in the swash zone to absorb incoming oil. This technique can be used in a wide range of low-slope substrates. Pom-Poms normally work best on heavier, weathered crude oil, while sorbent rolls work best on lighter, fresher crudes. The environmental effects of passive sorbents are typically limited to the minor disturbance to the substrate.

6.0 PIPELINE RELATED HAZARDS AND ASSOCIATED RISKS

Trans Mountain's Pipeline extends from the City of Edmonton in central Alberta to the Lower Mainland of British Columbia. Following this route, the pipeline passes through a variety of landscapes each with their own diverse geographic features and climates. As the pipeline passes through each local environment it may be exposed to a range of natural and human induced hazards each with the ability to negatively impact operations and personnel. The following section aims to describe hazards that could negatively impact the Trans Mountain Pipeline and workers in order to provide both hazard context and to outline actions that may be undertaken in order to mitigate and/or respond to such events.

6.1 Natural Hazards

Natural Hazards may be defined as naturally occurring physical phenomena caused either by rapid or slow onset events which may be geophysical (earthquakes), hydrological (avalanches, floods), climatological (extreme temperatures, wildfires), meteorological (hurricanes and storms/wave surges) or biological (disease epidemics and insect/animal plagues). While the Trans Mountain Pipeline may not be exposed to the entirety of the aforementioned hazards there are some naturally occurring hazards that could certainly be expected to impact pipeline operations and personnel.

6.1.1 Wildfire/Grass Fires

Wildfires, including forest fires and grassland fires, are a natural hazard in any forested and grassland region of Alberta and British Columbia. These fires are common between May and September and are most often caused by human activity and lightning strikes. Of particular concern are interface wildfires, the area where wildfire and human development meet. Interface fires often destroy homes and other critical infrastructure and typically lead to local or large-scale public evacuations.

A hazard specific *Wildfire Mitigation and Response Plan* has been developed to assist with the response to wildfires/grass fires.

In the event that Trans Mountain personnel identify a significant wildfire or grassfire they are to report the fire immediately to the local fire department and the provincial wildfire agency.

In Alberta contact **Alberta Wildfire at 310-FIRE (3473)**,

In B.C. contact the **British Columbia Wildfire Service at 800-663-5555**.

Be prepared to provide the following information:

1. **Location**: i.e., Where is the fire? How far up the hillside?
1. **Size**: e.g., Metres? Hectares? Size of a house? Size of a football field?
2. **Rate of spread**: i.e., How quickly is the fire spreading?
3. **Fuel**: i.e., What is burning? Grass, bushes, trees?
4. **Smoke/flames**: i.e., What colour is the smoke? Are flames visible?
5. **Threat**: i.e., Are there any people or infrastructure at risk?
6. **Action**: i.e., Is anyone fighting the fire?

In the event Trans Mountain personnel discover a small grass fire along access roads or the pipeline Right-of-Way personnel may utilize small handheld equipment including shovels and portable fire

extinguishers to suppress the fire if it is safe to do so. If the fire increases in size, spreads or presents a threat to life safety then personnel are to evacuate the area and contact the local fire department and the provincial wildfire body.

6.1.1.1 Wildfire/Grass Fire Checklist

- ❑ Notify Edmonton Control Centre and your supervisor, issue TAS.
- ❑ For large, uncontrolled fires, notify local fire department (call 911) & Provincial Wildfire Authority. In Alberta call toll free 310-3473. In British Columbia call 800-663-5555.
- ❑ Evacuate all non-essential personnel and secure area.
- ❑ Muster company response personnel at a safe location.
- ❑ If required, and safe to do, search for missing people. Utilize appropriate equipment and resources.
- ❑ Conduct initial wildfire assessment and following the wildfire decision tree as outlined in Section 2 of the “Wildfire Plan”.
- ❑ Determine strategic options, including offensive, defensive or monitoring as per Section 3 of the “Wildfire Plan”
- ❑ Determine strategies and tactics as per Section 4 of the “Wildfire Plan”.
- ❑ Coordinate response with the fire department or provincial wildfire officials.

6.1.2 Earthquake

An earthquake is a sudden and/or violent shaking of the ground, sometimes causing great destruction and injuries, as a result of movements within the earth's crust or volcanic action. While earthquakes may occur anywhere along the Trans Mountain Pipeline it is the coastal areas of British Columbia that pose the greatest risk.

In the event that Trans Mountain operations are affected by an earthquake it is vital to first ensure personnel safety and immediately notify the on-site supervisor and Edmonton Control Centre.

The Edmonton Control Centre also receives alerts and data on seismic events from various external services.

If an earthquake does occur and impacts Trans Mountain personnel while working in the field or at an office location, personnel should take steps to ensure the safety of themselves and coworkers.

At the outset of an earthquake Trans Mountain personnel should follow the ***Drop, Cover and Hold-On*** technique. This technique involves dropping to the ground once shaking is felt and moving underneath sturdy furniture such as a table or desk. Once safely underneath solid furniture, cover your head and torso to avoid being hit by falling objects. Finally hold onto the object you are underneath in order to remain covered. Once the shaking has stopped, remain in place for at least one minute to let any loose objects settle. Before exiting your safety location scan the area to look for additional hazards that may have developed as a result of the shaking. Examples may include broken glass, fallen objects and fire. While completing this scan consider the most appropriate means of exiting the building as quickly and safely as possible. Once outdoors, personnel should gather at pre-determined muster points in order to complete head counts.

Trans Mountain personnel who are outdoors during the onset of an earthquake should attempt to move to a clear area if it is safe to do so. Extra attention should be paid to overhead power lines, trees, signs, buildings, vehicles, and other potential falling hazards. The ***Drop, Cover, and Hold-On*** technique should be utilized as it will protect individuals from objects thrown horizontally, even if nothing is directly above them.

If Trans Mountain personnel are in a vehicle during the onset of an earthquake they should immediately and safely pull over to the side of the road, stop, and set the parking brake. Drivers should avoid overpasses, bridges, power lines, signs and other hazards. Stay inside the vehicle until the shaking stops. After the shaking has stopped, proceed carefully by avoiding fallen debris, cracked or shifted payment, and emergency vehicles. If a power line falls on the car, stay inside until a trained person removes the wire.

Notify your supervisor and/or the Edmonton Control Centre as soon as safely possible. Additional details including facility, pipeline or equipment damage and shutdowns should also be communicated at this time.

6.1.2.1 Earthquake Checklist

In the event of an earthquake, the following steps and procedures should be taken:

If Indoors

- ❑ Follow the Drop, Cover and Hold-On technique once an earthquake is felt.
- ❑ Remain in place for at least one minute after the shaking has stopped to let any loose objects settle.
- ❑ Before exiting the building, scan the area for additional hazards (e.g., broken glass, fire, fallen objects).
- ❑ Exit the building.
- ❑ Notify Supervisor.

If Outdoors

- ❑ Move to a clear area if safe to do so; pay attention to:
    - Overhead power lines
    - Trees
    - Signs
    - Vehicles
    - Potential falling hazards
- ❑ Follow the Drop, Cover and Hold-On technique once an earthquake is felt.
- ❑ Remain in place for at least one minute after the shaking has stopped to allow movement of objects to settle.
- ❑ Notify Supervisor.

If in Vehicle

- ❑ Pull off the road to the far-right shoulder, if possible, immediately.
    - Avoid overpasses, bridges, and power lines.
    - Stop on the median only if there is no other option; ensure that the vehicle is well off the travelled lanes.
- ❑ Set parking brake.
- ❑ Activate hazard warning lights.
- ❑ Shut off the vehicle.
- ❑ Stay in the vehicle.
    - If a powerline falls on the vehicle, stay inside until trained personnel remove the wire.
- ❑ Notify Supervisor.

After the Shaking Stops

- ❑ Complete a headcount and account for all personnel.
    - If any personnel are unaccounted for, determine last check-in time and location or known whereabouts and relay to emergency services.
    - If required, and safe to do, search for missing people. Utilize appropriate equipment and resources.
- ❑ Notify the Edmonton Control Centre Operator and Site Supervisor of response steps taken and obtain further instructions.
- ❑ Evacuate all nonessential personnel and third parties to a safe location.
- ❑ Shut down any transfer/loading operations and secure facilities:
    - Close isolation valves and tank valves.
    - Shut off nonessential power supplies.
- ❑ In the event of earthquake damage to critical Trans Mountain infrastructure enact the Emergency Response Plan.
    - If applicable, refer to the facilities Fire-Pre Plan in the event of a Tank Fire or 3-Dimensional Fire.
- ❑ Monitor site for evidence of leaks from pipelines and storage tanks.
- ❑ Exercise caution when entering damaged buildings watch for:
    - Downed power lines
    - Fire
    - Flooding
    - Debris
- ❑ Secure facility for aftershocks.

6.1.3 Floods

Floods are the most frequent and costly natural disaster often causing large-scale damage to properties, facilities and infrastructure while also posing a threat to life safety. Flooding events known as flash floods are of particular concern. Flash floods are typically caused by abrupt and extreme rainfall that causes a river, stream, pond or other body of water to swiftly overflow its banks in a short period of time, often in several hours or less. Flashfloods can also be caused by erosion of soil and sand, or by ice jams on rivers/streams in conjunction with a winter or spring thaw.

Trans Mountain Emergency Management monitors for, and the risk of, flood of the waterways in the vicinity of the Trans Mountain Pipeline. If a flood does occur and impacts Trans Mountain personnel while working in the field or at an office location, personnel should take steps to ensure the safety of themselves and coworkers. Notify your supervisor and/or the Edmonton Control Centre as soon as safely possible.

Government entities provide current and forecast streamflow conditions, including modeled forecast data, and flood advisories and warnings, using the following stages:

High Streamflow Advisory: River levels are rising or expected to rise rapidly, but that no major flooding is expected. Minor flooding in low-lying areas is possible.

Flood Watch: River levels are rising and will approach or may exceed bank-full. Flooding of areas adjacent to affected rivers may occur.

Flood Warning: River levels have exceeded bank-full or will exceed bank-full imminently, and that flooding of areas adjacent to the rivers affected will result.

In the event the risk of a flood has been identified, the following steps and procedures should be taken:

Mitigation from Flood Risk

- ❑ Receive notice of potential for flood.
- ❑ Identify and action appropriate activities based on alert levels and risk assessment to protect workers, the public, and the environment. Such activities could include:
    - Preparation of incident specific pre-emptive controlled evacuation plan.
    - Procurement, and set-up of sandbags or polyethylene barriers to protect buildings or equipment.
    - Removal of critical records from site.
    - Movement, or removal, of hazardous materials and dangerous goods from low-lying areas to prevent environmental damage.
    - Movement of critical equipment to higher ground.
    - Buoying any above-ground facilities that could become submerged to prevent damage from craft operating in flooded areas.

Decision to Evacuate Site

- ❑ Receive order to evacuate.
- ❑ If required, and safe to do, search for missing people. Utilize appropriate equipment and resources.
- ❑ Inform the Edmonton Control Centre if this has not already been done, issue TAS.
- ❑ Take action to shut down, isolate and de-pressurize equipment, as required.
    - Shut off electricity and electrical equipment.
    - Do not attempt to shut off electricity if water is already present; the combination of water and live electrical current can be lethal.
    - Shut off gas supply and water supply if safe to do so.
    - Shut down and isolate the section of the pipeline area at risk.
- ❑ Implement and follow applicable evacuation plan.
- ❑ Evacuate site to the pre-determined location.
    - Follow the specified evacuation route. Do not attempt to take short cuts as they may lead to a dangerous or blocked-in area.
    - Never try to walk or swim in flood waters.
    - If evacuating by vehicle:
        - Do not drive through flood waters.
        - Water will often prove deeper than it appears, and the vehicle could get struck or swept away by fast water.
        - Avoid driving across bridges if the water is high and flowing quickly, unless advised by Responders that it is the safest route.
        - If caught in fast-rising waters and the vehicle stalls, exit and remain with the vehicle until help arrives.

Re-entry to Site

- ❑ Confirm re-entry has been approved by Supervisor.
- ❑ Determine site and damage assessment requirements; determine if there is sufficient cover over pipeline.
- ❑ Notify landowners of areas of reduced cover.
- ❑ Monitor for damage to buildings and unsafe work areas. Indicators to watch for include:
    - Buckled walls or floors, holes in the floor, bent or broken piping, broken glass and other potentially dangerous debris.
    - Water that is heavily contaminated with sewage and other pollutants that can cause sickness and infections.
    - Electrical components and panels that need to be cleaned, dried, and tested by a qualified electrician. All equipment, heating, pressure, or sewage systems (including appliances) will need to be thoroughly cleaned, dried, inspected and deemed safe before use.
- ❑ In the event of flood damage, follow the Emergency Response Plan Section 3.0 Spill/Site Assessment.
- ❑ Conduct an aerial overflight.

6.1.4 Landslides

Landslides are defined by collapsing / falling soil, rock, and debris in a work area, and/or in the vicinity of the pipeline or terminal, due to proximity and exposure to an unstable natural slope. The severity of a landslide can vary, with debris volume ranging from a few cubic metres up to 10km^3. Landslides are a hazard to Trans Mountain personnel, first responders, the public, natural resources, and infrastructure.

Trans Mountain personnel working on site should be aware of the signs of a potential landslide, such as:

- Unusual sounds such as trees cracking or rocks knocking together.
- Any increase in the flow of a river or a change in water colour; both can indicate upstream debris activity that could have been triggered by a landslide.

It is important to note that excavation activities taking place during snowmelt or following significant rainstorms can increase the risks of landslides. An effective response prioritizes the health and safety of rescuers. If you are on site at the time of a landslide, **move away from falling or fast-moving debris**. Personnel should stay mustered until the landslide has stopped, and there are no indicators of subsequent landslides. Scan the area carefully before returning to the site muster. Notify your supervisor and/or the Edmonton Control Centre as soon as safely possible.

6.1.4.1 Landslide Response Checklist

In the event of a landslide, reference the steps below:

If On Site

- ❑ Move quickly uphill and away from the likely path of the debris flow.
- ❑ Remain in place until debris is no longer falling/flowing, and noises of cracking trees, knocking rocks or rushing water can not be heard.
- ❑ Before moving, scan the area for any hazards that may have developed, such as fallen power lines, and/or loose or hanging debris.
- ❑ Notify Supervisor.

If in a Vehicle

- ❑ Remain in the vehicle.
- ❑ Shut off engine and headlights.
- ❑ Leave flashers and radio on.
- ❑ Call for help.
- ❑ If you must evacuate the area in your vehicle, watch for collapsed pavement, mud, fallen rocks and other road debris.

If a Landslide is Witnessed

- ❑ Evacuate the area to the site muster; complete a headcount and account for all personnel.
    - If any personnel are unaccounted for, determine last check-in time and location or last known whereabouts and relay to emergency services.
    - Be aware that the slope may experience further movement for hours to days afterward. Do not look for missing people if sounds of cracking trees or knocking rocks can be heard, which may indicate another landslide.

- ❑ Call 911; communicate:
    - Time and date
    - Reporting persons name
    - Witness name
    - Time of accident
    - Location of accident (ROW KP or access route) GPS Coordinates (Lat/Long)
    - Number of persons involved, injured and/or missing
    - Vehicular involvement
    - Additional relevant information (weather [flyable?] and road condition, special requirements)
    - A call back number for reporting personnel

- Notify supervisor and relay the above preliminary accident details to the Control Centre at 888-876-6711.
- Brief arriving rescuers.
- Document evacuations, arrivals, departures, environmental concerns (shelter, food/water, lights), site sketch, and photos.
- Notify off-site personnel and expected travelers and visitors; instruct them to postpone attendance to site or provide alternative routes of travel.

Re-entry to Site

- ❑ Confirm re-entry to the site has been approved by a Supervisor.
- ❑ Determine site and damage assessment requirements to determine if there is sufficient cover on the pipelines.
- ❑ Notify landowners of areas of reduced cover.
- ❑ Monitor for damage to buildings and unsafe work areas:
    - Buckled walls or floors, holes in the floor, bent or broken piping, broken glass and other potentially dangerous debris.
    - Water that is heavily contaminated with sewage and other pollutants that can cause sickness and infections.
    - Electrical components and panels that need to be cleaned, dried, and tested by a qualified electrician. All equipment, heating, pressure, or sewage systems (including

appliances) will need to be thoroughly cleaned, dried, inspected and deemed safe before use.

- ❑ In the event of pipeline damage, follow the Emergency Response Plan Section 3.0 Spill/Site Assessment.
- ❑ Conduct an aerial overflight.

6.1.5 Avalanche

An avalanche is a mass of snow, often mixed with ice and debris which travels down mountain sides and causes massive destruction to objects located within its pathway. Avalanches occur due to any of the following triggers: overloading, temperature, slope angle, snowpack conditions, and vibration. Avalanches typically occur in mountainous regions of Canada and while unlikely to impact Trans Mountain operations they can still prove hazardous to operators in the field.

Response to an avalanche incident must be orderly and efficient, and keep the safety of rescuers in mind at all times. A successful rescue depends on a rapid response by appropriately trained and equipped personnel. The full Avalanche Safety Plan is available by request.

6.1.5.1 Avalanche Response Checklist

Should an avalanche occur, the following steps and procedures should be taken:

If in Vehicle

- ❑ Remain in the vehicle.
- ❑ Shut off engine and headlights.
- ❑ Leave flashers and radio on.
- ❑ Call for help.
- ❑ Switch transceiver to ‘Send’.
- ❑ Push sectional avalanche probe to the surface.
- ❑ Await Rescue Team.

If Avalanche Witnessed

- ❑ Evacuate area to the site muster; complete a headcount and account for all personnel.
  - If any personnel are unaccounted for, determine last check-in time and location or known whereabouts and relay to emergency services. If required, and safe to do, search for missing people. Utilize appropriate equipment and resources.

- ❑ Call 911; communicate:
  - Time and date
  - Reporting persons name
  - Witness name (hold witness)
  - Time of accident
  - Location of accident (ROW KP or access route) GPS
  - Number of persons involved, injured and/or missing
  - Number of responders with avalanche equipment
  - Vehicular involvement
  - Additional relevant information (weather [flyable?] and road condition, special requirements)
  - A call back number for reporting personnel

- Notify supervisor and relay the above Preliminary Accident Details to the Edmonton Control Centre 888-876-6711.
- Brief arriving rescuers.
- Document evacuations, arrivals, departures, environmental concerns (shelter, food/water, lights), site sketch, and photos.
- Commence shelter-in-place arrangements.
- Notify off-site personnel and expected travelers and visitors; instruct them to postpone attendance to site or provide alternative routes of travel.

6.1.5.2 Avalanche Rescue Card

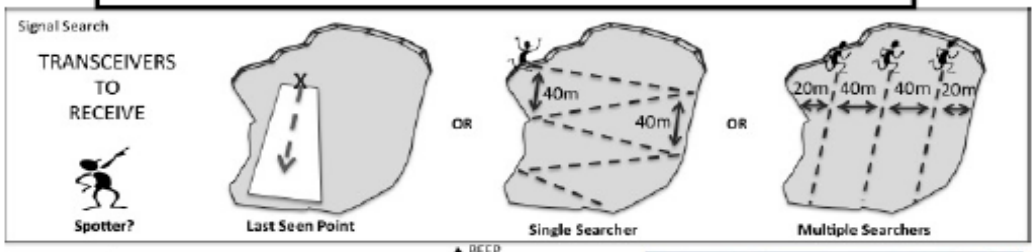
Avalanche Rescue Card Trans Mountain 1-888-876-6711

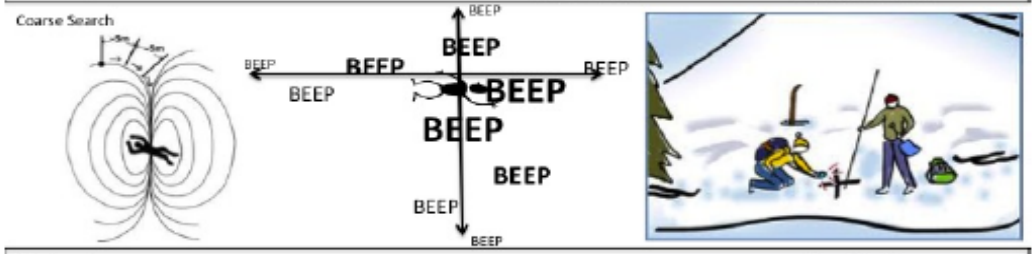
If you are caught in a vehicle-Remain in the vehicle
Shut off engine and headlights – Leave flashers and radio on.
Confirm location, call for help
Ensure transceiver is sending
Push sectional avalanche probe to the surface.
Await Rescue Team
Notify Trans Mountain Emergency 1-888-876-6711
Plan for rescue and hazards, see below & over

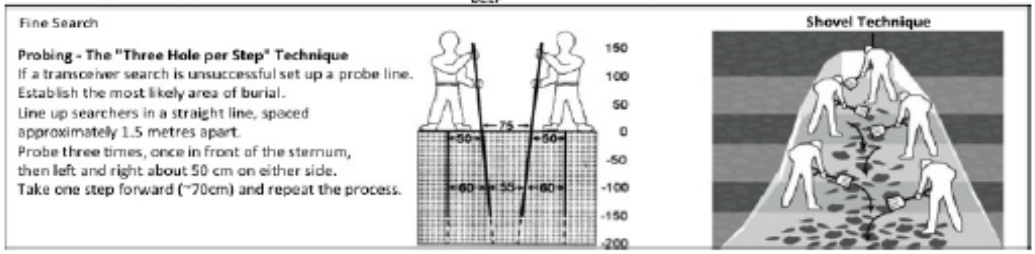
If you witness an avalanche:
Move people to a safe place
Note: Time, Location,
If persons missing or injured, vehicles involved
Notify Trans Mountain Emergency 1-888-876-6711
Plan for rescue and hazards, see below & over

Avalanche Search Instructions

1. Move all personnel to a safe location. Avoid contamination of the search area.
2. Retain and question witness.
3. Evaluate further hazard. Can you see the whole slope? Is the weather a factor?
4. Establish escape routes – use spotter and warning signal.
5. Mark the last seen point (if witnessed). Switch transceivers to Receive.
6. Transceiver search below the last seen point, watch for surface clues.
7. Random probe of likely burial locations, use transceivers if applicable.
8. Systematic coarse probe if transceiver search does not locate victims
9. Mark outline of avalanche deposit and all probed areas with flagging wands.
10. Draw a map of the avalanche showing all areas as they are searched/probed, noting pertinent details (last seen point, clues, victim location).
11. Brief arriving rescuers.
12. Document – arrivals, evacuations, departures, environmental concerns (shelter, food/water, lights), site sketch and photos etc.
13. Maintain communication with rescue base/team







6.1.6 Tornado

While tornadoes are not common along the majority of the Trans Mountain Pipeline there are locations, particularly in Alberta District, where tornado activity could develop and negatively impact Trans Mountain operations and personnel.

Tornadoes are defined as a violently rotating column of air which is in contact with the ground. They often develop during severe thunderstorms with frequent thunder and lightning. Tornadoes usually hit in the afternoon and early evening but have been known to strike at night as well.

Trans Mountain personnel should be aware of the potential signs of an incoming tornado. These may include:

- An extremely dark sky, sometimes highlighted by green or yellow clouds
- A rumbling sound or a whistling sound
- A funnel cloud at the rear base of a thundercloud, often behind a curtain of heavy rain or hail

In Canada, Environment Canada is responsible for warning the public when conditions exist that may produce tornadoes, through radio, television, social media, and the Environment Canada website and weather phone lines, using the following tornado alert system:

It is important to know the difference between a Tornado Watch and a Tornado Warning.

Tornado Watch – A tornado formation is likely in the area

Tornado Warning – A tornado has been sighted or seen on radar

6.1.6.1 Tornado Response Checklist

In the event the risk of a tornado has been identified, the following steps and procedures should be taken:

Tornado Watch

- ❑ Monitor for signs of a tornado and/or the issuance of a Tornado Warning.
- ❑ Shut down activities and/or muster personnel as required:
  - Shut down, isolate, and de-pressurize equipment, as time permits.
  - Shut off electricity and electrical equipment, as time permits.
  - Shut off gas supply and water supply, as time permits.

Tornado Warning and/or Tornado Sited

- ❑ Discontinue work and muster personnel indoors immediately.
  - Take shelter, preferably in a basement of a strong building.
  - If there is no basement, take cover under heavy furniture in the centre part of the building.
- ❑ Stay away from windows.
- ❑ Complete a headcount and account for all personnel.
- ❑ If required, and safe to do, search for missing people. Utilize appropriate equipment and resources.
- ❑ Provide regular updates to supervisor.
- ❑ Cell phones are the safest form of communication to use during a storm.

- ❑ Monitor the radio, social media on non-electrical devices for weather information updates, if safe to do so.
- ❑ Stay indoors until the tornado warning has been rescinded, and the order to muster has been rescinded.

If Outdoors

- ❑ Lie flat in the nearest depression such as a ditch or ravine.
  - Avoid tall objects, like trees, cranes, utility poles, etc.
- ❑ Cover your head to protect yourself from flying debris.
- ❑ Remain in place until certain the tornado has passed.
- ❑ Assess area for additional hazards that may have developed as a result of the storm, such as downed power lines, flood, fire, smell of natural gas, debris, etc.
- ❑ Provide regular updates to supervisor.

After the Storm

- ❑ Before moving out from cover survey the local area for any hazards that may have developed as a result of the tornado. Take caution against down power lines, fallen debris including broken glass, fires and potential flooding
- ❑ Provide first aid to anyone injured
- ❑ Notify your supervisor and Edmonton Control Centre of the situation status including injuries and infrastructure damage.
- ❑ If damage has occurred to Trans Mountain infrastructure such as the pipeline, follow the Emergency Response Plan Section 3.0 Spill/Site Assessment.

6.2 Seasonal Response Hazards

As response to pipeline and facility emergencies may occur at any time of year there is a possibility that personnel may be required to respond during adverse weather conditions. Given the location of the Trans Mountain Pipeline and its related facilities, responders may face conditions ranging from high heat to extreme cold, blizzard like conditions. It is imperative that responders take weather conditions into consideration as part of their overall response planning. Responders themselves must be aware of their own personal health at all times if effective operations are to be conducted. Ensuring a thorough Hazard Assessment/Tailgate Meeting is completed and a Safety Watch is appointed prior to operations cannot be overstated.

6.2.1 Winter Response Considerations

During a winter response personnel must consider the impacts that wind-chill and cold temperatures may have on responder health. Winter hazards that should be considered as part of the Health and Safety Plan include;

- **Hypothermia** – when the body loses heat faster than it can be produced leading to a reduced overall body temperature. Characterized by shivering, clumsiness and/or confusion.
- **Frostbite** – a freezing of the skin and underlying tissue leading to numbness, hard, red and/or pale skin.
- **Visibility during blizzards**, especially when driving and operating equipment
- **Warm-up areas**, including tents and vehicles, should be available and on-site in order to provide responders with a place to take breaks and effectively recover.

6.2.2 Responding on Ice Covered Waterbody

If response operations occur on an ice-covered waterbody additional precaution must be undertaken. Before an ice surface can be worked on or crossed it must be checked and evaluated for a safe load-carrying capacity for the equipment, people or vehicles going onto the surface, using the *Ice Assessment Form*. Findings should be shared with all workers expected to be working near or on any ice-covered waterbody. Rescue equipment with trained personnel should be available and on standby in the event that they are needed.

Prior to commencing any work on an ice-covered waterbody, you should have a list of communication and response activities to be undertaken in the event of a breakthrough and a list of resources should be outlined and confirmed. For additional information, see the *Ice Assessment & Safety Guideline* located on the winter response trailer prior to setup and on the intranet site in the Emergency Toolkit.

