



Emergency Response Field Guide

Puget Sound

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Plan Maintenance

Responsibility

Single point accountability for the Puget Sound Pipeline Field Guide development and maintenance rests with the Emergency Response and Security Advisor. This accountability is for:

- The development of the Puget Sound Field Guide 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 a minimum annual audit of the Plan takes place, and the plan is reviewed in full every 5 years.

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 Emergency Response and Security Advisor 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 Response and Security Group as specified. Revisions to the Distribution List only will not be distributed to all manual holders, however will be maintained electronically, all other changes will be distributed to all manual holders in a timely manner. A revised date is shown at the bottom of each updated or new page. The original revision date of the manual is 10/2012. All revisions will be tracked on the Control Sheet.

Revisions after Release or Exercise

In the event that Kinder Morgan Canada experiences a release (worst case or otherwise), or conducts an exercise or training session, the effectiveness of the plan will be evaluated and updated as necessary. The changes will be submitted to U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA), and the Washington Department of Ecology (WDOE) within 30 days.

Changes in Operating Conditions

If a new or different operating condition or information would substantially affect the implementation of the plan, Kinder Morgan Canada will modify the plan to address such a change, and within 30 days of making such a change, submit the change to PHMSA and WDOE, in addition to a 24 Hour notice of such changes occurring.



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: Emergency Response and Security Advisor Kinder Morgan Canada 2700-300 - 5 th Avenue S.W. Calgary, AB T2P 5J2 Canada Fax: (403) 514-6401	

To be completed by Emergency Response and Security Advisor	
Date Received:	Comments:
Date Reviewed:	
Issued as Revision: Y/ N	
If No, reason for Rejection:	
Signature Emergency Response and Security Advisor	

Control Sheet

The control sheet will record revisions and updates to the plan. The log sheet will identify the section amended including date, and verification of notification to WDOE and PHMSA and the person who made the changes and the purpose of the changes, where applicable.

Revision Number	Date of Revision	Change(s)	Name
1	October 2012	New Issue ERP	Kelly Malinoski
2	July 16 2013	Updates to all sections to incorporate requirements for WDOE, and issue for approval.	Kelly Malinoski
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Distribution

This Plan is a controlled document and all copies have been numbered prior to distribution. Copies are found in the locations shown below, or have been given to the person/organization listed.

No.	Issued To	E-Copy
1	U.S. Department of Transportation – PHMSA	X
2	U.S. Department of Transportation – PHMSA	X
3	Department of Ecology, Washington	
4	Department of Ecology, Washington	
5	Control Centre	
6	Control Centre (back up)	
7	Director, EHS Department	
8	Manager, Emergency Response & Security	
9	Manager, Environment	
10	Manager, Health and Safety	
11	EHS Coordinator (Puget Sound)	
12	Emergency Response and Security Advisor	
13	Director, Western Region	
14	Western Region Burnaby Office	
15	Sumas Station	
16	Supervisor, Puget Sound	
17	Laurel Station Control Room	
18	Anacortes Control Room	
19	Ferndale Station	
20	Truck #820	
21	Truck #821	
22	Truck # 822	
23	Truck #823	
24	Truck #824	
25	Truck #825	
26	Truck #826	
27	Spare	
28	Spare	
29	Spare	
30	Spare	

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Introduction

Initial Incident Actions

The initial responder to arrive at a spill site will take some immediate actions to ensure responder and public safety and to protect the environment. The initial responder will complete the following tasks, if appropriate and safe to do so while waiting for the Qualified Individual(QI).

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 Supervisor immediately to activate the Emergency Response Line (ERL/ERL+) System as outlined in Section 2.
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 to the District Supervisor who will initiate an ICS 201 form. This initial documentation will be kept with all other incident documentation.

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

Emergency Response Philosophy

On all emergency incidents, Kinder Morgan will follow the following basic response approach:

1. 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
 - Establish and announce command at the ICP, either at the incident scene location or, if necessary at a remote location
 - Establish and maintain an isolation perimeter, with hot, warm and cold zones
 - Establish staging area(s)

2. Size up the Situation

- A site assessment will identify the scope and nature of the incident, as well as any potential hazards to responders:
 - Recognize and identify any hazardous materials involved
 - Source of any releases
 - Potential exposures

3. 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 (MSDSs, etc.)
 - Conduct vapor monitoring

4. 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

5. Select and Don 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*.

6. 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

7. 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, fire-fighting, spill source control)
 - Defensive (i.e., protecting the public, fire control, spill response)
 - Non-intervention (protecting the public)

8. 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

9. 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.

Emergency Levels

The Kinder Morgan Canada 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 Kinder Morgan Incident Commander will invite the participation of Federal, State 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.	<ul style="list-style-type: none"> • 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
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.	<ul style="list-style-type: none"> • 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
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.	<ul style="list-style-type: none"> • Major emergency condition such as: <ul style="list-style-type: none"> ○ 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.

1.0 RESPONDER HEALTH AND SAFETY

It is important to understand that the different crude oils handled pose different hazards when spilled, depending on their chemical composition. Therefore, the primary hazards, and the need for vapor monitoring, and the cleanup techniques will depend on the characteristics and volume of crude oil spilled.

Many crude oils (including "sweet" crudes) can emit potentially dangerous levels of H₂S, and most crude oils also contain Benzene. Some crude oils have low flash points, especially during the initial hours after being spilled. In all of these cases, the risk of accidental ignition and/or the inhalation of toxic vapors must be mitigated, and a detailed site assessment (see Section 3) must be completed before on-scene operations are initiated. This assessment will be made by the Safety Officer.

Typically, the risks associated with the concentration of potentially-dangerous vapors will diminish with time, due to reduced vapor production as the lighter components volatilize, and vapors 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 vapors. Later, if the skin is broken and the oil disturbed, the oil might emit vapors normally associated with freshly-spilled oil. In all cases, the results of the initial site assessment should be used to develop a Safety and Health Plan.

The Initial Site Health & Safety Plan (ISHSP – Section 1.2) 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 Vapors

The need for respiratory protection will be determined by the Safety Officer after a review of the MSDS and data retrieved from the initial site assessment (see Section 3). If toxic vapor levels are determined to exceed safe working limits (see Section 3.4 for details), it might be possible for responders to work while wearing half-face respirators fitted with Organic cartridges. In this case, on-going vapor monitoring is essential to ensure that vapor 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 MSDS to determine the flash point of the material spilled and to perform vapor monitoring (for LEL). However, the MSDS does not replace the need for vapor monitoring. Whenever vapor levels are approaching 10% of the LEL for any spilled product, responders should leave the area immediately.

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 vessels/water and equipment. Special care should be taken when walking on oiled surfaces or shoreline, 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 in the forms section of this manual and on the intranet site: http://kmonline/business_units/KMC/Pages/EHS_Forms.aspx

1.3 Health and Safety Plan

The Health and Safety Plan form is available in the forms section of this manual and on the intranet site: http://kmonline/business_units/KMC/Pages/EHS_Forms.aspx

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 Kinder Morgan 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 KMC or other personnel, and members of the public and/or Emergency Services (Police, Ambulance, Fire).

2.1.1 Automated -Spill Detection

(b) (7)(F)



- Training – all operators are compliant with DOT 195 Operator Qualification Requirements.

2.1.2 Automated - Fire Detection

Fire detection at Laurel Station consists of fire wire alarms in the foam dam area on the top of the two tanks. If a fire was to occur along the rim seal of either tank it will melt the wire which then alarms to the Control Centre and Laurel Station. All enclosed buildings on site have fire alarms which also alarm to the Control Centre and Laurel station.

2.1.3 Automated – Intrusion Alarm

All buildings at Laurel Station have intrusion alarms which send a signal to the alarm monitoring company who then begins a callout starting with the on-call person, district supervisor and finally the Control Centre.

2.1.4 Automated/Complaint Detection Verification

If the detection method comes from alarms to the CCO or a member of the public the potential incident must then be visually verified by KMC 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.

2.1.5 Early Detection Methods

Aerial patrol flights will be made at least 26 times a year, and will not to exceed 21 days apart. 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 at Laurel Station when employees perform daily scheduled inspections of the site. At Anacortes and Ferndale locations, inspections are performed during scheduled deliveries.

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 Kinder Morgan 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 a discharge and conduct preliminary assessment
- Notify their immediate supervisor and provide assessment results.

2.1.6 Detection in Adverse Weather

A conservative shutdown time of 15 minutes has been established for calculating worst case discharge. Line ruptures and tank failures that cause worst case spills in adverse weather conditions would normally be detected and acted upon within 5 minutes. In the event that visual detection cannot occur due to adverse weather, and/or low visibility the pipeline will be shut down for safety until detection can occur. Equipment that may be used in these situations includes vapor detection, and thermal/infrared imagery.

2.1.7 Detection of Spills to Groundwater

In an area where a spill occurs that is not on impermeable ground a contractor will be contacted to assist with the detection and ongoing evaluation of a spill that may impact groundwater. The contacts for the specific contractors can be found in Section 2.10 Support Services - Primary Response Contractors (PRC).

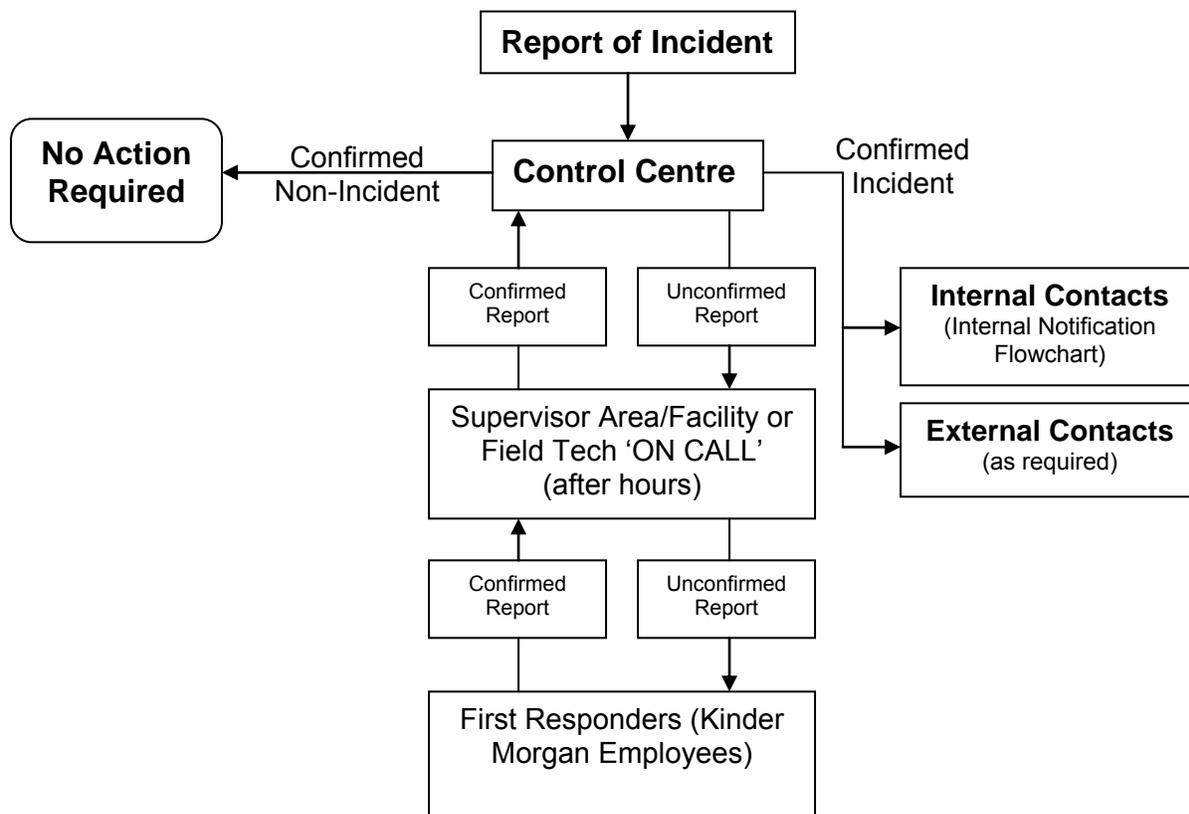
2.1.8 Shutdown Events

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 personnel may include, but are not limited to:

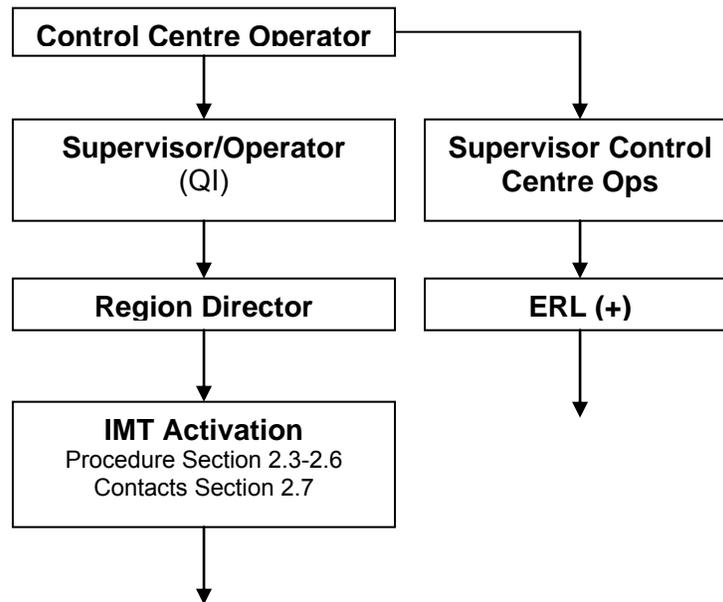
- Shut down affected line segment if there is an indication of a leak
- Isolate line segment
- Depressurize line
- Start internal and external notifications
- Mobilize additional personnel as required.

2.1.9 Spill 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 received the following flowchart shows the direction of communication to verify an incident.



2.2 Internal Notification Chart



2.3 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 a description of the 3 Response Levels)
- Initiate the notification of company and external personnel

2.3.1 Information to Report

Information about the spill should be as clear, concise, accurate and timely as possible. The minimum information reported, 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 Spill
- Product(s) Spilled
- Estimated Quantity
- Actions Taken To-Date
- Assistance Required
- Injuries
- Weather Conditions
- Reason for discharge (if known)

2.3.2 How to report

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

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

2.4 Incident Management Team (IMT) Notification/Activation

Upon being notified of the incident, the CC Supervisor will issue an ERL or ERL+. The ERL system is an online tool that delivers an automated group text message to designated Kinder Morgan personnel when notification of an emergency or non-emergency event is required. The CCO fills in the Emergency Condition Report and issues an ERL/ERL+ 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:

- Regional Director, affected area
 - The following people are contacted at the discretion of the Regional Director
 - Pipeline Protection Supervisor, affected area
 - Director, External Relations
 - Scheduler, Shipper Services, affected area
- Director, Central Region and Control Centre
- Director, Technical Services
- Field Representative
- EHS, regional contact
- Director, EHS (Calgary)
- Legal Representative
- Manager, Emergency Response & Security

If the on-line 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, at a minimum, will be assigned during this call:

- Safety Officer
- Information Officer
- Liaison Officer
- Legal Officer
- Operations Section Chief
- Planning Section Chief
- Logistics Section Chief
- Finance/Administration Section Chief

The full procedure for the Emergency Response Line (ERL/ERL+) can be found at E:\Manuals\Operating Systems\Control Centre\General Procedures\ 2.1.5.3 Emergency Response Line.pdf

2.5 IMT Fan-Out

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 Emergency Response Line (ERL/ERL+) Initial Contacts

This listing serves as the manual back-up ERL and ERL+ call down listing for the Puget Sound operating area.

Position	Name (s)	Office	Home	Cell
Qualified Individual Field Representative	Patrick Davis	(360) 398-1541	(b) (6)	(360) 319-0800
Regional Director	Bruce Jamer	(604) 268-3030	(b) (6)	(604) 314 -1970
Director, Central Region and Control Centre	Dan Carter	(780) 449-5930	(b) (6)	(780) 886-4939
Director, Technical Services	Paul Huddleston	(403) 514-6510	(b) (6)	(403) 874-8925
Director, EHS	Dan O'Rourke	(403) 514-6641	(b) (6)	(403) 669-6991
Manager Emergency Response and Security	Wayne Arcand	(604) 291-2744	(b) (6)	(604) 868-0436
Legal Representative	Peter Forrester	(403) 514-6643	(b) (6)	(403) 650-7229
Director, External Relations	Andrew Galarnyk	(403) 514-6536	(b) (6)	(403) 826-6464
EHS Regional Contact	Dan Chow	(604) 268-3008	(b) (6)	(604) 209-1351
Pipeline Protection Supervisor	Andrew Mark	(604) 268-3060	(b) (6)	(604) 612-7073

2.7 Kinder Morgan IMT Contacts

* Unit Leader

Position	Name	Office	Home	Cell
Command Staff				
Incident Commander (IC)	Arcand, Wayne	(604) 291-2744	(b) (6)	(604) 868-0436
Incident Commander (IC)	Carter, Dan	(780) 449-5930	(b) (6)	(780) 886-4939
Incident Commander (IC)	Davies, Michael	(403) 514-6597	(b) (6)	(403) 990-1641
Incident Commander (IC)	Davis, Patrick	(360) 398-1541	(b) (6)	(360) 319-0800
Incident Commander (IC)	Glenn, Lee	(780) 449-5957	(b) (6)	(780) 913-6197
Incident Commander (IC)	Hadden, Rob	(604) 268 3019	(b) (6)	(604) 861 1921
Incident Commander (IC)	Huddleston, Paul	(403) 514-6510	(b) (6)	(403) 874-8925
Incident Commander (IC)	Jamer, Bruce	(604) 268-3030	(b) (6)	(604) 314 -1970
Incident Commander (IC)	Rishaug, Ron	(780) 449-5940	(b) (6)	(780) 668-5940
Information Officer	Galarnyk, Andrew	(403) 514-6536	(b) (6)	(403) 826-6464
Information Officer	Hawthorne, Kristjana	(604) 268-3011	(b) (6)	(604) 790-5537
Information Officer	Hobenshield, Lexa	(604) 268-3013	(b) (6)	(604) 809-9869
Information Officer	Loban, Natalie	(604) 268-3007	(b) (6)	(778) 877-5576
Legal Officer	Forrester, Peter	(403) 514-6643	(b) (6)	(403) 650-7229
Legal Officer	Kennedy, Kristine	(403) 514-6542	(b) (6)	(403) 828-1703
Liaison Officer	Arcand, Wayne	(604) 291-2744	(b) (6)	(604) 868-0436
Liaison Officer	Malinoski, Kelly	(403) 514-6538	(b) (6)	(403) 804-6771
Liaison Officer	O'Rourke, Dan	(403) 514-6641	(b) (6)	(403) 669-6991



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Field Guide

Position	Name	Office	(b) (6)	Cell
Safety Officer	Arbo, Brian	(403) 514-6707		(403) 875-4978
Safety Officer	Chow, Dan	(604) 268-3008		(604) 209-1351
Safety Officer	Fleming, Edna	(403) 514-6437		(403) 519-3411
Safety Officer	Leier, Ryan	(703) 449-5918		(708) 991-3755
Safety Officer	Turner, Jason	(250) 371-4017		(250) 319-5331
Operations Section				
Section Chief	Buysse, Glen	(604) 268-3041		(604) 861-0085
Section Chief	Davis, Patrick	(360) 398-1541		(360) 319-0800
Section Chief	Glenn, Lee	(780) 449-5957		(780) 913-6197
Section Chief	Hansen, Steve	(604) 268-3080		(604) 813-8149
Section Chief	Jahnke, Brian	(250) 371-4040		(250) 371-4521
Section Chief	MacDonald, Scott	(250) 587-6350		(250) 819-9381
Section Chief	McClary, Dale	(360) 398-1541		(360) 319-2794
Section Chief	Nelson, Mike	(780) 449-5980		(780) 920-1384
Section Chief	Rishaug, Ron	(780) 449-5940		(780) 668-5940
Section Chief	Rutherford, Tom	(780) 852-4225		(780) 931-2734
Section Chief	Stelter, Kelvin	(250) 587-6305		(250) 674-8401
Section Chief	Telford, Craig	(604) 268-3040		(778) 828-0730
Section Chief	Wenner, Jim	(780) 449-5960		(780) 717-0911
Staging Area Manager	Ferrigan, Kevin	(250) 371-4093		(250) 314-4590
Staging Area Manager	Lincoln, Alan	(250) 371-4090		(250) 319-4443
Staging Area Manager	Mark, Andrew	(604) 268-3060		(604) 612-7073
Staging Area Manager	McCurrach, Allan	(250) 371-4092		(250) 372-7974
Staging Area Manager	Pleadwell, Todd	(360) 398-1541		(360) 319-3154
Staging Area Manager	Smith, Jason	(250) 371-4089		(250) 574-5826
Planning Section				
Section Chief	Chan, Rich	(604) 268-3055		(604) 328-4068
Section Chief	Feser, David	(403) 514-6405		(587) 894-0700
Section Chief	Fufezan, Dan	(780) 449-5914		(780) 983-7671
Section Chief	Hadden, Rob	(604) 268 3019		(604) 861 1921
Section Chief	Huddleston, Paul	(403) 514-6510		(403) 874-8925
Section Chief	Lalli, Raj	(250) 371-4011		(250) 319-2730
Section Chief	Toth, Greg	(403) 514-6490		(403) 875-0034
Documentation Unit*	Berry, Karen	(780) 449-5910		(780) 920-5513
Documentation Unit*	Couture, Anna Marie	(780) 852-4233		
Documentation Unit*	Frankova, Maria	(604) 268-3014		
Documentation Unit	Harsulla, Rita	(780) 449-5979		
Documentation Unit	Holmquist, Lisa	(360) 398-1541		
Documentation Unit*	Keenan, Marie	(403) 514-6621		(403) 479 0572
Documentation Unit	Malinoski, Kelly	(403) 514-6538		(403) 804-6771
Documentation Unit	Martens, Kathy	(403) 514-6527		(403) 608-9447
Documentation Unit	Reid, Corrine	(250) 371-4043		(250) 318-7706
Documentation Unit	Sommerfeldt, Gail	(250) 587-6372		(250) 674-8394
Situation Unit	DeLong, Terry	(403) 514-6517		(403) 651-2216



