Sampling and Monitoring Plan

TRANSMOUNTAIN

SAMPLING AND MONITORING PLAN

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Plan Maintenance

Responsibility

The accountability for the Sampling and Monitoring Plan development and maintenance is a combined effort by the Trans Mountain Manager, Emergency Management and Manager, Environment. This accountability is such:

- The document is owned by the Emergency Management Program as a supplemental plan to the Emergency Response Plan (ERP), however it is developed and maintained in cooperation with the Environment Protection Program who is responsible for the implementation of the Sampling and Monitoring Plan during an emergency.
- The administrative management for the Sampling and Monitoring Plan will be administered by the Emergency Management Program.

Plan 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.

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 ERP and its supplemental plans will be evaluated and updated as necessary.

Changes in Operating Conditions

If a new or different operating condition develops, or if new information which would substantially affect the implementation of the ERP and its supplemental plans is identified, then Trans Mountain will modify impacted Plans to address such changes.

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 Corp 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)	Name
1	January 2018	New Manual Issued	J. Kereliuk
2	April 2018	Minor wording changes to Section 1.0, 1.2 and 5.0	J. Kereliuk
3	Oct 2018	Rebranding from Kinder Morgan to Trans Mountain	K. Malinoski
4	February 2020	Amendments to Section 2.2 Sampling Technical Specialist Added Section 4.2.4.1 Sampling Under Winter Conditions Updated for ERL references to TAS	K. McLernon
5	April 2022	Annual Review of Plan Completed Section 2.0, Updated “Environment Unit Lead” to “Environment Unit Leader”	
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1.0 INTRODUCTION

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

The fundamental concepts of the Sampling and Monitoring Plan are initiated upon declaration of an emergency through the Trans Mountain Alert System (TAS) process and are maintained until the development of the incident specific surface water and sediment sampling plan is completed. The incident specific surface water and sediment sampling plan evolves from the Sampling and Monitoring Plan and will be scaled according to the magnitude of the incident.

The Sampling and Monitoring Plan will function as a “living document” in which information collected during sampling and monitoring will be used to continuously update the response strategies and monitor their effectiveness to achieve the objectives as laid out in the Incident Action Plan (IAP).

1.1 Scope

In the event of an emergency that impacts, or potentially could impact a surface waterbody, the Sampling and Monitoring Plan will be activated in conjunction with the appropriate ERP.

The Sampling and Monitoring Plan is considered a subset of Trans Mountain’s ERP(s) and has been developed to align with the Incident Command System (ICS).

1.2 Objectives

The objectives of the Sampling and Monitoring Plan are to:

- Assess the impact to surface water and sediment, resulting from a release
- Identify suitable sampling locations and frequency of sampling
- Evaluate surface water and sediment quality
- Facilitate development of response strategies to protect waterbodies and other potential receptors and mitigate the impacts of the release
- Facilitate assessment of the effectiveness of the response strategies used for the release

1.3 Implementation of the Sampling and Monitoring Plan

Activation of the Trans Mountain ERP will occur when an emergency is declared. Once an emergency has been declared, and a need identified for sampling and monitoring (potential for impact to a surface waterbody), the Sampling and Monitoring Plan will be initiated, and the Sampling and Monitoring Team(s) will be mobilized.

The Sampling and Monitoring Plan will be used in conjunction with other appropriate plans for the response phase of the incident until the incident specific surface water and sediment sampling plan is developed. These plans will be used during the transition from a response phase to the remediation phase as determined by Unified Command.

Implementation of the Sampling and Monitoring Plan is a function of the Planning Section’s Environment Unit (EU).

2.0 ROLES AND RESPONSIBILITIES

2.1 Environmental Unit Lead

The Environmental Unit Lead (EUL) is responsible for environmental matters associated with the response including surface water and sediment sampling. The EUL is responsible for the implementation of the Sampling and Monitoring Plan and communicating sampling results and recommendations to the Planning Section Chief and subsequently Unified Command. Specific duties for this role can be found in the Trans Mountain ICS Guide.