6.2.3 Summer Response Considerations

During the summer months personnel must be aware of the impact that heat and/or humidity will have on overall health. Summer related hazards that should be considered as part of the Health and Safety Plan include;

- **Heat Exhaustion** – a condition that occurs when the body is overheated and dehydrated. Symptoms associated with this illness may include heavy sweating, dizziness and fainting
- **Heat Stoke** – occurs when the body is overheated, at or above 104 F (40 C), due to prolonged heat exposure. Is considered a medical emergency requiring immediate treatment in order to prevent permeant physical damage

- **Biological hazards** – a review of potentially hazardous wildlife (insects, mammals) and plants (poisonous weeds) should be completed with responders as part of the pre-job Tailgate Meeting
- **Shaded areas** with adequate rehab supplies, including water, should be established on-site in order to provide responders with an area to rest and recover during break periods.

All stations have Fire Safety Plans which provide information regarding building evacuation procedures, evacuation routes, on-site fire equipment and fire prevention practices. For additional information refer to the specific facility Fire Safety Plan.

6.2.4 Pump Station Fires

Pump Station fires may originate from a variety of ignition sources including faulty electrical wiring, overheated materials such as flammable liquids, and lightening.

Prevention is the best method for avoiding pump station fires. Prevention activities can include;

- monitoring the accumulation of flammable and combustible waste and residues that contribute to fires
- ensuring that general equipment maintenance procedures are followed
- ensuring all flammable liquids are stored properly
- ensuring that proper hot work permitting is issued
- ensuring the appropriate level of fire detection and extinguishment systems and resources are available on-site (i.e., fire extinguishers)

6.2.4.1 Pump Station Fire Response Checklist

- ❑ Once fire is confirmed sound fire alarm to alert all on-site staff and contractors
- ❑ Following designated evacuation routes as outlined in the facility *Fire Safety Plan* and proceed to the designated muster station. Conduct head count.
- ❑ Call 911 or the local fire department
- ❑ Notify the Edmonton Control Centre in order to issue TAS
- ❑ Shutoff or isolate fuel sources feeding the fire if this can be done safely
- ❑ Provide first aid to any personnel who may be injured or require assistance
- ❑ For small fires consider an offensive attack utilizing handheld fire extinguishers (ABC and/or CO_2) and wheeled dry chemical extinguishers
- ❑ If the fire grows in size or if extinguishment cannot be safely achieved utilize and defensive strategy and retreat from the area
- ❑ Coordinate response with local fire
- ❑ Monitor weather conditions, including wind direction, as excessive smoke may impact members of the public

6.2.5 Right-of-Way Pipeline Fires

Right-of-way fires typically originate from failed piping/flanged connections causing a release of product into the ground with possible surface pooling. In order for a right-of way- fire to occur the released products vapours must reach a source of ignition, such as from equipment, machinery and/or vehicles near right-of-way.

Prevention is the best method for avoiding right-of-way fires. Prevention activities include;

- 24/7 monitoring of pipeline operations via SCADA system
- Aerial patrols of right of way looking for signs of
  - Vehicles/machinery on right of way
  - Discolored vegetation
  - melted snow
- Local visual inspections from operators
- In depth maintenance/integrity program

6.2.5.1 Right-of-Way Pipeline Fire Response Checklist

- ❑ Once fire is confirmed muster any personnel in area upwind of incident
- ❑ Call 911 or local Fire Department
- ❑ Notify control center in order to issue TAS
- ❑ Shut off or isolate fuel source feeding fire if this can be done safely
- ❑ Refer to the *Wildfire Response Plan* for a list of strategies and tactics
- ❑ For small fires consider an offensive attack utilizing handheld fire extinguishers (ABC)
- ❑ If fire grows in size or if extinguishment cannot be safely achieved utilize a defensive strategy and retreat from area
- ❑ If fire impacts adjacent wildland, follow the *Wildfire Mitigation and Response Plan* and ensure the appropriate Provincial Wildfire Agency is notified
- ❑ Coordinate response with local Fire Department
- ❑ Monitor weather conditions, including wind direction, as excessive smoke may impact members of the public

6.2.6 Vehicle Fires

Most vehicle fires are a result of malfunctioning electrical components, fuel lines or a fuel pipe splitting. In the case that Trans Mountain personnel are in a vehicle and begin to see smoke or smell burning material they should safely pull over and shut off the vehicle. Shutting off the engine will stop the flow of fuel and may prevent a full-blown fire. It is critical for the driver and other personnel to ensure they immediately exit the vehicle, and if safe, move off the road in order to reduce the likelihood of secondary accidents.

- For small fires only (passenger section, electrical fault, fires contained to contents of cargo space or trunk) use a vehicle ABC type fire extinguisher, if it is safe to do so.
- For large fires or fires involving fuel or storage tanks on the vehicle, evacuate the area by at least 25 metres and call for assistance from emergency responders. Once in a safe area you should stand by, assess the situation, and wait for assistance from emergency responders.

6.2.6.1 Vehicle Fire Response Checklist

- ❑ If smoke or flames are detected from an operating vehicle, safely pull to the side of the road and exit the vehicle.
- ❑ Move away from the vehicle and call 911 for any large or out of control fire.
- ❑ If the fire is small in size attempt extinguishment with vehicle fire extinguisher if it is safe to do so.
- ❑ Notify your supervisor and the Edmonton Control Centre.

6.3 Security Hazards

Security hazards present themselves in a variety of ways including, terrorism, breach of security events and vandalism. Often the main objective of these actions is to halt or disrupt normal operations. For these reasons Trans Mountain has established robust security protocols for the Trans Mountain Pipeline and its related facilities. Security protocols and response actions are further supported by an active Security Management Program. The Security Management Program focuses on direct and/or impending threats to ongoing operations and in most instances resolves issues without concern. However, in the event that a substantial security incident results in an impact to operations there is a strong likelihood that the Incident Management Team and Emergency Response Plans are activated. For these reasons a brief overview of common security hazards and response actions are outlined in the following subsections.

6.3.1 Terrorism

Terrorism is used to intimidate, coerce or attain ransom through the use of violence and/ or threats against persons (employees, general public, governing bodies, etc.) or property (pipeline, facilities, equipment, etc.). Violence is not the main goal of terrorism but a means to draw the attention of the local public, the government and the world to their cause.

The main reasons terrorist groups commit acts of violence to:

- Satisfy vengeance
- Create a desired influence on Governing bodies decisions, legislations or other crucial actions
- Attract media attention in order to acquire worldwide, national or local recognition for their cause
- Discourage foreign investment, tourism or assistance programs that may affect the target country's economy
- Produce widespread fear of society
- Destroy key infrastructure and facilities that will disturb lines of communication and create societal uncertainty about the Government's ability to protect and provide for its citizens

6.3.1.1 Terrorism Response Checklist

If you experience or witness a direct, credible threat to Trans Mountain personnel or property:

- ❑ Call 911 immediately to report the situation.
- ❑ If possible, evacuate the site and move to a secure location.
- ❑ If required, and safe to do, search for missing people. Utilize appropriate equipment and resources.
- ❑ If unable to leave the facility/building, choose a safe location such as an office to hide. Lock and/or barricade yourself in a secure room if possible.
- ❑ Notify your supervisor and the Edmonton Control Centre as soon as safely possible.

6.3.2 Breach of Security or Vandalism

If a Trans Mountain employee or contractor arrives at a company owned site and notices suspicious and/or unusual activity, including property damage they should contact local police/security and the Edmonton Control Centre before proceeding to investigate.

Other unusual activity may include:

- The presence of drones flying overhead or hovering around the incident site
- Media representatives or unidentified individuals using cameras, cell phones, video recorders or any other devices to document the incident site
- Fixed wing aircraft or helicopters exhibiting behaviour indicating their presence is related to the incident

6.3.2.1 Breach of Security or Vandalism Checklist

- ❑ Notify the Control Centre immediately of any of the following in the vicinity of an active Trans Mountain site; provide details to the Control Centre Operator:
    - Suspicious individuals
    - Suspicious vehicles parked at, or near, the incident site
    - Suspicious packages located at, or near, the incident site
    - Signs of unauthorized access including vandalism or breach of security
- ❑ If the situation is judged to be UNSAFE in any way:
    - Withdraw to what is judged to be a safe distance.
    - Immediately contact Police (911).
    - Do not engage any individuals in any way.
    - Await the arrival of the Police at the incident site.
- ❑ If the situation is considered SAFE:
    - Request that Police (911) be called to the site.
    - Try to preserve any possible evidence found which may indicate malicious activity.
    - Notify Trans Mountain Security Manager.
- ❑ Remain on-site to serve as a point of contact for the authorities.
- ❑ Be available as a liaison between Company Management and the local authorities.
- ❑ Inventory damages/property loss and estimate cost of repair or replacement.
- ❑ Make notes of evidence obtained.
- ❑ Obtain duplicate photos taken during the investigation.
- ❑ Evaluate the necessity of security personnel during non-business hours

6.3.3 Bomb Threat

A bomb threat or threat of any other nature may be received by anyone in Trans Mountain. In most cases, persons making such threats will deliver their message by phone to the first person contacted and will not wait for the call to be transferred. Consequently, it is important that a call of this nature be handled in accordance with an established plan.

6.3.3.1 Bomb Threat Checklist

All threats must be taken seriously.

- ❑ If threat is received by telephone, record the following information:
    - Exact wording
    - Time call was received
    - Record callers phone number if available on call display
    - Time the device or bomb is set to go off
    - Sex of caller
    - Age (young, old, teen)
    - Accent
    - Background noise (music, traffic, etc.)
- ❑ If the caller remains on the line, attempt to ascertain the following information:
    - Exact location of the bomb or nature of any other threat
    - When is it set to go off?
    - The kind and size of bomb?
    - Why was it put there?
    - How did it get into the facility?
- ❑ While the caller in on the line, attempt to locate your supervisor to listen in on the call.
- ❑ If the threat is received by email, do not delete, and contact management immediately.
- ❑ If threat is received by mail:
    - Do not handle it unnecessarily.
    - Place it in a plastic cover immediately.
- ❑ After call is over, or email/mail received contact your supervisor, and VP Operations or designate to determine further actions i.e., terminal shut down and evacuation. If required, and safe to do, search for missing people. Utilize appropriate equipment and resources.

7.0 SITE INFORMATION

7.1 Trans Mountain Pipeline Overview

In operation since October, 1953 and expanded in 2023 the Trans Mountain Pipeline (TMPL) was established to create a reliable energy supply for Canada and the United States. Line 1 (1149 kilometers in length) and Line 2 (2136 kilometers in length) transport approximately 800,000 barrels per day of crude oil and other refined products.

Starting in Sherwood Park, Alberta the pipelines travel west across the prairie paralleling Hwy16 and enter the Rocky Mountains south of Jasper, AB. Continuing westward through the mountains, the pipelines cross into British Columbia continuing to where the pipeline intersects Hwy 5 northeast of Valemount BC. At this point the pipelines travel southwest though mountains and valleys paralleling Hwy 5 until they reach Kamloops BC. From Kamloops BC the pipeline continues its southwesterly route, Line 1 through the Coquihalla Canyon, Line 2 along Hwy 5, until it reaches Abbotsford, BC. In Abbotsford the pipeline then turns to the northwest paralleling Hwy 1 where it eventually ends in Burnaby, BC at the Burnaby Terminal and the Westridge Marine Terminal.

Along the length of each pipeline there are a number of control valves and pump stations which assist in controlling the flow of the pipeline. The control valves are strategically located at major water crossings and at other specific locations to control not only the flow of the pipeline but also the amount of product that could be released in the unlikely event of a pipeline rupture. Many of the valves and all pump stations are operated from the Control Centre in Edmonton, Alberta. The Control Centre personnel monitor and record pipeline flow rates, pressures, and fluid characteristics twenty-four hours a day, seven days a week. When a fluctuation is detected, SCADA alerts the Control Centre operators to the potential for a leak and allows them to shut down the pipeline and dispatch crews.

To ensure a quick and effective response to any pipeline emergency, Trans Mountain stores and maintains emergency response equipment including sorbent materials, boom, response boats, recovery equipment, fire equipment and additional specialized equipment along the pipeline route at Trans Mountain facilities.

Additionally, Trans Mountain response personnel train and exercise on the use of spill response equipment and application of the Incident Command System (ICS). ICS is a standardized, structured, and scalable incident management system used by industry and government alike when responding to an incident (see Sections 8.0 -13.0 for more details)

The pipeline operation is divided into four districts to aid in emergency planning on a regional basis. Each of the districts also represents the operational boundaries of the pipeline. Emergency planning for each of the four planning districts includes the calculation of a worst-case discharge spill volume and stream tracing analysis of where a low likelihood spill could migrate to.

In addition to the district information contained in this Plan, each district has a corresponding Geographic Response Plan (GRP). GRP's provide detailed, geographic specific information to assist spill responders in the containment and recovery of released product. Control Points are pre-identified locations where responders can set up equipment to intercept, contain, and recover spilled product. The GRP data sheets document, for each control point, the site-specific tactics and the resources and equipment needed to implement the tactic. Additionally, the GRPs contain guidance on the resources and capabilities required to complete the tactics identified for each Control Point. The Tactical Response Actions Section in the GRPs describes when certain tactics are best used and provides instructions on how to implement the tactic.

7.2 Operational District Summary

7.2.1 Alberta District

The Alberta District starts in Sherwood Park, KP 0 for both Line 1 and Line 2[10] and ends at the Alberta – British Columbia inter-provincial boundary, Line 1 KP 406 / Line 2 KP 427. Line 1 and Line 2 are in the same ROW through much of the Alberta District except in Edmonton, where Line 2 leaves the Edmonton Terminal and transverses through a separate ROW. Line 1 and Line 2 lie in the same ROW from approximately Line 1 KP 27 / Line 2 KP 44.

The ROW within the Alberta District transverses from an urban environment in the east, travelling west through primarily flat agricultural land and finally into the eastern slopes of the Rocky Mountains where the district ends at the Alberta – British Columbia inter-provincial boundary. The pipelines cross the jurisdictional boundaries of Sherwood Park, Edmonton, Strathcona County, Spruce Grove, Stony Plain, Wabamun, Edson, Hinton, Parkland County, Yellowhead County, Jasper National Park, Municipality of Jasper and ID No 12 Jasper. The ROW does not transverse reserve land in the Alberta District.

The Alberta District office is located in Sherwood Park.

Line 1 varies in size from 24” (60.96 cm) in diameter leaving Edmonton Terminal to 30” (76.2 cm) in the Hinton area, then reduces back to 24” (60.96 cm).

Line 2 varies in size from 30” (76.2 cm) to 36” (91.44 cm) throughout the Alberta District.

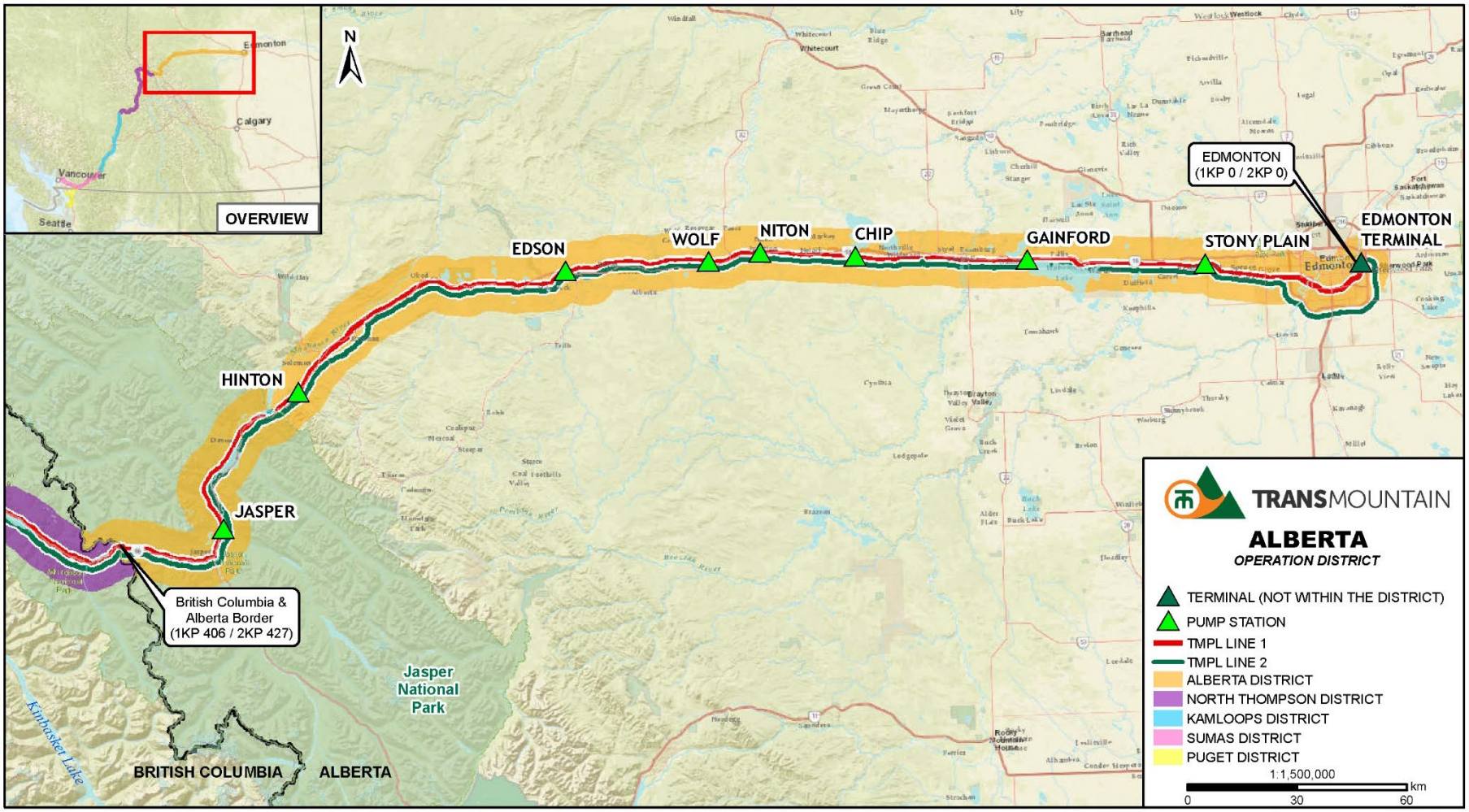
Spill modeling has shown that in many cases the spill will be contained by land along the pipeline right of way. However, the streams and rivers which may be impacted depending on the release location include the Athabasca, McLeod, or the North Saskatchewan Rivers.

The worst-case discharge volume potential within the Alberta District:

Alberta District	Location	Total Outflow (bbl/m^3)
Line 1	KP 339	21,687 bbl. / 3,448 m^3
Line 2	KP 359	21,060 bbl. / 3,348 m^3
Line 1 and Line 2	KP1 339 / KP2 359	42,747 bbl. / 6,796 m^3

[10] Line 2 KP referenced to SSEID 005

7.2.1.1 Alberta District Map



7.2.2 North Thompson District

The North Thompson District begins at the Alberta-British Columbia border Line 1 KP 406 / Line 2[11] KP 427 and ends at the Blackpool Station downstream fence line at Line 1 KP 710 / Line 2 KP 732. Line 1 and Line 2 are in the same ROW through much of the District.

The ROW transverses Mount Robson Provincial Park, paralleling Hwy 16. It then parallels Hwy 5 (North and South) through a mountainous environment and crosses the jurisdictional boundaries of Regional District of Fraser Fort George and Thompson Nicola Regional District. The ROW encounters a number of population centres including Rearguard, Tete Jaune Cache, Valemount, Blue River, McMurphy, Vavenby, Clearwater, Chu Chua, Darfield, Chinook Cove, Barriere, Louis Creek, and Vinsulla. Clearwater, BC is the largest urban centre. The ROW does not transverse reserve land in the North Thompson District.

The North Thompson District Office is located in Clearwater.

Line 1 in the North Thompson District is 24" (60.96 cm) in diameter.

Line 2 in the North Thompson District primarily 36" (91.44 cm) through the North Thompson District; though in the Valemount area the pipeline is 42" (106.68 cm).

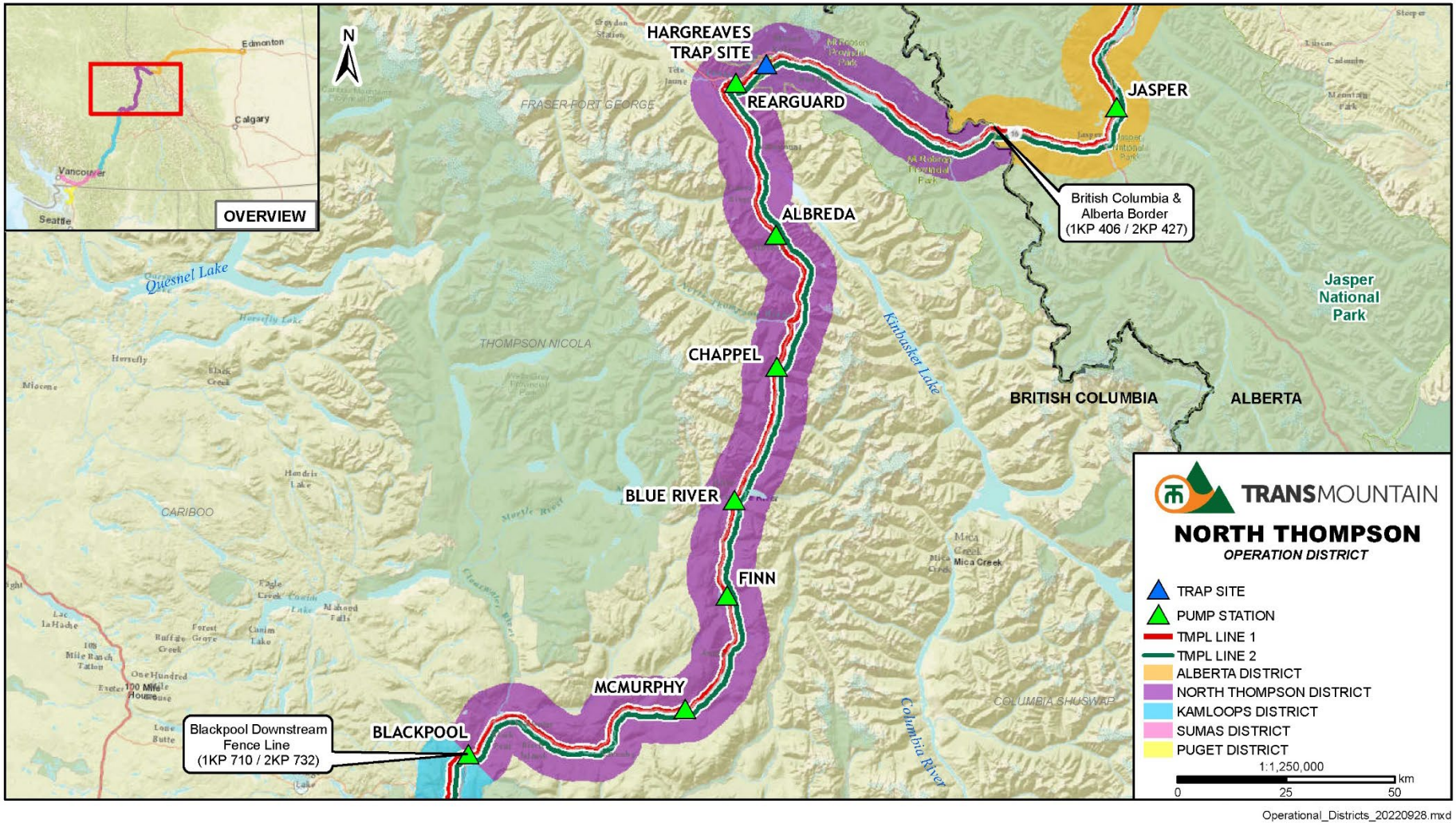
Spill modeling has shown that in many cases the spill will be contained by land along the pipeline right of way. Line 1 and Line 2 cross numerous creeks and rivers including the Albreda, Canoe, North Thompson and Fraser Rivers.

The worst-case discharge volume potential within the North Thompson District:

North Thompson District	Location	Total Outflow (bbl/m^3)
Line 1	KP 458	16,019 bbl. / 2,547 m^3
Line 2	KP 710	19,495 bbl. / 3,100 m^3
Line 1 and Line 2	KP1 458 / KP2 478	31,935 bbl. / 5,077 m^3

[11] Line 2 KP referenced to SSEID 005

7.2.2.1 North Thompson District Map



7.2.3 Kamloops District

The Kamloops District boundary begins at the at the Blackpool Station downstream fence line at Line 1 KP 710 / Line 2[12] KP 732 and ends at the top of the Coquihalla jump off at Line 1 KP 965 / Line 2 KP 993. The terrain of the District is predominantly dry, open and hilly. Line 1 and Line 2 are in the same ROW through much of the District.

The ROW parallels Hwy 5 through the Thompson Nicola Regional District and is within the Kamloops and Merritt city limits. The ROW transverses in the Kamloops District the Kamloops 4, Whispering Pines 4, Zoht 5, Zoht 4, Joeyaska 2, and Coldwater 1 reserves.

The Kamloops District office is located in Kamloops BC.

Line 1 is 24" (60.96 cm) in diameter.

Line 2 in is 36" (91.44 cm) in diameter except for portion between Darfield and Kamloops that is 30" (76.2 cm).

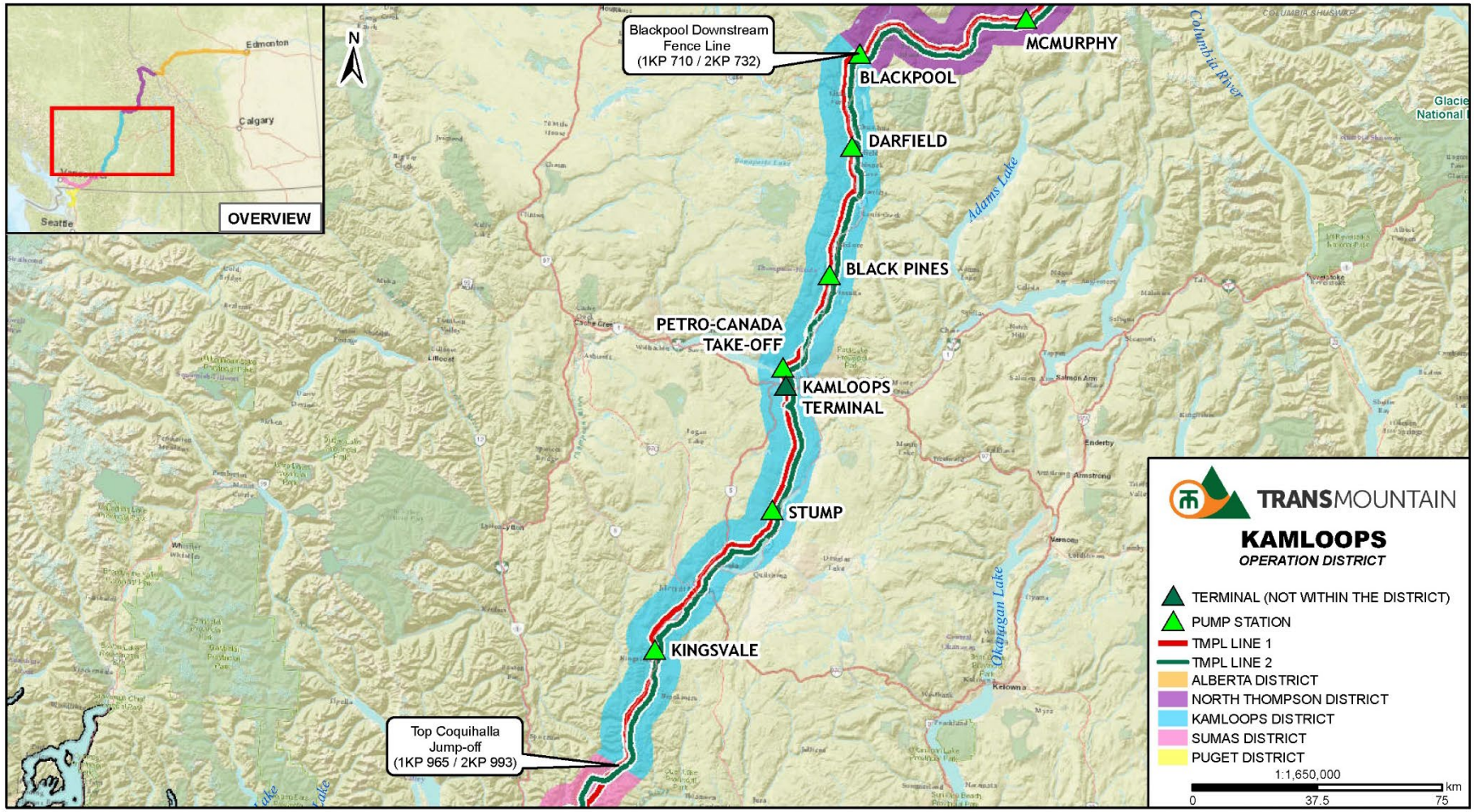
Spill modeling has shown that a spill should be contained to land in the district. However, there are streams and rivers which may be impacted depending on the release location including the North Thompson, Nicola, and Coldwater Rivers.