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Field Guide

Position	Name	Office	(b) (6)	Cell
Situation Unit	Farrell, Conan	(403) 514-6575		(403) 512-6797
Situation Unit*	Greig, Andrew	(403) 514-6530		(403) 862-4187
Situation Unit	Horn, Mike	(403) 514-6503		(403) 771-0315
Situation Unit	Huntington, Grant	(403) 514-6586		
Situation Unit*	Lind, Adam	(403) 514-6429		(403) 512-5145
Situation Unit	Mark, Andrew	(604) 268-3060		(604) 612-7073
Situation Unit*	McLeod, Jennie	(780) 449-5926		(778) 877-1933
Situation Unit*	Pearson, Jeff	(604) 268-3037		(778) 875-2963
Situation Unit*	Pleadwell, Todd	(360) 398-1541		(360) 319-3154
Situation Unit	Sobol, Sandra	(403) 206-6936		(403) 880-9633
Resource Unit*	Ireland, Yvanna	(403) 514-6496		(403) 998-0710
Resource Unit*	Lind, Adam	(403) 514-6429		(403) 512-5145
Resource Unit	Mark, Andrew	(604) 268-3060		(604) 612-7073
Resource Unit	McLeod, Jennie	(780) 449-5926		(778) 877-1933
Environment Unit*	Chow, Dan	(604) 268-3008		(604) 209-1351
Environment Unit*	Droppo, Mike	(403) 514-6537		(403) 630-0161
Environment Unit*	Leier, Ryan	(703) 449-5918		(708) 991-3755
Environment Unit	Longpre, Tracy	(403) 206-6977		(403) 862-0439
Environment Unit	Thesen, Cheryl	(403) 514-6483		
Environment Unit*	Turner, Jason	(250) 371-4017		(250) 319-5331
Logistics Section				
Section Chief	Berry, Karen	(780) 449-5910		(780) 920-5513
Section Chief	Hellevang, Shelley	(403) 514-6533		(403) 803-2466
Section Chief	Imola, Delia	(604) 268-3022		(604) 720-7623
Service Branch	Berrouard, Dave	(604) 268-3093		(604) 880-1204
Service Branch	Berry, Karen	(780) 449-5910		(780) 920-5513
Service Branch	Couture, Anna Marie	(780) 852-4233		
Service Branch	Frankova, Maria	(604) 268-3014		
Service Branch	Harsulla, Rita	(780) 449-5979		
Service Branch	Holmquist, Lisa	(360) 398-1541		
Service Branch	Keenan, Marie	(403) 514-6621		(403) 479 0572
Service Branch	Kowalik, Terry	(780) 449-5936		(780) 719-9573
Service Branch	Love, Steve	(403) 514-6435		(403) 993-6122
Service Branch	Malinoski, Kelly	(403) 514-6538		(403) 804-6771
Service Branch	Martens, Kathy	(403) 514-6527		(403) 608-9447
Service Branch	Reid, Corrine	(250) 371-4043		(250) 318-7706
Service Branch	Sommerfeldt, Gail	(250) 587-6372		(250) 674-8394
Support Branch	Arcand, Wayne	(604) 291-2744		(604) 868-0436
Support Branch	Berry, Karen	(780) 449-5910		(780) 920-5513
Support Branch	Couture, Anna Marie	(780) 852-4233		
Support Branch	Darrell, John	(403) 514-6598		(403) 650-4844
Support Branch	Frankova, Maria	(604) 268-3014		
Support Branch	Harsulla, Rita	(780) 449-5979		
Support Branch	Hellevang, Shelley	(403) 514-6533		(403) 803-2466



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Position	Name	Office	Cell
Support Branch	Holmquist, Lisa	(360) 398-1541	
Support Branch	Keenan, Marie	(403) 514-6621	(403) 479 0572
Support Branch	Lambert, Sean	(604) 268-3038	
Support Branch	Lincoln, Alan	(250) 371-4090	(250) 319-4443
Support Branch	Love, Steve	(403) 514-6435	(403) 993-6122
Support Branch	Malinoski, Kelly	(403) 514-6538	(403) 804-6771
Support Branch	Martens, Kathy	(403) 514-6527	(403) 608-9447
Support Branch	McCurrach, Allan	(250) 371-4092	(250) 372-7974
Support Branch	McLean, Cody	(403) 514-6651	
Support Branch	Reid, Corrine	(250) 371-4043	(250) 318-7706
Support Branch	Sommerfeldt, Gail	(250) 587-6372	(250) 674-8394
Finance Section			
Section Chief	Bangle, Mike	(403) 514-6690	(403) 826-9342
Section Chief	Imola, Delia	(604) 268-3022	(604) 720-7623
Section Chief	Senio, Lori	(780) 449-5922	(780) 940-5835
Section Chief	Aitkenhead, Diane	(780) 449-5915	(780) 233-0342
Claims Unit	Berrouard, Dave	(604) 268-3093	(604) 880-1204
Claims Unit	Imola, Delia	(604) 268-3022	(604) 720-7623
Claims Unit*	Love, Bob	(604) 268-3097	(604) 992-1955
Claims Unit	Martens, Kathy	(403) 514-6527	(403) 608-9447
Time Unit	Beitel, Corinne	(780) 449-5905	(780) 405-5330
Time Unit	Gutierrez, Monica	(403) 514-6491	
Time Unit	Senio, Lori	(780) 449-5922	(780) 940-5835
Cost Unit	Bangle, Mike	(403) 514-6690	(403) 826-9342
Cost Unit	Imola, Delia	(604) 268-3022	(604) 720-7623
Cost Unit	Modafferi, Sarina	(403) 514-6564	
Procurement Unit	Bangle, Mike	(403) 514-6690	(403) 826-9342
Procurement Unit	Gutierrez, Monica	(403) 514-6491	
Procurement Unit	McLean, Cody	(403) 514-6651	

(b) (6)

2.8 External Notification

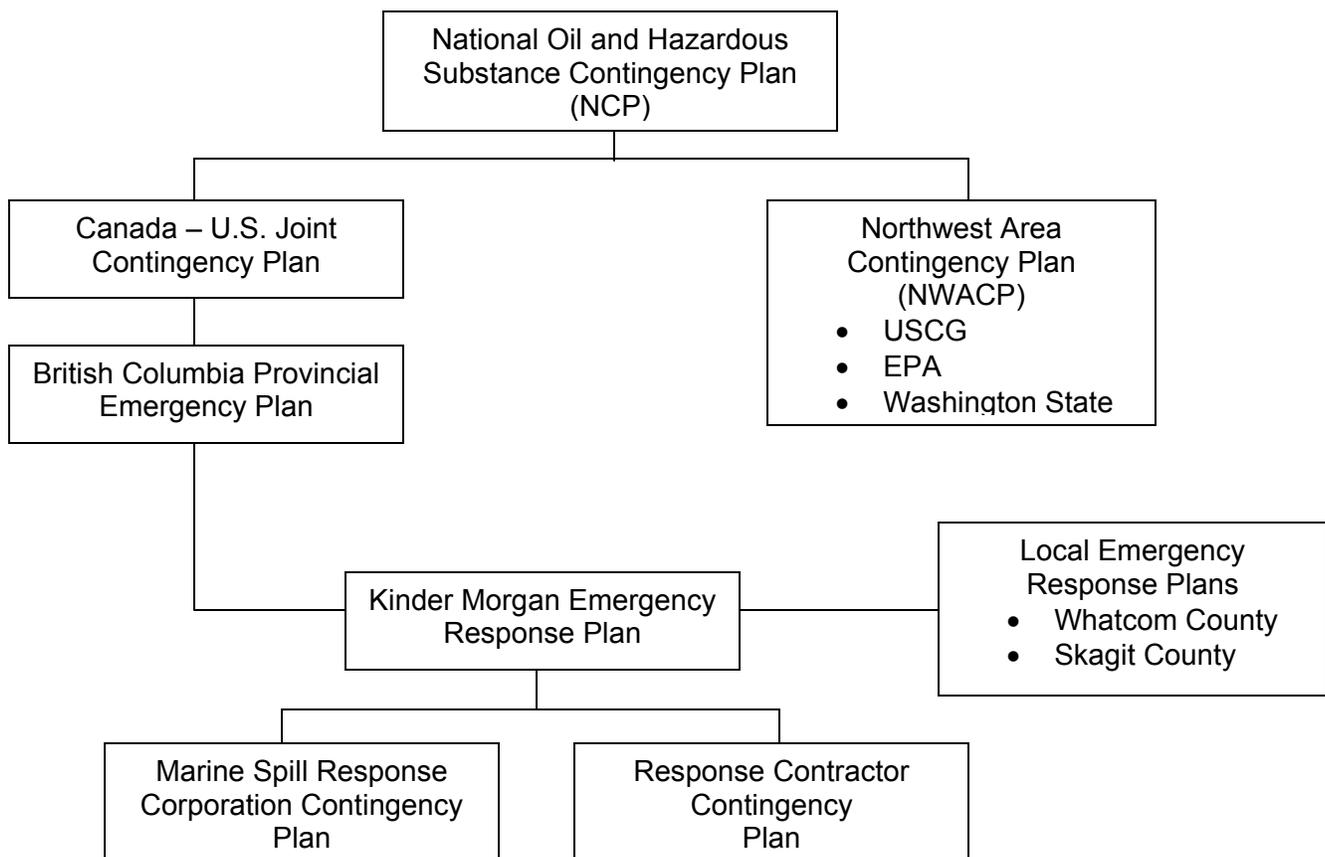
2.8.1 Interface With Other Plans

Kinder Morgan will respond to spills from its pipeline system to the best of its ability. In the event of a worst case spill, Kinder Morgan may require assistance, advice or direction from state and federal agencies regarding shoreline protection and cleanup measures. The relationship of the emergency Response Plan to federal, state and local plans is shown on the chart below.

Kinder Morgan is a member of Marine Spill Response Corporation (MSRC), an industry oil spill cooperative headquartered in Herndon, Virginia, with a Regional Response Center in Everett, Washington. The MSRC area of operation includes all of the inland water and marine areas that could be impacted by a spill from the pipeline system.

Kinder Morgan will rely on MSRC to provide response assistance for inland water and marine waters that may be impacted by potential spills from its pipeline system. However, MSRC will also provide initial response for a pipeline leak in the Anacortes area until appropriate company personnel reach the site.

The British Columbia Provincial Emergency Program is identified on the following chart due to the possible migration of petroleum from Washington State into Canada should a spill occur from the pipeline system into the Sumas River upstream of the international boundary.



2.8.2 External Notification – Potential Emergency Condition

In the case of a potential emergency condition¹ Washington State Department of Ecology will be contacted as per WAC 173-182-264(2) 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 shutdown 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. Odor 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.

WDOE Reporting Line: (800) 258-5990

The on site supervisor will make contact with the WDOE while investigating the potential spill location(s) prior to the confirmation of an incident to allow WDOE maximum response time possible.

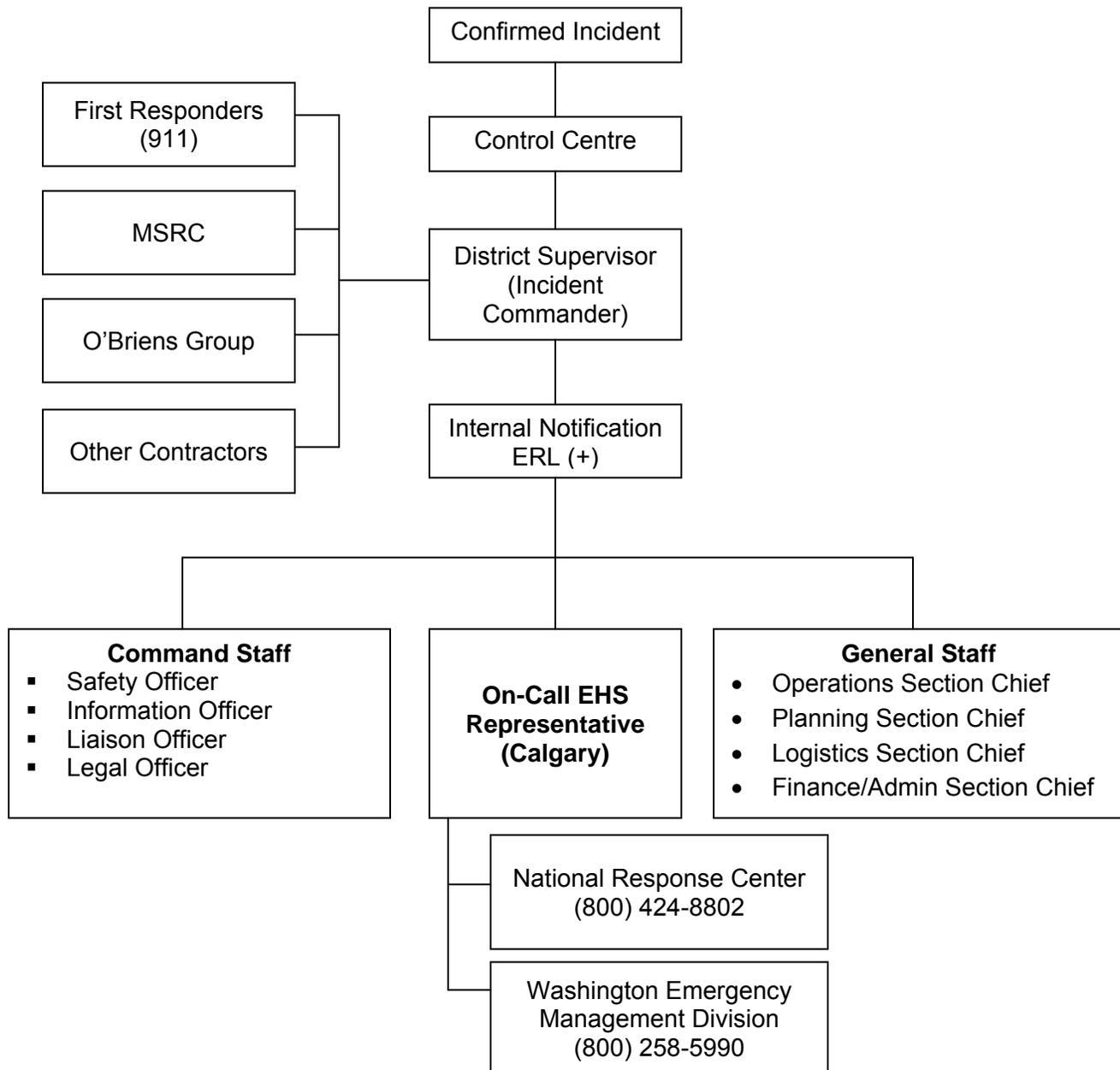
Notes: The CCO has the authority and the responsibility to shutdown a pipeline, station, or terminal during an emergency or as a precaution when in his/her judgment, further operation is unsafe. The CCO will not be faulted for shutting down under these conditions.

An Operator 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.

¹ A potential emergency can be defined as a spill of unknown volume, unconfirmed and is adjacent to waters of the state or where there is a pathway to waters of the state, and the environmental conditions, such as rain events or known shallow groundwater make impacts to waters of the state likely.

2.8.3 External Notification Chart – Confirmed Emergency Condition

In the case of a confirmed or known emergency condition the following chart will be used to identify who is to be contacted upon confirmation of the incident.



2.8.4 Initial Notification Requirements – Confirmed Emergency Condition

Kinder Morgan's policy is to make all of the calls directly to ensure that all appropriate government agencies are notified. This would be done by the EHS Department, and/or the on-site representative as needed.

Order of Call	Agency	Reporting Requirements	Comments
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.
2	MSRC 1-800-645-7745		Primary Response Contractor to assist with equipment and personnel.
KMC On-Call EHS Representative			
1	U.S. National Response Center (NRC) 1-800-424-8802 (24 Hour Number) (Covers PHMSA, EPA and USCG)	The NRC must be notified as soon as possible by telephone of any failure that causes death or injury, results in a fire or explosion, damage exceeds 50,000 US, pollutes any water body or is significant even though it did not meet the criteria of any other paragraph of this section. A report must also be made for any failure that results in a loss of 5 or more US gallons of hazardous liquid.	Use the form on the following page to make the initial report to ensure all known information is included. Following initial report PHMSA requires the F-7000-1 Accident Report Form to be filed electronically. The form and instructions can be found online http://www.phmsa.dot.gov/pipeline/library/forms
2	Washington State Emergency Management Division 1-800-258-5990 Northwest Regional Office (WDOE) 1-425-649-7000	All spills are required to be reported to WDOE if it has the potential to impact waters of the state ² except where the spill is less than 42 Gallons (1 bbl) which does not/cannot impact waters of the state. WAC 173-182-264	State and local authorities must be notified immediately if there is a release of hazardous substances under Superfund Regulations in excess of reportable quantities and which could result in exposure of persons outside the boundaries of the facility site. A follow up written notification is required to the LEPC as soon as practical after the release.

² Waters of the State means all lakes, rivers, ponds, streams, inland waters, underground water, salt waters, estuaries, tidal flats, beaches and lands adjoining the seacoast of the state, sewers, and all other surface waters and watercourses within the jurisdiction of the state of Washington. WAC 173-182-030(67)



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Field Guide

2.8.5 Emergency Condition Agency Report Form

Name and Address of Company
Name of Pipeline
Time of Discharge
Location of Discharge
Name of Oil Involved
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

2.9 Additional Government Contacts

These agencies may be contacted on an as-needed basis.

Agency	Contact
Federal Government – U.S.A.	
National Response Center (NRC)	(800) 424-8802 (202) 267-2675
Occupational Safety & Health Administration (OSHA)	(800) 321-6742
Poison Center Emergency Contact	(800) 222-1222
United States Coast Guard	(800) 424-8802
Federal Government - Canada	
National Energy Board (NEB)	(403) 807-9473
Transportation Safety Board Occurrence Hotline	(819) 997-7887
Washington State Government	
Washington Call Before You Dig	(800) 424-5555
Washington Department of Natural Resources	(360) 902-1000
Washington Emergency Management Agency, Spill Reporting Line and Burn Permits	(800) 258-5990
Northwest Air Pollution Authority	(800) 622-4627
Washington Department of Fish & Wildlife	(360) 466-4345
Washington State Department of Ecology	(425) 649-7000
Washington State Department of Transportation	(360) 676-2100
Washington State Police	911
Provincial Government – British Columbia	
Provincial Emergency Program (PEP)	(800) 663-3456
Skagit County	
Skagit County Emergency Management (LEPC)	(360) 428-3250
Skagit County Sheriff Department	(360) 336-3131 (911)
Skagit Valley Hospital Switchboard	(360) 424-4111
Whatcom County	
Whatcom County Sheriffs Office - Division of Emergency Management (LEPC)	(360) 676-6681 (911)
St. Joseph's Hospital	(360) 734-5400
Lummi Tribe	
Ronald Tso, Chief of Police	(360) 384-2266

2.10 Support Services - Primary Response Contractors (PRC)

<i>Name/Agency</i>	<i>Services/Personnel</i>	<i>Contact</i>
Washington State Approved - Primary Response Contractors		
Marine Spill Response Corporation (MSRC)*	<ul style="list-style-type: none"> • A listing of individuals is available by contacting MSRC. • Response Equipment can be provided as needed a list of available equipment is found in Section 9. 	1-800-645-7745
NRC Environmental Services**	<ul style="list-style-type: none"> • Spill Management Teams and Response Supervisors • Equipment Decontamination and Management • Waste Minimization, Management and Disposal • Contact NRC for current list of trained individuals. 	(800) 337-7455
Global Diving, Salvage Inc*	<ul style="list-style-type: none"> • Provides personnel and equipment for subsurface marine environments, and shoreline cleanup. • Equipment is located in Anacortes, WA • Contact Global for current list of trained individuals 	(800) 441-3483
Additional Kinder Morgan Response Contractors		
O'Brien's Group*	<ul style="list-style-type: none"> • Provides personnel for ICS and expertise currently trained individual lists can be obtained by contacting O'Brien's 	(985) 781-0804
Focus Wildlife*	<ul style="list-style-type: none"> • Provides Wildlife support for Washington State • Contact Focus for current list of trained individuals 	(800) 578-3048 (310) 386-5965 (778) 574-1501
Polaris Applied Sciences, Inc*	<ul style="list-style-type: none"> • Provides SCAT services for Washington State and British Columbia Canada 	(425) 823-4841 (206) 369-5686
CTEH*	<ul style="list-style-type: none"> • Air Monitoring, Air Modeling, environmental sampling, data management and toxicology consulting services. 	(866) 869-2834 (317) 473-0688
URS Corporation*	<ul style="list-style-type: none"> • Environmental Plan development, Field Sampling/support, Data management, waste management, groundwater spills and regulatory support 	(206) 438-2700



Name/Agency	Services/Personnel	Contact
BAI Environmental Services*	<ul style="list-style-type: none"> Provides Vacuum Truck, and other response equipment/personnel 	(360) 354-1134 Ivan DeVries Cell (360) 815-0238 Jeff TenPas (360) 815-0270 (360) 354-3822
Baker Tanks*	<ul style="list-style-type: none"> Provides temporary storage tanks. 	(800) 225-3712 (425) 347-8811

* Contract or letter of intent on file available in Section 19.

** No formal work directive, or letter of intent specific to Trans Mountain (Puget Sound) ULC, however there is an MSA in place covering Kinder Morgan and its subsidiaries for further creation of work directives in the event of an emergency.

2.11 Oil Company Contacts

Name/Office	Emergency/24-Hour Phone	Description
BP Cherry Point Refinery	(360) 371-1500	The Laurel Station to Ferndale Meter Station and delivers to a BP pipeline that then delivers to the Cherry Point Refinery
Phillips 66 Ferndale Refinery	(360) 384-1011	The Laurel Station to Ferndale Meter Station delivers to the Phillips 66 Ferndale Refinery.
Shell Oil Products Refinery	(360) 293-0800	The Laurel Station to Anacortes Pipeline delivers to the Shell Oil Products Refinery
Tesoro Refinery	(360) 293-9119	The Laurel Station to Anacortes Pipeline delivers to the Tesoro Refinery

2.12 Additional Resources Suppliers

Name	Location	Contact
Equipment/Construction		
Crowley Marine Services	Seattle	(800) 248-8632
J.T.I. Commercial Services (tractor, crane truck, backhoe, mowers, wood chipper, posi-trac, mower/skidder)	Everson	(360) 815-0693
Mid Mountain Contractors (various trucks, trackers, loaders, excavators, welding rig and equipment, and Hazwoper trained laborers)	Kirkland	(425) 202-3600



Name	Location	Contact
Strider Construction (excavators, dozers, loaders, backhoes, grader, compaction equipment, trucks/trailers, generators, trench boxes & steel plate, air compressor, lasers, pumps, saws)	Bellingham	(360) 380-1234
Western Refinery Services Inc. (vac trucks, roll-off boxes, pumps, skimmers, portable tanks, excavation equipment)		(360) 366-3303 24 hr
Granite Construction Company (various backhoes, trucks, compressor trucks, dozers, dump trucks, etc)	Bellingham	(360) 676-2450
Aviation		
Aero-Copters Inc.	Renron	(206) 763-2177
Classic Helicopter Corp.	Seattle	(206) 767-0515
Glacier Aviation	Olympia	(360) 705-3214
Security		
SSP Security	Bellingham	(360) 647-2441
Transportation		
Snelsons Companies (Tractor units for Kinder Morgan Oscars available on 24 hr basis)	Sedro-Woolley	(800) 624-6536 (360) 856-6511
Svensen Trucking (Tractor units for Kinder Morgan Oscars available on 24 hr basis)	Mt. Vernon	(360) 424-0258
Pipeline Repair		
Caldwell Welding Enterprises	Kamloops, BC	(250) 374-2982
Snelsons Companies	Sedro-Woolley	(800) 624-6536 (360) 856-6511
Waste Management		
US Ecology and Idaho	Grandview, ID	(208) 834-2274
Waste Management Services	Woodinville	(800) 592-9995
Wildlife Specialists		
Tri-State Bird Rescue	Newark, DE	(302) 737-9543
Environmental Specialists		
EML Environmental Mapping Limited	Saanich, BC	(250) 652-9739

3.0 SPILL/SITE ASSESSMENT

The primary purpose of a spill/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 spill should be gathered as quickly as possible in order to evaluate the situation and develop an initial response plan. It might also be possible for the Site Assessment Team to take measures to reduce possible spill impacts.