2.2 Sampling Technical Specialist

The Sampling Technical Specialist is part of the EU and is responsible for the development and implementation of the incident specific surface water and sediment sampling plan and coordination of the Sampling and Monitoring Team.

This role also includes coordinating and collaborating with regulatory agencies participating in the response, communicating the results of the sampling and monitoring activities to Unified Command via the EUL and Planning Section Chief, and identifying additional resource requirements including other specialist or subject matter experts (e.g., drinking water specialists) as necessary. Specific duties for this role can be found in Section 8.7.6.5 of the Trans Mountain's ICS Guide.

2.3 Sampling and Monitoring Team

The Sampling and Monitoring Team is a part of the EU, reporting to the Sampling Technical Specialist. Third party contractors have been pre-identified to staff the Sampling and Monitoring Team, based on technical knowledge, relevant experience, and response times. Upon activation of the Sampling and Monitoring Plan, the Sampling and Monitoring Team will mobilize to the location of the release and begin sampling and monitoring as soon as possible. Contractors are listed in the *Confidential Appendix* of the ERP.

2.4 Laboratory Services

Accredited laboratories have been pre-identified to provide analytical services for samples collected throughout the response. Results from analytical testing will be provided to the EU. These laboratories are listed in the *Confidential Appendix* of the ERP.

3.0 APPLICABLE STANDARDS

The following standards should be used to guide the development of the monitoring and sampling strategies and the development of the incident specific surface monitoring and sediment sampling plan:

- *Canadian Council of Ministers of the Environment (CCME), Protocols Manual for Water Quality Sampling in Canada, 2011*
- *Canadian Council of Ministers of the Environment (CCME), Guidance Manual for Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment, 2016*
- *United States Environmental Protection Agency, Guidance on Choosing a Sampling Design for Environmental Data Collection, 2002*

4.0 SAMPLING AND MONITORING STRATEGY

4.1 Sampling and Monitoring Team Mobilization

Once the Sampling and Monitoring Plan has been activated, the Sampling and Monitoring Team (third party contractor) will be instructed to mobilize, as soon as possible, to the location of the release and begin surface water and sediment sampling. This step in the response is carried out by the EUL or the Sampling Technical Specialist and may occur before the ICP has been established and Unified Command is operational.

The initial strategy is to:

- Mobilize adequate resources to collect samples and monitor impacts from the release based on the information available
- Prioritize sensitive areas for sampling and monitoring
- Communicate initial sampling and monitoring results as soon as possible to the EU

4.2 Development of Incident Specific Surface Water and Sediment Sampling Plan

Once the ICP is established, the Sampling Technical Specialist, along with any local, regional, provincial or federal agencies with jurisdiction present in the EU, will develop an incident specific surface water and sediment sampling plan for review and approval by Unified Command. Once approved, the implementation of this incident specific surface water and sediment sampling plan will be the responsibility of the EUL and Sampling Technical Specialist including management of the Sampling and Monitoring Team.

The incident specific surface water and sediment sampling plan will specify the most appropriate sampling and monitoring strategy for the release and will identify which criteria, guidelines or standards are applicable to the release based on jurisdiction, appropriate land use and potential receptors. The sampling and monitoring strategies will be updated, as necessary, throughout the response.

4.2.1 Identification of Impacted Area

Evaluate for impacts to surface water and/or sediment by reviewing:

- The initial incident report (available in the ICS 201)
- Response mapping (obtain from the Situation Unit)
- Release trajectory
- Aerial imagery and topographic maps

Reviewing the impacted area will facilitate the determination of appropriate sampling and monitoring locations.

4.2.2 Sampling Locations

Establish sampling sites:

- Upstream of the impacted area to assess background/baseline conditions
- Within the impacted area
- Downstream of the impacted area also to assess baseline conditions and monitor for changes to the impacted area

Consider in the selection of locations for both sampling and monitoring:

- Safety of sampling technician
- Hot, warm and cold zone logistics
- Impacts to the public and to landowners
- Impacts to sensitive habitats and species
- Heritage resource constraints
- Accessibility
- Equipment availability

Sampling and monitoring locations will be added to the incident mapping used within the ICP.