The worst-case discharge volume potential within the Kamloops District:

Kamloops District	Location	Total Outflow (bbl/m^3)
Line 1	KP 897	20,160 bbl. / 3,205 m^3
Line 2	KP 743	23,142 bbl. / 3,679 m^3
Line 1 and Line 2	KP1 772 / KP2 795	40,676 bbl. / 6,467 m^3

[12] Line 2 KP referenced to SSEID 005

7.2.3.1 Kamloops District Map



7.2.4 Sumas District

The Sumas District boundary begins at the top of the Coquihalla jump off at Line 1 KP 965 / Line 2[13] KP 993 and ends at the Westridge Marine Terminal- Line 1 KP 4.05 / Line 2 KP 3.5. The ROW parallels the Coquihalla Highway (Hwy 5) through the Coastal Mountain range. Line 1 ROW transverses the Coquihalla Canyon, while Line 2 ROW continue to parallel Hwy 5. At approximately, Line 1 KP 988 / Line 2 KP 1017, both Line 1 and Line 2 come back together to lie in the same ROW. Line 2 separates into its own ROW around Langley Line 1 KP 1118 / Line 2 KP 1148, then joins Line 1 ROW at Line 1 KP 1125 / Line 2 KP 1158. Line 2 veers into its own ROW frequently thereafter till it reaches Burnaby Terminal. Line 2 crosses beneath the Fraser River near the Port Mann Bridge into Coquitlam. Line 1 and Line 2 enter Burnaby Terminal at Line 1 KP 1147 / Line 2 KP 1180.

The ROW transverses in the Sumas District the Kawkawa Lake 16, Ohamil 1, Peters 1, Peters 1A, Popkum 1, Popkum 2, Grass 15, Tzeachten 13 and Matsqui Main 2 reserves.

Three 30” delivery pipelines connect the Burnaby and Westridge Marine Terminals to load vessels docked at the Westridge Marine Terminal. The tunnel is 130 metres below the surface and is 2.6 km in length, and 4 metres in diameter. The tunnel is heavy steel-lined and fully sealed with concrete so that there is no cavity for product to pool or seep to the surface. The underground tunnel contains valves at each side with multiple leak detection mechanisms in place. Should a leak be detected, the pipeline will be shut-in, drained and repaired via inline tools.

At Sumas Pump Station, a third pipeline system known as the Puget Sound Pipeline extends to Washington State. The Canadian portion of the Puget Pipeline System travels for approximately 9 kilometres before crossing the Canadian- US international border into the state of Washington.

The Sumas District office is in Burnaby.

Line 1 ranges from 20” (50.8 cm) to 24” (60.96 cm) in the Sumas District.

Line 2 in is 36” (91.44 cm) in diameter in the Sumas District.

The three delivery pipelines through the tunnel are 30” (76.2 cm).

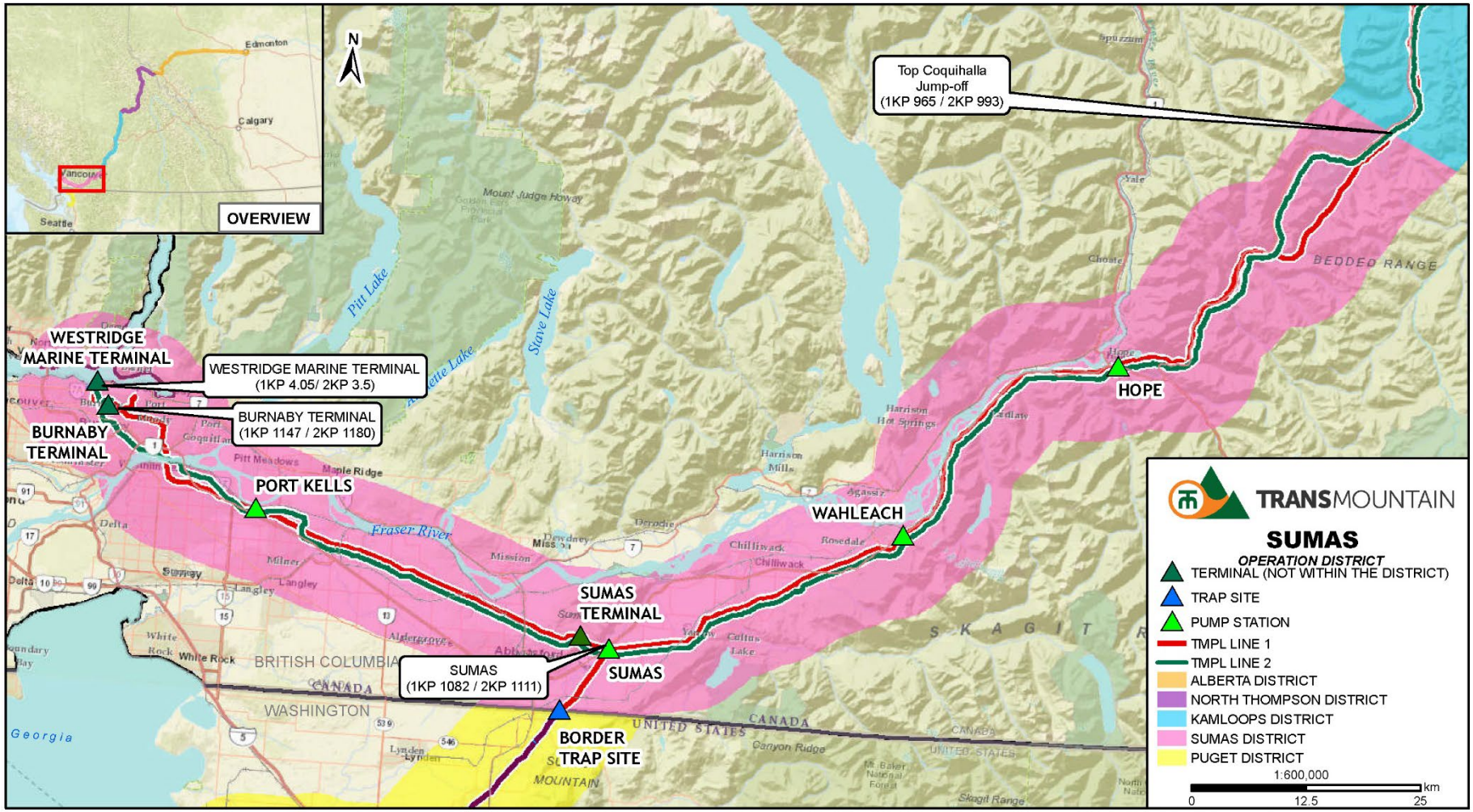
Spill modeling has shown that a spill should be contained to land in the district. There are streams and rivers which may be impacted depending on the release location including the Chilliwack, Coquihalla, and Fraser Rivers.

The worst-case discharge volume potential within the Sumas District:

Sumas District	Location	Total Outflow (bbl/m^3)
Line 1	KP 1115	12,211 bbl. / 1,941 m^3
Line 2	KP 1118	20,359 bbl. / 3,237 m^3
Line 1 and Line 2	KP1 1091 / KP2 1118	29,278 bbl. / 4,655 m^3

[13] Line 2 KP referenced to SSEID 005

7.2.4.1 Sumas District Map



7.3 Trans Mountain Products Summary

Product Name	Product Identifier	Vapour Density	Specific Gravity	API	Oil Group Number	Total Sulfur (wt%)
REFINED PRODUCTS						
Diesel	DSL	>1	0.85	34.7	3	<0.005
Ethanol Blend Gasoline	G85	>1	0.74	59.8	2	0.03
Premium Gasoline	G91	>1	0.68	76.2	2	<0.005
SUPER LIGHTS						
Pembina Condensate	CPM	>1	0.76	53.1	2	0.12
Fort Sask Condensate	FSC	>1	0.70	70.8	2	0.09
LIGHT SWEET						
Central Alberta Sweet	CSW		0.83	38.6	2	0.36
Peace River Crude	PCR	>1	0.80	45.0	2	0.45
Pembina Crude	PEM	>1	0.82	41.1	2	0.40
Pembina North	PNC	>1	0.83	40.1	2	0.40
Rainbow Crude	RBW	>1	0.83	39.6	2	0.42
Gibson Light Sweet	MGL	>1	0.83	40.1	2	0.50
LIGHT SOUR						
Central Alberta KOC	CAL	>1	0.85	34.9	3	1.13
Peace Sour Crude	PCSR	>1	0.83	39.1	2	1.29
LIGHT SYNTHETIC						
Horizon Synthetic	CNS		0.87	31.3	3	0.14
Suncor Synthetic A	OSA	>1	0.86	32.8	3	0.25
Premium Albian Synthetic	PAS	>1	0.87	30.9	3	0.09
Shell Synthetic	SSX	>1	0.88	29.9	3	0.16
Syncrude	SYN	>1	0.86	33.8	3	0.19
HIGH – TAN- DILBIT						
Access Western Blend	AWB	>1	0.91	23.2	3	3.89
Borealis Heavy Blend	BHB	>1	0.94	19.4	3	3.60
Fort Hills Reduced Carbon Lifecycle Dilbit Blend	FRB	>1	0.94	19.2		3.91
Kearl	KRL	>1	0.92	22.0	3	3.84
Sunrise Dilbit	SDB	>1	0.93	20.8	3	4.19
Surmont Heavy Dilbit	SHD	>1	0.92	22.0	3	4.10
Western Canada Dilbit	WDB	>1	0.92	21.9	3	4.09
HIGH TAN SYNBIT						
McKay Heavy	MKH	>1	0.94	19.3	3	2.85
Surmont Mix A	SMA	>1	0.92	21.7	3	3.37
LOW-TAN DILBIT						
Cold Lake Blend	CL	>1	0.93	22.4	3	3.72

Product Name	Product Identifier	Vapour Density	Specific Gravity	API	Oil Group Number	Total Sulfur (wt%)
OTHER HEAVIES						
Albian Heavy Synthetic	AHS	>1	0.94	19.6	3	2.75
Albian Vacuum Blend	AVB	>1	0.94	19.7	3	3.21
Suncor Synthetic H	OSH	>1	0.94	19.2	3	2.91
Suncor Synthetic PTCN	OSP	>1	0.92	21.6	3	3.07

7.4 Pipeline Technical and Tactical Response Information

7.4.1 Valve Locations and Access

"Valve Location and Access" is a table listing, for each pipeline, the kilometre location of each valve and how to access the valves by way of road. The directions to valve sites are considered to be security sensitive. The information is provided on a controlled basis within the confidential appendix of this manual.

7.4.2 Route Maps

Pipeline route maps for both Line 1 and Line 2 can be found in the applicable Geographic Response Plans.

8.0 INCIDENT MANAGEMENT

8.1 Incident Management Team Organization

Trans Mountain has a pre-defined Incident Command Structure with role descriptions defined and personnel pre-assigned to the key roles. In addition to the ICS Management Structure, Trans Mountain has a number of response operation components:

8.2 Initial Response Team

Initial Response resources are managed by the Senior On-Site Individual who assumes the role of Incident Commander until such time as a more senior employee takes over.

8.3 Local Incident Management Team

The Local Incident Management Team (IMT), which is comprised of terminal personnel in each response area, will respond to incidents beyond the capability of the Initial Responders.

If deployed, the Local IMT's primary tasks are to:

- Ensure the safety of all workers in the area of the spill
- Assess the situation (i.e., incident size, severity, likely impacts)
- Take appropriate action to mitigate the impacts to life safety, the environment, and property

The Local IMT will perform these tasks until relieved or replaced by a higher level of management within the response organization

8.4 Trans Mountain Incident Management Team

On larger spills, where the local IMT cannot manage a response without assistance, additional IMT personnel will we asked to attend from within Trans Mountain's company-wide support system.

The IMT is headed by the Incident Commander who directs and coordinates all response activities and resources. The Deputy Incident Commander provides on-site staff support to the Incident Commander through the Command Staff and relieves the Incident Commander as required.

Each Section is headed by a Section Chief reporting directly to the Incident Commander. The Initial Response Team and initial IMT may be absorbed into the response organization as additional IMT personnel arrive on the scene. The Operations Section Chief is also responsible for directing the activities of outside contractors called in to assist with the response.

8.5 Response Team Organization

The following diagram depicts a typical response organization to the branch director/unit leader level. If a position below a specific chief, director, supervisor, manager, or unit leader is not filled then the chief, director, supervisor, manager, or unit leader must complete the tasks of reporting position as well. For further information on each position and the supporting roles, please see the Trans Mountain ICS Guide.


Unified Command
Safety Officer
Information Officer
Liaison Officer
Legal Officer
Security Officer
Operations Section Chief
Planning Section Chief
Logistics Section Chief
Finance/Admin Section Chief
Staging Area Manager
Safety Watch
Field Operations Branch Director
Damage Prevention Branch Director
Air Operations Branch Director
Pipeline Facility/ Integrity Branch Director
Recovery and Protection Branch Director
Wildlife Branch Director
Emergency Response Branch Director
Situation Unit Leader
Documentation Unit Leader
Resources Unit Leader
Demobilization Unit Leader
Environmental Unit Leader
Technical Specialists
Service Branch Director
Support Branch Director
Human Resources Branch Director
Cost Unit Leader
Time Unit Leader
Procurement Unit Leader
Claims Unit Leader

8.6 Initial Response

The initial response will be carried out by local Trans Mountain personnel.

These are employees who are present at or near the scene of an incident who are properly trained in emergency response, defensive firefighting, safety and first aid. All other employees should be cleared from the incident scene immediately.

The senior person at the scene is automatically designated as the Incident Commander. Depending on the circumstances, the person-in-charge may be replaced by the Terminal Supervisor.

The initial responder's primary tasks are to:

- Ensure the safety of all workers and public in the area of the spill
- Assess the situation (i.e., incident size, severity, likely impacts)
- Notify the Terminal Supervisor immediately
- Take appropriate action to mitigate the impacts to life safety, the environment, and property

Initial responders will perform these tasks until relieved or replaced by a higher level of management within the IMT organization. In the event of a Level 1 incident, the initial responders may conduct the entire response effort. On larger incidents, the initial responders will typically be incorporated into the Operations Section of the IMT organization.

8.7 Control Centre Emergency Duties

8.7.1 Control Centre Operator

- Initiate the Emergency Conditions Report (ECR)
- Advise caller as appropriate
- Contact first responders, as required
- Contact "affected" Field Supervisor(s)
- Contact the Supervisor, Control Centre Operations
- Record all events in the "Additional Information" section of the ECR for the full duration of the incident
- Assume notification role of the Supervisor, Control Centre Operations, if no contact acknowledgment is received

8.7.2 Supervisor, Control Centre

- Send a TAS using the appropriate TAS list
- If the TAS system in unavailable, contact personnel as shown in Section 2 for back up TAS contacts.
- Call into the TAS line to start the Initial Information Exchange
- Participate in conference calls as required
- Send additional TAS updates as needed or required
- Forward the completed ECR to the Manager, Technical Services and Control Centre, for approval

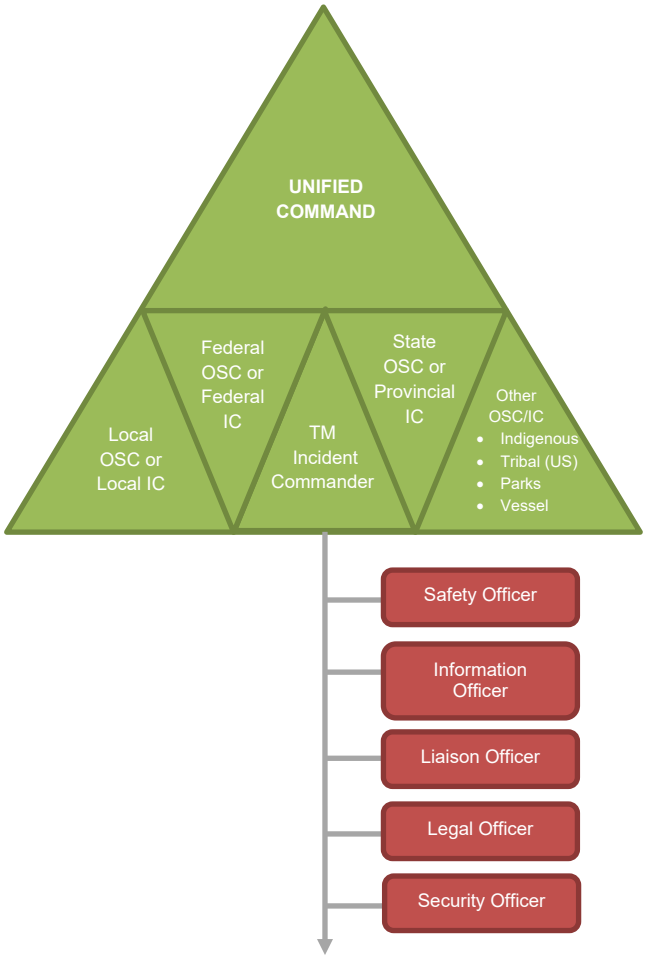
8.8 Transfer of Command

The Trans Mountain Incident Management Team is designed to work on a 24-hour basis. If 24-hour coverage is required, Command Staff and other response personnel will normally be relieved on a 12-hour shift schedule. Briefing meetings for Command Staff and other essential response personnel will be held at the time of each shift change. The Planning Section will be responsible for providing a summary of the ending shift activities along with a plan for the next shift. Written plans will be made in consultation with government agencies. Key ICS positions will be transferred on a 4-7-day rotation as needed after the initial transfer of command. The resources unit has the responsibility to identify and obtain any additional personnel required.

Whether internal or external, transfers of command for ICS positions will overlap to ensure that operations are not interrupted. The individual incoming and the individual leaving are required to meet and discuss any relevant information so that the position can be properly filled in and necessary task accomplished.

8.9 Unified Command

Wherever possible, the IMT will establish, and operate within, a Unified Command structure as warranted by the circumstances of an incident. When a federal or state/provincial agency arrive on-scene to participate in managing a response action, the agencies will utilize a unified command structure to jointly manage the spill incident. In the unified command, decisions with regard to the response will be made by consensus and documented through a single Incident Action Plan (IAP) for each operational period. In the event that the Unified Command is unable to reach consensus, the FOSC/FIC has ultimate decision-making authority. The unified command may incorporate additional indigenous or local government on-scene coordinators into the command structure as appropriate.



Incident Commanders for oil discharges and hazardous substance releases will, whenever possible and practical be organized under the Unified Command Structure which includes, but not limited to:

- The pre-designated Federal On Scene Coordinator (FOSC)/Incident Commander (FIC);
- The State/Provincial On Scene Coordinator (SOSC)/Incident Commander (PIC);
- The representative of the Responsible Party (RP); and
- The local and/or indigenous On Scene Coordinators, as appropriate.

To be considered for inclusion as a UC member, the following criteria must be considered:

- The organization must have jurisdictional authority or functional responsibility under a law or ordinance for the incident; and
- The organization must be specifically charged by law or ordinance with commanding, coordinating or managing a major aspect of the incident response; and
- The incident or response operations must have impact on the organization's Area Of Responsibility; and
- The organization should have the resources to support participation in the response organization.

Note: Incidents occurring within Jasper National Park will see the participation of a Parks Canada Incident Commander within Unified Command, *not* an Alberta provincial agency Incident Commander. The Alberta Environment and Parks (AEP) will have an advisory role within the Incident Command Post. A municipality of Jasper Incident Commander may also participate within Unified Command, depending upon the incident situation.

Actual Unified Command makeup for a specific incident will be determined on a case-by-case basis taking into account:

- The specifics of the incident;
- Determinations outlined in the four criteria listed above; and
- Decisions reached during the initial meeting of the Unified Command.

The Unified Command is responsible for the overall management of the incident. The Unified Command directs incident activities including the development and implementation of strategic decisions, approval of the incident action plan, and approves the ordering and releasing of resources. It is expected that each Unified Command member will have the authority to make decisions and commit resources on behalf of their organization.

8.10 Incident Commander/Deputy Incident Commander

The Incident Commander's responsibility is the overall management of the incident. On Level 1 incidents, the command activity will likely be carried out by a single (Trans Mountain) Incident Commander. On larger, Level 2 and 3 incidents, a Unified Command structure will be employed, with additional Incident Commanders from key agencies.

The initial IC is the senior person witnessing the incident. One or more changes of the IC role might take place during the initial phase of the incident, as more-senior personnel arrive on-scene until the ultimate IC takes over and the ICP is established.

The Incident Commander may have a deputy, who may be from Trans Mountain, or from an assisting agency. Deputies must be fully qualified to take over that position at any time.

The Incident Commander/Deputy IC Responsibilities can be found in the ICS Guide; in general the duties are to:

- Ensure that adequate safety measures are in place.
- Assess the situation and/or obtains a briefing from the prior Incident Commander.
- Determine Incident Objectives and strategy.
- Establish the immediate priorities.
- Establish an Incident Command Post.
- Establish an appropriate organization.
- Ensure planning meetings are scheduled as required.
- Approve and authorize the implementation of an Incident Action Plan.
- Coordinate activity for all Command and General Staff.
- Coordinate with key people and officials.
- Approve requests for additional resources or for the release of resources.
- Keep agency administrator informed of incident status.
- Approve the use of trainees, Convergent Volunteers, and auxiliary personnel.
- Authorize release of information to the news media.
- Order the demobilization of the incident when appropriate.

8.11 Safety Officer

The Safety Officer's function on the Command Staff is to develop and recommend measures for assuring personnel safety, and to assist and/or anticipate hazardous and unsafe situations.

Only one Safety Officer will be assigned for each incident. The Safety Officer may have assistants as necessary, and the assistants may also represent assisting agencies or jurisdictions. Safety assistants may have specific responsibilities such as air operations, hazardous materials, etc.

The specific duties related to the Safety Officer's responsibilities can be found in the ICS Guide; in general the duties are to:

- Develop a Site-Specific Health and Safety Plan.
- Participate in planning meetings.
- Identify hazardous situations associated with the incident.
- Review the Incident Action Plan for safety implications.
- Exercise emergency authority to stop and prevent unsafe acts.
- Investigate accidents that have occurred within the incident area.
- Assign assistants as needed.
- Review and approve the Medical Plan.

8.12 Information Officer

The Information Officer is responsible for implementing the external communications plan during any emergency incident.

The external communications plan objectives are to:

- Provide information about the incident and the related response effort to all stakeholders in a timely, accurate, and responsible fashion.
- Ensure that information about the incident is clear, factual and consistent with that provided by other responders and government agencies.
- Minimize unnecessary speculation, rumour, or concerns about the incident and potential risks to the public.
- Protect the company's reputation as a responsible corporate citizen.

The Information Officer is supported by a team of pre-assigned employees to assist in implementing the communications plan. This group is known as the External Communications Team.

The Information Officer, in consultation with the Incident Commander, ensures that the necessary contacts have been made to Trans Mountain public affairs staff at the Trans Mountain's head office in Calgary.

The Information Officer's responsibilities are to:

- Determine from the Incident Commander if there are any limits on information release.
- Develop material for use in media briefings.
- Obtain Incident Commander's approval of media releases.
- Establish a Media Relations Center.
- Inform media and conduct media briefings.
- Arrange for tours and other interviews or briefings that may be required.
- Obtain media information that may be useful to incident planning.
- Maintain current information summaries and/or displays on the incident and provide information of status of incident to assigned personnel.
- Activate a 24-hour, recorder public information line.

8.13 Security Officer

The Security Officer is responsible for providing safeguards for protecting personnel and property from loss or damage.

The Security Officer's responsibilities are to:

- Develop Security Plan for the incident site and facilities, including Staging Area, ICP and any location where personnel are house; adjust Plan for personnel and equipment changes and releases.
- Establish security for the ICP
- Implement identification program for incident facilities.
- Establish contacts with law enforcement agencies, as required
- Contact agency representatives to discuss any special custodial requirements which may affect operations
- Coordinate security activities with appropriate incident personnel
- Keep the peace, prevent assaults and settle disputes by coordinating with Agency Representatives
- Prevent theft of company and personal property
- Document all complaints and suspicious occurrences.

8.14 Liaison Officer

The Liaison Officer is the contact point for agency (federal, provincial/state, local government) or Indigenous Community representatives assigned to the incident by an assisting or co-operating agency or Indigenous Community. These are personnel other than those on direct tactical assignments or those involved in Unified Command.

The Liaison Officer's responsibilities are to:

- Be a contact point for Agency and/or Indigenous Community representatives.
- Organize and chair coordination calls in order to provide incident status updates. Refer to the Liaison Office Toolkit for coordination call agenda.
- Maintain a list of assisting and cooperating agencies, Indigenous Communities and their Representatives.
- Keep agencies and Indigenous Communities supporting the incident aware of the incident status.
- Keep Indigenous Communities and other surrounding communities that are not assisting/supporting the incident aware of the incident status through regular updates and coordination calls.
- Arrange and schedule on-site Community Monitors to access select divisions of the incident site, subject to required training and PPE, as required.
- Monitor incident operations to identify current or potential inter-organizational issues.
- Participate in Planning Meetings, providing current resource status, including limitations and capability of assisting agency resources.
- Arrange for and provide personnel to act as an External Liaison Officer at any responding agency Incident Command Post, and/or Emergency Operations Centre as needed/requested by a federal agency, provincial/state agency, Indigenous Community and/or local authority.
- Appoint and supervise, as required, positions to assist the Liaison Officer.

8.14.1 On-Site Community Monitors

Trans Mountain has developed an On-Site Community Monitors procedure which identifies the process for providing safe and timely access of non-responders to incident sites. Timely access of monitors is important for collaboration and transparency between Trans Mountain and Indigenous Communities, community groups, and other stakeholders who may be associated with the area of impact. On-site access of monitors may assist with the incorporation of local and/or cultural knowledge into response operations and the remediation phase.

8.15 Government Agency Representatives

Agency Representatives assigned to an incident from Federal, Provincial or local government agency report to the Liaison Officer or to the Incident Commander in the absence of a Liaison Officer. These representatives should have full authority to make decisions on all matters affecting that agency's participation at the incident.

8.15.1 Agency Representatives Responsibilities

- Ensure that all agency resources are properly checked-in at the incident.
- Attend briefings and planning meetings as required.
- Provide input on the use of agency resources unless resource technical specialists are assigned from the agency.
- Cooperate fully with the Incident Commander and the General Staff on agency involvement at the incident.
- Ensure the well-being of agency personnel assigned to the incident.
- Advise the Liaison Officer of any special agency needs or requirements.
- Report to home agency dispatch or headquarters on a prearranged schedule.
- Ensure that all agency personnel and equipment are properly accounted for and released prior to departure.