The nature of Spill/Site Assessments will depend on the product spilled, the spill size and the location (i.e., land, groundwater or marine).

Site Assessment Team members should don half-face respirators for all spill until the nature of the material can be assessed for safety.

Product	Spill Size	Vapor Monitoring	Assessment Team PPE	
			Skin/Eyes	Respiratory
Crude	All	LEL, O ₂ and Toxins (see Sections 3.2 - 3.4)		

NOTE: If vapor levels reach 10% of the LEL, Site Assessment Team members should leave the area immediately

3.1 Site Assessment Guidelines

3.1.1 Safety Checklist

- Conduct Pre-Entry Safety Checklist
- Remove all non intrinsically-safe radios, pagers, etc.
- Establish communications procedures/schedules
- Don appropriate PPE
- Refer to MSDS
- Determine wind speed and direction
- Determine current direction
- Approach spill from upwind/up current if possible
- Conduct vapor 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
- Block escaping product

3.2 Vapor Monitoring on Marine Spills

3.2.1 Pre-Assessment Preparation

A trained team should conduct an initial site assessment from land and, if available and spill impacts water, a second team in a workboat should conduct an assessment. If only one team is available, they will be required to make both assessments. The site assessment team(s) should wear appropriate PPE for the initial site assessment unless specifically instructed otherwise by the Incident Commander. The Incident Commander may downgrade the level of PPE required by the site assessment team if the product and amount spilled are known, and a lesser level of PPE is deemed appropriate.

- Calibrate and check battery charge levels on each air monitoring instrument.
- Complete an *Initial Health and Safety Plan*. Conduct the pre-entry briefing, using the completed *Permit to Work Form* and any other relevant documentation. Select and use the *Gas Testing Certificate* that matches the level of respiratory protection in use by the assessment team.
- Ensure that all air monitoring instruments are well secured and protected from weather. Be careful that any "protection" does not cover any of the meters' ports that require continuous airflow.

3.2.2 Site Assessment Procedures

The on-water team should move toward the spill and stop at an upwind location to make final preparations for the assessment. Air monitoring requires accurate position information. A global positioning system (GPS) is the preferred method for determining positions.

Due to the lack of elevation and the rapid spread of the oil on water, the site assessment team may not be able to accurately judge the spill parameters. Lacking any other guidance, the assessment team must make judgments on where the main body of oil may be, and how to approach it. Vapor readings should be taken frequently.

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 "worst case" assessment. A safe and effective site assessment will require caution, persistence and field decisions.

As the assessment team moves toward the oil, or its anticipated location, periodic stops will be made to record results. The team leader must take immediate action if at any time the air monitoring instrument readings meet or exceed "evacuation" levels (see Vapor Monitoring Flowchart - Section 3.4). 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 spill characterization is complete. The identification of physical, environmental, chemical or other hazards will complete the assessment.

3.3 Vapor Monitoring on Land Spills

3.3.1 Site Assessment Procedures

The team should move toward the area and stop at an acceptable location, preferably upwind, to make final preparations for assessment. The GPS is the preferred method for determining position of air sampling results ashore.

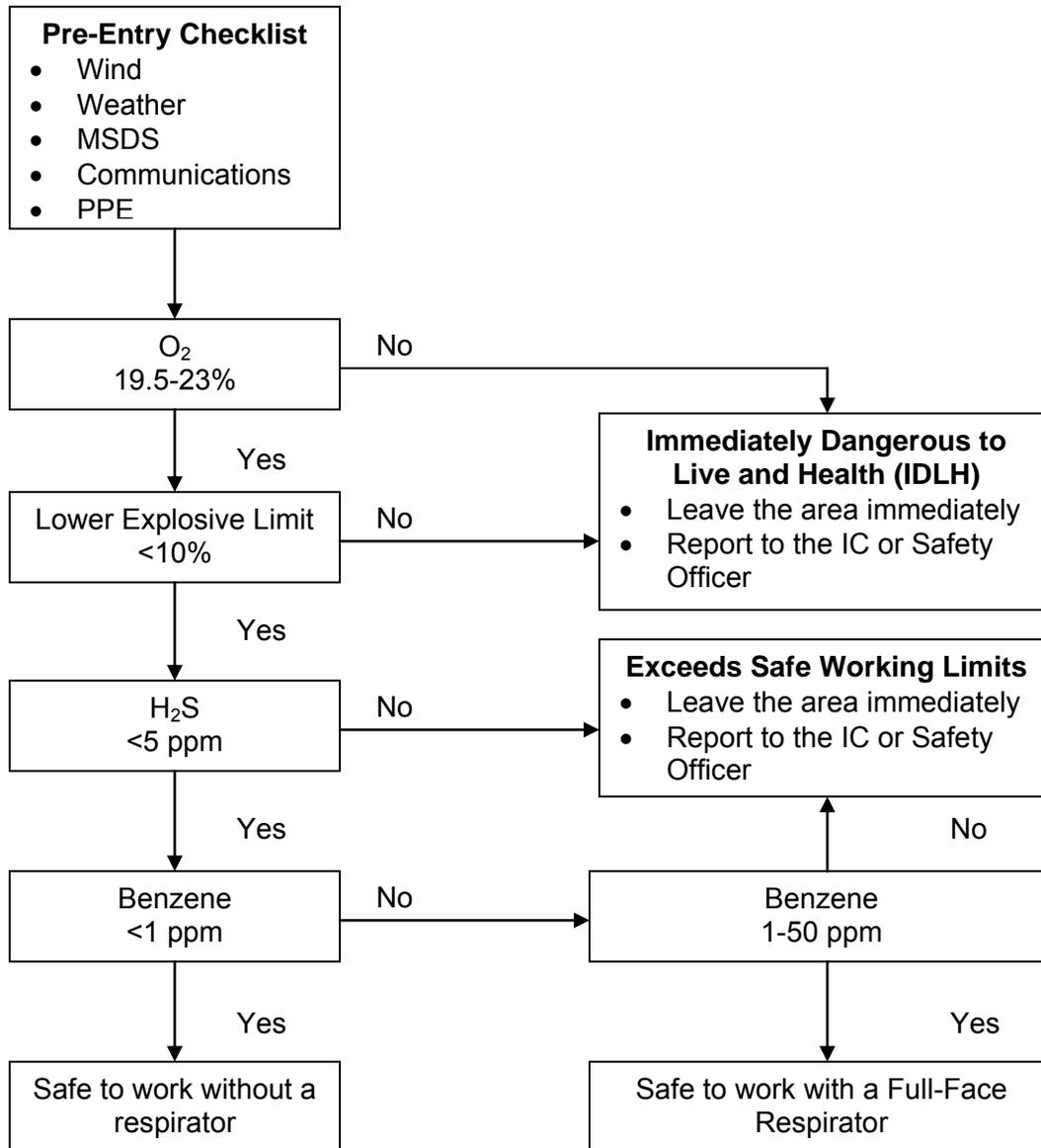
On shoreline assessments, the team will likely have accurate information or visual sightings of the extent of the oil in the zone. Local geography, access roads, and other features may limit the team's ability to approach the impacted area from upwind. The team must evaluate its options and decide the 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 "worst case" 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 oil spill characterization is complete. The identification of physical, environmental, or other hazards will complete the assessment.

3.4 Vapor Monitoring Flowchart



Note: This flowchart should be used as a guideline only. If there are any questions about safe working vapor levels, consult the Safety Officer.

3.5 Spill Observation/Assessment/Estimation Factors

3.5.1 Spill Surveillance

The following guideline assists 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 spill's maximum spread.
- 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.
- Use surface vessels to confirm the presence of any suspected oil slicks (if safe to do so); consider directing the vessels and photographing the vessels from the air, the latter to show their position and size relative to the slick.
- Spill surveillance is best accomplished through the use of helicopters or small planes; helicopters are preferred due to their superior visibility and manoeuvrability.
- All observations should be documented in writing and with photographs and/ or videotapes.
- Describe the approximate dimensions of the oil slick based on available reference points (i.e. vessel, shoreline features and facilities); use the aircraft or vessel to traverse the length and width of the slick while timing each pass; calculate the approximate size and area of the slick by multiplying speed and time.
- Record aerial observations on detailed maps, such as topographic maps.
- In the event of reduced visibility, such as dense fog or cloud cover, boats may be used to patrol the area and document the location and movements of the spill, however, this method may not be safe if the spill involves a highly flammable product.
- Surveillance is required during spill response operations to gauge the effectiveness of response operations; to assist in locating skimmers; and assess the spill size, movement, and impact.

3.5.2 Estimating Spill Trajectories

Oil spill trajectories should be estimated in order to predict direction and speed of the slick movement. Trajectory calculations provide an estimate of where oil slicks may impact shorelines and other sensitive areas, and also provide an estimate of the most effective location in which to mobilize spill response resources for protection, containment and recovery.

Oil spill trajectories can be estimated using vector addition or with computer programs such as CAMEO. Hand calculations typically utilize the following assumptions:

- Oil moves at approximately the same direction and speed as the water currents, unless the winds are strong.
- Wind speed can be multiplied by 0.034 to determine the effect of winds on speed and direction of spill movement.
- The combined effects of winds and currents can be added to estimate spill movement speed and direction.



Washington Oil Spill Compensation Schedule

Credit for Oil Recovery

From Ecology's Spill Prevention, Preparedness, and Response Program

If you spill oil into state waters, you can receive credit for any oil you recover, IF you follow these guidelines. The volume of oil you recover can directly and significantly affect the amount of the Resource Damage Assessment (RDA) claim made against you. Following these guidelines will make estimating the volume of oil recovered generally simple and cost effective, even for small spills.

- 1) Weighing is the easiest and least expensive method for determining the volume of oil recovered in absorbent material. Keep an accurate record of the size and number of each type of absorbent materials used because you must be able to determine how much the material weighed before it absorbed the oil. For recovery credit purposes, you do not need to extract the oil from the absorbent material by compression (squeezing) or washing.
- 2) Place oiled absorbent material in doubled plastic bags so the recovered oil does not leak out or evaporate. Keep absorbent material (pads, sweeps, booms, etc.) separate from other material (garbage, PPE, oiled debris, etc.).
- 3) Keep track of the length of time the absorbent materials are left in the water. This will help to estimate the amount of water absorbed.
- 4) Keep the water content as low as possible by allowing surface water to drain off absorbent material before placing it in the bags. Keep the bags closed as much as possible when working in the rain. Close lids on dumpsters to keep out rainwater.
- 5) In order to receive recovery credit, the oil must be recovered within 24 hours of the time oil first spills into state waters. Keep oil recovered within the first 24 hours separate from oil recovered after that time.
- 6) You cannot receive credit for oil recovered from areas other than water, such as soil, vegetation, road surfaces, ship decks, etc. Keep oil recovered from water separate from oil recovered from other areas.
- 7) Store primary and secondary recovery liquids separately. (See attached guidelines for definitions).
- 8) Do not collect or store recovered oil in tanks or vacuum trucks containing oil from other sources. Do not put oil from other sources into tanks or vacuum trucks containing recovered oil.
- 9) Oil collected in tanks or vacuum trucks must be allowed to physically separate from any water. The recovered oil volume must be derived using volumetric methods. You cannot use an estimate of the percent of oil in a tank or truck to derive recovery volume.

Washington Oil Spill Compensation Schedule Credit for Oil Recovery

RDA COMMITTEE RESOLUTION 96-1.1

Adopted May 8, 1996 (Revised May 12, 2004)

Intent: The RDA Committee recognizes that early containment and recovery of oil from the environment directly reduces the expected natural resource injuries caused by a spill. In order to acknowledge this fact in the compensation schedule, the RDA Committee developed the following credit provision. The credit reflects the direct avoidance of persistence effects, and likely reduction in mechanical effects, of each gallon of oil **recovered from the water within 24 hours of the time oil first spills into state waters**. The credit also recognizes that the acute impacts of oil in the water column begin immediately and are not sufficiently avoided even by rapid recovery efforts to warrant reduction under the compensation schedule.

Relationship to Other Resolutions: This resolution supersedes Resolution 95-1.

Credit Provision: Formula A shown below shall be used in compensation schedule applications to provide credit for the volume of spilled oil recovered from the water by responders within 24 hours, for any incident which meets the following criteria:

- 1) Recovered oil is stored and measured in accordance with the attached guidance document, and recorded on the attached data sheet;
- 2) Oil spilled to water is contained and recovered inside primary containment and within 1,000 feet of either the spill source or the point where the oil first enters state waters (Primary Recovery Liquids).

Formula A: Pursuant to the calculation of damages under WAC 173-183-830(3), WAC 173-183-840(2), WAC 173-183-850(2), and WAC 173-183-860(2), the mechanical injury and persistence components shall be multiplied by the difference between the spill-to-water volume and the total volume of oil recovered from the water by spill responders within 24 hours, such that:

$$\text{Damages}(\$) = \text{Scaling coefficient} * [(SVS_{at} * Oil_{at} * \text{Spill to water volume}) + (SVS_{mi} * Oil_{mi} * \{ \text{Spill to water volume} - \text{Total 24 hour recovery volume} \}) + (SVS_{per} * Oil_{per} * \{ \text{Spill to water volume} - \text{Total 24 hour recovery volume} \})]$$

If criterion 1 above is met but criterion 2 is not, Formula B shall be used to provide credit for the volume of spilled oil contained and recovered inside primary containment (Primary Recovery Liquids), which is applied to the Mechanical Injury portion of the calculation. The volume of any other oil recovered from the water within 24 hours (Secondary Recovery Liquids) is added to the Primary Recovery Liquids volume and credit for the total volume recovered from the water is applied to the Persistence portion of the calculation.

Formula B: Pursuant to the calculation of damages under WAC 173-183-830(3), WAC 173-183-840(2), WAC 173-183-850(2), and WAC 173-183-860(2), the mechanical injury component shall be multiplied by the difference between the spill to water volume and the Primary Recovery Liquids volume, and the persistence component shall be multiplied by the difference between the spill volume to water and the total volume of oil recovered by spill responders within 24 hours of the time oil first spills into state waters (Primary Recovery Liquids plus Secondary Recovery Liquids), such that:

$$\text{Damages}(\$) = \text{Scaling coefficient} * [(SVS_{at} * Oil_{at} * \text{Spill to water volume}) + (SVS_{mi} * Oil_{mi} * \{ \text{Spill to water volume} - \text{Primary Recovery Volume} \}) + (SVS_{per} * Oil_{per} * \{ \text{Spill to water volume} - \text{Total 24 hour recovery volume} \})]$$

This provision applies to all compensation schedule applications which occur after the adoption date of this resolution. Criterion 1 does not apply to spills for which the preassessment screening occurred before the adoption date of this resolution.

Washington Oil Spill Compensation Schedule Credit for Oil Recovery GUIDELINES

The following guidelines define how recovered oil must be handled, stored, and measured in order to receive credit under the Oil Spill Compensation Schedule. Given the scope of this credit, the guidelines focus on oil and oil-water mixtures recovered within 24 hours of the time oil first enters state waters. The state on-scene coordinator must confirm on the attached documentation form that these guidelines were met.

1. Definitions

- Primary recovery liquids: Oil and oil-water mixes recovered from the water inside the primary containment boom, and within 1,000 feet of either the spill source or the point where oil first spills into state waters, within 24 hours of the time oil first enters state waters.
- Secondary recovery liquids: Any other oil and oil-water mixes recovered from the water within 24 hours of the time oil first enters state waters.

2. General Guidelines

- The volume of primary recovery liquids and secondary recovery liquids shall be measured and recorded on the attached data form. Measurements must be reviewed and accepted by the state/federal OSC or their designee. Primary recovery liquids and secondary recovery liquids shall each be stored separately from each other and from all other materials collected during the spill response (such as oil recovered directly from the spill source) until such time that these measurements are completed.
- Primary and secondary recovery liquids should be stored in containers which have been verified as empty. If it is necessary to use a storage container which already contains water and/or petroleum products, the contents of that container must be identified and properly measured prior to the addition of primary or secondary recovery liquids.

3. Measurement Guidelines – Skimmers/Vacuum Trucks

- The volume of primary and secondary recovery liquids recovered by skimmers and vacuum trucks must be derived from volumetric methods rather than from estimates of removal performance.
- The percentage of oil contained in oil-water mixtures (including emulsions) recovered from the water shall not be measured until debris has been removed and the components have been allowed to physically separate.

4. Measurement Guidelines – Sorbents (boom, pads, etc.) and other oiled materials

- The volume of primary and secondary recovery liquids recovered from sorbents and other oiled materials must be derived from one of the following methods rather than from estimates of removal performance:
 1. **Volumetric:** Liquid shall be extracted from materials by compression or washing. The recovered oil-water mixture shall be measured as described above for skimmers/vacuum trucks.
 2. **Gravimetric:** Weighing of sorbents and other oiled materials shall take into account the pre-oiled weight of the material itself, any absorbed water, and accumulated debris. Density of the recovered oil shall be measured and used to convert the weight of the oil component into a volume.

Rather than measuring all applicable recovered sorbents and other oiled materials, representative sampling and statistical analysis may be used to estimate the volume of primary and secondary recovery liquids if that analysis meets the attached criteria.

Sampling and statistical analysis of recovered sorbents and other oiled materials

Measurement of each and every sorbent recovered during the first 24 hours is often infeasible for larger spills. In such cases, measuring a representative sample of oiled materials is the most effective way to estimate the total recovery. Unfortunately, many sampling and statistical analysis methods - some quite complex - could apply to this effort. Each requires assuming or knowing certain things about the total population of oiled materials from which representative samples are being drawn. For example, does the population follow a normal distribution? How much variance is expected? These attributes will largely be unknown and vary among spills. As a result, it is not practical to provide a “cookbook” approach to collecting and analyzing sample data for oil recovery. In fact, it is difficult to even prescribe acceptable margins of error. Therefore, the below guidelines simply set forth some basic sampling and analysis principles designed to control sampling error and avoid highly complex statistical analyses which would require extensive review. The responsible party must determine which sampling methods, sample sizes, and data analysis methods are most appropriate and provide written justification for those decisions. If a spill presents unusual or complex sampling issues, the responsible party is encouraged to seek approval of a sampling and analysis plan from Ecology staff before beginning to collect data.

Sampling

- Sample sets should be unbiased and representative of the total population. For example, sampling should be random without replacement and represent materials recovered during the entire first 24 hours of the spill event. The responsible party shall document in writing how they determined that the sample sets are unbiased representations of the total population.
- Sample sets should only be composed of like materials. For example, sorbent pad data should be collected and analyzed separately from sorbent boom data.

Two sample sets should be collected for each type of oiled material. The responsible party should determine the most appropriate test for determining sample size and justify that test in writing (e.g., citation of an equation from an acknowledged authority). At a minimum, the sample size for each set should be equal and large enough to be 80% certain (i.e., power $[1-\beta] = 0.80$) of detecting no greater than a 5% difference between the two sample means at the 5% level of significance (i.e., $\alpha = 0.05$). Most general statistics textbooks include equations for estimating required sample sizes, many using an iterative process and involving an estimation of expected variance. If an equation requires estimation of an expected variance or coefficient of variation, the estimate should be appropriate for the oil type, recovery material, and environmental conditions involved.

Analysis

- The total number of units in the population being sampled should be counted (an estimate may be acceptable under certain conditions if justified in writing).
- Once a sufficient sample size has been achieved, a mean volume of primary or secondary recovery liquids per unit of oiled material (e.g., # of gallons per sorbent pad) should be calculated for each sample set. The average of the two mean volumes should then be multiplied by the total number of units in the population in order to extrapolate the total recovery volume.
- Analysis of sampling data should result in an exact recovery volume as well as a range of volumes based on standard deviations from the mean.

More sophisticated predictions can be obtained from computer programs. Oil spill trajectory services can be obtained from:

- National Oceanic and Atmospheric Administration (NOAA) through the Federal On-Scene Commander (FOSC)
- Private Consulting Firms

3.5.3 Estimating River/Stream Velocity

Time Required for Stick/Floating Object to go 100 feet (seconds)	Stream Velocity (mph) ¹
136	0.5
68	1.0
45	1.5
34	2.0
27	2.5
23	3.0
19	3.5
17	4.0
15	4.5
14	5.0
11	6.0
10	7.0
9	8.0
8	9.0
7	10.0

Multiply mph x 1.6 to obtain current speed in kilometers per hour (km/ h)

To estimate the total time until recovery can start (in hours):

1. Estimate: the time since the spill occurred
2. Add: the time required to mobilize personnel and equipment to a control point
3. Add: the time to set up

To estimate the distance that the spill has advanced downstream:

1. Take: total time in hours (estimated above)
2. Multiple by: oil slick velocity in mile/ hour

To estimate the location of the front of the oil spill:

1. Determine: location (mile) on stream where spill occurred
2. Subtract: distance (estimate above)
3. To Get: location (mile) of the oil slick when the recovery team is ready

3.5.4 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. See below figured for estimating slick thickness.

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

Early in a spill response, estimation of spill volume is required in order to:

- Report to agencies
- Determine liquid recovery requirements
- Determine personnel and equipment requirements
- Estimate disposal and interim storage requirements.