4.2.3 Sampling Frequency

Sampling frequency and the number of samples collected will depend on the location of the release, relative to the waterbody and the severity of the release.

- Sampling will, at a minimum, occur daily in situations where migration of released product is imminent, or there is increased potential for released product to migrate due to dynamic conditions;
- Sampling frequency will be reviewed regularly throughout the response phase; and
- A reduction in the sampling frequency may occur once it has been determined that conditions have stabilized.

4.2.4 Sampling Procedures

Sampling will be carried out in accordance with regulatory requirements and regulator guidance, as well as industry best practices.

Samples collected will be transported to the contracted, accredited lab with a request for rush analysis for contaminants of concern associated with the released product.

The ICS Form 204 will be used to communicate specific sampling work instructions.

4.2.4.1 Sampling Under Winter Conditions

Sampling and monitoring under winter conditions poses unique challenges and appropriate consideration must be made to account for these challenges.

In the event of a winter response preparation of the incident specific sampling and monitoring plan will take into consideration the site safety plan and the ice safety assessment. Additional care should be taken in flowing watercourses as there may be large variations in ice quality and depth. Best attempts, based on the safety of the ice, should be made to complete sampling and monitoring in a consistent procedure as is done in non-ice conditions. In some instances, ice may need to be removed to complete sampling. This may be done by either chipping the surface away with a clean piece of equipment or by the use of an ice auger. Close monitoring of gas levels should be conducted as the ice is opened.

Due to the non-uniform nature of ice, there may be under-ice pockets where oil can accumulate in natural depressions; product pooling can occur under ice sheets as they are not uniform. In such instances samples will be taken in multiple locations to ensure they are representative of the overall impacted area.

Precautions to protect the samples from freezing during transport must also be considered.

4.2.5 Sampling Results

Upon receipt of the sample results, the third-party contractor and Sampling Technical Specialist will:

- Review and assess results as they are received from the lab
- Determine the condition of water and/or sediment quality across the impacted area
- Communicate the results to the EUL for input into the planning process
- Evaluate the incident specific surface water and sediment sampling plan regularly to ensure it adequately addresses changing conditions
- Consider adding or removing sampling locations
- Consider increasing or reducing the sampling frequency
- Consider changes to parameters sampled at specific locations

4.3 Development of Public Safety Measures

The EUL will make public safety recommendations regarding surface water quality based on sampling and monitoring data and recommendations provided by the Sampling Technical Specialist. A recommendation will be made to the Planning Section Chief to bring forward to Unified Command.

Note:

- Trans Mountain does not have the authority to independently issue public safety orders (i.e., water use restrictions). Public safety orders will be issued by the appropriate government authority under the advisement of Unified Command.
- Public safety authorities may independently issue public safety orders based on their own interpretation of the sampling and monitoring results.

Protocols and supplemental strategies, including the Liaison Officer agency briefings and the Trans Mountain Crisis Communications Plan, will be utilized to distribute the messaging, in coordination and collaboration, with participating jurisdictions and regulatory bodies.

4.4 Reporting Requirements

Sampling result updates will be produced by the third-party contractor summarizing the monitoring and sampling results. These updates will be submitted to the Sampling Technical Specialist as the analytical data is received and interpreted.

Updates regarding sampling and monitoring data will be communicated to the Planning Section Chief for inclusion in situational updates provided to Unified Command. The frequency of the sampling and monitoring updates will be determined by the EUL.

5.0 SAMPLING AND MONITORING PLAN DEACTIVATION

Sampling and monitoring will continue until a consensus is determined between the Environment Unit, Regulators, and impacted Indigenous communities, that the agreed upon end points have been achieved.

In cases where surface water and sediment quality have been impacted, it is likely that sampling activities will continue beyond the response phase and into the subsequent remediation phase.

6.0 RECORDS AND RECORD MAINTENANCE

All related sampling and monitoring documentation and the incident specific surface water and sediment sampling plan will be maintained in the incident file as outlined in the ERP.