8.15.2 Canada Energy Regulator (CER)

The CER's top priority in any emergency is to make sure that people are safe and secure, and that property and the environment are protected. Any time there is a serious incident, CER Inspectors may attend the site to oversee a company's immediate response. The CER will require that all reasonable actions are taken to protect employees, the public and the environment. Further, the CER will verify that the regulated company conducts adequate and appropriate clean-up and remediation of any environmental effects caused by the incident.

- Monitors, observes and assesses the overall effectiveness of the company's emergency response in terms of:
  - Emergency Management
  - Safety
  - Security
  - Environment
  - Integrity of operations and facilities; and
  - Energy Supply
- Investigates the event, either in cooperation with the TSB, under the Canada Labour Code, or as per the Canada Energy Regulator Act or Canada Oil & Gas Operations Act (whichever is applicable)
- Inspects the pipeline or facility
- Examines the integrity of the pipeline or facility

- Requires appropriate repair methods are being used
- Requires appropriate environmental remediation of contaminated areas is conducted
- Coordinates stakeholder and Indigenous community feedback regarding environmental clean-up and remediation
- Confirms that a company is following its Emergency Procedures Manual(s) commitments, plans, procedures, and CER regulations and identifies non-compliances
- Initiates enforcement actions as required
- Approves the restart of the pipeline

8.15.3 Transportation Safety Board of Canada

The TSB's role is to advance transportation safety through the investigation of transportation occurrences in the marine, pipeline, rail and aviation modes

TSB Classification System - The primary criterion for determining if an occurrence in any mode will be investigated is whether or not such analysis is likely to lead to a reduction of risk to persons, property, or the environment.

Class 1 Occurrence (Public Inquiry)

- the potential for reducing the risk to persons, property, or the environment;
- whether an inquiry would uncover facts that might not otherwise be made known;
- whether an inquiry would result in quicker remedial action;
- the actual or potential extent of injuries and/or loss of life;
- the degree of public interest in and concern about public safety; or
- the possible involvement of an arm of government.

Class 2 Occurrence (Individual Occurrence Investigation)

- there is a high probability of advancing Canadian transportation safety in that there is significant potential for reducing the risk to persons, property, or the environment; or
- the Governor in Council so requests (pursuant to Section 14(1) of the CTAISB Act).

Class 3 Occurrence (Individual Occurrence Investigation)

- there is significant public expectation that the TSB should independently make findings as to cause(s) and contributing factors; or
- there is potential for better understanding the latent unsafe conditions contributing to a significant safety issue; or
- a government representative so requests (pursuant to Section 14(2) of the CTAISB Act); or
- the Board must do so to meet its obligations or commitments.

Class 4 Occurrence (Safety Issue Investigation)

Multiple occurrences, which the Board deems to be indicative of significant unsafe situations or conditions, will be subject to a safety issue investigation when:

- there is a high probability of advancing Canadian transportation safety by reducing the risk to persons, property, or the environment; or
- in the Board's opinion, there is widespread public expectation that the TSB should independently analyze a particular safety issue.

Class 5 Occurrence (Data Collection)

Data pertaining to occurrences that do not meet the criteria of classes 1 through 4 will be recorded in suitable scope and detail for possible safety analysis, statistical reporting, or archival purposes.

8.15.4 Strathcona County Emergency Services

Strathcona County Emergency Services has provided Trans Mountain with a list of duties and response capabilities. This document is available from the Trans Mountain Emergency Management Department.

8.15.5 Kamloops Fire and Rescue Department

Kamloops Fire and Rescue Department has provided Trans Mountain with a list of duties and response capabilities. This document is available from the Trans Mountain Emergency Management Department.

8.15.6 Alberta Health Services

Alberta Health Services will aid in an emergency response through the following duties and response capabilities:

- Monitor incidents impacting health and provides advice / direction.
- Provide public direction during emergencies impacting environmental and human health (Air & Water).
- Provide Public with Health information during public health emergencies.
- Alberta Health sets and enforces standards and required practices for Alberta emergency medical services (EMS) and ambulance services.
- As per the Alberta Public Health Act, in the event of an emergency, Alberta Health Services has full authority to order public safety protective measures.
- EMS ground and air practitioners follow a set of evidence-based Medical Control Protocols when attending to patients that ensure consistent standards of care are being provided province-wide.
- Provide Indigenous community support
- Provide support to municipal reception centres
- Ensuring public health matters are monitored and addressed as per the Public Health Act (e.g., Infection Prevention & Control, Environmental and Housing requirements, food safety, etc.)
- Provide information to the public who call 811 on location(s) and health services offered at reception centres
- Support public health, home care and environmental health functions at the reception centres.

8.15.7 Alberta Region Department of Indigenous Services Canada

The Alberta Region Department of Indigenous Services Canada, First Nations and Inuit Branch offers an Indigenous Health Program that partners with Indigenous peoples, communities and key stakeholders to provide accessible, culturally appropriate health services for Indigenous, Métis and Inuit people in Alberta. During emergencies in Indigenous communities, FNIHB provides environmental public health and nursing services to all residents on reserve.

8.15.8 British Columbia Health Authorities

British Columbia Health Authorities will aid in an emergency response through the following duties and response capabilities:

- Act as a consultant utilizing provided information on toxic chemicals to the Emergency Operations Center.
- Monitor health effects of the incident to ensure appropriate data is collected and investigate such health effects.
- Provide advice to the government on the existing or potential health effects of the incident.
- Establish and operate trauma teams for emergency health services.
- Provide health advice and safety levels for any health care or special care facility and for the more vulnerable residents.
- Monitor adverse effects/contamination of water systems.
- Enforce and regulate Public Health Regulations.

8.15.9 British Columbia First Nations Health Authority (FNHA)

The FNHA is a province-wide health authority that has assumed the programs, services, and responsibilities formerly handled by Health Canada's First Nations and Inuit Health Branch – Pacific Region. The FNHA does not replace the role or services of the Ministry of Health and Regional Health Authorities. The FNHA will collaborate, coordinate, and integrate with other health authority's health programs and services to assist BC Indigenous.

8.15.10 Health Emergency Management British Columbia (HEMBC)

HEMBC provides expertise, education, tools, and support for the BC health authorities to effectively mitigate, prepare for, respond to, and recover from the impacts of emergency events; ensuring the continuity of health services.

During an emergency HEMBC will:

- Provide a representative to collaborate with the Liaison Officer;
- Provide Subject Matter Expert representatives from the Health Authorities to ICP – Environmental Unit to communicate and coordinate air monitoring data to enhance and expedite public safety assessments and protective measures; and
- Coordinate between Health Authorities Communications personnel and the ICP Public Information Officer on public messaging and media releases related to public health.

8.16 Legal Officer

The Legal Officer is responsible for providing advice and direction on all matters that may have a legal impact on Trans Mountain and should participate in:

- Legal requirements in execution of agreements
- Incident investigation report reviews/meetings
- Environmental damage assessments
- Claims, where applicable
- Any major contracts that are not standard to the operation
- Any insurance issues/concerns
- Major health & safety issues/injuries
- Information releases
- Government Agency requests
- Reporting to Incident Commander

Note: Legal maintains contact information for Insurance and other agencies for claims in the Calgary office.

8.17 Response Planning (Short-Term and Initial Phase of Long-Term Events)

Short-term responses that are small in scope and/or duration and require few resources can often be managed using only the Incident Command Briefing (ICS 201 Form). Responses to longer-term events will also begin with the completion of the ICS 201 and Incident Briefing.

8.17.1 Incident Briefing

During the transfer of command process, an Incident Briefing provides the incoming Incident Commander with basic information regarding the incident situation and the resources allotted to the incident. Most importantly, it is the de facto Incident Action Plan (IAP) for the initial response and remains in force and continues to develop until the response ends or the Planning Section generates the incident's first IAP. It is also suitable for briefing individuals newly assigned to Command and General Staff, as well as needed assessment briefings for the staff.

When	• Upon the arrival of a new Incident Commander a transfer of Command will take place. The Incident Briefing also serves as an opportunity to provide initial information to incoming key IMT and agency personnel.
Facilitator	• The Incident Briefing is facilitated by the Current (and often initial) Incident Commander.
Attendees	• The Incident Briefing is attended by the incoming IC, the Command and General Staffs, as well as any senior responding Government Agency personnel and senior contractor representatives.
Agenda	• Situation (note territory, exposures, safety concerns, etc. use map/charts) • Objectives and priorities • Strategy(s) and tactics • Current organization • Resource assignments • Resources enroute and/or ordered • Facilities established

8.18 Response Planning (Long-Term Events)

Trans Mountain follows the ICS model for incident response planning. The planning cycle and associated meetings can be found in the Trans Mountain ICS Guide located in the Emergency Toolkit.

8.19 Terminating/Downgrading the Response

The decision to terminate and/or downgrade emergency operations and to demobilize personnel and equipment shall be made on a site-specific basis, based on the status of the incident. Factors that may affect the decision to terminate/downgrade the response include the following:

- The emergency condition has been controlled and immediate threats to the health and safety of the public have been eliminated
- Any leaks or spills have been contained, and all remaining free oil, petroleum products, or hazardous materials have been recovered from the site
- Repair operations have been undertaken to prevent further leaks or spills from occurring
- Further emergency operations at the site will cause more damage to property and the environment than that which resulted from the leak or spill initially.

The Regional Director or designee shall consult appropriate government agencies and other involved parties before making any decisions related to terminating/downgrading response activities. These agencies and involved parties include representatives from federal, provincial and/or municipal agencies with jurisdiction in the emergency.

Prior to terminating/downgrading the response the following issues should be considered by the Unified Command:

- Demobilize equipment and personnel at the first opportunity in order to reduce cost
- Consider which resources should be demobilized first; for example, berthing expenses can be saved by demobilizing out-of-area contractors before local ones
- Equipment may need both maintenance and decontamination before being demobilized
- All facilities (staging area, Incident Command Post, etc.) should be returned to their pre-incident condition before terminating operations
- Determine what documentation should be maintained, where, and for how long
- Contract personnel may be more susceptible to injuries as they approach termination
- Some activities will continue after the cleanup ends; examples include incident debriefing, bioremediation, claims, and legal actions
- Express gratitude to the community, police department, fire department, and emergency crews for their work during the response.
- Develop project plans and/or Recovery Plans as required prior to terminating the response

8.20 Incident Records

Trans Mountain utilizes the Incident Command System when responding to any real and/or potential emergency. As part of this process Trans Mountain's Incident Management Team utilizes ICS Forms in order to support and respond to the emergency. Any sustained response will result in the Incident Management Team establishing a Planning Cycle in order to generate an Incident Action Plan that will address all aspects of the emergency.

All forms generated as part of the incident response will be submitted to the Documentation Unit, under the Planning Section. Upon termination of the incident the Documentation Unit will ensure all original documents are properly stored with the Legal Department. Incident Records will be used to generate reports and/or as evidence for any follow up investigations, both internal and external, if required.

Incident Records are retained by the Legal Department who store all incident files in accordance with Trans Mountain's Record Retention Policy and procedures.

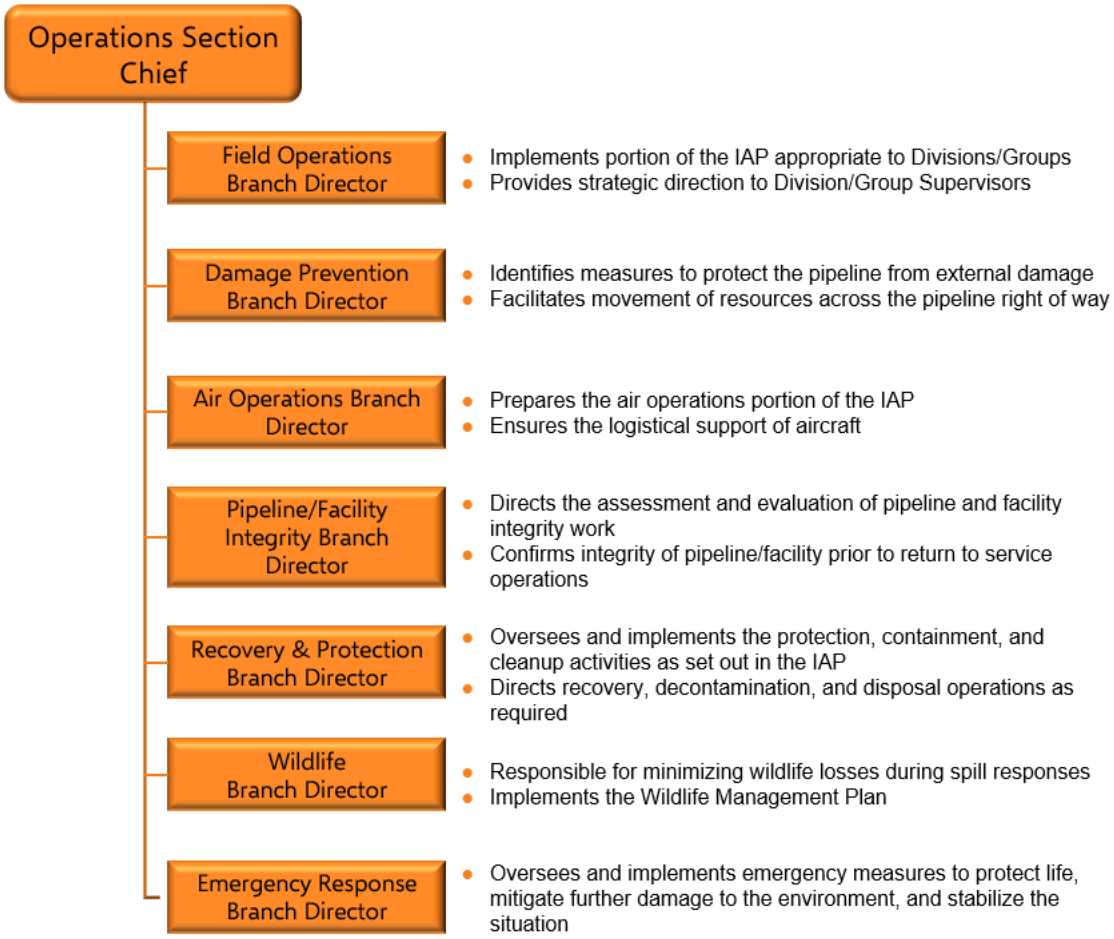
8.21 Post-Incident Reporting and Debrief

Trans Mountain reviews all incident responses using the Emergency Management Exercise Reporting Procedures and produces a report focusing on the effectiveness of the response and emergency procedures and emergency procedure manuals. The Incident Investigation Committee investigates the cause of the incident.

9.0 OPERATIONS SECTION

The Operations Section is responsible for the oversight of all tactical assignments in the response. These include all contractors or other agencies that supply tactical resources in response to the incident. These might include representatives from the Fire Department, the police, the Ambulance Service as well as response organizations. Detailed duties and responsibilities for individuals in the Operations Section can be found in the Trans Mountain Incident Command System Guide in the Emergency Toolkit.

The Operations Section may consist of numerous (functional) Groups and Branches, (geographic) Divisions. If Staging Areas are used, these are also managed by the Operations Section.



9.1 Response Objectives

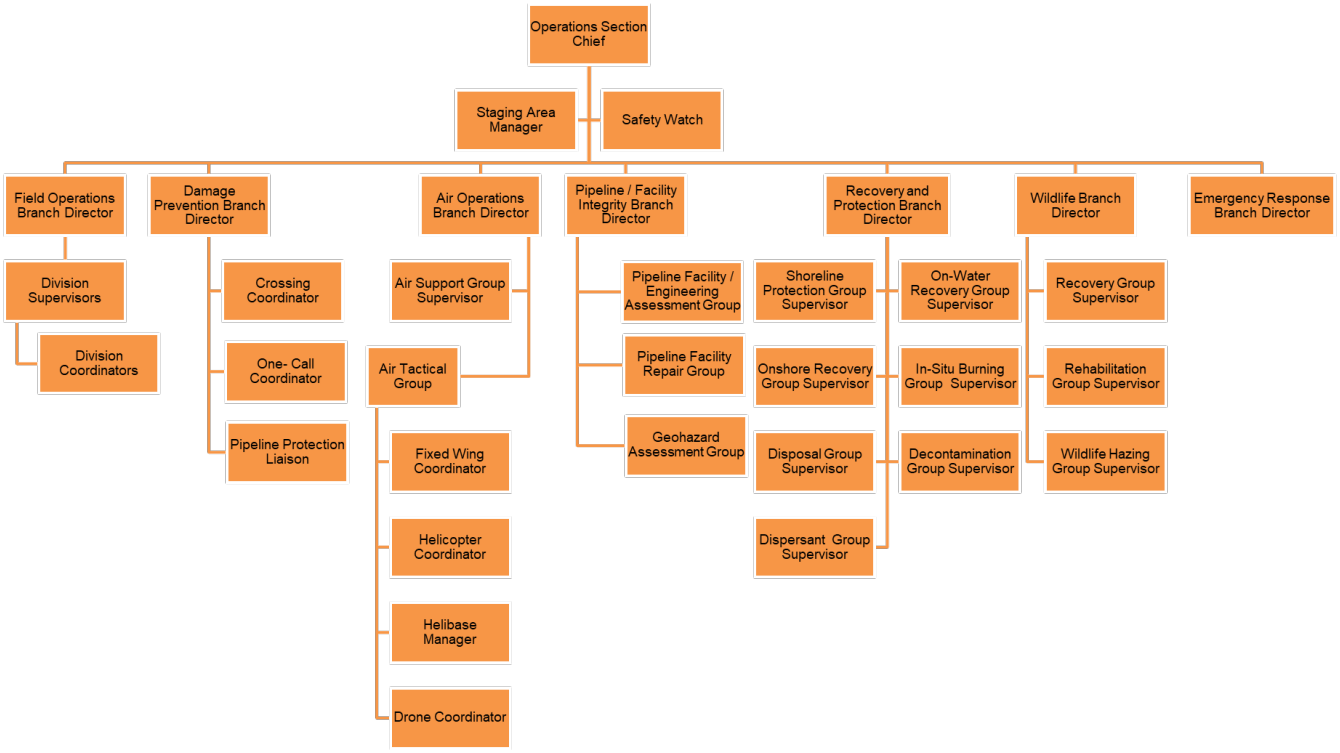
Once the safety of all personnel has been ensured, the source of discharge is secured, and initial notification has been activated, the overall tactical priorities covered are:

- Containment and Recovery of Spilled Oil
- Protection of Sensitive Resources
- Site and Shoreline Clean-Up

Response objectives and priorities will be determined by the Incident Commander, Unified Command, and the Planning and Operations Section members. Critical advice will be provided by representatives of key government agencies.

9.2 Operations Section Organization Chart

Not all roles will be filled for all incidents; however, the following chart is an outline of the possible positions section 9.2 to be filled. Detailed descriptions of each position and its duties can be found in the Trans Mountain ICS Guide.



9.3 Operations Section Chief

The Operations Section Chief, a member of the general staff, is responsible for managing all operations directly applicable to the primary mission. The Operations Chief activates and supervises elements in accordance with the Incident Action Plan and directs its execution; activates and executes the Site Health and Safety Plan; directs the preparation of unit operational plans, requests or releases resources, makes expedient changes to the Incident Action Plans as necessary, and reports such to the Incident Commander.

9.4 Waste Management Plan

The management of waste from a spill is a priority for Trans Mountain and a key component supporting incident response. The appropriate handling, storage, transport, disposal and tracking of waste associated with a spill is essential for effective planning and response to a spill.

In the event of an emergency that has the potential for generating waste, the Waste Management Plan will be activated in conjunction with this Plan. After the initial assessment has been conducted an incident specific waste management plan will be developed to support the Incident Action Plan.

Responsibility for working with the provincial authorities to develop an incident specific waste management plan lies with the Environmental Unit Leader. More information on the duties of the Disposal (Waste Management) Technical Specialist can be found in the Incident Command System Guide as well as in the Waste Management Plan, both located in the Emergency Toolkit.

All waste materials collected from a spill should be sorted and stored in separate containers or piles that are clearly marked showing the type of waste they contain. Temporary storage locations on the terminal premises should be totally contained and secure to prevent further leakage or migration of spilled product.

9.4.1 Temporary Storage Methods

Method of Containment	Product						
	OIL	Oily Water	Oily Soil	Oil/Debris (Small)	Oil/Debris (Medium)	Oil/Debris (Large)	Capacity
Drums	✓	✓	✓				0.2-0.5 yd^3
Bags		✓	✓	✓			1.0-2.0 yd^3
Boxes			✓	✓			1-5 yd^3
Open top roll-off	✓	✓	✓	✓	✓	✓	8-40 yd^3
Roll top roll-off	✓	✓	✓	✓	✓	✓	15-25 yd^3
Vacuum box	✓	✓					15-25 yd^3
Frac tank	✓	✓					500-20,000 gal
Poly tank	✓	✓					200-4,000 gal
Vacuum truck	✓	✓	✓				2,000-5,000 gal
Tank trailer	✓	✓					2,000-4,000 gal
Barge	✓	✓					3,000+gal
Berm, 4 ft		✓	✓	✓	✓	✓	1 yd^3
Bladders	✓	✓					500-1,500 gal

9.5 Emergency Equipment and Response Times

Trans Mountain owns and maintains a large fleet of emergency response equipment strategically placed at various points along the Trans Mountain Pipeline System to which Trans Mountain operational staff have 24-hour access.

The equipment ensures that the company is able to respond to any emergency in a timely manner in accordance with the planning standard.

9.5.1 Planning Standard

The planning standard establishes the desired response outcomes and forms the basis for Trans Mountain's emergency response plans, procedures and processes.

The planning standard:

- Outlines the hazard assessment process, which includes a hazard listing (spill, fire, explosion);
- Specifies the quantity and location of response equipment and personnel needed to respond within maximum target response times; and
- Defines maximum target response times to be used for response planning to warrant a prompt, safe and effective response to an emergency

Maximum target times are based, in part, on a variety of regulatory requirements. Real response times are reviewed after any event requiring activation of the Emergency Response Plan to confirm Trans Mountain has resources and equipment placed in the appropriate location to meet the maximum target response times.

Current emergency response capabilities and equipment are strategically placed to meet the planning standard and include:

- Early detection systems/alarms and firefighting equipment for fires and spills (storage tanks and pump stations);
- Contracted, on-call third party responders to a support tank fire response at Terminals
- Personnel and company vehicles to respond to spill and fires (terminal storage tanks, pump stations and right-of-way); and
- Oil Spill Containment and Response (OSCAR) units strategically placed to ensure rapid response along the right-of-way and at facilities.

9.5.2 Response Equipment

Emergency response equipment, such as spill drums with absorbent material to assist in immediate cleanup of any local spill, is available at all facilities. Other emergency resources, such as river boats and response trailers, are located at strategic locations along the Trans Mountain Pipeline. All company facilities, fleet vehicles and emergency response vehicles/trailers contain first aid equipment.

Air Monitoring Equipment – All Trans Mountain initial responders will arrive on site with personal air monitoring equipment that they will use to assist in the development of the Initial Health and Safety Plan. The initial on-site results will also identify if there are any potential public safety concerns. The Air Monitoring Plan will be implemented for potential on-going public safety concerns.

Boats – Trans Mountain owns and maintains a number of boats along the pipeline route to ensure response actions can be carried out on rivers and lakes in locations where a spill could potentially impact water bodies. Response boats are jet drive boats that range in size from 18’ to 24’ and allow for response in all expected water environments, including shallow water.

Boom trailer – Boom trailers may vary in size however their primary purpose is to house containment boom for on-water spill operations. The trailers contain supplementary equipment, such as additional rope, to assist with boom deployment.

Decontamination trailer – Decontamination trailers are sized to be towed by half-ton or three-quarter ton trucks and contain equipment to facilitate the cleaning of personnel and small equipment. The use of decontamination trailers ensures that when personnel leave an impacted area they are not tracking contaminates with them. The trailer includes wash stations, pools, tents, detergent, hand sprayers and other equipment necessary to decontaminate people and small equipment.

Fire Foam Trailer – Fire Foam Trailers are used as mobile foam concentrate storage systems. Fire Foam Trailers may be designed to inject water/foam mixtures into a tanks foam piping system in order to extinguish rim seal fires, others are used to store large quantities of foam concentrate for larger spills and/or fires.

Fire Hose Trailer – Hose trailers contain large quantities of fire hoses to support fire response efforts as required.

Foam Bladder Trailer – A Foam Bladder Trailer is a wheel mounted bladder foam storage tank with inline proportioning used to mix and inject water/ foam concentrate into a facilities fire piping system. The trailers can draw water/foam directly from the bladder or externally from foam concentrate drums utilizing a hose. The trailers include a mounted monitor which may be used for direct fire suppression.

Foam Cannon – Foam cannons are located at Trans Mountain Terminals for use in the unlikely event of a tank fire. These mobile large volume discharging platforms are capable of delivering water or foam solution for fire suppression, tank cooling, personnel protection and vapour suppression.

Land/Creek Response Trailer – Land/Creek Trailers contain specialized equipment designed to be used for spills on land or in small creeks and/or ditches. Equipment includes Watergate dams, turner valley gates and water block dams as well as sandbags and sorbent materials and other common spill response equipment.

OSCAR trailer – Oil Spill Containment and Recovery (OSCAR) trailers are located strategically at various points along the Trans Mountain Pipeline. These trailers contain various tools and spill response equipment ranging from absorbent materials and skimmers, to booms and other cleanup tools specific to the area.

Portable Fire Pump – Portable fire pumps are located at Trans Mountain Terminals for use in the unlikely event of a large tank fire. These mobile pumps assist the existing fire systems by providing higher capacity pumping of water and/or foam solution.

Rapid Response Trailer – Rapid Response trailers are similar to OSCAR trailers, however they are smaller in size (typically under 30' long), can be towed behind a half-ton or three-quarter ton truck and are more maneuverable in tight locations. Rapid response trailers have containment, recovery and storage equipment on board.

Non-Floating Oil Response Trailer – Non-Floating Oil Response Trailers contain specialized equipment designed to be used for the detection of sunken and/or submerged oil. Equipment such as silt fencing, boom, view boxes, pompoms and other sorbent materials are housed inside a trailer to be dispatched in the event there is a possibility of the spilled product becoming sunken or submerged.

Wildlife Response Trailer – Wildlife Response Trailers are deployed to spill locations in order to deter wildlife, including birds and a variety of ground animals, from entering or landing near the contaminated area(s). A variety of equipment including fencing, flags and effigies are housed within these trailers.

Wildfire Response Trailer – Wildfire Response Trailers are designed as a self-supplied water and/or foam deployment system. The trailers are designed to protect at risk facilities along the pipeline right-of-way. There are two types of wildfire trailers one type has water on the trailer and the other is for structure protection for sites that have water.

Winter Response Trailer – Winter Response Trailers contain specialized equipment designed to be used in ice and snow. Winter response equipment includes specialized ice cutting devices (ice auger, chainsaw), ice rescue equipment, specialized ice lifting devices and additional rehabilitation supplies. Personal protective equipment and safety equipment that would be useful during a cold weather response, such as blankets, heaters, winter liners for hard hats, are also included.

9.5.3 Response Equipment Maintenance

Trans Mountain response equipment is tested and inspected as noted below.

- Daily and weekly – portions of the fire suppression systems are tested and inspected on a weekly and daily basis depending on the system component and regulatory requirements.
- Monthly – all emergency response equipment is inspected and inventoried on a monthly basis to ensure response readiness.
- Spring Inspection – all emergency response equipment undergoes a thorough spring maintenance check which may include inspection by a third-party inspection facility. All equipment is function tested at this time.
- Fall Inspection – all emergency response equipment undergoes a thorough fall inspection and maintenance check which includes winterizing any equipment that is at risk of freezing. Some equipment is also inspected by a third-party inspection facility.
- Exercises – all equipment is deployed at least annually during an exercise at which time all components are inspected and tested in a response environment. All equipment used during

an exercise is inspected in accordance with its Post-use Inspection procedures, which may include decontamination of watercraft, function testing pumps/generators, drying ropes and boom etc.