Some rapid methods to estimate spill size are:

- 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 [bbl])
- 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

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)

Where safety allows, every effort should be made to limit the quantity of released product into adjacent waterways:

- Conduct site assessment (see Section 3.1)
- Act quickly and carefully
- 
- Stop all pumps
- Close all valves
- Block potential escape points using sorbent booms

4.1 Initial Containment Actions

Initial containment actions will focus on utilizing containment on site in the most effective manner to:

- Prevent the oil from impacting water, thereby reduce the surface area and shoreline to be cleaned
- Concentrate the oil (when safe to do so), making physical recovery more efficient
- Limit the environmental impact to the immediate spill area.

Selection of the appropriate location and 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

4.2 Spill Mitigation Procedures

Failure	Procedure
Failure of Transfer Equipment	<ul style="list-style-type: none"> • 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 vapor cloud ignition by shutting down all engines and motors.
Tank/ Cavern Overfill/ Failure	<ul style="list-style-type: none"> • 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 vapor cloud ignition by shutting down all engines and motors. • Ensure that dike 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)	<ul style="list-style-type: none"> • 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 vapor 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	<ul style="list-style-type: none"> • 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 vapor cloud ignition shutting down all engines and motors. • Control fire before taking steps to contain spill.
Manifold Failure	<ul style="list-style-type: none"> • 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 vapor cloud ignition by shutting down all engines and motors. • Drain fluids back into containment areas (if possible).

4.3 Spills to Land

The penetration of oil into soil depends on a number of factors, including:

- Oil viscosity
- Soil type, wetness, and permeability
- Ground temperature

Normally, the amount of oil in saturated soil will range from 0.1 to 0.3 gallons/ft³, however, the amount may exceed 0.4 gallons/ft³ in dry soils, i.e., beneath structures. Also, low viscosity oils will tend to penetrate deeply into coarse sediments. In homogenous soils, the deepest penetration will normally be located below pooled oil. In the event that oil reaches groundwater, the oil will typically move relatively slowly - typically 1.5 to 3 ft/day.

On impermeable ground, immediately block drain inlets, drain tiles, conduits, sewage systems, and pipe/cable ducts (limit the spread to waterways).

On permeable ground, pump out pooled oil as soon as possible to temporary storage and move contaminated soil to an impermeable surface (HDPE liner).

4.3.1 Interceptor/Trench

The construction of an interceptor/trench requires:

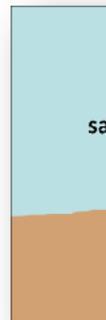
- Excavators/hand tools
- Wood planks (depending on soil type)
- Water pumps

Only use a trench if the water table is less than 10 ft. below ground. Dig the trench approximately 3 ft. below oil level, then reduce the water level in trench about 2 ft.



4.3.2 Trench/Berm

Berms can be built from sorbents, earth, or snow to block the spread of oil. Where time allows, an HDPE liner can be used to line a trench.



4.4 Open Water Containment

4.4.1 Open Water Booming

In cases where significant amounts of spilled oil enter a lake type environment, it might be necessary to attempt to contain free-floating oil in open water using the U, J or V-booming techniques. This activity will be conducted by MSRC.

4.4.2 U-Booming (Open Water Containment)

A single boom can be towed at a low speed (around 0.5 knots) allowing the oil to collect/concentrate in the apex of the boom. The collected oil can then be towed to a location where conditions allow the mechanical recovery of the oil.



4.4.3 J-Booming

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 the thickest patches of oil.



4.4.4 V-Booming

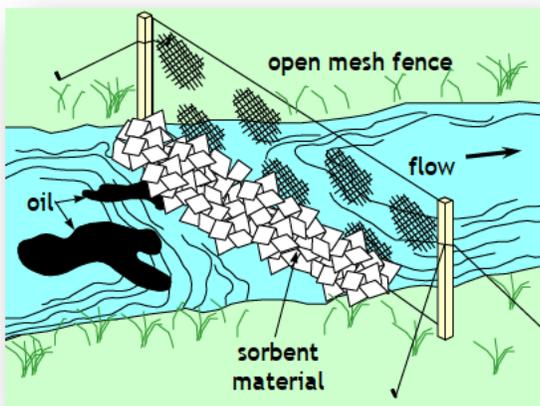
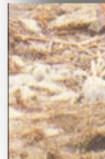
Two booms are towed at a low speed (around 1 knot) funneling the oil into the mouth of a skimming vessel.

Collected oil is then transferred to a barge or other floating oil storage device. The recovered product could then be transferred to slop oil tanks or to a vacuum truck.

4.5 Spills to Creeks and Rivers

4.5.1 Small Creeks

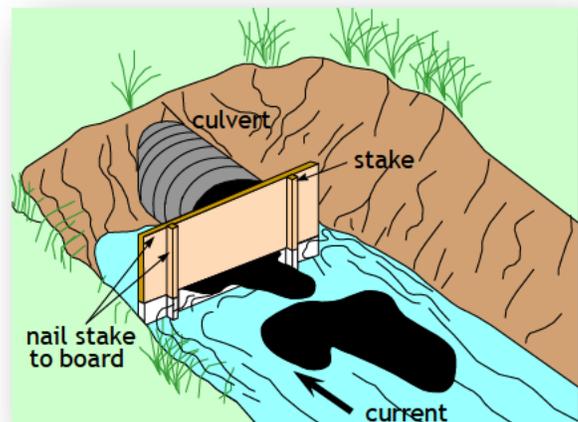
On spills to small (less than 0.5 ft/sec.) creeks, a board can be placed across the creek in order to block the surface flow. This technique will only work on very low velocity flow creeks.



Another option on slowly-flowing creeks and rivers (less than 0.5 ft/sec.) is a filter fence. Chicken wire, or open mesh fence material is placed across the waterway, and sorbent pads of booms are positioned against the fence. Sorbents should be monitored as once they water-wet, they will no longer absorb oil.

4.5.2 Ditches/Culverts

Spills into ditches can be blocked at culverts by placing a plywood board against the culvert opening. The plywood should be nailed to stakes to maintain its position. Also, care should be taken to ensure that the board does not block the water flow under the board into the culvert. The board can be repositioned vertically to reduce/increase the water flow under the board.



4.5.3 *Inverted Weir Dam*

On higher-flow creeks and rivers, angled pipes can be placed in sand bag or earthen dams to allow clean water to flow from the bottom (allowing floating oil to be blocked at the surface).



4.5.4 *Deflection Booms*

On fast-flowing rivers (exceeding 1 knot), booms should be angled in order to deflect floating oil towards shore. In some cases, it might be necessary to use multiple booms. When booming in rivers, take advantage of natural eddies and collection points.



4.5.5 *Boom Angles in High Currents*

CURRENT (MPH)	CURRENT (ft/second)	BOOM (Angle)
1.7	2.5	30° to 42°
2.0	2.9	25° to 35°
2.3	3.4	22° to 30°
2.6	3.8	19° to 26°
2.9	4.2	17° to 24°
3.2	4.6	16° to 21°
3.5	5.0	15° to 19°

4.6 Spills in Cold Weather

4.6.1 Oil Fate in Cold Weather

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 41°F is approximately 1/3 of what it is at 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.

4.6.2 Spill Response

Frozen conditions can actually 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. 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.

Snow and ice can be used to contain oil. Snow is also an effective sorbent. Equipment such as pumps and hoses must be thoroughly dried after use to minimize residual water that can freeze, causing damage or limiting use.

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.

4.6.3 Biological Issues in Cold Conditions

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.

4.6.4 Trenches and Berms

In cases where spilled oil has pooled on snow and ice, efforts should be made to block the spread of oil using trenches and/or berms.

Where possible, trenches should be lined using a HDPE liner or ice layer, using a water spray.

4.6.5 Oil on Ice



Oil that has pooled on top of ice should be removed as soon as possible using Vac trucks or transfer pumps.



The transfer of highly-viscous weathered oil may be difficult, especially in cold temperatures. In this case,

steam-injected screw auger pumps should be used to transfer oil to temporary storage.

4.6.6 Oil Under Ice

Courtesy BCO

The containment and recovery of oil under ice involves numerous safety and operational issues. The combination of pre-planning and safe practices will increase the likelihood of success.

Ice safety will be assessed immediately prior to flooding and if weather conditions change during the flooding where personnel are required to be deployed on ice.

4.6.7 Ice Augering

On spills under lake ice, or where oil is trapped and/or migrating slowly, ice augering can be used to create pathways for the oil to float to the surface for removal.

4.6.8 Ice Trenching/Slotting

Where safety allows, ice trenching/slotting can be employed in flowing rivers to provide a means of allowing under ice oil to float to the surface for recovery.



Trenches should be angled relative to the water flow to reduce losses due to entrainment. Note that specialized equipment is required to cut trenches and is available in the OSCAR units in Canada.

4.7 Response Tactics for Shorelines

Kinder Morgan and all contractors/consultants will conduct shoreline assessments and clean-up through the appropriate method on a site-specific basis using pre-existing mapping of shorelines and Geographic Response plans, the North West Area Contingency Plan, overflights and SCAT teams. Shoreline protection and clean-up resources are available via Kinder Morgan's contract with MSRC and per Appendix W of the approved PRC application. Additionally Kinder Morgan can meet the requirements of WAC 173-182-510(2) and WAC 173-182-520 by utilizing environmental consultants Polaris and URS. The following table is a summary of shoreline types and response tactics.

Type of Shoreline	Recommended Cleanup Activity
Developed or unforested Land	May require high pressure spraying: <ul style="list-style-type: none"> • To remove oil. • To prepare substrate for recolonization of barnacle and oyster communities. • For aesthetic reasons.
Freshwater Flat	<ul style="list-style-type: none"> • These areas require high priority for protection against oil contamination • Cleanup of freshwater flats is nearly impossible because of soft substrate • Cleanup is usually not even considered because of the likelihood of mixing oil deeper into the sediments during clean up effort • Passive efforts such as sorbent boom can be used to retain oil as it is naturally removed.
Fresh marsh	<ul style="list-style-type: none"> • Marshes require the highest priority for shoreline protection. • Natural recovery is recommended when: <ul style="list-style-type: none"> ○ 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. • Oil wrack and other debris may be removed by hand.
Swamp	<ul style="list-style-type: none"> • No cleanup recommended under light conditions. • Under moderate to heavy accumulations to prevent chronic oil 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.

4.8 Recovery

It is Kinder Morgan Canada's policy that, wherever possible, spilled oil be mechanically removed from the environment, using sorbents and/or oil skimmers.

4.8.1 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.

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.

4.8.2 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.



4.8.3 Cleanup Techniques – Removal

Technique	Description	Recommended Equipment	Applicability	Potential Environmental Impacts
Manual Removal	Hand tool (scrapers, wire brushes, shovels, cutting tools, wheel barrows, 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.	<u>Equipment</u> misc. hand tools <u>Personnel</u> 10-20 workers	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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.	<u>Equipment</u> motor grader, backhoe, dump truck elevating scrapers <u>Personnel</u> 2-4 workers plus equipment operators	<ul style="list-style-type: none"> • On land, wherever surface sediments are accessible to heavy equipment • Large amounts of oiled materials. 	<ul style="list-style-type: none"> • Removes upper 2 to 12 inches of sediments.
Sorbent Use	Sorbents are applied manually to oil accumulations, coatings, sheens, etc. to remove and recover the oil.	<u>Equipment</u> misc. hand tools misc. sorbents <u>Personnel</u> 2-10 workers	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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.	<u>Equipment</u> 1-2 50- to 100-bbl vacuum trucks w/ hoses 1-2 nozzle screens or skimmer heads <u>Personnel</u> 2-6 workers plus truck operators	<ul style="list-style-type: none"> • Can be used on all habitat types • Stranded oil on the substrate • Shoreline access points. 	<ul style="list-style-type: none"> • Typically does not remove all oil • Can remove some surface organisms, sediments, and vegetation.

4.8.4 Cleanup Techniques - Washing

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 1-5 100- to 200-gpm 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	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Can impact clean downgradient 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 50- to 100-gpm/100-psi pumping systems with manifold 1-4 100-ft hoses and nozzles per system 1-2 200-ft containment booms per system 1 oil recovery device per system Personnel 8-10 workers per system	<ul style="list-style-type: none"> Substrates, riprap, and solid man-made structures Oil stranded onshore Floating oil on shallow intertidal areas. 	<ul style="list-style-type: none"> Can impact clean downgradient 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 1-2 100-ft containment booms per unit 1 oil recovery device per unit Personnel 2-4 workers per unit	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Will remove most organisms if present Can damage surface being cleaned Can affect clean down gradient or nearby areas.

4.8.5 Cleanup Techniques – Dispersant

This checklist is intended to aid the Unified Commander (UC) in reaching a decision on whether the use of dispersants is the best course of action for potential or actual oil spill mitigation. It also provides a familiar listing of data to all Regional Response Team (RRT) members involved with the decision to allow the use of dispersants. The following sequence of events should normally be followed for an oil spill in which the UC wishes to use dispersants.

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 the UR should evaluate the potential use of dispersants. If the UC feels the potential for dispersant use exists, he/she should have their staff gather the information necessary to complete the dispersant checklist. He/she also should request RRT activation to prepare the RRT for review.

If upon completion of the dispersant checklist the UC decides the use of dispersants in the best course of action the checklist information should be passed to the RRT for final decision on its use.

The following steps should be utilized in deciding if the use of dispersants will be required. (An immediate threat to life which can be substantially lessened by the use of dispersants pre-empts the following matrix by the UC).

Dispersant applications in the region will be monitored as a general practice. The UC is responsible for designating monitors. The Pacific Strike Team may serve as monitors when available. There are two criteria suggested: required and desirable.

Compilation of Data	
(1) Spill data	
	(a) Circumstances (fire, grounding, collision, etc):
	(b) Time/Date of incident:
	(c) Type of oil product:
	(d) List bulk chemicals carried and their volumes:
	(e) Volume of product released:
	(f) Total potential of release:
	(g) Type of release (instantaneous, continuous, intermittent etc)
(2) Characteristics of the spilled oil	
	(a) Specific gravity:
	(b) Viscosity:
	(c) Pour point:
	(d) Volatility (flash point):
	(e) Relative toxicity:
(3) Weather and water condition/forecasts	
	(a) Air temperature, wind speed, direction:
	(b) Tide and current information:
	(c) Sea conditions:
	(d) Water temperature and salinity:
	(e) Water depth and depth of mixed layer:
(4) Trajectory information	
	(a) 48 hour oil trajectory forecast:
	1. Surface area slick:
	2. Expected areas of landfall:
	(b) 48-hour dispersed oil trajectory forecast:



Compilation of Data			
	1. Oil movement in water column:		
	2. Surface oil movement in water column:		
	3. Concentrate of dispersant/oil mixture in water column:		
(5) Characteristics of available dispersants			
	(a) Characteristics of available dispersants		
	Product 1	Product 2	Product 3
	1. Name		
	2. Manufacturer		
	3. When available		
	4. Location(s)		
	5. Amount available		
	6. Type of containers		
	7. Characteristics		
	a. Toxicity		
	b. Effectiveness		
	c. Reactions		
	d. Applicability to spilled oil		
	e. Other		
	8. Application methods		
	9. Miscellaneous		
	(b) Type of transportation and dispersing equipment:		
	Company 1	Company 2	Company 3
	1. Name		
	2. Location		
	3. Time to arrive		
	4. Equipment available		
	5. Other		
(6) Info about available dispersant and dispersing equipment			
	(a) Name of proposed dispersant on EPA and State acceptance lists:		
	(b) Type: (self-mix, concentrate, etc)		
	(c) Proposed application methods and rates:		
	(d) Efficiency under existing conditions: (% dispersed and volume dispersed)		
	(e) Location of the area to be treated:		
	(f) Surface area of slick treatable in scheduled time period:		
	(g) Estimated time interval between dispersant application and sensitive environments/resources:		
(7) Comparison of effectiveness of conventional cleanup methods vs. the use of dispersants:			
	(a) Containment at the source:		
	(b) Shoreline protection strategies:		
	(c) Shoreline cleanup strategies:		
	(d) Time necessary to execute response:		
(8) Habitats and resources at risk			
	(a) Shoreline habitat type and rea of impact:		
	Dispersant treated spill	Untreated spill	
	1.		
	2.		
	3.		

Dispersant Monitoring	
Required	
(1) Records	
	(a) Dispersant brand
	(b) Equipment and methods used in application
	(c) Dilution of dispersant prior to application, if any
	(d) Rate of application (gallons per acre, dispersant to oil ratio)
	(e) Times and area of application
	(f) Tracts of vessels or aircraft during application
	(g) Wind and wave conditions during application
Effectiveness: Visual and photographic documentation, by qualified observers of:	
	(a) Oil before and after dispersant application and
	(b) Re-surfacing of dispersed oil.
Environmental Impacts: Visual and photographic surveys of:	
	(a) The extent of shoreline impact by dispersed and undispersed oil
	(b) Mortality or abnormal behavior by fish, birds or mammals.
Desirable	
(1) Effectiveness: Sampling of the water beneath the oil slick and the oil and dispersant combination to determine the level of petroleum hydrocarbons in the water. This sampling could include "in-situ" measurements or sample collection for layer analysis.	
(2) Environmental impacts:	
	(a) Comparison of shoreline areas impacted by oil and oil and dispersant mixtures
	(b) Analysis of oil concentrations in sediments under dispersed oil
	(c) Investigation of water column organisms for signs of adverse impacts due to dispersed oil
	(d) Collection and analysis of birds affected by dispersants or dispersants and oil mixtures.

4.8.6 Cleanup Techniques – In-Situ Treatment

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	<ul style="list-style-type: none"> Any sedimentary substrate that can support heavy equipment Sand and gravel beaches with subsurface oil Where sediment is stained or lightly oiled Where oil is stranded above normal high waterline. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Oil may persist for significant periods of time Remobilized oil or sheens may impact other areas Higher probability of impacting wildlife.

4.8.7 Cleanup Techniques - 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 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.

The criteria for decanting are outlined below:

- All equipment intended for use in a decanting operation should be inspected to insure that it contains no harmful chemicals from prior use, and cleaned if necessary;
- All decanting should be done in a designated response area within a collection area, skimmer collection well, recovery belt, weir area, or directly in front of a recovery system
- Vessels or operations employing booms with skimmer in the apex of the boom should decant forward of the skimmer;
- All vessels, motor vehicles and other equipment not equipped with an oil/water separator should allow adequate retention time for oil held in internal or portable tanks before decanting commences
- A containment boom should be deployed around the collection area to minimize potential loss of decanted oil;
- Visual monitoring of the decanting area shall be maintained so that discharge of oil in the decanted water is detected promptly; and
- Records of volumes of oily water processes and oil recovered should be maintained

NOTE: Decanting requires regulatory approval.

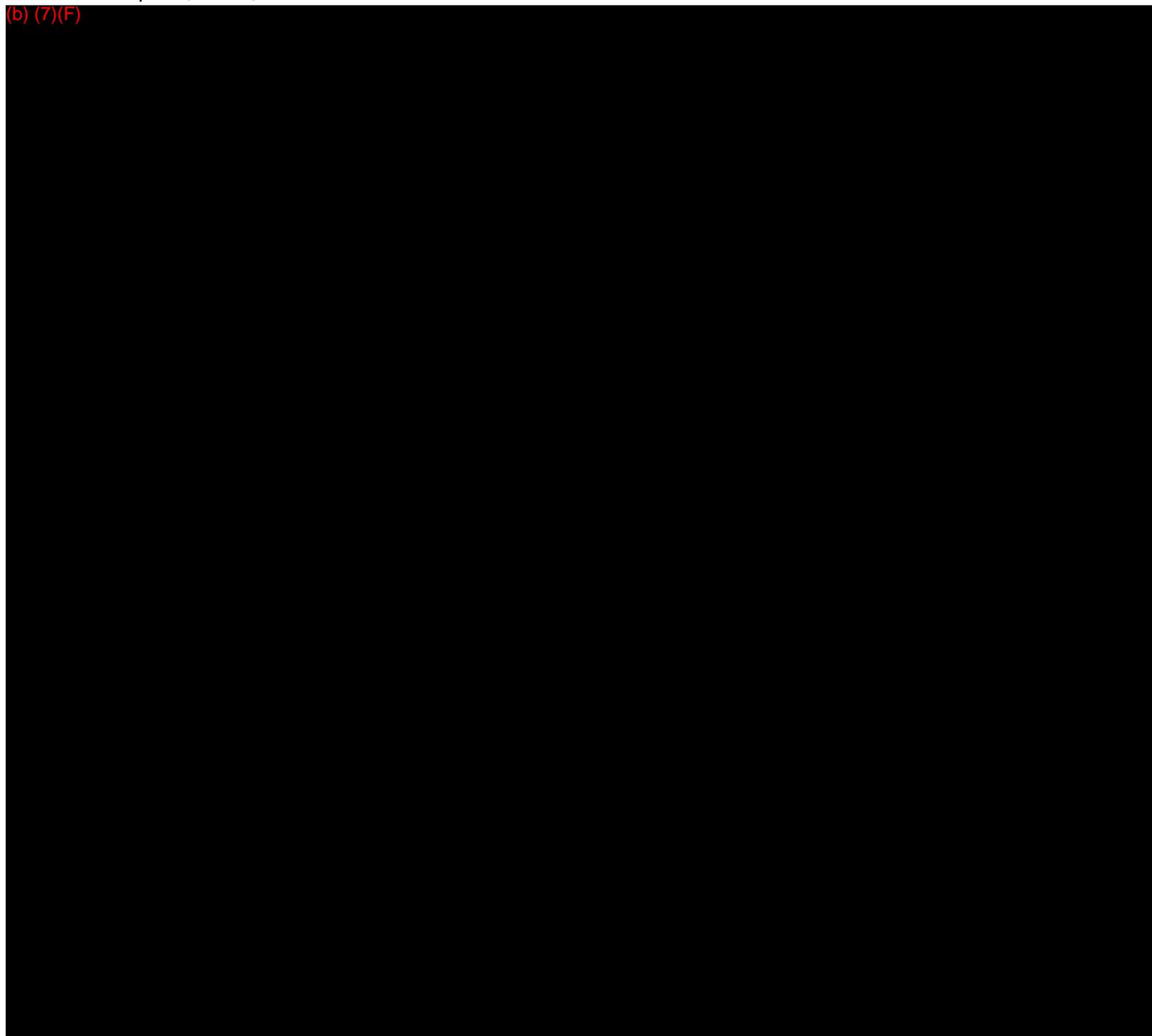
4.9 Credit for Oil Recovery

If oil is spilled into Washington State waters Kinder Morgan may receive credit for oil that has been recovered. Please see the following pages with information on how to receive this credit and the process of applying for the credit.

5.0 PROTECTION OF SENSITIVE AREAS

Where safety allows, various techniques can be used to protect sensitive areas. Careful consideration of the oil and shoreline types must be given before decisions are made. This will be done through the Environmental Unit with oversight by Federal and/or State Regulatory Agencies. The following map identifies Department of Transportation sensitivities such as Municipal Water Intakes, Schools, Hospitals, Parks, Recreation Areas and First Nation Reserves.

(b) (7)(F)



5.1 Area Description

There are environmentally and economically important sites in the vicinity of this pipeline; however, there are no known culturally important sites.

The marine and estuarine waters within the San Juan Islands and Puget Sound are among the most biologically rich and sensitive areas of the State of Washington. A wide diversity of shoreline and marine habitats (estuaries, rocks, reefs and islands), abundant food resources and exceptional water quality all contribute to making this area especially valuable to wildlife.

This region contains a number of small to medium-sized seabird nesting colonies, a multitude of marine mammal breeding and resting sites, rearing and feeding habitat for marine fish and one of the most impressive arrays of marine invertebrates in the world. The region is also a temporary home to many species of marine birds and mammals that are seasonal residents or pass through the area during migration. Flight restriction zones exist in the area to protect sensitive wildlife species.

In addition to this manual there is a Field Handbook and Control Points Manual which identifies control points and access points to water bodies for equipment deployment to prevent migration of oil downstream. In Sections 9 and 10 there is additional information in regards to available equipment. Section 13 has additional information for Wildlife Operations.

5.1.1 Marine Mammals

Common species of whales and dolphins found within the area include gray whale, orca, dall's porpoise and harbor porpoise. In addition, the harbor seal is a permanent resident of the area. Three addition species occur as regular seasonal residents or migrants: the steller sea lion, california sea lion and the northern elephant seal. Although relatively few steller sea lions are found in this area, this species is of special concern because it is listed as a 'Threatened Species'. This region also supports a large population of river otters which are largely marine in their habits.

The islands, nearshore rocks and beaches of the region provide pupping and resting sites for harbor seals. The largest concentrations are found in the vicinity of Boundary Bay and Padilla Bay. Other smaller sites are scattered throughout the entire area. Nearshore waters are also used as feeding areas by seals, seal lions, gray whales, harbor porpoise and river otters.

5.1.2 Birds

Many species of marine birds and shorebirds are either residents or seasonal visitors with this area. Much of the seabird nesting is scattered throughout the region on offshore rocks, exposed rocky coasts or on pilings.

Bald eagles and peregrine falcons nest in the area and are closely associated with the marine ecosystem because of their feeding habits and choice of resting sites. These birds are either listed as threatened or endangered and are therefore of particular concern. This area hosts a large wintering population of bald eagles.

Marbled murrelets are unique among the area's seabirds because they nest inland in old-growth forests, yet spend much of their time feeding and resting on marine waters in the nearshore environment. This species is of special concern since it's been shown to be highly vulnerable to oil spills and gillnet entanglement and is listed as a threatened or endangered species.

In addition to supporting a wide variety of resident birds, Puget Sound is recognized as one of the most important waterfowl wintering areas on the Pacific Flyway for waterfowl. This area has been identified as a key component in the North American waterfowl plan.

5.1.3 Bird Colonies

Most of these species follow the coast during their southward movement, many species winter around these bays, while others stop briefly to rest and feed before continuing their migration to Southern California, Mexico, Central America or South America. During fall and spring migration, as well as winter, large populations of shorebirds and waterfowl inhabit nearshore areas. Consequently in the event of a spill, certain protective measures may be required to minimize the effect on waterbirds. For example, during a critical spill situation, initial efforts should attempt to repel birds from the site with equipment such as bird canons. Depending on the species involved, some repelling devices will successfully deter individuals from the affected area while others will be ineffective.

Subsequent efforts can be reorganized on the basis of these results. The degree of effectiveness decreases as birds become accustomed to the sound system, this process is referred to as habituation. Activities such as people, boats and machinery usually are the most effective deterrents.

5.1.4 Eelgrass

Eelgrass meadows in protected bays provide food source for variety of species within the marine food chain. Additionally, it provides habitat and protection and acts as a nursery for many marine species. In the event of an oil spill near eelgrass meadows, protective measures should be implemented to reduce the impact.

Measures such as booms may be effective when conditions permit deployment. If placed from shore, minimize trampling and dragging equipment over the habitat. Dispersants may be applied in deeper water where dilution will be rapid. If applied in shallow water, use only in areas with adequate flushing from tidal or wave action. If applied directly over seagrass beds, dispersed oil may impact seagrass and organisms associated with seagrass beds. Herding agents may be used between the oil and shoreline.

For cleanup, natural cleansing is still preferable to most cleanup methods. Manual removal results in the removal of sediments and organisms and should be used in the 'wade zone' only. Trampling and dragging of equipment over the habitat should be minimized.

Substrate removal may delay or prevent re-establishment of the original ecosystem and vacuum pumping may result in the removal of organisms and sediment. Both methods are not advisable. In intertidal area, low pressure flushing may be viable. Vegetation cropping should be avoided since it modifies the habitat and may kill important habitat plants.

5.1.5 Inlets, Intakes, Harbors and Marinas

Inlet, intakes, harbors and marinas are inhabited by a variety of fish, invertebrates and waterbirds that would be at risk if an oil spill occurs near any of these facilities. Marinas have a great potential for public exposure to hazards and damage claims and should be boomed to exclude oil. Intakes for commercial, industrial and municipal water usage areas are subject to impact due to safety hazards, loss of use and damage claims. Protective measures could include exclusionary booming to prevent or exclude oil from entering these areas. Many of the entrances or channels have tidal currents exceeding 1 knot in the opening. In these cases, booms should be deployed landward from the entrance in quiescent areas. Booms should be placed at an angle to the current to guide oil to an area where it can be recovered.

The deployment of a second boom behind the first may be desirable to contain any oil that escaped under the primary boom.

Diversion booming should be used where the water current in an area greater than 1 knot or if the areas are too large to boom with available supplies. Diversion booms are deployed at an angle from the shoreline closest to the leading edge of the approaching oil slick to deflect oil towards shore, where pickup of pooled oil is more effective.

Since the area is predominantly environmentally sensitive, recommended response strategies are to attempt to limit the extent of shoreline fouling and to limit the area covered by the slick to the maximum extent possible. Since oil is the primary product handled, containment booming operations will be initiated. In addition, shoreline protection boom may be utilized in an attempt to prevent fouling of shorelines.

It is also important to recognize that while certain immediate environment protection response strategies must be planned for in advance, the ongoing protection and cleanup during a major spill would involve professional input from the company's oil spill advisors and the Federal and State On-Scene Coordinators.

5.1.6 Recreational Areas

Publicly accessible recreation areas generally have good water/shoreline access for logistical purposes.

5.1.7 Salmon and other Spawning Streams

Numerous streams throughout the area have been identified as environmentally sensitive due to the presence of spawning areas for salmon and other species.

The following factors are detrimental to spawning fishes, their nests and eggs:

- Changes in water temperature
- Increased siltation or turbidity
- Increased amount of dissolved gases in the water column
- Physical destruction of habitat by personnel and/or equipment.

To reduce the impact of an oil spill and response activities to streams identified as spawning habitat, the following steps would be taken:

- Attempt to contain spilled product as far upstream of spawning areas as possible
- Minimize or eliminate the use of overflow dams
- 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 Spill Containment and Recovery

Containment and recovery refer to techniques that can be employed to contain and recover terrestrial and aquatic petroleum spills.

Terrestrial spills typically result from pipeline or tank leaks. The company is equipped with secondary containment systems for areas with no-pressurized breakout tanks. Spills occurring within the

secondary containment area or along the pipeline areas should be contained at or near their source to minimize the size of the cleanup area and quantity of soil affected.

Containment is most effective when conducted near the source of the spill, where the oil has not spread over a large area and the contained oil is of sufficient thickness to allow effective recovery and/or cleanup. The feasibility of effectively implementing containment and recovery techniques is generally dependent upon the size of the spill, available logistical resources, implementation time and environmental conditions or nature of the terrain in the spill area.

For terrestrial spills, trenches and earthen berms or other dams are most often used to contain oil migration on the ground service. Recovery of free oil is best achieved by using pumps, vacuum sources and/or sorbents.

Spills that reach water spread faster than those on land. They also have greater potential to contaminate water supplies, to affect wildlife and populated areas and to impact manmade structures and human activities. Responses on water should therefore emphasize stopping the spill, containing the oil near its source and protecting sensitive areas before they are impacted.

Sorbents are used to remove minor on water spills. For larger spills, booming is used to protect sensitive areas and to position oil so it can be removed with skimmers or vacuum trucks.

5.3 Booming Techniques

5.3.1 Exclusion Booming

Description

Boom is deployed across or around sensitive areas and anchored in place. Approaching oil is deflected or contained by boom.

Primary Uses

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.

Environmental Effects

Typically, effects are limited to minor disturbance to substrate at shoreline anchor points.



5.3.2 Deflection Booming



Description

Boom is deployed at an angle to the approaching slick. Oil is diverted away from the sensitive area to a less sensitive location for recovery.

Primary Uses

Angle 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). On straight

coastline areas to protect specific sites, where breaking waves are less than 1.5 ft (0.5 m).

Environmental Effects

Typically, 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.

5.3.3 Along-Shore Booming

Description

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.



Primary Uses

This technique can be used in quiet areas with breaking waves of less than 1 ft (0.3 m).

Environmental Effects

Typically, effects are limited to possible shoreline oil contamination down-wind and down-current.

5.3.4 Shore-Seal Booming

Description

Specially-designed, shore-sealing boom is positioned in the inter-tidal zone to deflect oil.

Primary Uses

This technique can be used in a wide range of substrates, but is most often used on mud and sand flats.

Environmental Effects

Typically, effects are limited to minor disturbance to substrate at shoreline anchor points.



5.3.5 Use of Passive Sorbents

Description

Sorbents are positioned in the swash zone to absorb incoming oil.

Primary Uses

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.



Environmental Effects

The environmental effects of passive sorbents are typically limited to the minor disturbance to the substrate.

5.4 Spill Movement Estimates

Watercourse	Normal Seasonal Minimum Flow Rate (miles/hour)	Normal Seasonal Maximum Flow Rate(miles/hour)	Maximum Velocity Above Normal (miles/hour)
Chuckanut Creek	0.5	1.7	2.3
Deer Creek	0.1	0.8	1.2
Friday Creek	0.8	2.1	2.69
Nooksack River	0.9	2.5	3.1
Samish River	0.4	1.3	1.8
Siler Creek	0.1	0.6	0.9
Squalicum Creek	0.4	1.2	1.6
Sumas River	0.4	1.2	1.8
Tenmile Creek	0.3	0.9	1.3
Tributary to Squalicum Creek	0.3	0.9	1.2
Whatcom Creek	1.0	3.6	3.9

5.5 Historical Climatic Data

	Jan-Feb	Mar-Apr	May-Jun	Jul-Aug	Sept-Oct	Nov-Dec
Max Wind Speed (mph)	S 51	SW 44	SW 32	SW 29	SW 38	S 66
Average Wind Speed (mph)	9.4	9.4	8.7	7.9	8.4	9.2
Min Temperature (F)	36	39	47	55	46	36
Maximum Temperature (F)	49	58	69	75	70	50
Average Temperature (F)	42	48	58	65	57	42
Average Precipitation (inches)	4.6	3.2	1.6	0.9	2.4	5.7
Average Daylight (hours)	8.7	12	15.5	15.4	11.8	8.5

6.0 MULTIPLE HAZARDS

The pipeline and facilities are exposed to multiple types of hazards, including:

- Fire and explosion
- Natural Disasters:
 - Tornadoes
 - Earthquakes
 - Floods
 - Avalanches
- Security Incidents:
 - Bomb Threat
 - Breach of Security

6.1 Fire and Explosion Checklist

- Notify Control Center/Field Personnel of possible emergency situation
 - If applicable, refer to the facility-specific Fire Prevention Plan
- Notify nearest fire department (call 911)
- Evacuate all non essential personnel and secure area
- Muster company response personnel at a safe location
- Shut off fuel source that is feeding fire, if safe to do so
- If fire is small, use of hand held dry chemical extinguisher may be sufficient to control and extinguish the fire. **Do not take chances**
- Coordinate response with fire and/or police departments
- Apply foam and water if available and as directed by Fire Department Personnel
- Administer medical attention to any injured persons
- Monitor site weather conditions (particularly wind direction)

6.1.1 Fire Prevention

All company personnel are responsible for monitoring the accumulation of flammable and combustible waste materials and residues that contribute to fires.

- Flammable substances are those liquids, solids or vapors that have flashpoints below 38° C (100° F). Some of the more common flammables are gasoline, natural gas, propane, methanol and certain paints, primers and thinners.
- Combustible substances are those liquids, solids or vapors that have flashpoints greater than 38° C (100° F). Some of the more common combustibles include grasses, paper, wood, paint, certain lubricating oils and greases.

Good housekeeping and equipment maintenance are essential to keep fire hazards to a minimum. Listed below are housekeeping and maintenance requirements for controlling the supply and accumulation of flammable and combustible substances:

- Flammable liquids shall be stored in original or approved containers.
- Larger quantities (95 liters/25 gallons or more) of flammable liquids or vapors shall be stored in an approved container outside of the building or inside the building in an approved fire-rated storage cabinet.
- Each flammable liquid container shall have a bonding and grounding cable attached between it and the receiving container while liquids are being transferred or dispensed.
- Oil-soaked rags shall be stored in UL-approved, covered metal containers.
- Scrap paper and wrapping or packing materials shall be removed from the work area immediately after unpacking. Waste receptacles shall be emptied daily and contents placed in the trash containers provided.
- Weeds and grasses will not be allowed to grow or accumulate around flammable liquid storage facilities (tanks), pumping stations, or manifold areas.
- Using gasoline or condensate for cleaning agents is strictly prohibited.
- Site personnel are responsible for visually inspecting heat-producing equipment and ensuring that good housekeeping and equipment maintenance are being performed to keep fire hazards to a minimum.

6.2 Natural Disaster – Tornado

Definitions

Tornado Watch	A tornado formation is likely in the area
Tornado Warning	A tornado has been sighted or seen on radar

Look For

- Rotary motion at the base of the thundercloud system.
- Rotating cloud of debris or dust near ground.

Listen For

- The roar which can be heard for several miles described as jet aircraft or trains.
- If a natural disaster threatens the Primary Control Center, transfer of operation to the Secondary Control Center shall be initiated.

6.2.1 Tornado Action Checklist

Before the Storm

- If you see a tornado approaching location, call your Supervisor.
- Seek shelter, preferably in a cellar, culvert or strong building. Stay away from windows. Take cover under heavy furniture in the center part of building, keep some windows open
- In open country move away from tornado's path at a right angle. If you cannot escape, lie flat in nearest depression such as a ditch or ravine. If you have to crawl into culverts or under small bridges, beware of flooding, snakes and other animals seeking shelter.
- Keep listening to radio or television if possible. If you see a tornado, call the weather bureau.

After the Storm

- Give aid to injured.
- If damage has occurred to pipeline, follow the Emergency Response Plan found on page I-4, and report to supervisor.
- Watch for:
 - Downed power lines
 - Flooding
 - Debris

6.3 Earthquake Action Checklist

- Shutdown petroleum transfer and secure facilities:
 - Close isolation valves and tank valves
 - Close storm-water discharge valves
 - Shut off nonessential power supplies
- Monitor site for evidence of leaks from pipeline facilities.
- Notify the Control Center Operator of steps taken and obtain further instructions.
- Evacuate all nonessential personnel and third parties to a safe location.
- In the event of earthquake damage:
 - Follow the Emergency Response Philosophy found on page I-4
- Secure facility for aftershocks; exercise caution when entering damaged buildings
- Watch for:
 - Downed power lines
 - Flooding
 - Debris

6.4 Flood Action Checklist

A flash flood watch means that flooding is possible - watch out for it and be alert.

A flash flood warning means flooding has been reported - immediately take precautions to insure your safety.

- Shut down and isolate the section of the pipeline at risk
- Monitor the pipeline route for potential damage
- Buoy any above-ground facilities that could become submerged to prevent damage from craft operating in flooded areas
- Never try to walk, swim or drive through swift water
- Evacuate if necessary
- When flooding subsides, perform survey to determine if there is sufficient cover over pipeline
- Notify landowners of areas of reduced cover
- In the event of flood damage, follow the Emergency Response Plan found on page I-4
- Conduct an aerial overflight

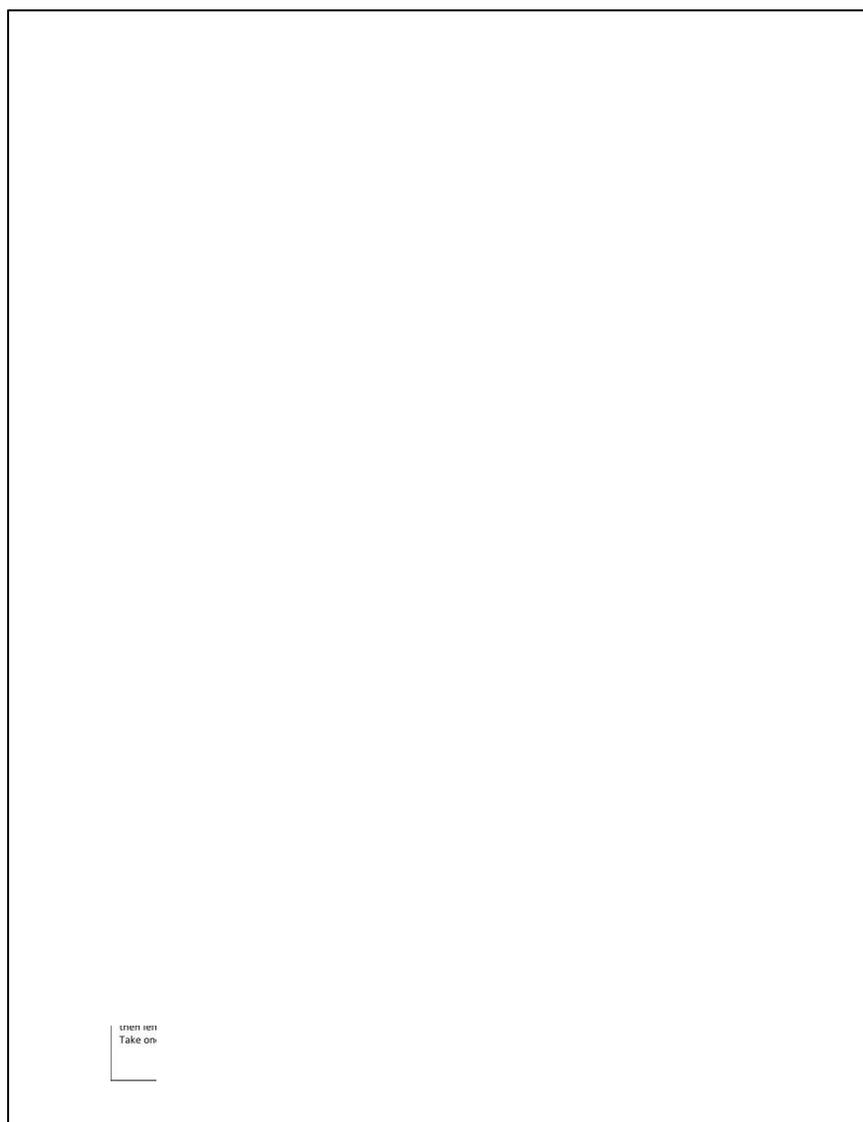
6.5 Avalanche Checklist

Response to an avalanche incident must be orderly and efficient, and keep the safety of rescuers uppermost at all times. A successful rescue depends on a rapid response by appropriately trained and equipped personnel.

- At the accident site, rescuers must be able to ensure their own safety while working as a team to accomplish the rescue as rapidly as possible.
- The initial response team may require additional resources to be deployed at the site as the rescue proceeds. In order to accomplish this, a plan has been developed to aid in conducting a rescue with the minimum of wasted time and effort.
- Rescue participants should be trained in and practice rescue techniques utilizing the avalanche rescue equipment available.

The full Avalanche Safety Plan is available by request or on KMonline EHS - Manuals

6.5.1 *Avalanche Rescue Card*





1-888-876-6711

Field Guide

6.5.2 *Avalanche – Preliminary Accident Details*

Initial Response

If you witness an avalanche, or an avalanche incident is reported to you:

- 1 **Retain Witness(es) and ensure safety of personnel**
- 2 **Note and Record Preliminary Accident Details**

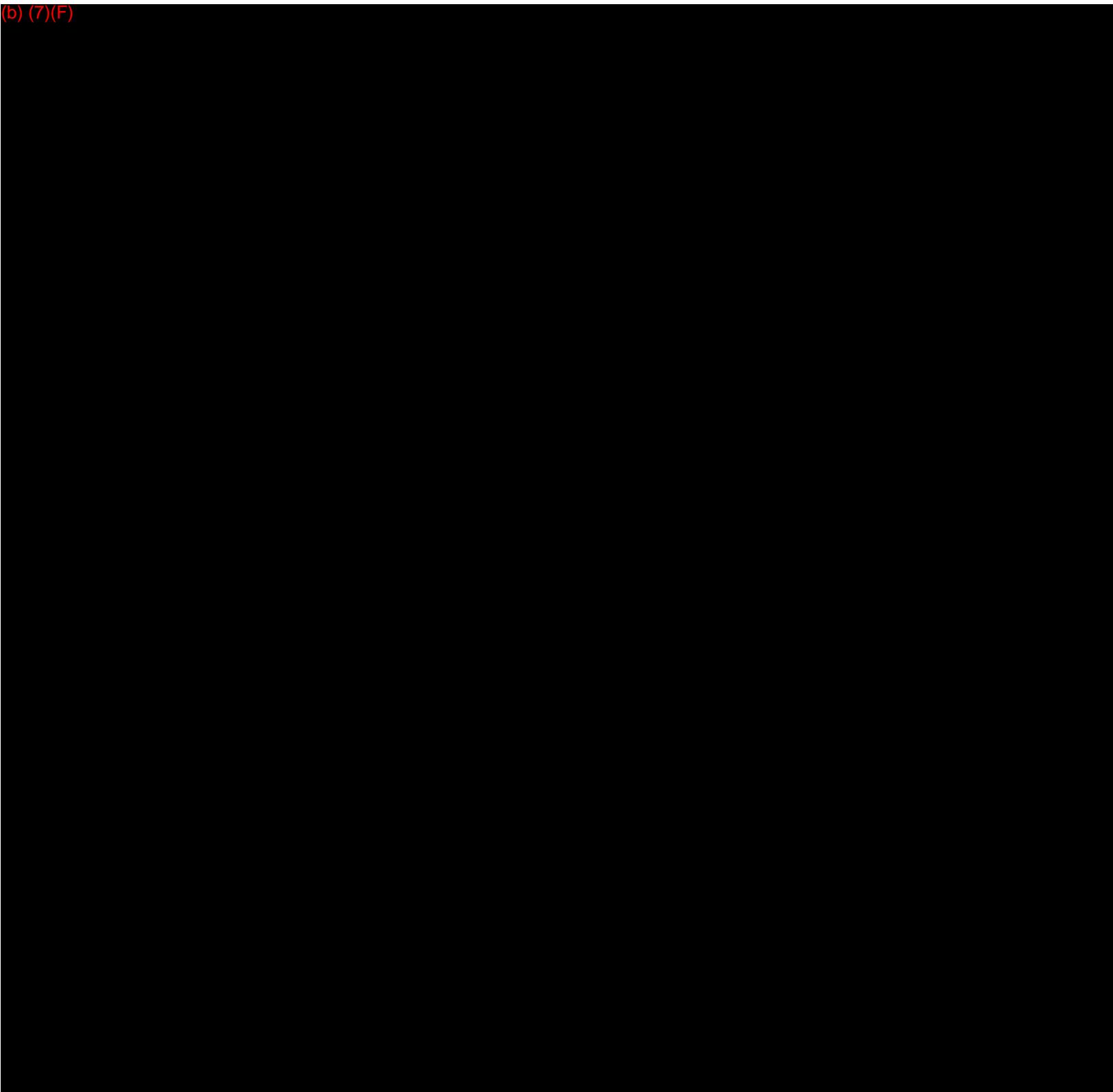
Time and Date	
Reporting Persons Name	
Witness Name (hold witness)	
Time of Accident	
Location of accident (ROW KP or access route) GPS	
Number of persons involved, injured and/or missing	
Number of responders with avalanche equipment	
Vehicular involvement	
Additional relevant information (weather [flyable?] and road condition, special requirements)	
A call back number for reporting personnel.	