- Multi-year programs – some emergency equipment such as fixed fire suppression systems undergo 3-year inspections and 5-year inspection and maintenance activities in accordance with guidance provided by industry standards.

Trans Mountain will produce, upon request of the BC Minister of Environment & Climate Change Strategy, records evidencing the inspection and maintenance of equipment.

9.5.4 Response Times

Trans Mountain has a planning standard to identify the maximum times by which specific activities are anticipated to occur. The planning standard is used to strategically locate people and equipment to ensure a prompt response to any event involving the Trans Mountain Pipeline. These response times are for planning purposes only and do not act as target times. All incidents are responded to immediately upon notification of a potential incident or at the confirmation of an incident. Response times are reviewed after any event requiring activation of the Emergency Response Plans to ensure they are adequate and effective. Response times are divided into eight response targets and are measured from the time an emergency is confirmed.

ACTIVITY AND RESPONSE TIME

Activity	Response Time
Confirmed emergency – shutdown of operations	Immediate
Internal emergency response (TAS) conference call	30 Minutes
Initial site safety assessment	1 Hour
Secondary containment boom is in place *Applicable only to Westridge Marine Terminal*	1 Hour
Emergency Response Equipment arrives on site	2 Hours
Emergency Response equipment deployed to initiate extinguishment of full-surface tank fires and flammable liquid storage facilities	4 Hours
Emergency Response Equipment at site deployed (boom and skimmers)	6 Hours
Incident Command Post established	6 Hours
Advanced spill response equipment at site	12 Hours
Additional Equipment at site (as needed)	24+ Hours

9.5.5 Equipment Requirements

To determine equipment placement and requirement the worst-case discharge volume is used. The worst-case discharge volume is calculated based on the highest volume for each response zone using the highest volume for each of the following criteria:

- The maximum time to detect the release, plus the maximum shutdown response time multiplied by the maximum flow rate per hour, plus the largest line drainage volume after shutdown.
- The maximum historic discharge from the pipeline; or
- The largest single breakout tank or battery of breakout tanks, without a secondary containment system.

9.5.6 Mobile Spill Equipment List

Trans Mountain Location*	Boat	Boom Trailer	Secondary Boom (not mobile)	Decontamination Trailer	OSCAR Trailer	Rapid Response Trailer	Wildlife Response Trailer	Non-Floating Oil Trailer	Land/Creek Trailer	Winter Response Trailer
Gainford Station	x	x			x					x
Edson Station	x			x						
Jasper Station	x	x			x		x			x
Rearguard Station				x						
Blue River Station	x	x			x					x
Blackpool Station				x						
Kamloops Terminal	x (2)	x			x		x	x		x
Kingsvale Station				x		x				
Hope Station	x					x				x
Sumas Station		x		x	x		x		x	
Burnaby Terminal	x				x					
Westridge Marine Terminal	x		x	x[1]	x[2]					
Laurel Station	x (3)			x	x					
Burlington Station					x					

**Equipment is subject to movement based on risk*
[1]*Decontamination Trailer stored in a sea can.*
[2]*Spill equipment is stored in a sea can.*

9.5.7 Mobile Fire Equipment List

Trans Mountain Location	Fire Foam Trailer	Fire Hose Trailer	Foam Bladder Trailer	Foam Cannon	Wildfire Trailers	Gorilla
Edmonton Terminal		x (2)	x	x		x
Jasper Station					x (2)	
Blue River Station					x	
Kamloops Terminal	x (2)*			x	x	
Hope Station					x	
Sumas Terminal		x		x		
Burnaby Terminal		x		x		x

**One Fire Foam Trailer is a flatbed and foam totes.*

9.5.8 Contractors, Contractor Equipment and Labor

Trans Mountain's primary response contractors and support services are private entities with which Trans Mountain has a contractual relationship. The removal of this information follows the requirements of The Personal Information Protection and Electronic Documents Act (PIPEDA) (federal legislation). The information is provided on a controlled basis within the confidential appendix of this manual.

9.6 Decontamination Plan

All personnel and equipment must go through a decontamination process to ensure spilled material does not contaminate a larger area than needed. The Decontamination Plan will be activated in conjunction with this Plan. After the initial assessment has been conducted an incident specific decontamination plan will be developed to support the Incident Action Plan. A copy of the Decontamination Plan can be found in each Decontamination Trailer or in the Emergency Toolkit.

9.7 Public Evacuation

When an emergency is declared, and it has been determined that the incident has risk to the public, which may require the implementation of immediate public safety measures, evacuation may be required.

Public evacuation is conducted in coordination with the Local Authority and in conjunction with this plan (the ERP), Pipeline Evacuation Guidance and the Trans Mountain Public Health Assessment and Response Plan for Airborne Health Risks. The Local Authority sets the direction of appropriate public safety measures and lead the development of the incident-specific evacuation plan.

Trans Mountain is responsible to:

- Take immediate action to identify the hazards and/or potential hazards that may arise from an incident along the pipeline.
- Confirm the parameters of the Protective Action Zone and implement the appropriate safety measures to protect people and property.

- Provide hazard-specific and technical information to the Local Authority to aid in the determination of initial public safety measures, and to support the ongoing assessment of risk to the public and the rescinding or implementation of additional public safety measures.

Incident Type	Hazard	Initial Isolation Zone	Protective Action Zone
Pipeline Release	Vapour	50 metres all directions	300 metres downwind

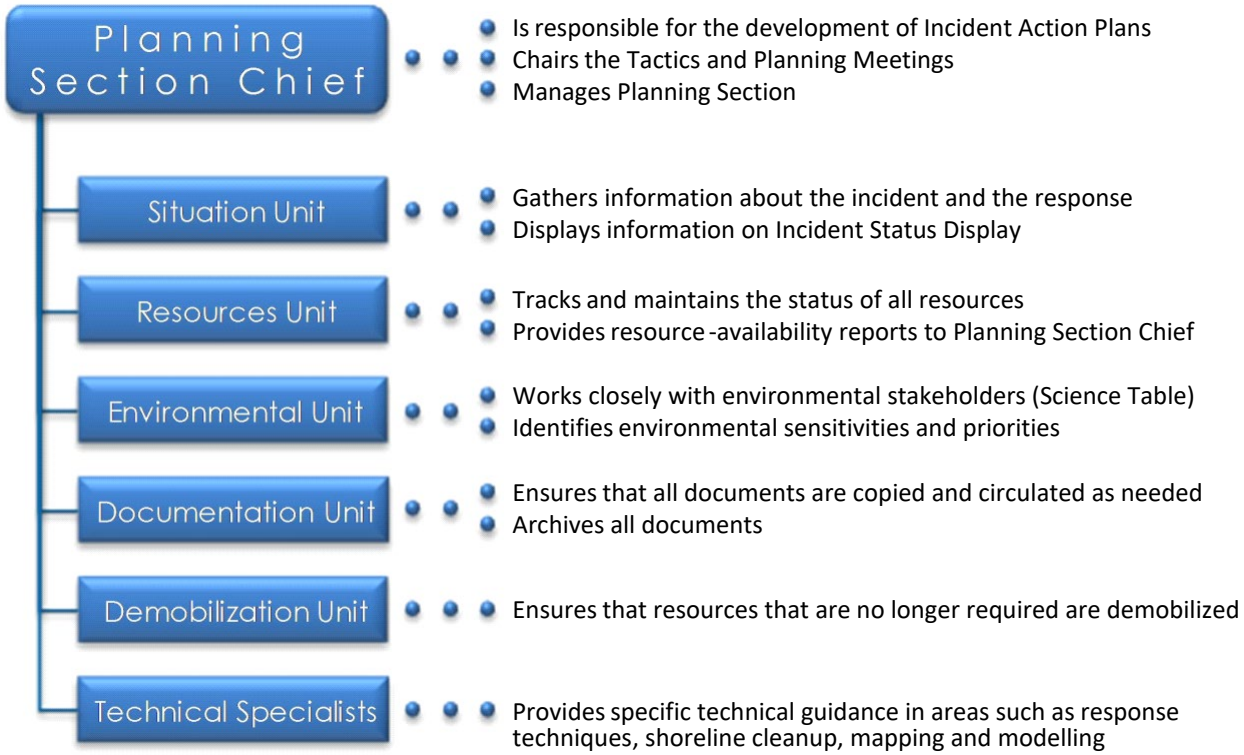
The ICP together with the local authority will continually monitor the hazards and the incident to determine if the situation has evolved, using the technical information and air monitoring data collated by the Environmental Unit. This additional assessment will be used to determine if subsequent actions are required, including if the Protective Action Zone requires expansion or contraction. Trans Mountain will support the local authority in these efforts by assisting with the implementation of further public safety measures, as required.

Note: Public protection measures do not apply to responders who are wearing appropriate PPE to respond.

10.0 PLANNING SECTION

The Planning Section is responsible for the gathering of incident intelligence, and the development of Incident Action Plans. This includes the tracking of incident information and resources, and the documentation of the incident. Detailed duties and responsibilities for individuals in the Planning Section can be found in the Trans Mountain Incident Command System Guide in the Emergency Toolkit.

Technical Specialists, i.e., fire or oil spill specialists will also be assigned to the Planning Section. Technical Specialists will be Qualified Professionals.[14]



10.1 Planning Section Chief

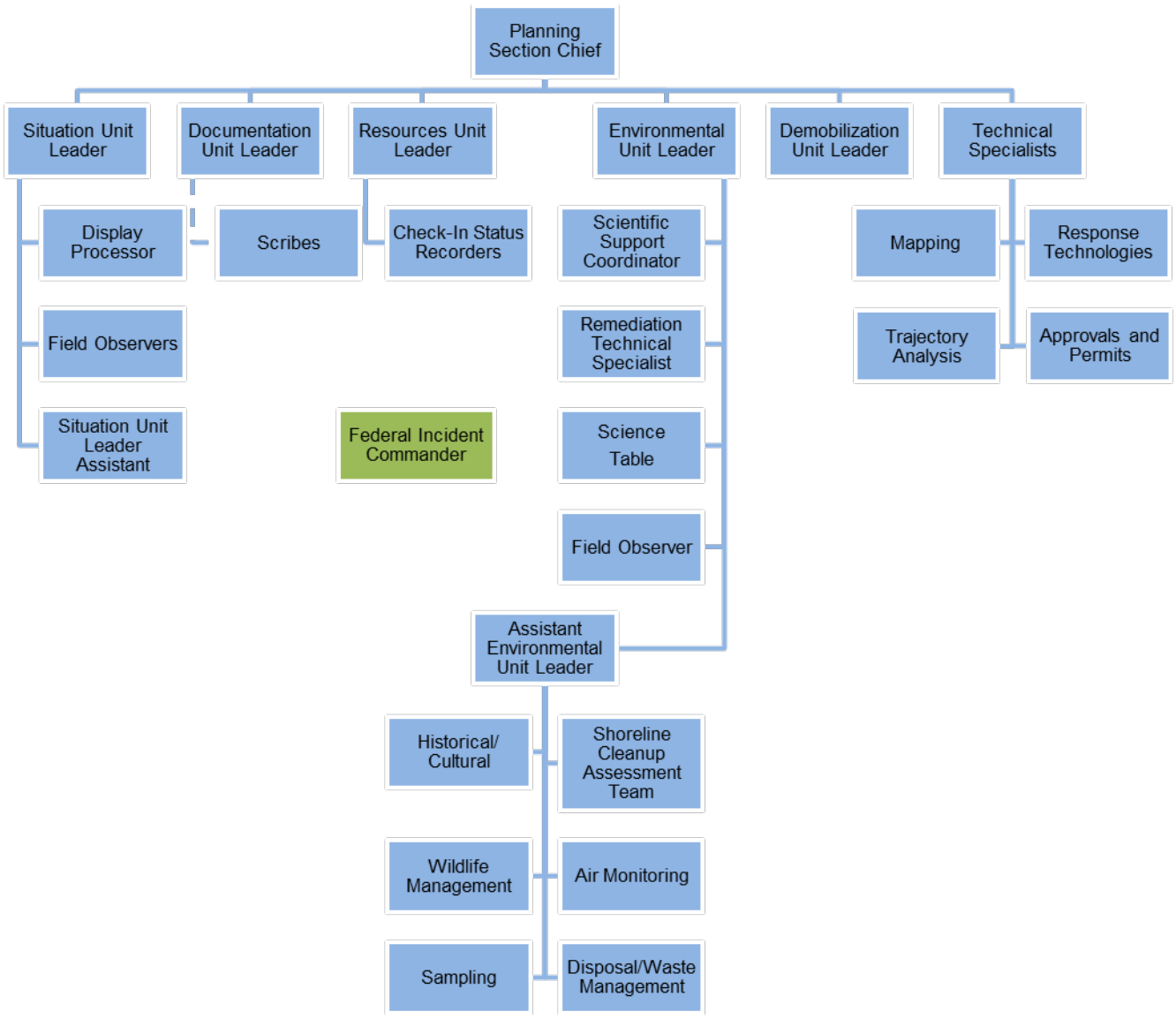
The Planning Section Chief, a member of the General Staff, is responsible for collecting, evaluating, disseminating, and using information about the incident and status of resources. Information is needed to:

1) understand the current situation,
2) predict probable course of incident events, and
3) prepare alternative strategies for the incident.

[14] A Qualified Professional is an applied scientist or technologist specializing in a relevant applied science or technology including, but not necessarily limited to, agrology, forestry, biology, engineering, geomorphology, geology, hydrology, hydrogeology, or landscape architecture. A qualified professional must be registered in Alberta or British Columbia with the appropriate professional organization and acting under that association's Code of Ethics and subject to disciplinary action by that association. He or she must also be someone who, through demonstrated suitable education, experience, accreditation, and knowledge relevant to the particular matter, may be reasonably relied on to provide advice within his or her area of expertise.

10.2 Planning Section Organization Chart

Not all roles will be filled for all incidents; however, the following chart is an outline of the possible positions to be filled. Detailed descriptions of each position and its duties can be found in the Trans Mountain ICS Guide.



10.3 Sampling and Monitoring Plan

10.3.1 Spill Monitoring and Sampling

The protection of water resources in an emergency is a priority for Trans Mountain. Monitoring and mitigation of impacts during the response to a spill is a main focus of the Incident Management Team which will establish, and be located in, the Incident Command Post (ICP). The timely assessment of the condition of water quality, and sediment quality, provides valuable information, allowing for mitigation planning, and the response to a spill.

The procedures in the Sampling and Monitoring Plan will be used to identify and document the location and movement of, and the area covered by, the spill.

In the event of an emergency, the Sampling and Monitoring Plan will be activated in conjunction with this Plan. After the initial assessment has been conducted an incident specific sampling and monitoring plan will be developed to support the Incident Action Plan.

10.3.2 Assessment of Adverse Effects

The Sampling and Monitoring Plan procedures will be utilized to continuously to assess and document the current and potential effects of the spill on human health, environment, and infrastructure.

A copy of the Sampling and Monitoring Plan can be found in the Emergency Toolkit.

10.3.3 Spill Response Planning

The protection of human health, environment, and infrastructure are of the highest priority in spill response planning. High Consequence Areas (HCAs) have been identified in each District and include:

- Populated Areas
- Ecological Areas
- Heritage Resources
- Essential Infrastructure

Response actions and mitigation procedures undertaken at the time of a release can ultimately influence the duration, magnitude and extent of impacts to HCA. Tactics are contained within each District's Geographic Response Plan and in Section 4.2 Spill Mitigation Procedures. HCAs identified within the Control Point Datasheets and GIS database are used to develop incident-specific response plans.

For planning purposes, the worst-case scenario is used when determining the magnitude of the risk posed to HCAs from a spill. Thus, the tactics and equipment deployment procedures used in the response plans reflect the worst-case scenario.

10.4 Demobilization

Trans Mountain will develop a Demobilization Plan, to ensure the resources available are what is required. Therefore, emphasis must be placed on establishing efficient demobilization procedures. Further information on the Demobilization Unit Leader is available in the Incident Command System Guide located in the Emergency Toolkit.

10.4.1 Demobilization Procedures

- The Planning Section will initiate the development of a Recovery Plan for implementation upon completion of the response phase of the incident
- Operations Section will determine which resources are ready for release from a specific collection site
- The Planning Section will provide guidance on release priorities and demobilization recommendations
- Information maintained by the Planning Section will be utilized to assist in the prioritization
- Decontaminated equipment will be returned to appropriate staging area for release or re-deployment
- Transports for equipment will be required if remote from staging area
- The Planning Section will document all demobilization and decontamination activities
- Equipment designated for re-assignment will be mobilized to the appropriate staging area
- The Division Supervisor will ensure a log is maintained documenting that proper decontamination procedures are performed for each piece of equipment
- The Operations Section will ensure that redeployed personnel receive proper rest prior to returning to duty. The Planning Section Chief will monitor personnel redeployment activities to ensure number of hours worked is within acceptable guidelines.

10.5 Shoreline Cleanup Assessment Technique (SCAT)

The SCAT process is conducted as part of the overall planning activity to identify sensitive shoreline resources, develop appropriate protection plans as outlined above, and identify recommended pre-treatment and cleanup techniques. A SCAT Team Leader, under the Environmental Unit Leader, is responsible for coordinating and directing these activities.

The specific goals of the SCAT process are to:

- identify the shoreline areas that are, and are not, oiled as a result of the spill through aerial surveys
- conduct ground surveys of these areas if necessary to define precise oil conditions, operational limitations, and to establish clean-up locations and priorities
- determine the most environmentally suitable methods of clean-up based on shoreline type and characteristics
- conduct and monitor shoreline clean-up operations

A comprehensive, practical description of the SCAT process is contained in Environment Canada's *Oil Spill SCAT Manual for the Coastlines of British Columbia*.

10.6 Public Health & Air Monitoring

Trans Mountain contractors will conduct air monitoring operations during emergencies in order to obtain accurate and reliable air quality data. As per Trans Mountain's Public Health Assessment and Response Plan for Airborne Risks, the collected information will be used to determine appropriate response actions to ensure public protection.

In the event of an emergency, the Public Health Assessment and Response Plan for Airborne Risks will be activated in conjunction with this Emergency Response Plan. After the initial assessment has been conducted an incident specific air monitoring plan will be developed to support the Incident Action Plan.

A copy of the Public Health Assessment and Response Plan for Airborne Risks can be found in the Emergency Toolkit.

10.7 Common Operating Picture

Trans Mountain's Common Operating Picture (COP) is a readily available web-based interface that provides visual mapping representation of Trans Mountain assets and resources, in relation to nearby land, people, and resources. It has the capacity to provide relevant information and data-mapping to all relevant portions of the Trans Mountain pipeline. Data can be seen against both current and historical aerial imagery, satellite imagery, and terrain models. It also contains data synchronized to publicly available Government alerts and databases, that together, provide an up-to-date common operating picture during the response.

In the event of an incident, the COP will be used to provide a spatial context of the incident in relation to the Right-of-Way and facilities. Information available includes:

- Resources: Trans Mountain assets, offices, and equipment caches
- High consequence areas, including ecological areas, heritage resources, and essential infrastructure
- Potentially affected persons or groups
- Natural hazards
- Spill Response control points and boat launches
- Information regarding Third-Party Contractors and Mutual Aid, such as location, coverage, and/or equipment

Additional information which can be added to the COP, if available:

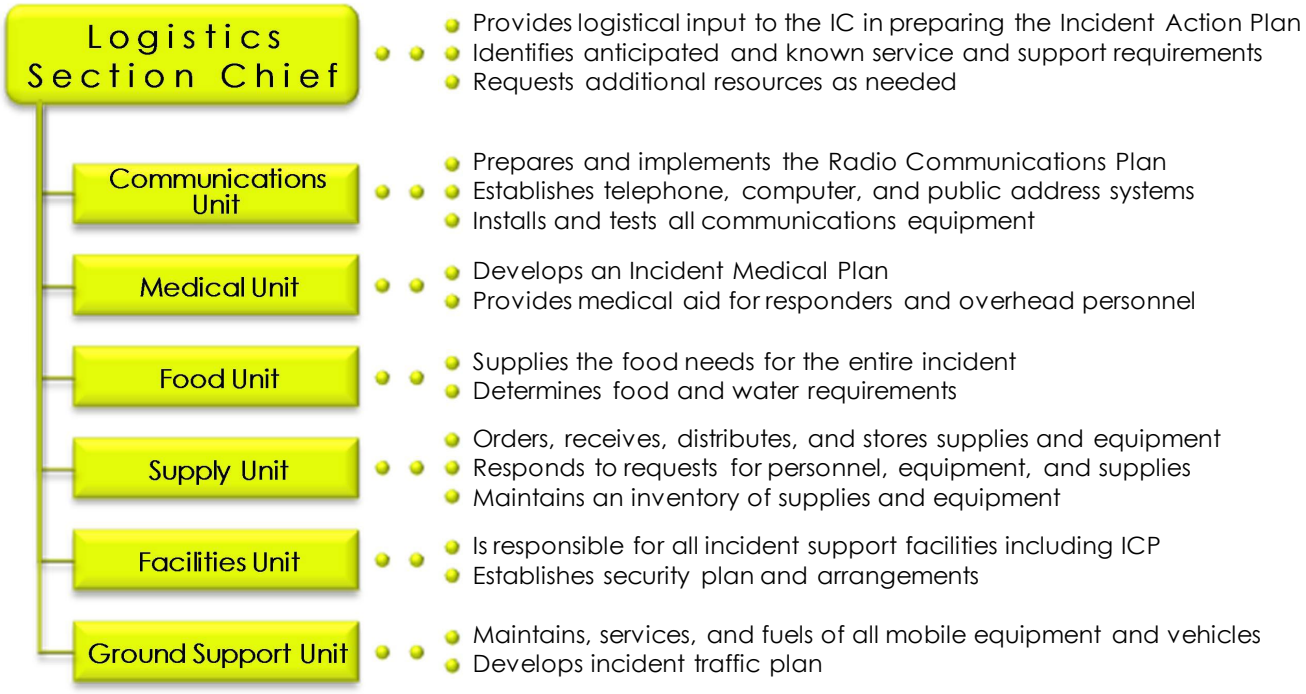
- Driving alerts and notifications
- Weather station readings
- Flood and wildfire alerts and warnings
- Government-issued evacuation alerts and orders

COP users can determine access routes, obtain a visual 3D context with terrain, and conduct a 'desktop' assessment of safety, that can be combined with field observations as part of developing a comprehensive assessment in the quickest amount of time. The COP can also be used to calculate response times for deployment of equipment, Trans Mountain personnel (from offices and facilities), mutual aid personnel and third-party contractors.

The COP Tool itself is managed by the Incident Command Post- Planning Section- Mapping/GIS Technical Specialists; information is added at the request of the ICS Section Chiefs, Unit Leaders and Emergency Management.

11.0 LOGISTICS SECTION

The Logistics Section is responsible for providing support to the incident, including all incident facilities (including the Incident Command Post). The Logistics Section will also source all required resources, including personnel and equipment, accommodations, food, and supplies. Detailed duties and responsibilities for individuals in the Logistics Section can be found in the Trans Mountain Incident Command System Guide in the Emergency Toolkit.

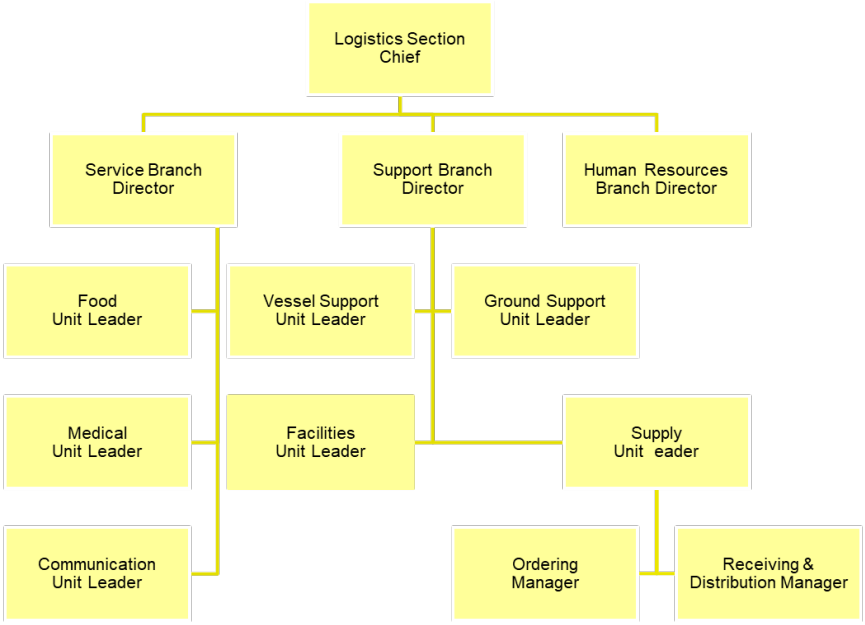


11.1 Logistics Section Chief

The Logistics Section Chief, a member of the General Staff, is responsible for providing facilities, services, and material in support of the incident response. The Logistics Section Chief participates in developing and implementing the Incident Action Plan and activates and supervises Branches and Units within the Logistics Section.

11.2 Logistics Section Organization Chart

Not all roles will be filled for all incidents; however, the following chart is an outline of the possible positions to be filled. Detailed descriptions of each position and its duties can be found in the Trans Mountain ICS Guide.



11.3 Facilities

11.3.1 Incident Command Post

Typically, the ICP is located near the incident site and is the focus for the conduct of direct, on-scene control of tactical operations. Incident planning is also conducted at the ICP; an incident communications center also would normally be established at this location. The ICP may be collocated with the incident base if the communications requirements can be met. The ICP may perform local Emergency Operations Center-like functions in the context of smaller jurisdictions or less complex incident scenarios.

Upon arrival at the site, IMT members should go directly to the primary ICP location. The IMT will assemble at the designated Command Post as soon as possible following notification. If another location is being utilized, team members will be notified upon arrival.

There are pre-designated Incident Command Post (ICP) and Staging Area locations along the pipeline corridor and in communities where its facilities are located. Access to these facilities, and the lead time required varies depending on the location and type of facility being used. Specifically, Trans Mountain has identified resources in the following communities; In British Columbia; Burnaby, Richmond, City of Vancouver, Abbotsford, Chilliwack, Hope Merritt, Kamloops, Clearwater, Blue River, Valemount, and in Alberta; Jasper, Hinton, Edson, Gainford, Edmonton and Sherwood Park. Trans Mountain has agreements and protocols in place where appropriate with the service providers. All facilities meet the requirements for internet and telephone connectivity, food, lodging, meeting space, parking and security for a multi-agency response.

Incident Command Post facilities are private entities with which Trans Mountain may have contractual relationship. The information is provided on a controlled basis within the confidential appendix of this manual. The removal of this information follows the requirements of The Personal Information Protection and Electronic Documents Act (PIPEDA) (federal legislation).

11.3.2 Media Relations Centre

The designated Media Relations Centre in the event of an emergency will be designated at the time of an emergency, based on the location of the ICP. Media Relations facilities are private entities with which Trans Mountain may have contractual relationship. The information is provided on a controlled basis within the confidential appendix of this manual. The removal of this information follows the requirements of The Personal Information Protection and Electronic Documents Act (PIPEDA) (federal legislation).

11.3.3 Staging Areas

A number of locations may serve as the key staging areas for response activities, the actual location of the staging area will depend on the type of emergency event. It is important to note that Logistics is responsible for establishing staging areas but once established Operations is responsible for their continued operation and staffing.