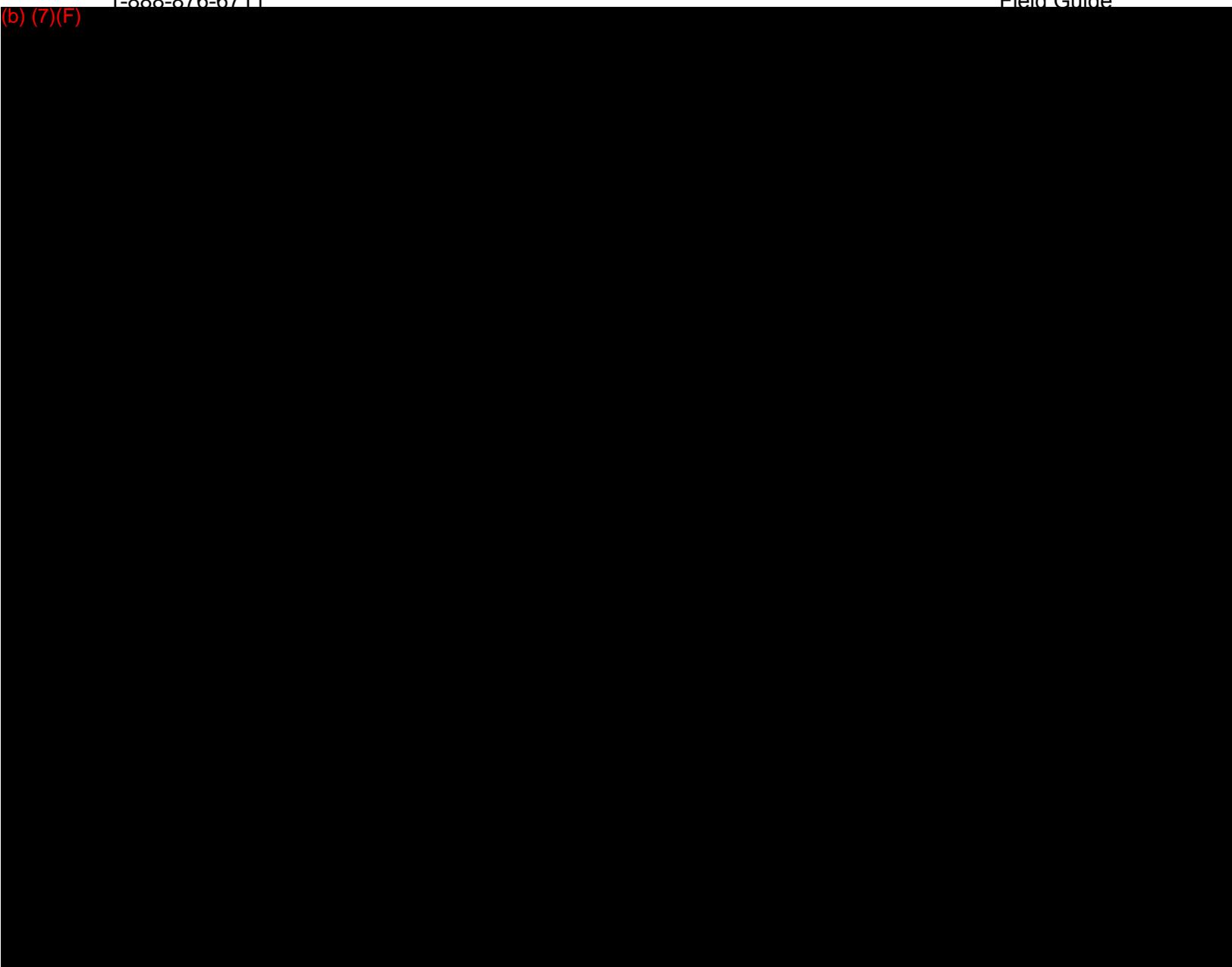
- 3 Relay the above Preliminary Accident Details to

Base Control Centre at (Kinder Morgan Emergency 1-888-876-6711)

Initial Responder/Incident Commander **MAY BE PROMPTED FOR ADDITIONAL INFORMATION** by the Base Control Centre.

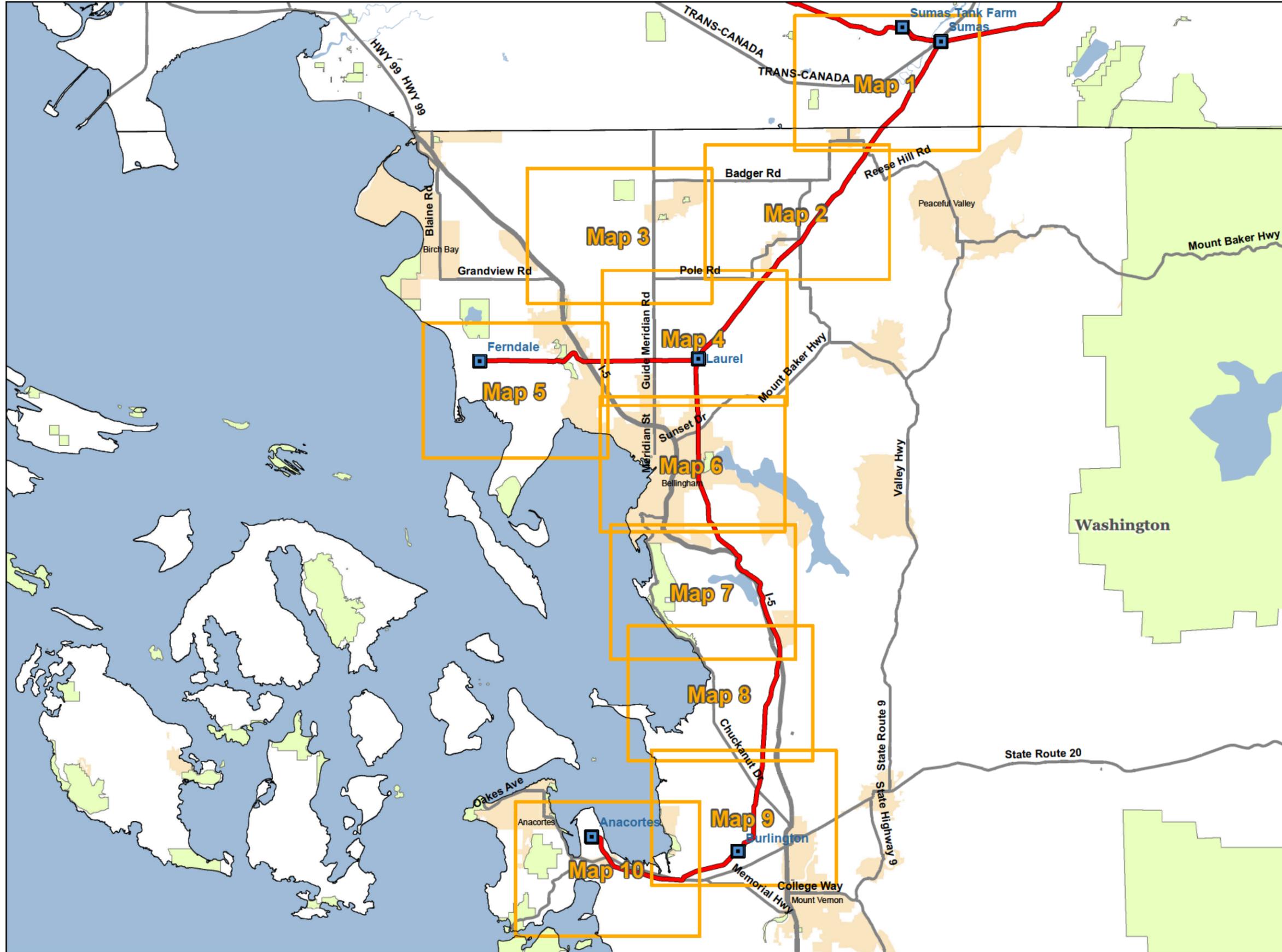
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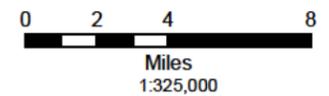
7.0 ROUTE MAPS



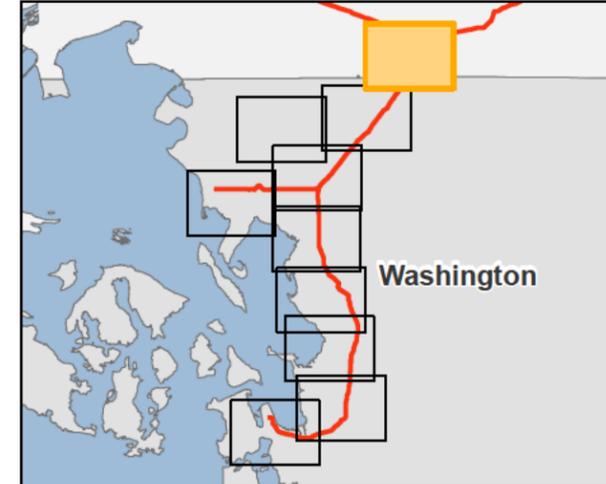
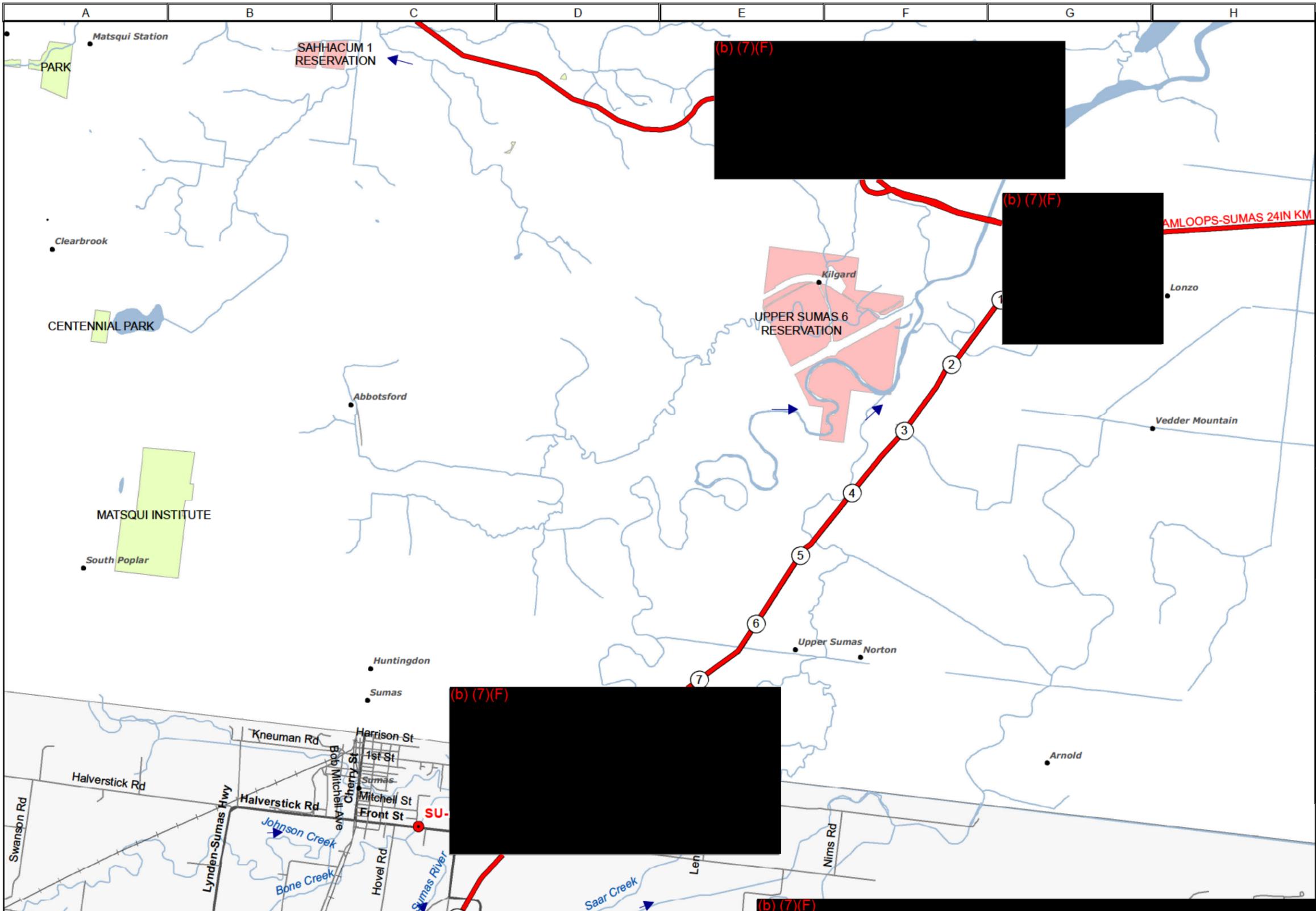
KINDER MORGAN
CANADA INC
EMERGENCY RESPONSE

Puget Sound
Key Map

November 2012

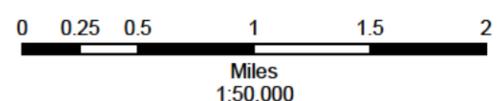


PUGET SOUND PIPELINE EMERGENCY RESPONSE MAP



Map 1 Sumas

Mile:
0 to 7

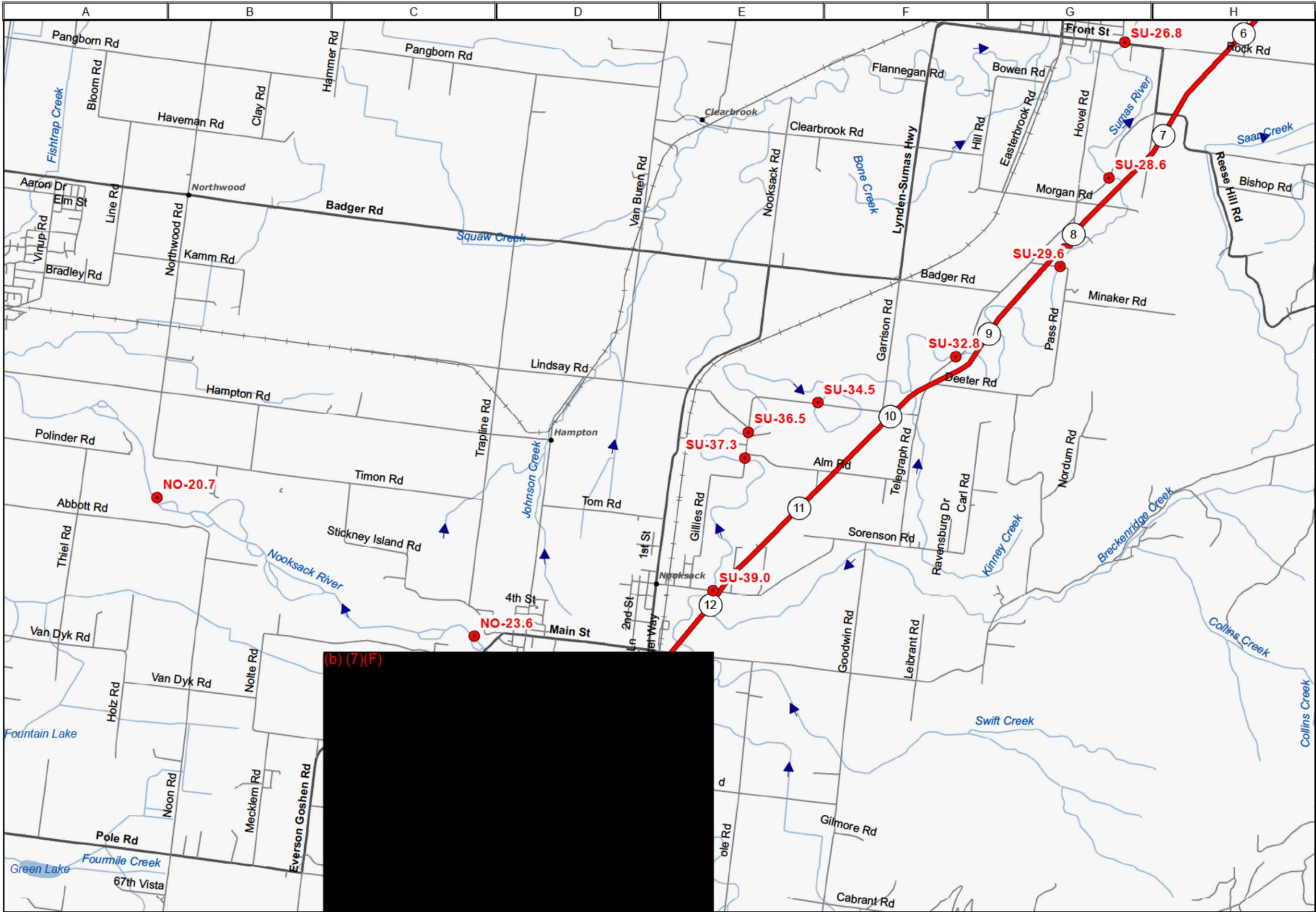
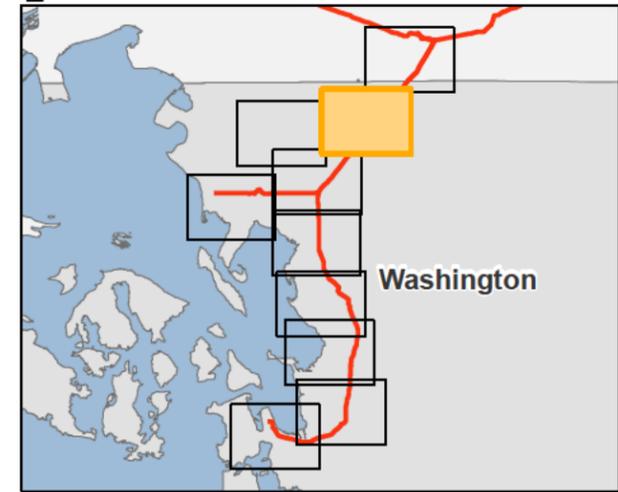


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-  River Flow Direction
-  Streams/Rivers
-  Water Body

PUGET SOUND PIPELINE EMERGENCY RESPONSE MAP

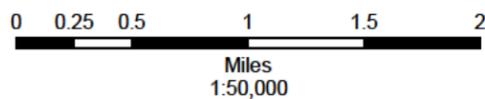


Map 2
Nooksack

Mile:
7 to 15



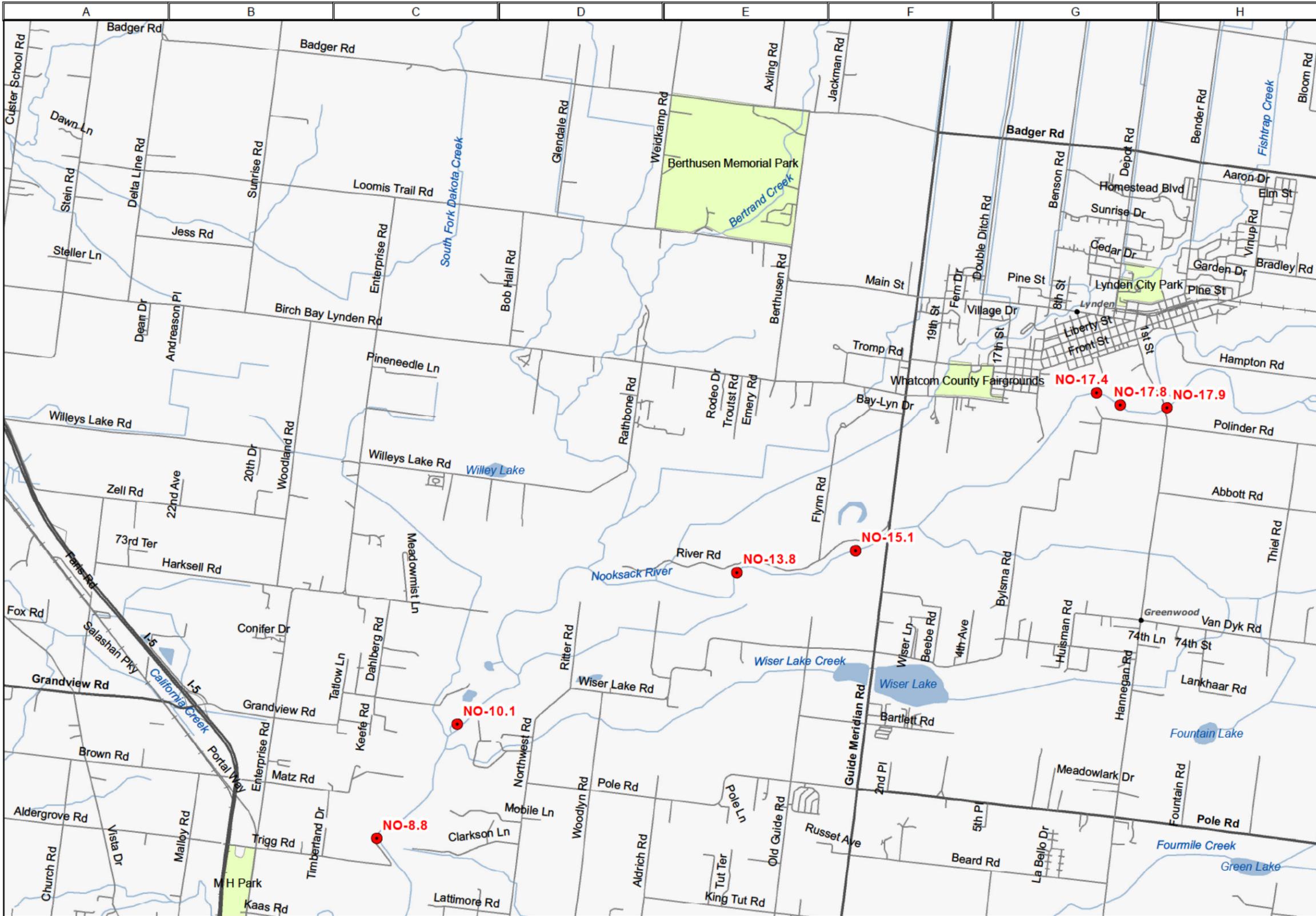
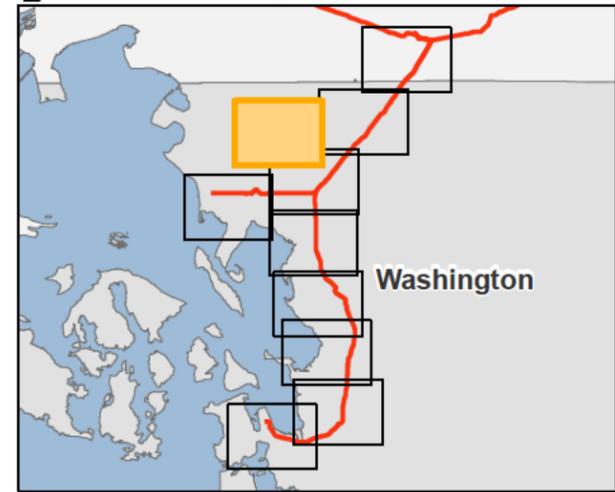
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- River Flow Direction
- Streams/Rivers
- Water Body