Factors considered in the selection of staging areas include:

- Safety and security
- Accessibility by road, water
- Available space for storing equipment
- Suitability for landing helicopters
- Ease of providing long-term logistics support (personnel changes, fueling, and provisioning)

11.4 Communications

11.4.1 Emergency Communications System

During a response, communications will take place through one or more of the following modes:

- Landline and/or cellular telephones
- Radio System
- Satellite Communication
- Electronic Mail (email) Communications

The Control Point Data Sheets, found in the GRPs, contain areas where communication gaps have been pre-identified. An incident specific communications plan should be developed upon completion of the initial assessment of spill to ensure reliable communications are established.

11.4.2 Telephone Communications

Regular or cellular telephones will be the primary mode of communications between team members to whom cellular phones have been assigned, and the Incident Command Post, and between the Incident Command Post and various outside agencies and organizations. Regular and cellular telephone contacts for all IMT personnel and agencies are provided in the confidential appendix of this manual.

11.4.3 Radio Communications

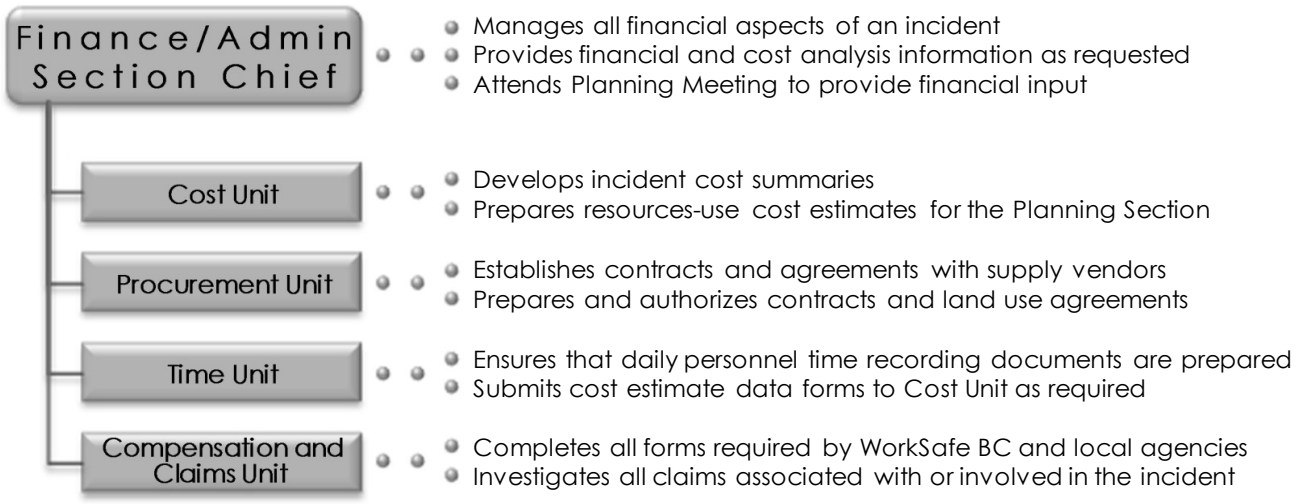
The radio system utilizes Motorola portable radio units. Separate channels may be used for the incident response and normal operations. Also, different contractors operate a number of radios on separate channel. When necessary to facilitate communications between Trans Mountain and contract personnel, radios may be shared during an incident. During an incident, all radio frequencies used will be tracked using the ICS 205.

11.5 Security

Due to the large amount of public attention created at an incident site, additional security measures are required. Security needs will be evaluated for any command post, staging area as well as the incident site. Additional duties for security can be found in the Incident Command System Guide.

12.0 FINANCE AND ADMINISTRATION SECTION

The Finance and Administration Section is responsible for all financial aspects of the response, including assisting in establishing contracts with suppliers, and setting up systems to monitor time and costs. Detailed duties and responsibilities for individuals in the Finance and Administration Section can be found in the Trans Mountain Incident Command System Guide in the Emergency Toolkit.

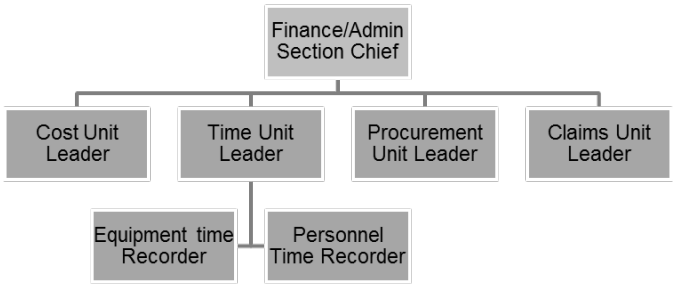


12.1 Finance Section Chief

The Finance/Administration Section Chief, a member of the General Staff, is responsible for all financial and cost analysis aspects of the incident and for supervising members of the Finance/Administration Section.

12.2 Finance Section Organization Chart

Not all roles will be filled for all incidents; however, the following chart is an outline of the possible positions to be filled. Detailed descriptions of each position and its duties can be found in the Trans Mountain ICS Guide.



12.3 Managing Spill Liability Claims

The Insurance/Risk Management Department will do the following things while managing spill liability claims. The Compensation and Claims unit leader will either work closely with the Trans Mountain Insurance Risk Management Department, or the Insurance/Risk Management Department will deploy specific personnel to the ICP.

- Participation in the initial TAS conference call to gather information.
- Provide notice of incident to appropriate insurers.
- Coordinate with legal, operations & procurement to investigate any contractual protections available.
- Establish contact with liability adjuster and instruct them to proceed immediately to the incident site. Adjuster(s) can usually be on site within 4-12 hours of notification.
- Member of Risk Management group will travel to site to work with the adjuster and act as the liaison with the incident commander on site.
- Adjuster can make contact with the displaced residents at the discretion of Trans Mountain or the local authorities. Adjuster will gather pertinent information (phone no., address, damage assessments, costs incurred) and will provide contact information to them for later follow-up.
- If needed, set up an 800 number for the intake of damage claims to be funneled back through the adjuster for processing. This would be coordinated through the Communications Department.
- Adjuster and/or Risk Management to follow-up with displaced residents to address concerns regarding damage claims or out of pocket expenses that resulted from the incident.
- Risk Management to coordinate with the business unit to set up a property damage/liability AFE to cover the costs of damage claims of third parties.
- Instruct adjuster to gather documentation from third party claimants in order to settle and/or resolve any damage claims arising from the incident.
- Risk Management to coordinate with legal department on those third-party claims in which Trans Mountain is sued or third party has legal representation.

12.4 Managing Spill Liability Claims – Informal Claims Process

A land agent (“Adjustor” in this context) enters the field as soon as possible after the report of the incident, often within hours. The land agent begins identifying and communicating with parties that are either directly affected by the incident or close enough to warrant communications on what is occurring. This land agent has the authority to immediately compensate or make arrangements with affected parties to mitigate the negative effect the event has had on their lives. Examples of this “immediate compensation” might be: Short term accommodations for displaced persons; water, food or groceries provision or compensation; short term lost income payment (in cases where the party has limited resources); payment for boarding of livestock or household pets; rental vehicle compensation necessitated due to loss of access to their own car; travel costs to stay with relatives or to get away from trauma of situation; compensation for short term counseling; payment for destroyed tools/equipment that might prevent the person from carrying on their livelihood until replaced.

These immediate “claims” are identified in the field, settled immediately (with consultation with the Claims Unit Leader, or under agreed terms of reference) and either cash or check is completed on the spot, or company credit cards are used to procure things like hotel rooms. Formal paperwork is not required on these payments, the party must sign a receipt acknowledging the payment. If there are additional claims, the formal process will be followed.

12.5 Managing Spill Liability Claims – Formal Claims Process

In the event that the informal process cannot settle claims by individuals, this formal process will be followed.

12.5.1 Oil Spill Claims Event Tiers

Oil spill claims events can be generally classified by the number of claims anticipated rather than the quantity of product released. These tiers are defined as follows:

- Tier 1 – up to 50 oil spill claims anticipated
- Tier 2 – between 50 and 500 spill claims are anticipated
- Tier 3 – over 500 spill claims are anticipated

12.5.2 Oil Spill Claims Management

Management of oil spill claims will be provided by the Claims Unit Leader and the Trans Mountain Insurance/Risk Management Department representatives in cooperation with the Incident Commander. Outside contractors will support claims processing during all events.

12.5.3 Insurance

Trans Mountain currently has $750 million of spill liability insurance, the first $2 million which is covered by self-insurance.

12.5.4 Oil Spill Claims Handling Process

After an oil spill occurs, Trans Mountain will advertise for claims. Oil spill claims information and forms will be made available through local claims centers, if established, or via the internet. Depending on the anticipated number of claims related to the spill, Trans Mountain will establish local claim centers. Oil spill claims will be accepted by Trans Mountain up to 3-years from the date that Trans Mountain began advertising for claims or 3-years from the date that the injury or damage being claimed was reasonably discovered – whichever date is earlier.

12.5.5 Oil Spill Claims Advertisements

Trans Mountain will advertise for claims after being advised to do so by our legal department, or within 15-days after being designated as the Responsible Party. The geographic extent of the oil spill will dictate the publications in which claim advertisements will be placed. The length of time advertisements will run in local publications will be based on recommendations provided by our legal department or the length of time specified by the regulatory authority.

12.5.6 Oil Spill Claims Contact Information

In the event of an oil spill contact information for oil spill claims, location of local claim centers and mailing address for claims submission will be available via the toll free Public Information Line, established at the time of an incident, and on the website established at the time of an incident, as well as in advertisements placed in local publications.

12.5.7 Local Claims Centers

Local claims centers will be established based on community need and/or the number anticipated claims. Local claims centers will remain in operation for as long as warranted by workload and community need.

12.5.8 Oil Spill Claims Forms

The claims form used by Trans Mountain will be made available at the time of an incident as soon as the claims process is determined. Information entered in any claim form must be typed or legibly hand-written in blue or blue-black ink. The claim form must include the “sum-certain” monetary amount being claimed and be signed by the claimant in black or blue-black ink. The Claims Tracking Sheet may be used in the claims adjudication process to track the status of claims received and a Claim Check Sheet may be used to record the type of documentation provided with each claim. Samples of the forms are available in the Emergency Toolkit.

12.5.9 Oil Spill Claims Adjudication and Timeframe

Trans Mountain will process claims in the order they are received. Each claim will be assigned a unique identification number which will be used to track the claim internally. The identification number can also be used by claimants who wish to provide additional information to support their claim or inquire about the status of a claim. Trans Mountain will review each claim received to ensure, as much as possible, that all needed information to make a claim decision has been provided by the claimant. If additional information is needed, we will request that the claimant forward that information to us so it can be added to the claim and considered during adjudication. If the information requested is not received within 90 days, Trans Mountain will adjudicate the claim with the available information. This may result in a reduction of possible claim compensation or an outright denial of the claim.

Once Trans Mountain sends the claimant a claim determination, the claimant must either accept or reject the offer within 60 days. The claimant must sign a release before the claim will processed for payment. If the claimant takes no action within 60 days after receiving the claim determination, the offer to pay the claim will be voided and the claim will be closed. If the claimant rejects the offer, they can provide additional information and ask Trans Mountain to reconsider the claim determination; typically, this would start an entirely new review process with another claim determination made as a result of the reconsideration. Claims submitted to Trans Mountain will be paid in the order that accepted offers (with signed releases) are received. Claims are usually paid with 30-days from the date Trans Mountain receives the claimant’s signed release.

12.6 Oil Spill Claims Documentation

The amount and type of documentation needed to make a claim determination depends on many factors, including the claim type and the monetary amount claimed.

The following types of claims may be submitted to Trans Mountain. Example types of documentation are also included below within the listing of each claim type. The examples provided are for reference only; they may or may not represent everything needed to adjudicate a claim.

12.6.1 Removal Costs

Costs to prevent, minimize, mitigate, or clean up the oil spill. Examples of Proof and Documentation that may be needed:

- Proof that actions were coordinated with the FOSC.
- Witness statements
- Detailed description of actions
- Dates on which work was performed
- Analysis of spill substance
- Map of area

- Pictures of area, damage, and spill
- Receipts, invoices, or similar records with description of work
- How rates were determined and any comparison of rates
- Daily records of personnel costs including details on labor rates, hours, travel, and transportation
- Daily records of equipment costs including description and use
- Signed disposal manifests and proof of payment for disposal
- Payroll verification of hourly rate at the time of spill
- Verification of equipment rates for equipment used

12.6.2 Property Damage

Injury or damage to, or economic loss resulting from destruction of real property (land or buildings) or other personal property including a boat. Examples of Proof and Documentation that may be needed:

- Proof of ownership or leasehold interest in the property; lease or rental agreement of any substitute property used
- Proof or evidence that property was injured, destroyed, or not usable because of the oil spill
- Report of any expenses or money lost while the property was unavailable because of spill damage
- Proof of value of property both before and after the spill or injury
- Documented cost of repair or replacement of the property
- Proof of value of property before and after the spill
- Documentation that shows whether or not substitute property was available, and related costs of substitute property if used.
- Documentation that shows how claimant lost money from the damage to the property
- Witness statements
- Copy of title, deed, lease, or license to property in claimant's name
- Pictures or videotape of property and/or damage
- Maps or legal documents showing the location of the property within the spill area
- Professional property appraisals for the value of the property prior to and after the spill, actual selling price of the property, and evidence connecting the depressed selling price to the oil spill rather than to other economic or real property factors
- Copies of bills paid for repair of damage or two estimates showing activities and costs to repair the damage

12.6.3 Loss of Profits or Earning Capacity

Damages equal to the loss of profits or impairment of earning capacity due to the injury, destruction, or loss of property or natural resources. Examples of Proof and Documentation that may be needed:

- Proof that property or natural resources that were damaged, destroyed or lost, resulted in claimant's loss
- Proof the claimant's income was reduced due to the damage or loss of the property or natural resources and how much it was reduced
- Documentation showing the amount of profits and earnings in similar time periods
- Documentation showing any alternative employment or business during the period claimed and any income received during that period
- Documentation showing and savings to overhead costs or other normal expenses - those not paid as a result of the spill (commuting costs, utility fees, employee salaries)
- Photos of damaged property (before and after the spill)
- Witness Statements on how the spill led to loss of business income or earning capacity; explain any earnings anomalies
- Statement on how the spill caused a loss in income
- Affidavit from claimant's employer about the impact the spill had on an employees work or income, and if the employer intends to file a claim for lost profits or earning capacity.
- Copies of pay stubs, receipts, timesheets from before, during, and after the spill
- Personnel records from claimant's employer before, during, and after the spill, showing employment
- Claimant's description of efforts to reduce loss, including job search
- Copies of any job-hunting expenses (e.g., travel costs)
- Signed copies of income tax returns and schedules for at least two years prior to spill
- Details of employment expenses not paid during period being claimed (e.g., commuting costs)
- Copies of pay stubs, receipts, timesheets from alternative employment during time of spill (including unemployment compensation)
- Description and documentation of business losses due to spill
- Copies of letters of business cancellations caused by the spill damage
- Maps or descriptions of the area showing the business location and the spill impact area
- Financial statements for at least two years prior to spill and from the year of the spill
- Signed copies of business income tax returns and schedules for at least three years prior to spill
- Details on efforts to mitigate business losses or why no efforts were taken
- For hotels, daily and monthly occupancy information for two years prior to spill and the year of the spill
- Description of marine charter business losses caused by the spill
- Evidence that charter vessel(s) was in the area impacted by the spill and were unable to carry on their business due to the spill
- Maps or descriptions of the area showing charter business location within spill area
- Signed copies of income tax returns (for charter boat business) and schedules for at least three years prior to spill
- Details on expenses not paid out during period being claimed (e.g., wages)
- Booking records for three years prior to spill and year of spill
- List of charter rates, including any services the business specializes in (e.g., sport fishing)
- Copies of any logs relating to boating activities for the year prior to and the year of the spill
- Registration documents for the vessel

12.6.4 Loss of Subsistence Use of Natural Resources

Loss of subsistence use claim if natural resources claimants depend on for subsistence use purposes that have been injured, destroyed, or lost by an oil spill event. Examples of Proof and Documentation that may be needed:

- Proof that injury, destruction, or loss of natural resources would have been used by the claimant to obtain food, shelter, clothing, medicine, or other minimum necessities of life.
- Documentation identifying each specific natural resource for which compensation for loss of subsistence use is being claimed
- Description of the actual subsistence use you make of each specific natural resource you identify;
- Description of how and to what extent claimant's subsistence use of the natural resource was affected by the injury to, destruction of, or loss of, each specific natural resource;
- Description of claimant's efforts to mitigate subsistence use loss
- Description of alternative source(s) or means of subsistence available to claimant during the period

12.6.5 Loss of Government Revenue

Net loss by Federal, State, or Local Governments of taxes, royalties, rents, fees, or net profit shares due to the injury, destruction, or loss of real property, personal property, or natural resources. Examples of Proof and Documentation that may be needed:

- Information showing that the loss of revenue was caused by the injury to, destruction of, or loss of real or personal property or natural resources caused by the discharge
- Information showing the amount, identity, and description of the revenue loss for which compensation is claimed, including the applicable authority for collecting the revenue, method of assessment, applicable rate, and dates of collection or periods of loss
- Documentation showing expenditures saved because revenue was not collected
- The total assessment or revenue collected and related expenditures for comparable revenue periods, typically covering two years
- Description of what revenues were impacted and how the spill caused a loss of revenues
- Copies of statutes, regulations, ordinances, etc., outlining applicable authority to raise such revenues, property affected, method of assessment, rate of assessment, and method and dates of collection of assessment
- Government financial reports showing total assessment or revenue collected for comparable periods, typically covering two years
- Details of any expenses not paid out by government

12.6.6 Increased Public Service Costs

Net costs by State & Local Governments for providing increased or additional public services during or after removal activities, including protection from fire, safety, or health hazards, caused by a discharge of oil or directly attributable to response to the oil spill Event. *Examples of Proof and Documentation that may be needed:*

- Documentation showing justification for the public services provided, including documentation of what specific services were provided and the relationship to the spill.
- Documentation showing when services were provided during and after the oil spill removal.
- Documentation showing services were in addition to services normally provided
- Documentation showing the net cost for the services and the methods used to compute those costs
- Reports showing the increased public services were required and if the services were due to fire, health, or safety hazards
- Detailed description of what increased services were necessary and why, including a distinction between removal activities, safety acts, and law enforcement acts, and if the increase was actually incurred or if normal resources were diverted for use
- Daily reports on the activities of the government personnel and equipment involved Government Labor and Equipment Rates:
- Payroll verification of the government hourly rate at the time
- Verification of the standard government equipment rates for any equipment claimed
- Signed and dated records of the spill including hourly rates for labor and equipment
- Explanation as to whether rates are fully loaded or not and formulas used
- Certification that rates used reflected actual costs incurred and did not include punitive damages or fees

13.0 SUPPLEMENTAL PLANS

In support of the ERP, a number of supplemental plans have been developed.

13.1 Geographic Response Plans

Geographic Response Plans (GRPs) provide detailed, geographic specific information to assist spill responders in the containment and recovery of released product. GRP's identify and describe environmental sensitivities, including natural and cultural resources, as well as locate and classify Control Points.

Four GRPs have been developed, one for each District:

- Alberta District
- North Thompson District
- Kamloops District
- Sumas District

A copy of each GRP can be found in the Emergency Toolkit.

13.2 Waste Management Plan

The management of waste from a spill is a priority for Trans Mountain and a key component supporting incident response. The appropriate handling, storage, transport, disposal and tracking of waste associated with a spill is essential for effective planning and response to a spill.

In the event of an emergency that has the potential for generating waste, the Waste Management Plan will be activated in conjunction with this Emergence Response Plan. After the initial assessment has been conducted an incident specific Waste Management Plan will be developed to support the Incident Action Plan.

A copy of the Waste Management Plan can be found in each Decontamination Trailer or form can be found in the Emergency Toolkit.

13.3 Decontamination Plan

All personnel and equipment must go through a decontamination process to ensure spilled material does not contaminate a larger area than needed. The Decontamination Plan will be implemented by the Decontamination Group Supervisor who will work under the Recovery and Protection Branch Director. The Decontamination Group Supervisor is responsible for creating and implementing an incident specific Decontamination Plan, if necessary.

A copy of the Decontamination Plan can be found in each Decontamination Trailer or in the Emergency Toolkit.

13.4 Sampling and Monitoring Plan

The protection of water resources in an emergency is a priority for Trans Mountain. Monitoring and mitigation of impacts during the response to a spill is a main focus of the Incident Management Team which will establish, and be located in, the Incident Command Post (ICP). The timely assessment of the condition of water quality, and sediment quality, provides valuable information, allowing for mitigation planning, and the response to a spill.

In the event of an emergency, the Sampling and Monitoring Plan will be activated in conjunction with this Emergency Response Plan. After the initial assessment has been conducted an incident specific Sampling and Monitoring Plan will be developed to support the Incident Action Plan.

A copy of the Sampling and Monitoring Plan can be found in the Emergency Toolkit.

13.5 Public Health Assessment & Response Plan for Airborne Risks (Air Monitoring Plan)

Trans Mountain has developed a Public Health Assessment and Response Plan for Airborne Risks. In the event of an emergency, the Public Health Assessment and Response Plan for Airborne Risks will be activated in conjunction with this Emergency Response Plan. After the initial assessment has been conducted an incident specific air monitoring plan will be developed to support the Incident Action Plan.

The objectives of the incident specific air monitoring plan are to;

- Anticipate and identify Potential Chemicals of Concern (PCOC) from product releases and/or fires
- Evaluate, via proper monitoring principles, public health exposures
- Facilitate development and implementation of incident-specific air monitoring and response strategies to protect the public; and
- Identify action levels for PCOC that triggers assessment of public health risk.

A copy of the Public Health Assessment and Response Plan for Airborne Risks can be found in the Emergency Toolkit.

13.6 Wildlife Management Plan

The protection of wildlife in an emergency is a priority for Trans Mountain; monitoring and mitigation of impacts during the response to a spill is a main focus of the Incident Command Post (ICP). The timely assessment of wildlife and wildlife habitat conditions provides valuable information, allowing for mitigation planning, and the response to a spill.

In the event of an emergency, the Wildlife Management Plan will be activated in conjunction with this Emergency Response Plan. After the initial assessment has been conducted an incident specific Wildlife Management Plan will be developed to support the Incident Action Plan.

A copy of the Wildlife Management Plan can be found in the Emergency Toolkit.

13.7 Non-Floating Oil Assessment and Response Plan

The purpose of the Non-Floating Oil Assessment and Response Plan is to provide initial guidance for the assessment and response to spilled oil that is at risk of, or has become, non-floating within an inland water environment. In the event of a spill emergency, the Non-Floating Oil Assessment and Response Plan will be activated in conjunction with this Emergency Response Plan. The Non-Floating Oil Assessment and Response Plan will remain active until such time that an incident specific version can be implemented by the Incident Command Post (ICP).

A copy of the Non-Floating Oil Assessment and Response Plan can be found in the Emergency Toolkit.

13.8 Convergent Volunteer Management Plan

During an emergency, it is possible that members of the public will converge on the incident scene with the intention of supporting emergency response and restoration efforts. Although Trans Mountain does not request volunteer assistance, if there is a strong interest demonstrated by the community, Trans Mountain will attempt to support and incorporate Convergent Volunteers into the response effort.

In the event of an emergency, the Convergent Volunteer Management Plan will be activated in conjunction with this Plan, if necessary. After the initial assessment has been conducted an incident specific Convergent Volunteer Management Plan will be developed to support the Incident Action Plan.

A copy of the Convergent Volunteer Management Plan can be found in the Emergency Toolkit.

13.9 Wildfire Plan

Wildfires, including forest fires and grassland fires, are a natural hazard in any forested and grassland region of Alberta and British Columbia. A Wildfire Plan has been developed to assist with the response to wildfires/grass fires. After the initial assessment has been conducted an incident specific Wildfire Plan will be developed to support the Incident Action Plan.

A copy of the Wildfire Plan can be found in the Emergency Toolkit.

13.10 Crisis Communications Plan

The Crisis Communications Plan will support the Trans Mountain's (Trans Mountain) Emergency Management Program (EMP) and Integrated Safety and Loss Management System (ISLMS) and is designed to ensure the company has adequate resources and processes in place to quickly and effectively respond to the information needs of its stakeholders, customers, government and regulatory officials, the public and the media during a crisis.

A copy of the Crisis Communication Plan can be found in the Emergency Toolkit.

13.11 Terminal Evacuation Plan

An Evacuation Plan has been prepared for each of the terminals which describes the measures Trans Mountain personnel, the local authority and first responders, along with supporting entities, complete during an emergency at the Terminal that may require the evacuation or shelter-in-place of the surrounding community and/or marine environment.

The fundamental concepts of the Evacuation Plan are initiated when it has been determined that the incident has risk to the public, which may require the implementation of immediate public safety measures. The local authority sets the direction of appropriate public safety measures as applicable. Trans Mountain will supply incident-specific information to assist in the decision to evacuate and supply resources, as needed, to implement public evacuation.

A copy of the Evacuation Plan can be found in the Emergency Toolkit.

13.12 Groundwater Assessment Plan

The Groundwater Assessment Plan is used following a product release to assess and evaluate the potential impacts to groundwater, evaluate its quality and monitor the potential risks to groundwater receptors. Additionally, the plan will facilitate the development of response strategies to protect groundwater and mitigate the impacts of the release.

In the event of an emergency that impacts, or potentially could impact an aquifer, the Groundwater Assessment Plan will be activated in conjunction with the appropriate Geographic Response Plan. The fundamental concepts of the Groundwater Assessment Plan are initiated by the Environmental Unit and are maintained until the development of the incident specific plan, based on the assessment, is completed.

A copy of the Groundwater Assessment Plan can be found in the Emergency Toolkit.

14.0 SAFETY DATA SHEETS

14.1 Summary Safety Data Sheet

This Summary Safety Data Sheet represents the range of crude oil products that may be shipped in the Trans Mountain Pipeline. The ranges provide information on the most extreme to least extreme of the specifications a Safety Data Sheet (SDS) or Material Safety Data Sheet (SDS) will be provided to all responders upon arrival at site which will outline the specific hazards for the product involved.

Physical Description

Liquid, black to colourless, Odors include rotten eggs, sulphur, hydrocarbon, petroleum and solvent

Route of Exposure

Inhalation, Skin absorption, skin or eye contact, accidental ingestion

Hazards

- Inhalation of oil mist vapours from hot oil may cause irritation of the upper respiratory tract. Can also cause headaches, nausea, loss of appetite, drowsiness, vomiting, loss of consciousness and death
- Carcinogenic
- May affect fetal development and heritable genetic damage
- Prolonged exposure may cause serious health effects
- Flammable Liquid
- Extremely toxic and H2S may be present
- Irritating to eyes, skin, nose, throat and lungs
- May cause headaches and dizziness
- Ingestion may cause chemical pneumonia, sever lung damage, and respiratory failure
- Combustible and can accumulate static charges which may cause an ignition
- Can cause central and peripheral nervous system damage
- May produce thermal burn
- Toxic gases will form upon combustion
- Vapour accumulation could flash and/or explode if ignited

Chemical Properties

High	Low
Boiling Point	
1100°C	-89°C
Density	
1200 kg/m^3 (1.013 g/cm^3)	800 kg/m^3 (0.661 g/cm^3)
Vapour Density	
7.8	>1
Specific Gravity	
1.03	0.7
Flashpoint	
260°C	-40°C
Auto Ignition	
537°C	229°C
Viscosity	
350 mm²/s	0.11 mm²/s
Water Solubility	
Slight	Insoluble

Toxicological Information

Benzene	
LD50 High:8260 mg/kg Low: 690 mg/kg	LC50 High: 13700 ppm Low: 4000 ppm
H2S	
LD50: 390 mg/kg	LC50: 444 ppm

14.2 Safety Data Sheets

SDSs for products shipped through the Trans Mountain Pipeline and/or stored at the Terminal Sites are available to Trans Mountain personnel online via the Trans Mountain intranet site https://ww1.actiocms.com/login.cfm or in the SDS binder at the Terminal.

The Safety Data Sheet (SDS) for the relevant product will be provided to all First Responders upon arrival at incident site and forwarded to affected and potentially affected communities.

15.0 RESPONSE PLAN CERTIFICATION

15.1 Declaration of Contingency Plan

DECLARATION THAT SPILL CONTINGENCY PLAN IS TRUE,

ACCURATE AND COMPLETE

As an authorized representative of the regulated person, I declare that a spill contingency plan has been prepared for the substance(s) for which the regulated person is a regulated person under the *Environmental Management Act,* S.B.C. 2003, C. 53. The regulation and Act are administered by the British Columbia's Ministry of Environment and Climate Change Strategy. I declare that the Spill Contingency Plan is true, accurate and complete, and that the information contained in Table 1 (below) and substances and quantities listed in Section 7 contain accurate information.

Regulated Person

Trans Mountain Canada Inc.	Davies, Michael	Chief Operating Officer
From	Surname, given name	Title
{original on file}		2700, 300 – 5th Avenue S.W. Calgary, Alberta T2P 5J2
Signature	Date (day-month-year)	Address

Designated Contact

Trans Mountain Canada Inc.	Malinoski, Kelly	Director, Emergency Management
From	Surname, given name	Title
{original on file}		2700, 300 – 5th Avenue S.W. Calgary, Alberta T2P 5J2
Signature	Date (day-month-year)	Address

Table 1: Sections in the Emergency Response Plan where information that satisfies the requirements of the Spill Contingency Planning Regulation (SCPR) is available.

Section of the SCPR	Section in ERP	Section Title
Contents of Spill Contingency Plan		
3 (a)	Section 15.2	Owner/Operator Information
3 (b)	Section 15.1	Declaration of Contingency Plan
Hazard assessment		
4 (1)(a)	Section 7.0 and 14.1	7.0 Site Information 14.1 Summary Safety Data Sheet
4 (1)(b)	Section 7.0	Site Information
4 (1)(c)	Section 7.0 Within the Common Operating Picture Tool, Geographic Response Plans,	Site Information
4 (2)	Within the Common Operating Picture Tool	
Spill response planning map	Within the Geographic Response Plan	
Equipment, personnel and other resources		
6 (1)(a)	Section 9.5.6	Mobile Spill Equipment List
6 (1)(b)	Section 9.5.3	Response Equipment Maintenance
6 (2)(a)	Section 9.5.7	Mobile Fire Equipment List
6 (2)(b)	Section 9.5.2	Response Equipment
6 (2)(c)	Section 9.5.2	Response Equipment
Incident Command System		
7 (1)(a)(i)	Section 8.10	Incident Commander/Deputy Incident Commander
7 (1)(a)(ii)	Section 8.12	Information Officer
7 (1)(a)(iii)	Section 8.14	Liaison Officer
7 (1)(a)(iv)	Section 8.11	Safety Officer
7 (1)(a)(v)(A)	Section 12.1	Finance Section Chief
7 (1)(a)(v)(B)	Section 11.1	Logistics Section Chief
7 (1)(a)(v)(C)	Section 9.3	Operations Section Chief
7 (1)(a)(v)(D)	Section 10.1	Planning Section Chief
7 (1)(b)	Information is contained in the Confidential Appendix	
Human health and safety		
8(a)	Section 1.0	Responder Health and Safety
8(b)	Section 1.0 Within the Initial Site Health & Safety Plan	Responder Health and Safety
Communications		
9(1)(a)	Section 11.4	Communications
9(1)(b)	Section 8.12	Information Officer
Waste Management	Section 13.2	Waste Management Plan
Wildlife	Section 13.6	Wildlife Management Plan
Spill response		
12(1)(a)	Introduction, Sections 1.0 and 3.0	1.0 Responder Health and Safety 3.0 Spill/Site Assessment

Section of the SCPR	Section in ERP	Section Title
12(1)(b)	Section 2.0	Internal and External Notification
12(1)(c)	Sections 1.0, 2.0, 3.0, 4.0 and 5.0	1.0 Responder Health and Safety 2.0 Internal and External Notification 3.0 Spill/Site Assessment 4.0 Spill Containment and Recovery 5.0 Protection of High Consequence Areas
12(1)(d)(i)	Section 8.19	Terminating/Downgrading the Response
12(1)(d)(ii)	Section 8.19	Terminating/Downgrading the Response
12(2)(a)	Introduction and Sections 1.0 and 3.0	1.0 Responder Health and Safety 3.0 Spill/Site Assessment
12(2)(b)	Introduction, Emergency Levels	
12(2)(c)(i)	Introduction and Sections 1.0 and 3.0	1.0 Responder Health and Safety 3.0 Spill/Site Assessment
12(2)(c)(ii)	Section 9.7	Public Evacuation
12(3)(a)(i)	Section 2.11	Reporting Requirements
12(3)(a)(ii)	Sections 2.4 and 2.5	2.4 Internal Notification Procedure 2.5 Incident Management Team Notification/Activation
12(3)(a)(iii)	Section 2.10, 2.11, and 2.13	2.10 External Notification – Confirmed Emergency Condition 2.11 Reporting Requirements 2.13 Other Notifications
12(3)(b)	Section 9.7	Public Evacuation
12(4)(a)	Section 3.0	3.0 Spill/Site Assessment
12(4)(b)	Sections 1.0, 3.0, 10.3.2	1.0 Responder Health and Safety 3.0 Spill/Site Assessment 10.3.2 Assessment of Adverse Effects
12(4)(c)	Section 10.0	Planning Section
12(4)(d)	Section 11.3	Facilities
12(4)(e)	Sections 2.1 and 2.2	2.1 Incident Verification 2.2 Incident Verification Flowchart
12(4)(f)	Sections 4.0 and 5.0	4.0 Spill Containment and Recovery 5.0 Protection of High Consequence Areas
12(4)(g)	Sections 4.0 and 5.0 and within the Geographic Response Plans	4.0 Spill Containment and Recovery 5.0 Protection of High Consequence Areas
Training	Section 17.0	Training and Exercises

15.2 Owner/Operator Information

Owner: Trans Mountain Corporation
2700, 300-5th Avenue S.W.
Calgary, Alberta T2P 5J2
Phone: 1-888-876-6711

Operator: Trans Mountain Pipeline
2700, 300-5th Avenue S.W.
Calgary, Alberta T2P 5J2
Phone: 1-888-876-6711

15.3 Environment, Health and Safety Policy

TRANSMOUNTAIN

Effective Date	March 6, 2023
Reviewed Date	March 6, 2023
Policy Owner	Director, EHS
Approver	President and CEO

ENVIRONMENT, HEALTH AND SAFETY POLICY

Policy Statement

The Environment, Health, and Safety (EHS) Policy serves to state and reinforce Trans Mountain's commitment to EHS principles in all aspects of its business activities.

Background

Trans Mountain is committed to ensuring that the principles of EHS remain a top priority wherever we operate. All employees and contractors working for, or on behalf of Trans Mountain must share in the commitment of protecting people and the environment, contributing to sustainable development by using materials, natural resources and energy efficiently, and promoting best practices to ensure we continue to earn the confidence of our customers, and the public.

Purpose

This Policy establishes the EHS principles by which Trans Mountain's business activities must be conducted and provides confirmation of Trans Mountain's commitment to the health and safety of our employees and contractors, the public, as well as to environmental protection and sustainability.

Applicability

This Policy applies to all employees, contractors, consultants, entities, companies, and offices under our operational control.

Guiding Principles

- We comply with all environmental, health and safety, laws, rules and regulations, not just because it is legally required, but also because we believe it is the responsible way to conduct our business.
- We have a systematic approach to environmental, health, and safety, (EHS) management designed to comply with the law and follow industry best practice through the implementation of our environmental management system and Life Saving Rules.
- We train our employees and contractors to be aware of and meet their responsibility for environmental protection, as well as health, safety and to achieve continuous performance improvement.
- We ensure all workers are aware of and understand their right to refuse unsafe work and the authority to stop any work they believe will endanger their health or safety, or that of others.
- We actively identify and manage risks to prevent or reduce possible adverse consequences from our operations and undertake a precautionary approach to EHS challenges.
- We have systems in place to ensure we are prepared for emergencies and procedures that coordinate our response plans with emergency response organizations to minimize the impacts to the environment and the communities where we operate.
- We assess and manage exposure of our employees and contractors to EHS hazards in our operations.
- We monitor and report EHS performance in support of our goals.
- We implement strategies to reduce our environmental footprint and meet our emissions reduction goals.
- We engage our leadership and resources to effectively implement and execute the principles above.

Compliance

All employees, contractors, and consultants working for, or on behalf of Trans Mountain shall comply with this Policy; any purposeful violation of this Policy may result in disciplinary action, including, where applicable, termination of employment/employment services agreement and/or legal action.

Review and Approval

This Policy, including any substantial revisions following its initial publication, shall be sanctioned by the Director, EHS and approved by Trans Mountain's President and Chief Executive Officer. Administrative modifications to this Policy and its appendices may be approved by the Director, EHS.

Dawn Farrell, President and CEO
Trans Mountain Corporation

TRANS MOUNTAIN INTERNAL USE ONLY

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16.0 REGULATORY BACKGROUND

16.1 Federal

Agency	Responsible For Contact	Reporting Requirements	Comments
CER/CTSB Single Window Occurrence Reporting	EH&S department	Effective September 01, 1999 the CER & CTSB have a single window incident reporting hot line. Reporting to this one number satisfies the requirement to advise both these Boards. Note: The same information as that detailed in the CER & CTSB sections below is required.	The single window initiative does not detract from the substantive reporting obligations set out in section 52 of the OPR-99. The information required by the CER under section 52 of the OPR 1999 must now be sent to the CTSB in accordance with the time frames established by the CER under the OPR-99 and the OPR-99 Guidance Notes.
Canada Energy Regulator Report to CER through Canadian Transportation Safety Board	EH&S Department	All "Significant Incidents" must be immediately reported to the CTSB reporting line via the Reporting Hotline telephone number (1-819) 997-7887) and through the CER's Online Event Reporting System (OERS) (https://apps.cer-rec.gc.ca/ers). A Significant Incident may be defined as; *(1) fatality; (2) missing person (as reportable pursuant to the Canadian Oil & Gas Drilling & Production Regulations (DPR) under the Canadian Oil & Gas Operations Act (COGOA) or the Oil & Gas Operations Act (OGOA); (3) a serious injury (as defined in OPR or TSB regulations); (4) a fire or explosion that causes a pipeline or facility to be inoperative; (5) a LVP hydrocarbon release in excess of 1.5 m3 that leaves company property or right f way; (6) a rupture (defined as an instantaneous release that immediately impairs the operation of a pipeline segment such that pressure of the segment cannot be maintained; (7) a toxic plume as defined in CSA Z662* Other events that do not meet the CER/CTSB criteria but are still deemed reportable (see	Typically, within 1 hour, a company should communicate all available factual information to the CTSB. The preliminary incident report should: (a) describe the incident, including the events leading up to and following the incident; (b) list all relevant agencies contacted and persons affected by the incident; (c) summarize any losses or impacts to people (e.g., injury, fatalities), environment (e.g., terrain, habitats, animals), production (e.g., interruption or reduction in service), and property; (d) identify any unsafe acts or conditions contributing to or causing the incident; (e) provide details on any emergency response; and (f) state any corrective actions taken or planned to be taken to minimize the effects of the incident. A detailed incident report should correct any information provided in the preliminary incident report and/or provide additional information. The detailed incident report should (a) provide any details regarding the failure mechanism and detailed analysis of the failed component (if necessary); (b) identify the underlying causes and contributing factors of the incident;

Agency	Responsible For Contact	Reporting Requirements	Comments
		below), must be reported via the OERS (https://apps.cer-rec.gc.ca/ers) within 24 hours of occurrence or discovery include; *(1) incidents as defined under the OPR, PPR, and DPR/Oil & Gas Drilling Regulations; (2) unauthorized activities under the CER Pipeline Crossing Regulations Part II; (3) emergency burning or flaring under PPR; (4) hazard identification under the PPR; (5) suspension of operations under the PPR; (6) near-misses under the DRP; (7) serious accidents or incidents under the Canadian Oil & Gas Geophysical Operations Regulations/Oil & Gas Geophysical Operations Regulations; (8) emergencies or accidents under the Canadian Oil & Gas Installations Regulation/Oil & Gas Installations Regulation; and (9) accidents, illness, and incidents under the Canadian Oil & Gas Diving Regulations/Oil & Gas Diving Regulations*	(c) update the progress of any corrective actions taken or planned to be taken to minimize the effects of the incident; and (d) state any actions taken or planned to be taken to prevent a similar incident. If the OERS is not available, all pipeline occurrences must be reported by telephone to the CTSB. CER Incident Line: 403-299-2773
Canadian Transportation Safety Board	EH&S Department	Verbal notification of "significant pipeline occurrences" to the CTSB must be made immediately. Such occurrences include*;* *(1) loss of human life; (2) a serious injury (defined in the Onshore Pipeline Regulations or the Transportation Safety Board Regulations); (3) a fire or explosion that causes a pipeline or facility to be inoperative; (4) a low vapour pressure hydrocarbon release in excess of 1.5 m³ that leaves company property or the right-of-way; (5) a rupture (an instantaneous release that immediately impairs the operation of a pipeline such that pressure cannot be maintained); or (6) a toxic plume*	The report must contain the following information: (a) the name of the operator; (b) the date and time of the occurrence; (c) the unique identifier of the pipeline or portion of pipeline, such as its name or number; (d) the specific pipeline components that malfunctioned or failed; (e) the location of the occurrence by reference to a specific designation point such as the operator's facility or the pipeline's kilometre post location; (f) the closest city, town or village to the occurrence site; (g) the number of persons who were killed or sustained serious injuries as a result of the occurrence; (h) a list of any commodity contained in or released from the pipeline and an estimate of the volume of commodity released

Agency	Responsible For Contact	Reporting Requirements	Comments
		(defined in Canadian Standards Association Standard Z662).	and recovered; (i) the actual or anticipated duration of any interruption of the operation of the pipeline or a portion of the pipeline; (j) a description of the occurrence, the events leading up to it and the extent of any damage, including the consequences on the pipeline or portion of the pipeline and on any other property and the environment; (k) a description of any action taken or planned to address the consequences of the occurrence; (l) a description of any action taken or planned to protect persons, property and the environment, including any evacuation as a result of the occurrence; (m) the name and title of the person making the report and the phone number and address at which they can be reached; and; (n) any information specific to the occurrence that the Board requires
Canadian Transportation Safety Board, Continued	EH&S Department	Other pipeline occurrences that must be submitted into the Online Event Reporting System (OERS) include *(1) a person is killed or sustains a serious injury; (2) the safe operation of the pipeline is affected by;* *a) damage sustained when another object came into contact with it, or* *b) fire or explosion or an ignition that is not associated with normal pipeline operations; (3) an event or an operational malfunction results in;* *a) an unintended or uncontrolled release of gas,* *b) an unintended or uncontrolled release of HVP hydrocarbons,* *c) an unintended or uncontained release of LVP hydrocarbons in excess of 1.5 m^3, or* *d) an unintended or uncontrolled release of a commodity other than gas, HVP hydrocarbons or LVP hydrocarbons;* *(4) there is a release of a commodity from the line pipe*	The Online Event Reporting System (OERS) automates the single-window pipeline occurrence notification process that was established by the CTSB and the Canada Energy Regulator (CER) in 1999. Starting 1 January 2015, the OERS must be used to report all pipeline occurrences. Except for significant occurrences as listed in the previous section, telephone notification will no longer be required. If the OERS is not available, all pipeline occurrences must be reported by telephone to the CTSB. Information must be entered in the OERS even if the occurrence has been reported by telephone. Incident Line 819-997-7887, Fax 819-953-7876, email pipelinenotifications@tsb.gc.ca

Agency	Responsible For Contact	Reporting Requirements	Comments
		body; (5) the pipeline is operated beyond design limits or any operating restrictions imposed by the Canada Energy Regulator; (6) the pipeline restricts the safety operation of any mode of transportation; (7) an unauthorized third party activity within the safety zone poses a threat to the safe operation of the pipeline; (8) a geotechnical, hydraulic or environmental activity poses a threat to the safe operation of the pipeline; (9) the operation of a portion of the pipeline is interrupted as a result of a situation or condition that poses a threat to any person, property or the environment; or (10) an unintended fire or explosion has occurred that poses a threat to any person, property or the environment.	
Environment Canada **For Environmental Emergencies pertaining to Gasoline**	Liaison Officer	Under requirements of the Environmental Emergency Regulations, notification of an environmental emergency is required for all substances which are accidentally released in quantities which exceed the criteria specified by Environment Canada in the regulations; notified through the appropriate provincial coordinating agency. At least 200 litres of Gasoline. Alberta Alberta Ministry of Environment Telephone: 780-422-4505 or 1-800-222-6514 British Columbia: 800-663-3456 The 24-hour, toll free number connects with the Emergency Coordination Centre (part of Emergency Management BC)	The verbal report should include the following information as it is known at the time of the report: (a) the reporting person's name and telephone number at which the person can be immediately contacted (b) the name of the person who owns or has charge, management or control of the substance immediately before the environmental emergency (c) the date and time of the release (d) the location of the release (e) the name/ UN number of the substance (f) the estimated quantity (g) the means of containment (from which the substance was released) and a description of its condition (h) the number of deaths and injuries resulting (i) the surrounding area affected and potential impact of the release (j) a brief description of the circumstances leading to the release (k) the cause of the release (if known) (l) details of the actions taken or further actions contemplated (m) names of the agencies notified or on-scene (n)

Agency	Responsible For Contact	Reporting Requirements	Comments
			other pertinent information. Under requirements of the E2 Regulation a written report should be made within 30 days.
Environment and Climate Change Canada (ECCC)	EH&S Department	*For spills or deleterious substances (i.e., silt) of any size that enter (or may enter) waters frequented by fish (includes creeks, ditches, freshwater streams, tidal and marine waters)* ECCC should be notified through the appropriate provincial coordinating agency. Alberta Ministry of Environment Telephone: 780-422-4505 or 1-800-222-6514 British Columbia: 800-663-3456 The 24-hour, toll free number connects with the Emergency Coordination Centre (part of Emergency Management BC	Provides advice to federal and provincial agencies for spill response and protection of sensitive habitat. ECCC administers Section 36(3) (pollution provisions) of the Fisheries Act. Under ECCC's Notification Regulations, Alberta Ministry of Environment and Emergency Management BC serve as the reporting window for an incident and will notify ECCC as well as other federal and provincial departments/ministries and agencies, such as the Canadian Coast Guard and BC Ministry of Environment.
Transport Canada	Liaison Officer	*For spills involving transportation of dangerous goods (other than in the pipeline e.g., tanker truck).* Transport of Dangerous Goods Regulation. Call local authority (911) & 1-888-CANUTEC (1-888-226-8832) or 613-996-6666	
Canadian Coast Guard & Transport Canada (Marine Spill)	Incident Commander	All marine spills must be reported verbally as soon as feasible to the Canadian Coast Guard at 1-800-889-8852 **Marine Communications and Traffic Services (MCTS)** Marine Channel 16 VHF **Department of Transport Canada Marine Safety Office** Office: 604-666-3636 Fax: 604-666-9177 All marine spills must be reported in writing as soon as feasible. Form available in the Pipeline ERP Manual in section (2.12) page 12 (External Agency Reporting Form)	The report must include the following information: (a) the identity of any vessel involved (b) the name and address of the oil handling facility (c) the name and position of the person who is responsible for implementing and coordinating the oil pollution emergency plan (d) the date, time, and location of the discharge or the estimated date, time and location of the anticipated discharge (e) the nature of the discharge or anticipated discharge, including the type and estimated quantity of oil involved (f) a description of the response actions to be taken (g) on-scene conditions (h) any other relevant information.

Agency	Responsible For Contact	Reporting Requirements	Comments
Transport Canada (Transportation of Dangerous Goods Program (TDG))	Liaison Officer	*For spills involving transportation of dangerous goods (other than in the pipeline or from OHF operations e.g., tanker truck).* Transport of Dangerous Goods Regulation Call local authority (911) & 1-888-CANUTEC (1-888-226-8832) or 613-996-6666	Information to report includes: (a) the name and contact information of the person making the report; (b) in the case of a release of dangerous goods, the date, time and geographic location of the release;(c) in the case of an anticipated release of dangerous goods, the date, time and geographic location of the incident that led to the anticipated release; (d) the mode of transport used; (e) the shipping name or UN number of the dangerous goods; (f) the quantity of dangerous goods that was in the means of containment before the release or anticipated release; (g) in the case of a release of dangerous goods, the quantity of dangerous goods estimated to have been released; and (h) if applicable, the type of incident leading to the release or anticipated release, including a collision, roll-over, derailment, overfill, fire, explosion or load-shift.
Fisheries and Oceans Canada (DFO)	EU Lead	*Emergency Authorizations Under the Fisheries Act* Call DFO 1-855-852-8320	In emergency response situations where Trans Mountain needs to undertake actions which impact or may impact aquaculture activities, Trans Mountain shall ensure that the required emergency authorizations are sought from Fisheries and Oceans Canada. Additionally, Trans Mountain shall take steps to inform Canada Energy Regulator that such authorizations have been requested and the subsequent outcome of those requests.

16.2 Provincial – Alberta

Agency	Responsible For Contact	Reporting Requirements	Comments
Alberta Environment & Parks and Alberta Energy Regulator	Liaison Officer	*Spills on the pipeline right-of-way or lands not owned by the Company may be reportable to AER. Generally, spills of refined products in excess of 200 litres and unrefined products in excess of 2m^3, and which have or may have an adverse effect on the environment are reportable.* Note: Contact Law Department before notification for spills on company owned land or for clarification of "reportable" thresholds. Environmental Protection and Enhancement Act (ss. 99 and 100), Release Reporting Regulation; Oil and Gas Conservation Act and Regulations.	Notifications for all environmental emergencies, including spills, can be made by one call to the Alberta Energy & Environment 24 Hour Response Line (1-800-222-6514). Alberta Environment & Parks will notify other agencies, including Environment and Climate Change Canada (ECC), and Fisheries and Oceans Canada.
Alberta Environment & Sustainable Resource Development	Liaison Officer	*In certain areas and at certain times of the year, a fire caused by a leak from the pipeline or by construction or maintenance activities which the Company is unable to extinguish must be reported to a forest officer, the municipality, or the RCMP.* Alberta Forest and Prairie Protection Act.	Wildfires should be reported through the 24-hour Wildfire Reporting Line at Toll Free: 310-FIRE (3473)

16.3 Provincial – British Columbia

Agency	Responsible For Contact	Reporting Requirements	Comments
Emergency Management BC 800-663-3456	Liaison Officer	*For spills equal or greater than 100 litres (0.1 m^3) of petroleum* (***does not apply to CER regulated facilities***). The 24-hour, toll free number connects with the Emergency Coordination Centre (part of Emergency Management BC).	Notifications for all environmental emergencies, including spills, can be made by one call to EMBC at (800) 663-3456. Spill Reporting Regulation, Waste Management Act (Aug/ 1990). EMBC will notify other agencies including BC Ministry of Environment, Lands & Parks, Environment Canada, Canadian Coast Guard, BC Oil and Gas Commission[15], and affected municipal governments.
Ministry of Forests, Lands, Natural Resource Operations & Rural Development	Liaison Officer	*In the event of fire associated with pipeline maintenance work or a leak.* The 24-hour, toll free number connects with the Emergency Coordination Centre (part of Emergency Management BC).	Forest Fire Practices Code (Bill 40, Section 86, 88- duty to report and control fires). Fire Prevention and Suppression Regulation.
BC Oil & Gas Commission	Liaison Officer	*Permitting from the OGC* The 24-hour, toll free number connects with the Emergency Coordination Centre (part of Emergency Management BC).	In emergency response situations where Trans Mountain needs to undertake actions in British Columbia which results or may result in the alteration of watercourses, fish collection/isolation or related consequences, Trans Mountain shall ensure the required permitting is obtained from the British Columbia Oil and Gas Commission
British Columbia Ministry of Environment & Climate Change Strategy (BC MoE) 800-663-3456	Liaison Officer	*Responsible for the effective protection, management and conservation of B.C.'s water, land, air and living resources.* *The 24-hour, toll free number connects with the Emergency Coordination Centre (part of Emergency Management BC).* *In the event that a spill originating from any Trans Mountain Expansion Project is confirmed to contaminate drinking water, the company must notify BC MoE within the following time periods:*	EMBC will advise BC MoE of reportable spills. BC MoE provides advice on response and protective measures to minimize the environmental impacts of spills. Approvals for waste storage, treatment and disposal should be coordinated through this agency. For spills that meet provincial reporting criteria there is a requirement per the BC Spill Reporting Regulation to submit a written End-of-spill report within 30 days of the emergency response completion date. In addition, the BC Ministry of Environment and Climate Change Strategy may order a written Lessons-Learned Report be submitted within 6

[15] EMBC Discretion to include BC Oil and Gas Commission on incident notification and update list.

Agency	Responsible For Contact	Reporting Requirements	Comments
		• *As soon as practicable;* • *Within 72 hours, whichever is less.*	months after the emergency response completion date for the spill.
BC Environment Assessment Office (BC EAO) 800-663-3456	Liaison Officer	*In the event that a spill originating from any Trans Mountain Expansion Project confirmed to contaminate drinking water, the company must notify BC EAO within the following time periods:* • *As soon as practicable;* • *Within 72 hours, whichever is less.* Notified or accessed through the appropriate provincial coordinating agency- EMBC *The 24-hour, toll free number connects with the Emergency Coordination Centre (part of Emergency Management BC).*	

17.0 TRAINING AND EXERCISES

17.1 Training

Trans Mountain ensures that employees receive the training necessary to protect themselves, the public, the local community and the environment during an incident. Training will be provided to enable employees to perform their designated emergency responsibilities. Formal training will be reinforced by a program of regular emergency response exercises. Trans Mountain will make reasonable efforts to coordinate training and exercising plans with those of key outside emergency agencies.

There are several types of training available to Trans Mountain employees for emergency response, at a minimum all employees who could be involved in emergency response will receive Incident Command System level 100 training, and additionally field operations staff will receive the following training: Initial Response, Spill Response Tactics and Decontamination Response Tactics. Some employees will receive HAZWOPER training if they could reasonably be asked to respond to incidents in Washington State. Employees will also receive training on the Emergency Management Program, including the implementation and use of Emergency Response Plans.

Training records are the joint responsibility of the Operations Training Group, and Manager, Emergency Management. All training is conducted in accordance with the requirements as set out in the Integrated Safety and Loss Management System and the Emergency Management Exercise and Training Plan.

17.2 Exercises

Exercises allow responders to practice the knowledge and skills received in training, identify areas of future training priority, identify improvement opportunities for emergency procedures and/or equipment, and provides opportunity to share exercise learning's to ensure a smooth response in the unlikely event of an incident. Exercises also provide opportunity for Trans Mountain responders to engage with indigenous community responders and those from federal, provincial, and local agencies.

Members of the various response teams will participate in exercises each year that are relevant to their individual operations as outlined in the *Emergency Management Exercise and Training Plan*. At a minimum each district will participate in one exercise per year which may be a deployment, tabletop or functional exercise. The exercise may be organized by Trans Mountain or may be organized by a response partner.

The Incident Management Team (IMT) will participate in one Level 3 (all resources deployed) Full Scale Exercise per year, the location of which will change from year to year. Full Scale Exercises will be rotated throughout each of the Operations Districts and within the communities in which Trans Mountain operates. The Full-Scale Exercises will utilize a diverse range of emergency scenarios to ensure response capabilities are confirmed under varying conditions. The IMT is the same for the Trans Mountain Pipeline ERP, Westridge Marine Terminal ERP, Terminals ERP and the Trans Mountain (Puget Sound) Pipeline ERP; therefore, the IMT will be trained / exercised annually regardless of the ERP used for the actual exercise.