PUGET SOUND PIPELINE EMERGENCY RESPONSE MAP

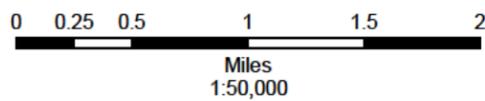


Map 3 Nooksack River

Mile:
Offset



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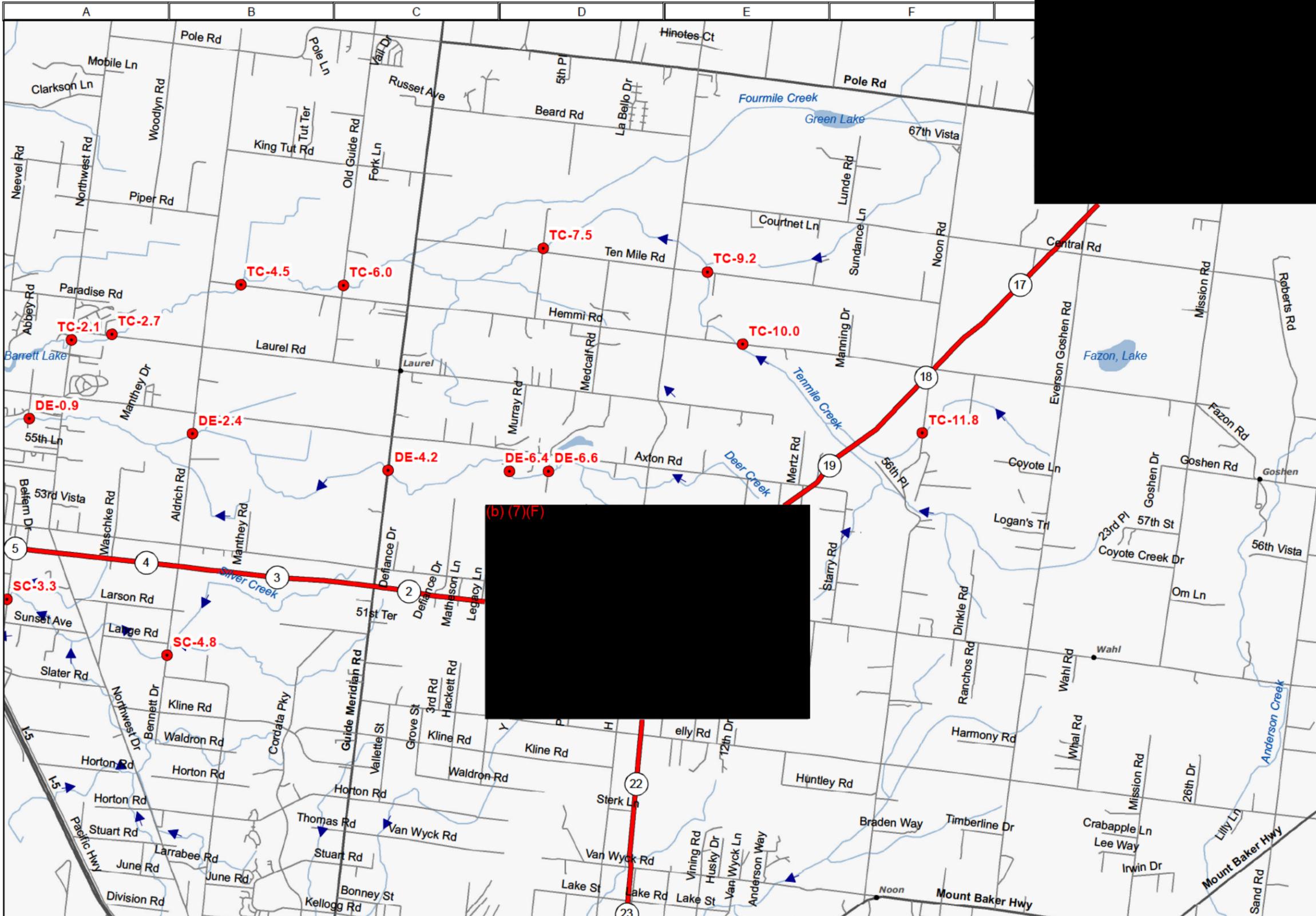
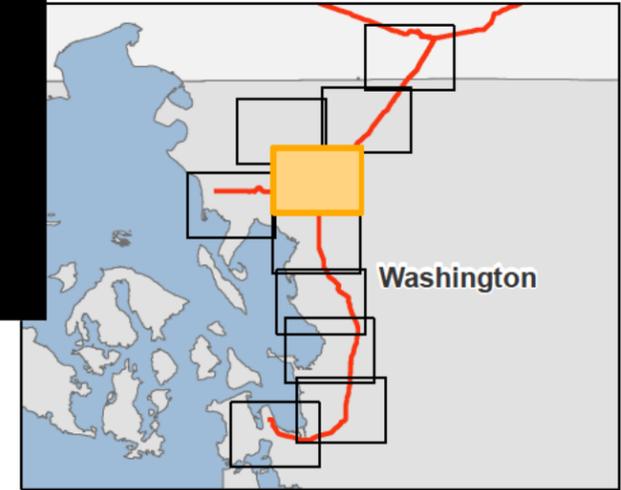


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- River Flow Direction
- Streams/Rivers
- Water Body

PUGET SOUND PIPELINE EMERGENCY RESPONSE

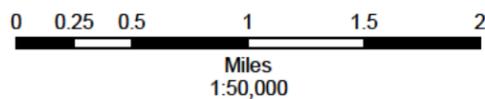


Map 4 Laurel Station

Mile:
15 to 22.8



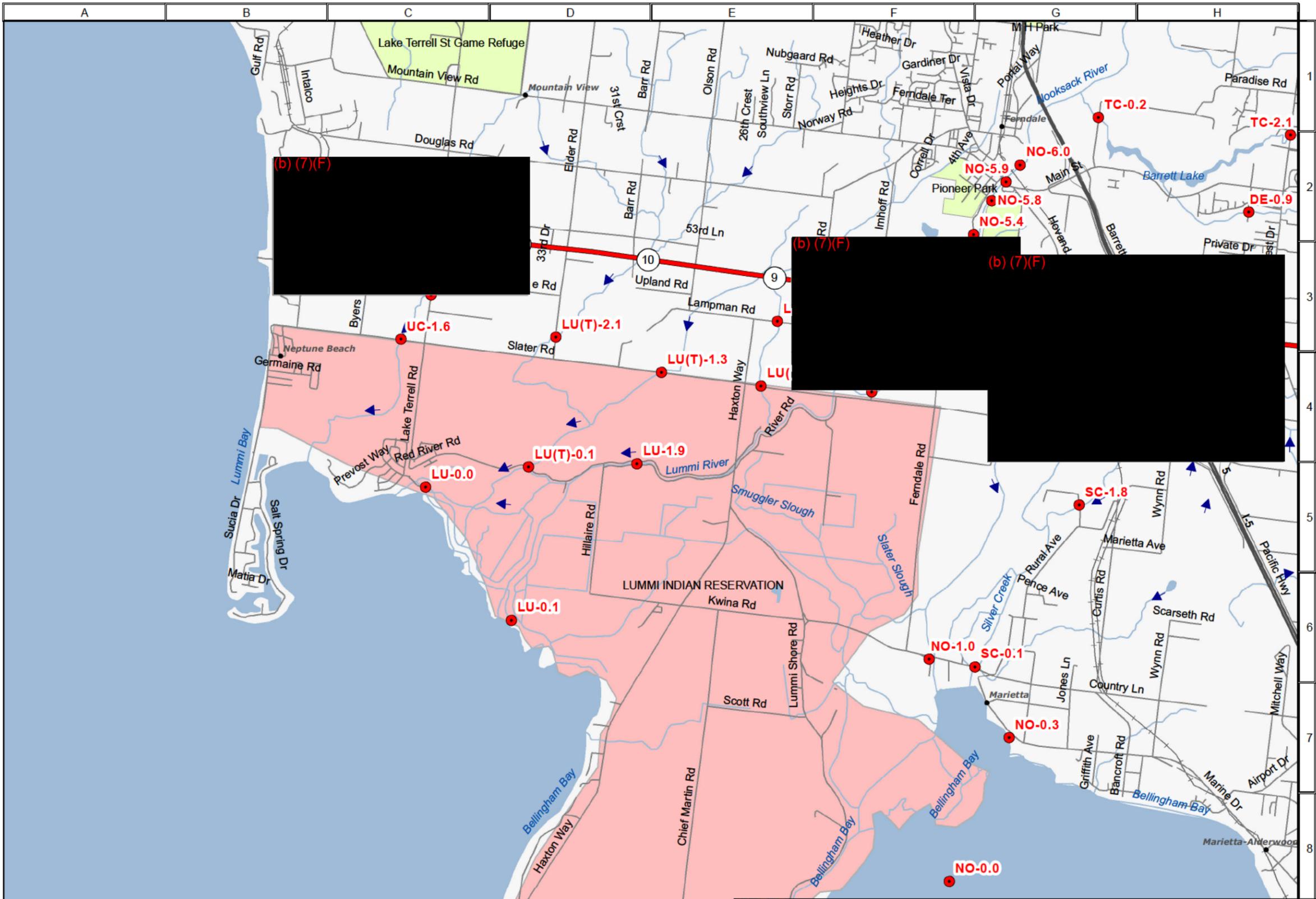
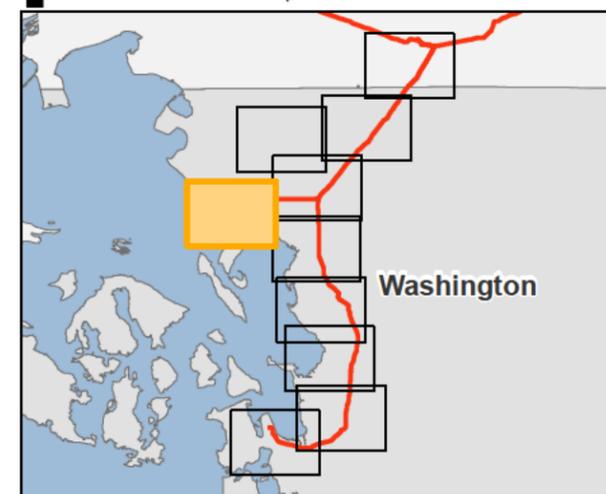
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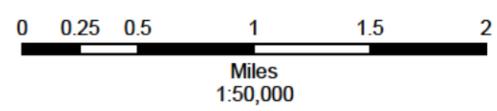
-  River Flow Direction
-  Streams/Rivers
-  Water Body

PUGET SOUND PIPELINE EMERGENCY RESPONSE MAP



Map 5
Ferndale

Mile:
4.2 to Ferndale

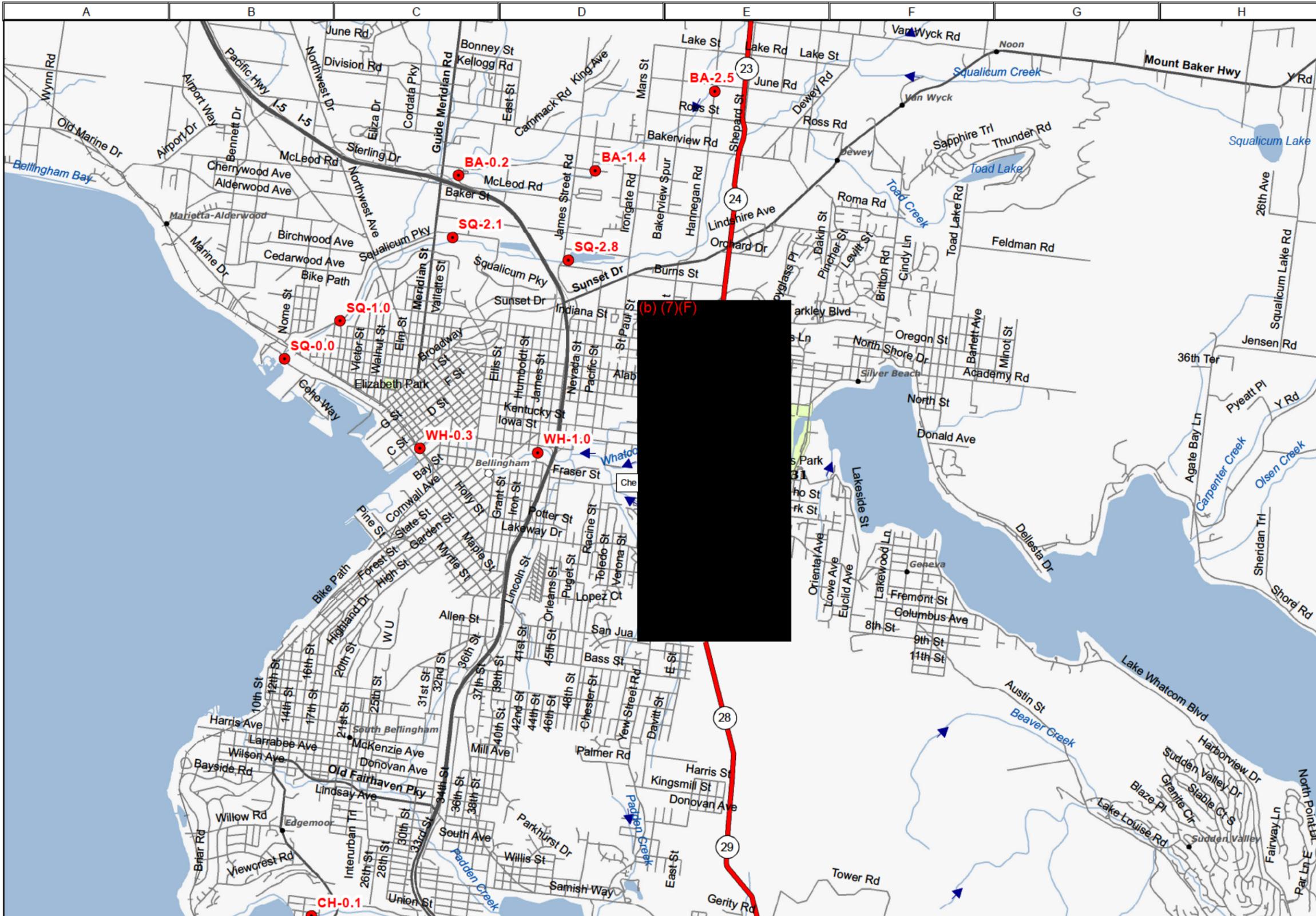
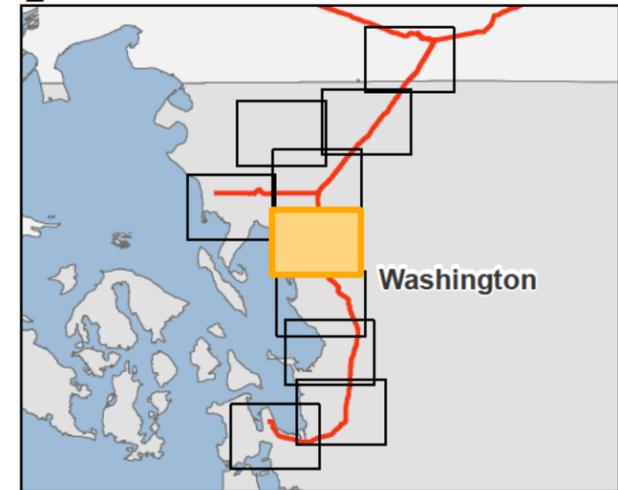


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-  River Flow Direction
-  Streams/Rivers
-  Water Body

PUGET SOUND PIPELINE EMERGENCY RESPONSE MAP

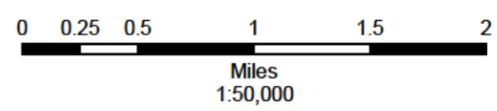


Map 6 Bellingham

Mile:
22.8 to 29



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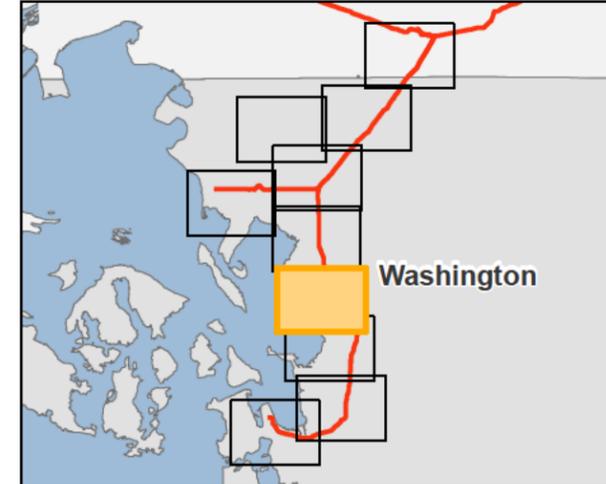
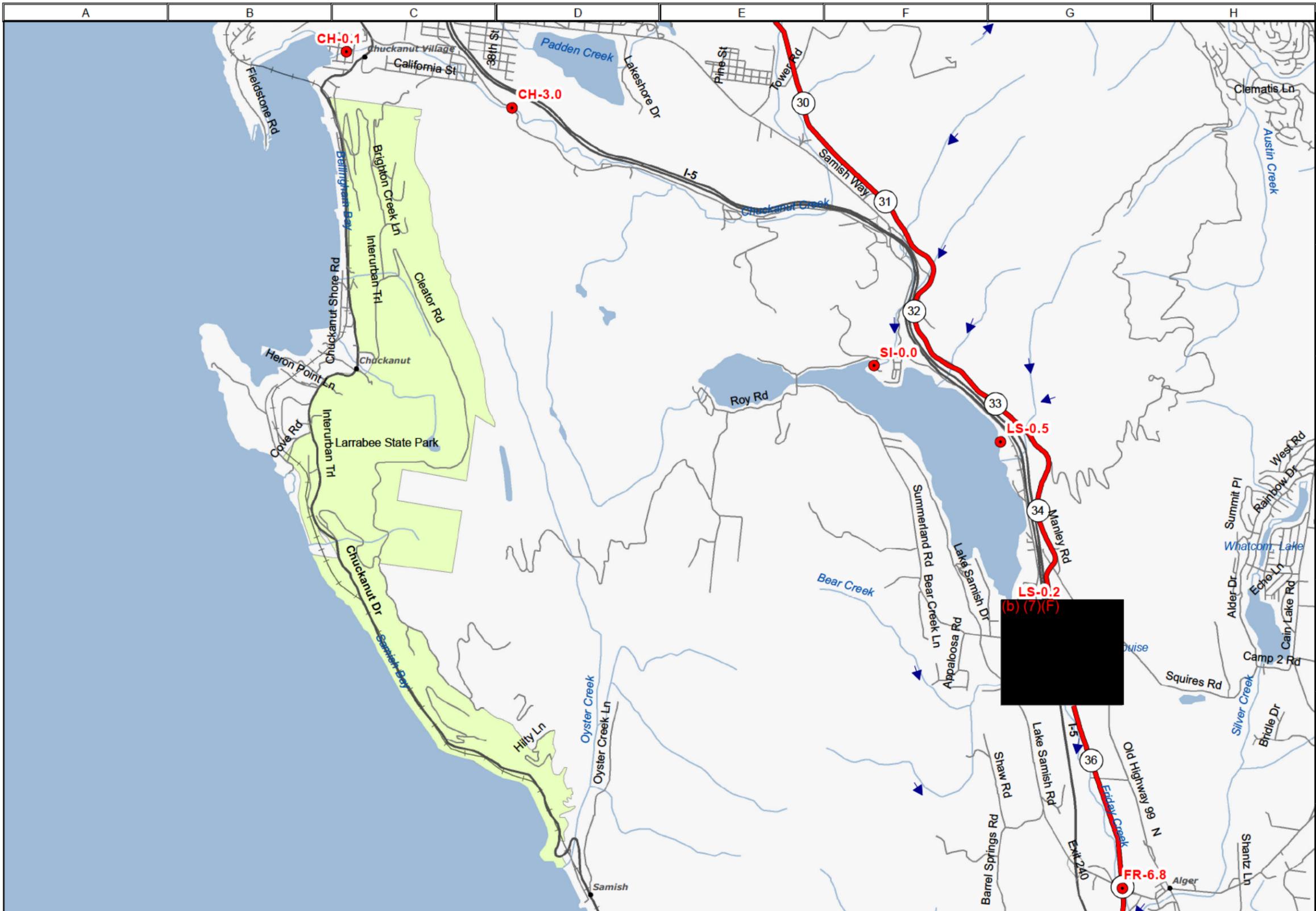