18.0 PLANNING STANDARD COMPLIANCE

As required by Condition 31, Trans Mountain has conducted a risk assessment and gap analysis, herein after referred to as a capacity assessment, to determine the need for additional emergency response equipment, trained responders, and operational support, herein after referred to as response support, and to confirm the most effective locations for placement of resources to meet target response times based on a worst-case spill along the pipeline, including all facilities.

Trans Mountain's Emergency Management Planning Standard (Planning Standard) forms the basis for the capacity assessment. The Planning Standard is a foundational component of the Emergency Management (EM) Program, as it establishes desired response outcomes, including target response times, to be used for response planning to ensure a prompt, safe, and effective response to any emergency. The Planning Standard forms the basis for Trans Mountain's emergency response plans, procedures, and processes.
The Planning Standard:

- Outlines the hazard assessment process, which includes a hazard listing (spill, fire, explosion);
- Specifies the quantity and location of response equipment and personnel needed to respond within maximum target response times; and
- Defines maximum target response times to be used for response planning to warrant a prompt, safe and effective response to an emergency.

Maximum target times are based, in part, on a variety of regulatory requirements. Actual response times are reviewed after any event requiring activation of Trans Mountain's emergency response plan to confirm Trans Mountain has resources and equipment placed in the appropriate location to meet the target response times.

Trans Mountain's Planning Standard is guided by industry best practices and federal regulation. It is primarily based on Washington State Administrative Code, United Stated Department of Transportation – Pipeline and Hazardous Materials Safety Administration (EPA-PHMSA) standards, and the Canada Shipping Act Response Organizations and Oil Handling Facilities Regulations requirements for response organization response times.

As per Canada Shipping Act Response Organizations and Oil Handling Facilities Regulations (2019 95-405; 2019, Part 8 Section 168(1)), Trans Mountain must have an agreement with a Response Organization. The Canada Shipping Act Environmental Response Regulation Part 2 Clause 13(2) requires Trans Mountain to have resources and equipment available for immediate response, including for the purposes of containing and controlling product, within one hour and for the purposes of recovery and clean up, within six hours.

With operations in Washington State, Trans Mountain must identify in its response plan the resources, including type and amount, available to respond within a specific time after discovery of a spill, or to mitigate the substantial threat of a worst-case discharge, as outlined by the EPA-PHMSA (49 CFR 194.115) and the Washington Administrative Code (2006 Number 173 Chapter 182 Section 365).

In a jurisdiction where a regulatory authority has a more stringent planning standard, that standard shall apply. Trans Mountain applies the most stringent standard to the Planning Standard across its emergency management operations.

Current emergency response capabilities and equipment are strategically placed to meet the Planning Standard and include:

- Early detection systems/alarms and firefighting equipment for spills and fires (storage tanks and pump stations);
- Contracted, on-call third party responders to a support tank fire response at Terminals;
- Personnel and company vehicles to respond to spill and fires (terminal storage tanks, pump stations and Right-of-Way); and
- Oil Spill Containment and Response (OSCAR) units strategically placed to ensure rapid response along the pipeline Right-of-Way and at facilities.

18.1 Worst-Case Spill Volume Calculations

To determine equipment placement and requirement, Trans Mountain utilizes the worst-case discharge volume. Each operational district has its own worst-case discharge volume (See Table 4), represented by the highest potential product discharge volume in that district. The greatest volume among the criteria listed below is the worst-case discharge volume for that operational district. The criteria evaluated are:

1. The maximum historic discharge from the pipeline in that Operational District;
2. The largest single breakout tank or battery of breakout tanks, without a secondary containment system; or
3. The maximum time to detect the release (detection time), plus the maximum shutdown time (shutdown time) multiplied by the maximum flow rate per hour (flow rate), plus the largest line drainage volume after shutdown (line drainage).

Regarding criteria 1, the quantity of the largest historic discharge from the existing pipeline in each operational district is described in Table 2.

Table 2: Largest historic pipeline discharge by district[16]

Operational District	Detected	Spill Volume (m^3)	Spill Volume (bbl.)	Location	Substance
Alberta	Apr. 29, 1966	1,110	6,982	MP 239	Crude Oil
North Thompson	May 27, 1965	44	277	MP 292.5	Crude Oil
Kamloops	Apr. 26, 1971	475	786.3	MP 581.3	Crude Oil
Sumas	Jul. 24, 2007	232	1,459	Westridge Delivery Line	Crude Oil - Synthetic

Regarding criteria 2, there are no breakout tanks or batteries of breakout tanks along Line 1 or Line 2 without secondary containment. Therefore, this value is zero.

18.1.1 Calculation Process

18.1.1.1 Pipeline Outflow Analysis Overview

The objective of the analysis is to calculate outflow volumes based on the valve locations, leak detection, isolation, and valve actuation parameters. In addition, the outflow volumes were provided to a consultant to perform an overland spill modeling assessment to assess the potential surrounding spill impact that

[16] As obtained from: https://www.transmountain.com/spill-history as of August 2022

would be predicted in the event of a hypothetical worst-case product release, corresponding to a full bore opening that is equal to the internal diameter of the pipeline located on the bottom (6 o'clock position) of the pipe.

18.1.1.2 Outflow Volume Analysis

The analysis employs an outflow volume calculation to determine the potential "worst-case" product releases corresponding to the updated valve configurations. The outflow calculation utilizes valve placement locations, valve closure times, product specifications, and the elevation profile of the pipeline as a basis for estimating the potential worst-case product release.

The outflow profile is established by plotting the calculated product release volumes at 30-meter intervals along the pipeline centerline. This analysis applies an outflow volume calculation to determine the simulated worst-case product release, corresponding to a full bore opening that is equal to the internal diameter of the pipeline located on the bottom (6 o'clock position) of the pipe.

18.1.1.3 Outflow Modeling

The process of assessing a loss of containment requires a conservative and useful prediction of the amount of product that may be lost in the event of a failure and outflow modelling is the process by which these predictions are made. By interpreting the operational parameters into appropriate hydraulic considerations, a leak and resulting spill can be modeled at points along the centerline. The results of these simulations are combined to form a profile for the entire pipeline showing areas of higher and lower potential outflow.

The amount of product released during a leak is dependent on the local hydraulic pressure at the leak site over the duration of the shutdown procedure, along with the geometry of the pipeline. The conditions affecting the outflow of product during a leak occur in four distinct phases: Phase 1 – Full Operation; Phase 2 – Pump Shutdown; Phase 3 – Valve Closure; and Phase 4 - Gravity Drainage.

18.1.1.4 Outflow Phases

Phase 1 – Full Operation

In the event of a release, the pumps are in full operation and product flows at a constant rate until the pipeline is shutdown.

The amount of product lost during Phase 1 is calculated by determining the leak rate at the release site and multiplying by the duration of the entire first phase. The first phase is comprised of two periods. The detection period is the amount of time required to detect that a leak has occurred, and the troubleshooting period is the amount of time required by operations staff to ensure that a leak is occurring and to take appropriate action.

<u>Detection Period</u>

The time required to detect a leak is dependent on the size of the leak. This model considers a leak to be detected in one of three ways: an instantaneous drop in pressure, the accumulation of released product, or detection along the Right-of-Way.

If an instantaneous pressure drop is sufficient, the result is the immediate detection of a leak. If the leak is too small to be noticed immediately, the leak is detected when the amount of lost product reaches a

defined threshold. The leak detection time is capped by the maximum amount of time that could elapse before a leak would be noticed by normal above-ground activities on the Right-of-Way.

Troubleshooting Period

The amount of time required by operations staff before initiating a shutdown is determined by the operator.

Phase 2 – Pump Shutdown

This phase begins after detecting a leak and initiating shutdown of the pipeline. The calculations in this phase are conducted at time intervals over the duration of the pump shutdown phase. Discrete values for the pump pressure and flow rate of the pipeline over time form a shutdown profile. At each time interval, the value of flow rate and pressure at the pump station is interpolated and used to determine the local pressure at the leak site and consequently the leak rate.

Phase 3 – Valve Closure

In this phase, the pumps have been shut off and the product flows under the force of gravity alone. As the valves close during this phase, the flow rate is restricted. Like Phase 2, the third phase calculates the local pressure at the leak site at discrete time intervals. The aperture is interpolated from the valve closure profile associated with each valve and consequently the flow coefficient is determined from the aperture.

Phase 4 – Gravity Drainage

After all valves are closed, the bulk flow of product is stopped. However, the section contained by the closed valves can drain by gravity through the orifice. This phase is modeled statically, and it is assumed that all product that can drain in this manner.

When product is drained in this way it can be replaced either by air or by a vacuum. The pressure of the atmosphere can uphold a column of product before a vacuum is formed. The elevation of product upheld from atmospheric pressure is known as the column height. Drainage of any segment will be expected to continue until a significant local maximum is reached. It is important to consider the difference between minima and maxima when determining if a maximum is significant. If the difference between a local maximum and an adjacent local minimum is less than the internal diameter of the pipeline, then product drainage may continue until the next local maximum.

Figure 1 shows the effect of the relation between the elevation changes and the inner diameter of the pipeline, where Case A forms a seal in the line where drainage cannot pass the low point. In Case B, the elevation differential is not sufficient to prevent further drainage.

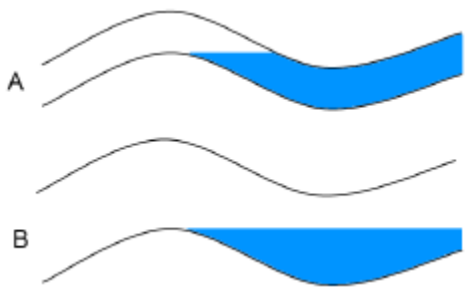

Figure 1: Seal caused by internal diameter differences

18.1.1.5 Worst-Case Discharge Calculation Sources

The time to detect an unintentional release from Line 1 or Line 2 is approximately six minutes. See Phase 1 in Table 3 for the volumes associated with the Detection/Troubleshooting period. The maximum time to shut down Line 1 or Line 2 is approximately nine minutes, including four minutes for pump shutdown and five minutes for valve closure. See Phase 2 and Phase 3 for the volumes associated with the Pump Shutdown and Valve Closure period. The maximum volume that could be left in the section between any Line 1 or Line 2 valves is noted in Phase 4 Gravity Drainage.

Table 3: Worst-case discharge calculation sources

LINE 1

Operational District	WCD Scenario	KP	Phase 1 Outflow (bbl/m³) *Detection/Troubleshooting Period*	Phase 2 Outflow (bbl/m³) *Pump Shutdown*	Phase 3 Outflow (bbl/m³) *Valve Closure*	Phase 4 Outflow (bbl/m³) *Gravity Drainage*	Total Outflow (bbl/m³)
Alberta	WCD - Max	339	1,279 bbl. / 203 m³	682 bbl. / 108 m³	8,497 bbl. / 1,351 m³	11,228 bbl. / 1,785 m³	21,687 bbl. / 3,448 m³
North Thompson	WCD - Max	458	1,279 bbl. / 203 m³	682 bbl. / 108 m³	3,417 bbl. / 543 m³	10,641 bbl. / 1,692 m³	16,019 bbl. / 2,547 m³
Kamloops	WCD - Max	897	1,279 bbl. / 203 m³	682 bbl. / 108 m³	17,092 bbl. / 2,717 m³	1,106 bbl. / 176 m³	20,160 bbl. / 3,205 m³
Sumas	WCD - Max	1115	1,279 bbl. / 203 m³	682 bbl. / 108 m³	10,185 bbl. / 1,619 m³	65 bbl. / 10 m³	12,211 bbl. / 1,941 m³

LINE 2

Operational District	WCD Scenario	KP	Phase 1 Outflow (bbl/m³) *Detection/Troubleshooting Period*	Phase 2 Outflow (bbl/m³) *Pump Shutdown*	Phase 3 Outflow (bbl/m³) *Valve Closure*	Phase 4 Outflow (m³) (bbl/m³) *Gravity Drainage*	Total Outflow (bbl/m³)
Alberta	WCD - Max	359	1,974 bbl. / 314 m³	1,053 bbl. / 167 m³	5,153 bbl. / 819 m³	12,880 bbl. / 2,048 m³	21,060 bbl. / 3,348 m³
North Thompson	WCD - Max	710	1,974 bbl. / 314 m³	1,053 bbl. / 167 m³	3,977 bbl. / 632 m³	12,492 bbl. / 1,986 m³	19,495 bbl. / 3,100 m³
Kamloops	WCD - Max	743	1,974 bbl. / 314 m³	1,053 bbl. / 167 m³	5,718 bbl. / 909 m³	14,398 bbl. / 2,289 m³	23,142 bbl. / 3,679 m³
Sumas	WCD - Max	1118	1,974 bbl. / 314 m³	1,053 bbl. / 167 m³	2,187 bbl. / 348 m³	15,146 bbl. / 2,408 m³	20,359 bbl. / 3,237 m³

18.1.2 Worst-Case Discharge Scenarios

During consultation on the EM Program, Trans Mountain received input to enhance its Program by considering, as the worst-case spill volume, product release from both Line 1 and Line 2 at the same location in the Right-of-Way (ROW). The input was accepted and incorporated into Trans Mountain's Planning Standard. For each operational district, three possible worst-case discharge scenarios were examined:

Scenario A: The worst-case discharge on Line 1 plus associated discharge from Line 2.
Scenario B: The worst-case discharge on Line 2 plus associated discharge from Line 1.
Scenario C: The largest possible combined discharge (not necessarily involving maximum discharge values) from Line 1 and Line 2 (where the pipelines are within 50 m of one another).

The results of the worst-case discharge volume calculations for the three scenarios in each of the Trans Mountain operational districts is presented in Table 4. These volumes were used in the calculation of the adequacy of spill response equipment specifically when evaluating product recovery and storage.

Table 4: Worst-case discharge volume

District	Scenario	Line 1 (bbl/m^3)	+	Line 2 (bbl/m^3)	=	Total (bbl/m^3)*
Alberta	A	21,687 bbl. / 3,448 m^3	+	21,060 bbl. / 3,348 m^3	=	**42,747 bbl. / 6,796 m^3**
	B	21,687 bbl. / 3,448 m^3	+	21,060 bbl. / 3,348 m^3	=	**42,747 bbl. / 6,796 m^3**
	C	21,687 bbl. / 3,448 m^3	+	21,060 bbl. / 3,348 m^3	=	**42,747 bbl. / 6,796 m^3**
North Thompson	A	16,019 bbl. / 2,547 m^3	+	15,916 bbl. / 2,530 m^3	=	**31,935 bbl. / 5,077 m^3**
	B	10,912 bbl. / 1,735 m^3	+	19,495 bbl. / 3,099 m^3	=	30,407 bbl. / 4,834 m^3
	C	16,019 bbl. / 2,547 m^3	+	15,916 bbl. / 2,530 m^3	=	**31,935 bbl. / 5,077 m^3**
Kamloops	A	20,160 bbl. / 3,205 m^3	+	19,249 bbl. / 3,060 m^3	=	39,409 bbl. / 6,265 m^3
	B	9,935 bbl. / 1,580 m^3	+	23,142 bbl. / 3,679 m^3	=	33,078 bbl. / 5,259 m^3
	C	18,650 bbl. / 2,965 m^3	+	22,026 bbl. / 3,502 m^3	=	**40,676 bbl. / 6,467 m^3**
Sumas	A	12,211 bbl. / 1,941 m^3	+	12,849 bbl. / 2,043 m^3	=	25,060 bbl. / 3,984 m^3
	B	8,918 bbl. / 1,418 m^3	+	20,359 bbl. / 3,237 m^3	=	**29,278 bbl. / 4,655 m^3**
	C	8,918 bbl. / 1,418 m^3	+	20,359 bbl. / 3,237 m^3	=	**29,278 bbl. / 4,655 m^3**

The largest maximum combined discharge volume for each operational district is highlighted in **orange.*
***Scenario A:** The worst-case discharge on Line 1 plus associated discharge from Line 2.*
***Scenario B:** The worst-case discharge on Line 2 plus associated discharge from Line 1.*
***Scenario C:** The largest possible combined discharge (not necessarily involving maximum discharge values) from Line 1 and Line 2 (where the pipelines are within 50 m of one another).*

18.2 Spill Equipment Capacity Assessment

Based on the Planning Standard, Section 9.5.1 Planning Standard, Trans Mountain conducted a capacity assessment to confirm that the placement of oil spill containment, recovery, and storage equipment along the pipeline route satisfies the response time targets set out in the Planning Standard (See Table 5). The assessment examined the access routing between pre-identified Control Points and Trans Mountain facilities where equipment is stored and from which personnel are dispatched. The assessment also determined whether there were locations along the pipeline route where additional equipment was

required to meet the Planning Standard response time targets. Response times are based on a maximum travel speed of 65km per hour to account for traffic and inclement weather.

Table 5: Spill response equipment requirements by travel time, boom length, oil recovery rate and minimum storage

Travel Time (Hours)	Boom (Feet)	Oil Recovery Rate (%)	Minimum Storage of Recovered Product (Barrels)
2	2,000	n/a	n/a
6	5,000	10%	1xEDRC
12	20,000	15%	2xEDRC
24	as needed	20%	3xEDRC
48+	as needed	25%	as needed

** Effective Daily Recovery Capacity (EDRC) - daily capacity of oil recovery devices that accounts for limiting factors.*

18.2.1 Boom Capacity

In accordance with the Planning Standard, Trans Mountain can have in place anywhere along the line, 2,000 feet of boom within two hours, an additional 5,000 feet within 6 hours, and an additional 20,000 feet, for a total of 27,000 feet of boom within 12 hours, as well as appropriate response personnel for boom deployment. See Table 6.

Accounting for the boom available from each of Trans Mountain's facilities, and the coverage extent associated with each facility, it was determined that Trans Mountain can meet the 2-hour and 6-hour Planning Standard using its own inventory. Trans Mountain has committed to maintaining the 6-hour requirements with its own inventory, relying on external partners for any shortfall required to meet the 27,000 ft within the 12-hour requirement, as well as additional supplies, as needed, during response.

Third-party boom is available from Western Canadian Spill Services and Western Canada Marine Response Corporation. As per the Planning Standard, "Advanced Response Equipment" arrives within the 12-hour mark and includes equipment from third parties.

Table 6: Available boom

PLANNING STANDARD REQUIREMENT	Alberta	North Thompson	Kamloops	Sumas
2,000ft boom (min) assembled within 2 hrs	2,100 - 5,100ft	2,350 - 8,550ft	7,300 - 13,825ft	7,200 - 13,825ft
7,000ft boom (min) assembled within 6 hrs	7,200 - 15,750ft	14,100 - 19,475ft	17,375 - 19,475ft	15,025 - 17,375ft
27,000ft boom (min) assembled within 12 hrs	15,750 - 24,575ft	24,575ft	24,575ft	19,475 - 21,825ft
	plus >20,000ft from third-party resources			

18.2.2 Recovery Capacity

In addition to boom, the Planning Standard also outlines the associated oil recovery rates and minimum storage volume, as described in Table 7. Oil recovery rate is the amount of oil that can be recovered in 24 hours, expressed as a percentage of the worst-case spill volume in barrels. This number is the Planning Standard for which Trans Mountain assesses and establishes product skimming capacity. Manufacturers provide a rating of skimming equipment's recovery capacity. Trans Mountain, as a measure of conservatism, assumes only 20 percent of the manufacturers skimming efficiency rate. For example, the skimmers contained in each OSCAR have a product skimming capacity of 32,803 barrels per day according to manufacturer standards, whereas Trans Mountain assumes a skimming capacity of 6,560 barrels per day. Together these amounts represent the Effective Daily Recovery Capacity (EDRC), which is the calculated daily capacity of oil recovery devices, accounting for limiting factors such as weather.

The largest maximum combined discharge volume identified for each operational district (Table 4) was used to calculate the minimum available recovery capacity (m^3) required by the Planning Standard for the 6-hour, 12-hour, 24-hour, and 48-hour timeframe (Table 7).

Table 7: Required minimum and actual daily recovery capacity (m^3) by district

	Alberta		North Thompson		Kamloops		Sumas	
PLANNING STANDARD REQUIREMENT	**Required**	**Actual**	**Required**	**Actual**	**Required**	**Actual**	**Required**	**Actual**
10% of worst-case discharge within 6 hrs	680	1,565 - 3,130	508	3,130 - 4,139	647	3,357 - 4,139	466	2,574 - 3,357
15% of worst-case discharge within 12 hours	1,020	3,130 - 4,922	762	4,922	970	4,922	699	4,139 - 4,922
20% of worst-case discharge within 24 hours	1,360	4,922	1,015	4,922	1,293	4,922	931	4,922
25% of worst-case discharge within 48 hours	1,700	4,922	1,269	4,922	1,617	4,922	1,164	4,922

By calculating the recovery capacity of equipment (e.g., oil skimmers) located at each Trans Mountain facility, and the coverage extent associated with each facility, it was determined that Trans Mountain has sufficient skimmers in each operational district to recover volumes greater than those associated with the 6-hour, 12-hour, 24-hour, and 48-hour response time targets.

18.2.3 Storage Capacity

Once the product has been skimmed, it must be contained and stored. Trans Mountain uses a variety of storage methods, including temporary on-site mobile storage (drums, bags, frac or poly tanks, vacuum trucks, et al.), waste handling facilities, and temporary storage facilities on Trans Mountain property.

The minimum daily recovery capacity (m^3) identified for each operational district (Table 7) was used to calculate the minimum storage capacity (m^3) required by the Planning Standard for the 6-hour, 12-hour, 24-hour timeframe (Table 8).

Table 8: Required and actual storage capacity by district (m^3)

	Alberta		North Thompson		Kamloops		Sumas	
PLANNING STANDARD REQUIREMENT	**Required**	**Actual**	**Required**	**Actual**	**Required**	**Actual**	**Required**	**Actual**
1 x EDRC* within 6 hours	680	2,101 - 4,504	508	4,209 - 4,506	647	3,310 - 4,506	466	3,302 - 3,310
2 x EDRC within 12 hours	2,039	4,504 - 5,410	1,523	5,410	1,940	5,410	1,397	4,506 - 5,136
3 x EDRC within 24 hours	4,078	5,410	3,046	5,410	3,880	5,410	2,793	5,410

** Effective Daily Recovery Capacity (EDRC) - daily capacity of oil recovery devices that accounts for limiting factors.*

Through calculating the storage capacity of equipment located at each Trans Mountain facility, and the coverage extent associated with each facility, it was determined that Trans Mountain storage capacity for each Control Point exceeds the minimum storage capacity requirements associated with the 6-hour, 12-hour, 24-hour time targets.

18.3 Equipment

Trans Mountain's extensive inventory of response equipment, as per Section 9.5 Emergency Equipment and Response Times, is mustered along the pipeline route and strategically positioned based on the target response times described in the Planning Standard. The fleet of emergency response equipment positioned at Trans Mountain Facilities and Stations along the line is made up of boats, trailers containing boom, skimmers, and other specialized pieces, all designed for response, containment, and recovery and curated to meet the requirements of the Planning Standard. Equipment stored at secure Trans Mountain locations allows for accessibility 24 hours a day, 7 days a week. The locations of these facilities ensures that in the event of a spill, the response times outlined in the Planning Standard can be met.

18.4 Trained Responders

Trans Mountain maintains a competency-based trained workforce who are available to respond to an emergency at all times. The staffing levels in each operational district, including operations and pipeline integrity personnel, allow Trans Mountain to have a minimum of eight trained field responders on site, in addition to the initial Trans Mountain responder, within six hours of the confirmation of an incident. As outlined in the Planning Standard, minimum training requirements for all field personnel include Incident Safe Approach, Incident Command System 100, and basic firefighting and spill response techniques.

In the event of an emergency, Trans Mountain initially stands up the following personnel to a virtual Incident Command Post to begin response actions: Incident Commander, Deputy Incident Commander, Operations Section Chief, Deputy Operations Section Chief, Planning Section Chief, Resource Unit Leader, Situation Unit Leader, Environment Unit Leader, Logistics Section Chief, Finance Section Chief, Liaison Officer, Information Officer, and Safety Officer. As soon as the physical Incident Command Post

is established, it would serve as the central location from which the response would be managed, and the Incident Command System structure is then scaled and staffed appropriately to the level and complexity of the event.

At all times, Trans Mountain can call upon a depth of, at minimum, six staff members who are trained and qualified to fill any of the following Incident Management Team positions: Incident Commander, Safety Officer, Liaison Officer, Operations Section Chief, Planning Section Chief, Logistics Section Chief, and Environment Unit Leader. Additionally, at least five possible staff members can be called upon to fill each of the following positions: Finance Section Chief, Staging Area Manager, Situation Unit Leader, and Documentation Unit Leader. All other Incident Management Team positions can be staffed with employees and/or contractors at a depth of at least four persons.

These minimum staffing levels allow Trans Mountain to maintain 24-hour response coverage on a rotating schedule. To ensure a safe and efficient response, additional operational support can be obtained from Trans Mountain staff and contractors, as needed, to meet the needs identified in the Incident Action Plan. Trans Mountain has in place Master Service Agreements with several response contractors, as well as Mutual Aid Agreements with local authorities and industry partners.

18.5 Response Support

18.5.1 Contractors

The confidential appendix identifies suppliers contracted to supply support services that may be required during a response. This includes (but is not limited to) primary response contractors, industrial firefighting, air monitoring, communications, aviation, lodging, and construction equipment. All potential service providers have master service agreements in-place which allows for rapid deployment of these resources at the time of an incident.

18.5.2 Mutual Aid Agreements

Trans Mountain has established Mutual Aid Agreements with local governments and industry partners to supplement Trans Mountain's response resources, should the need arise. The agreements formalize each party's intent to assist one another in the event of an emergency, in accordance with the terms of the agreement. Having these agreements in place facilitates rapid sharing of and access to equipment and personnel and increases Trans Mountain's response capacity. The Mutual Aid Agreements with local governments also provide communities with access to equipment for natural and industrial hazards that may require public and environmental protection.

Trans Mountain has been proactive in the development of Mutual Aid Agreements and has ratified agreements with groups including Kamloops Fire Rescue, Strathcona District, Burrard Inlet Industry Partners (Shell Oil, Suncor, and Imperial Oil), as well as other industry partners. Agreement offers have also been extended to several local authorities, with discussion and/or negotiations underway.

Many of the organizations with whom Trans Mountain has a Mutual Aid Agreement participate regularly in Trans Mountain exercises, as well as in other joint exercises designed to increase response efficiency, interoperability, and coordination between parties.

18.5.3 Incident Command Post & Staging Area Locations

Trans Mountain has designated potential Incident Command Post and Staging Area locations along the pipeline corridor and in communities within each of its four Operational Districts (Alberta, North Thompson, Kamloops, and Sumas). In British Columbia, Trans Mountain has identified Incident

Command Post locations in Abbotsford, Burnaby, Chilliwack, Coquitlam, Kamloops, Merritt, Surrey, and Valemount.

All facilities designated as Incident Command Posts meet the requirements for a multi-agency response, including connectivity (internet, telephone, and audio visual), food, lodging, meeting space, parking, and security. Where appropriate, respective agreements and protocols exist with the identified service provider.

At the confirmation of an incident, Trans Mountain immediately staffs the Incident Management Team and dispatches key response personnel to the Incident Command Post. The balance of Incident Command System staff follows promptly thereafter. While transfer time to the Incident Command Post varies based on location, individuals begin working on their assigned response roles without delay and assemble at the appropriate site as soon as possible.

Further to physical Incident Command Post locations, Trans Mountain has in place the technology and processes to support virtual Incident Command Post.