November 2012

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- River Flow Direction
- Streams/Rivers
- Water Body

PUGET SOUND PIPELINE EMERGENCY RESPONSE MAP

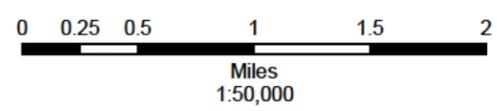


Map 7 Lake Samish

Mile:
29 to 36



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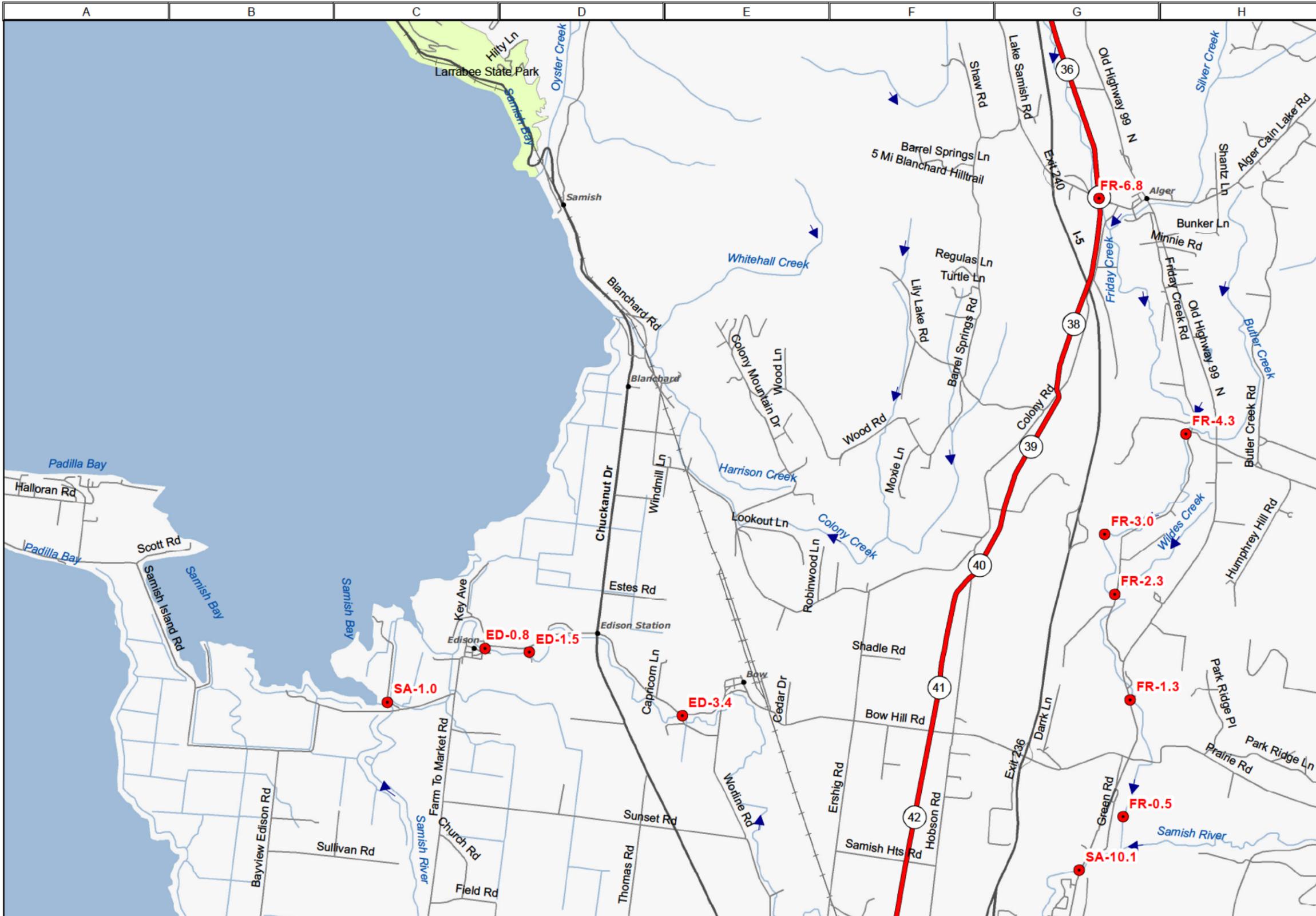
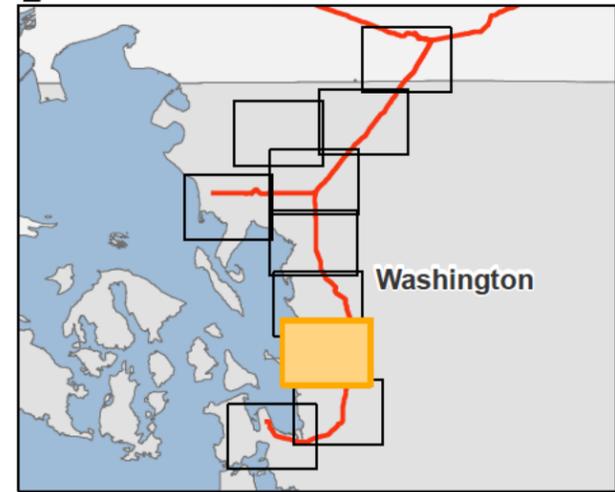


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-  River Flow Direction
-  Streams/Rivers
-  Water Body

PUGET SOUND PIPELINE EMERGENCY RESPONSE MAP

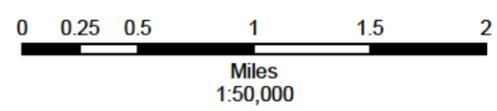


Map 8 Samish Bay

Mile:
36 to 42.5



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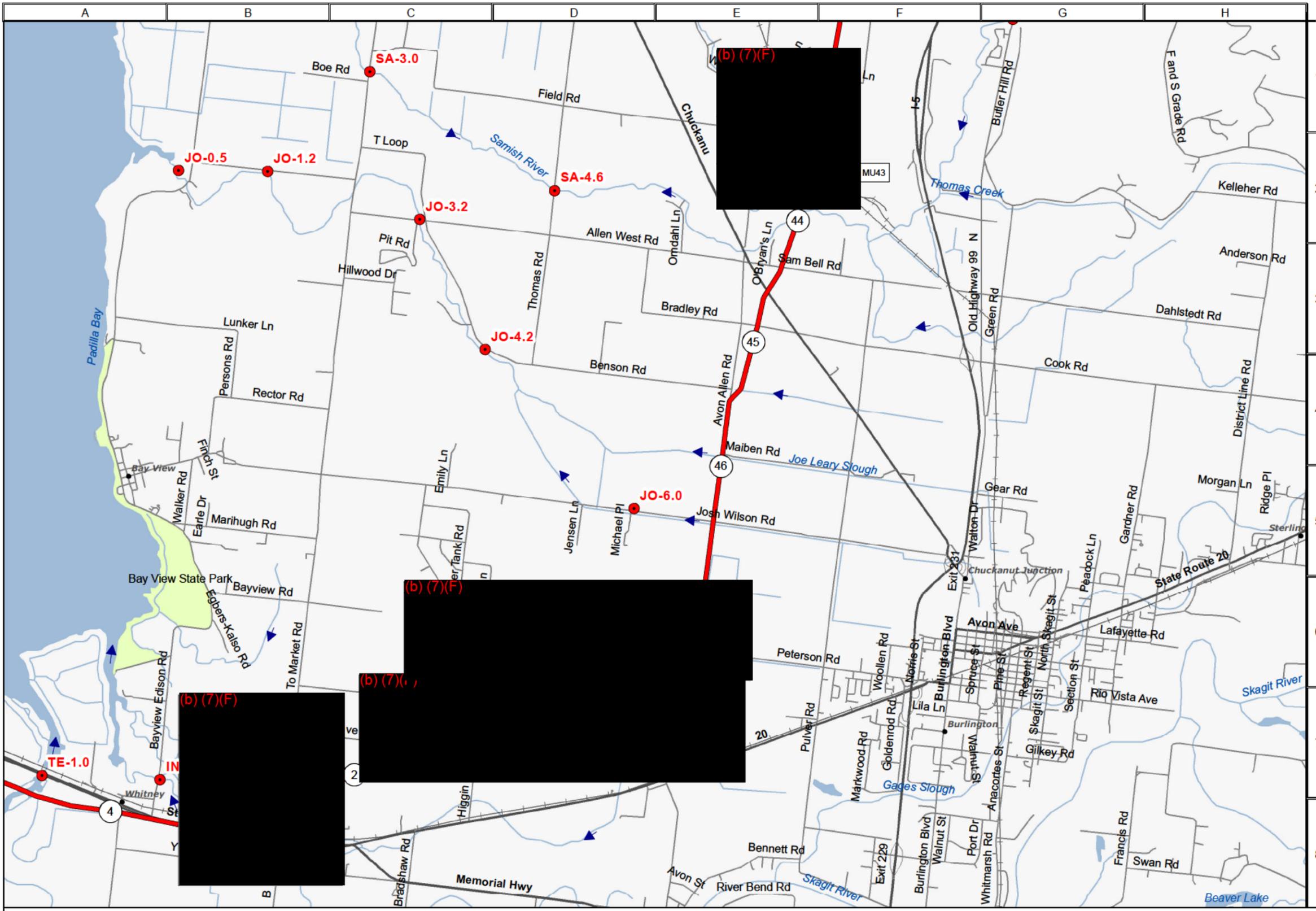
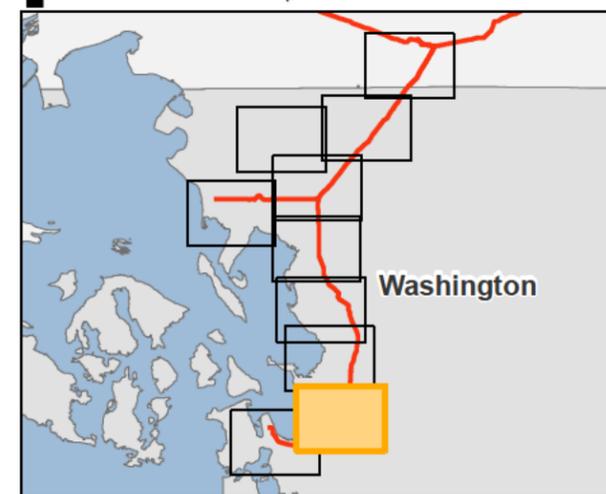


November 2012

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-  River Flow Direction
-  Streams/Rivers
-  Water Body

PUGET SOUND PIPELINE EMERGENCY RESPONSE MAP

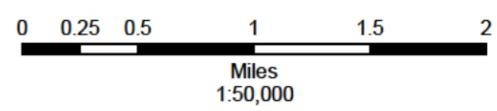


Map 9
Burlington

Mile:
42.5 to 48



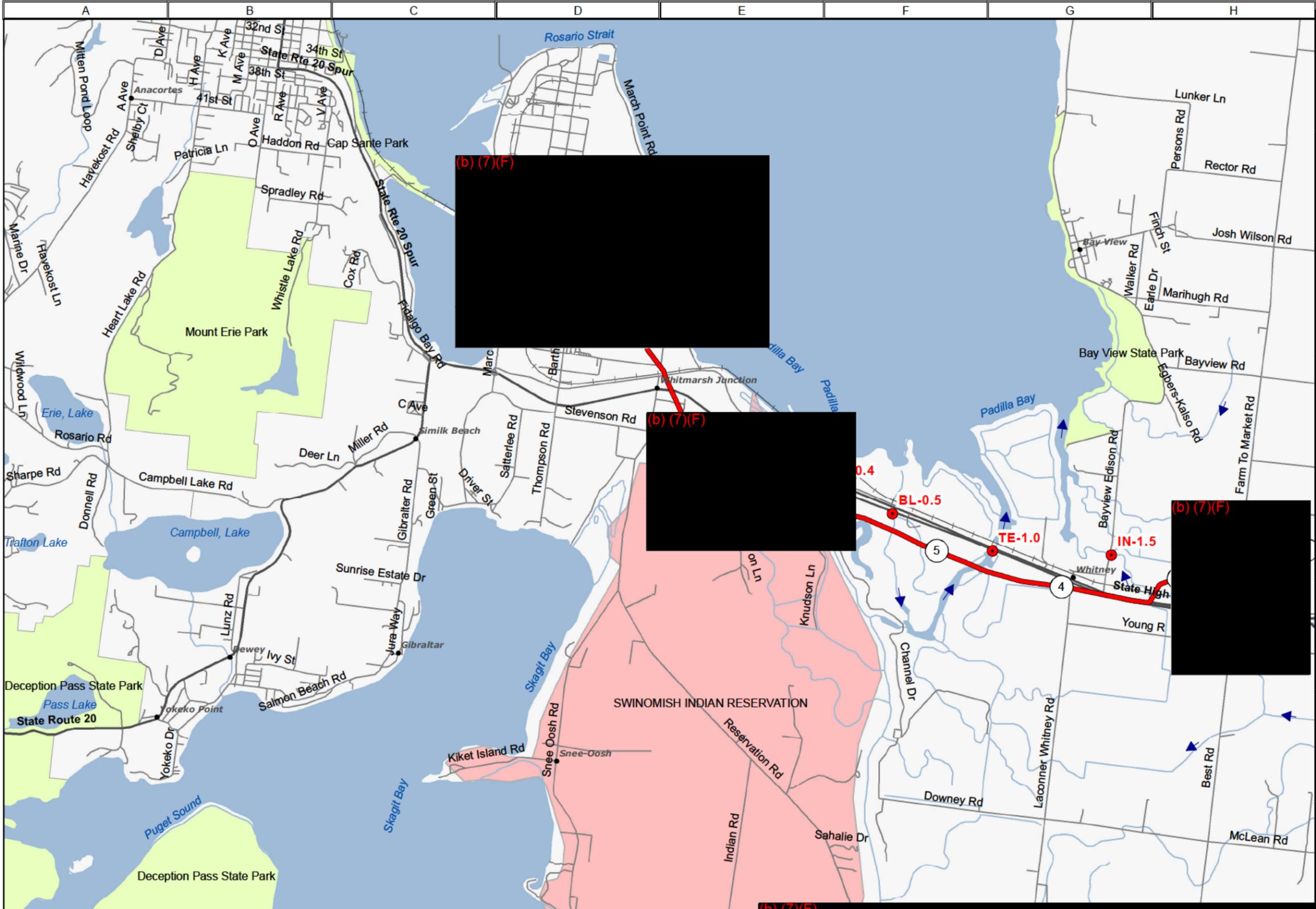
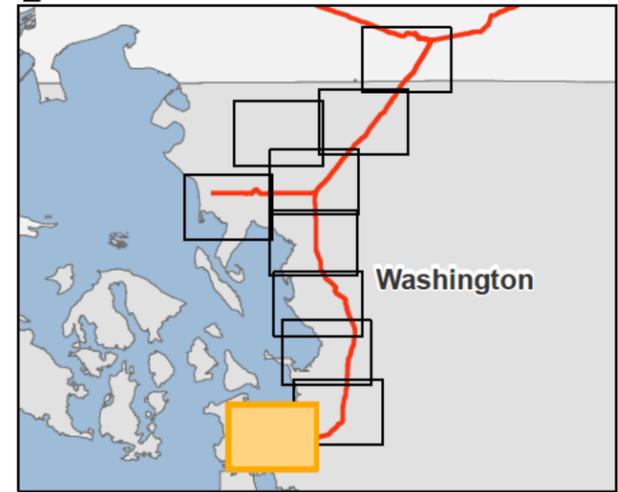
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November 2012

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PUGET SOUND PIPELINE EMERGENCY RESPONSE MAP

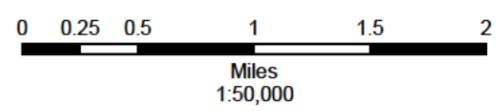


Map 10
Anacortes

Mile:
MB3 to Anacortes



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November 2012

- River Flow Direction
- Streams/Rivers
- Water Body

8.0 CONTROL POINTS

Control Point Name MCLEOD ROAD **Control Point** BA-0.2

(b) (7)(F)

ts Feet **Review Date** 9/27/2005

Location At Best Western Heritage Inn on McLeod Road. **Land Owner** Unknown

Control point is in centre of Best Western Heritage Inn complex.

WORKSPACE

Size Ample **Location** Good beside creek and in adjacent parking areas

Description Creek bank and parking areas

Comments Excellent working area

WATER BODY

Name BAKER CREEK **Width** 5 to 10 feet

Depth Or Bank Height Moderate slope; bushy

Bed Type Rock **Distance To Confluence** 0.2 miles to Squalicum Creek

LOGISTICS

Nearest Response Equipment Laurel Station

Logistics Comment

Helicopter: use the eastern parking lot

Helicopter Operation Fair

Boat Launch Not Required

Upstream Cp BA-1.4

Downstream Cp SQ-1.0

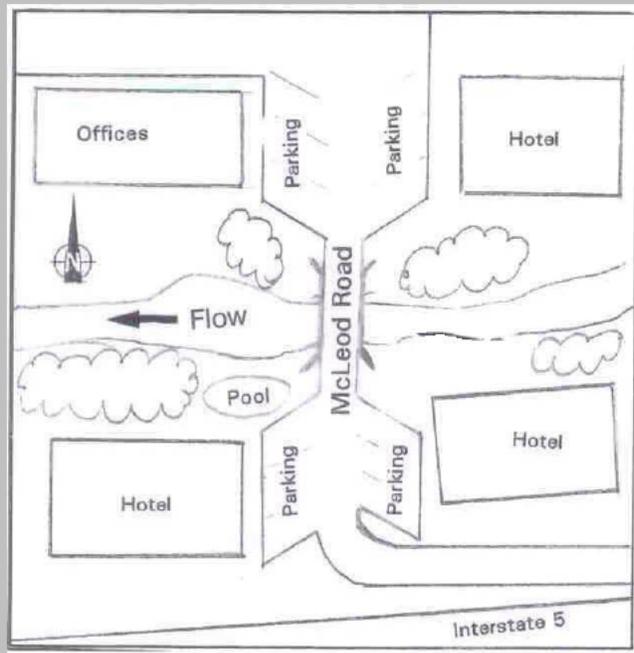
STRATEGY

Comments Containment and recovery with board weir (or syphon dam) and disk skimmer and/or vacuum truck.

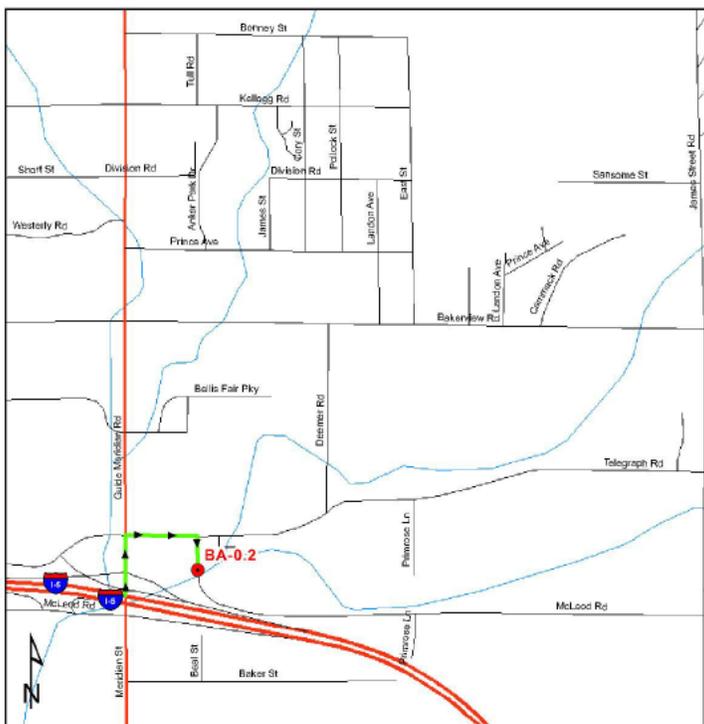
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) E
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, take exit 256 and proceed North on Guide Meridian. Take a right turn at Telegraph Road, and a right again on McLeod Road.



EMERGENCY RESPONSE

Best Access:

BA-0.2

Oct 20, 2009

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Control Point Name TELEGRAGH ROAD**Control Point**

BA-1.4

(b) (7)(F)

Feet

Review Date

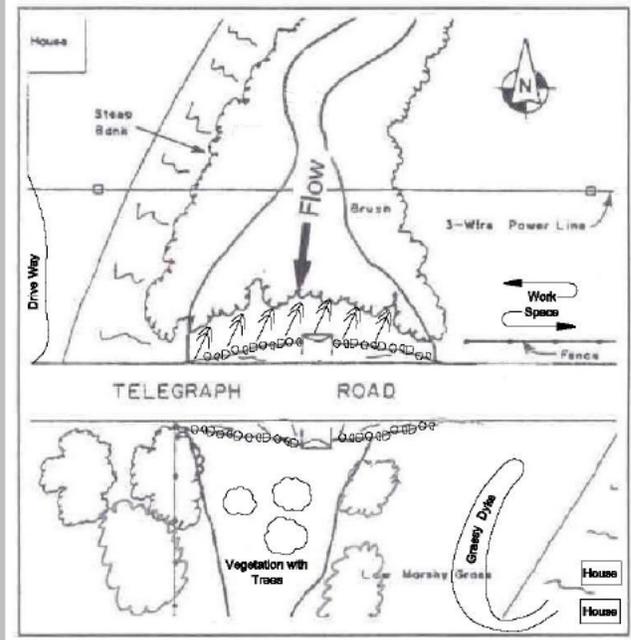
9/27/2005

Location At Telegraph Road culvert, just east of 1470 Telegraph Road**Land Owner** Unknown**WORKSPACE****Size** Regular **Location** Adequate adjacent to creek on the east side**Description** Creek bank and neighboring yard (to the east)**Comments****WATER BODY****Name** BAKER CREEK **Width** 10 feet (up to 50 feet with the flooding area)**Depth Or Bank Height** 4 feet; gradual slope**Bed Type** Mud, clay, silt and sand **Distance To Confluence** 1.4 miles to Squalicum Creek**LOGISTICS****Nearest Response Equipment** Laurel Station **Logistics Comment****Helicopter Operation** No**Boat Launch** Not Required**Upstream Cp** BA-2.5**Downstream Cp** BA-0.2**STRATEGY****Comments** -Containment and recovery with board weir and disk skimmer and/or vacuum truck.
-This control point requires a lot of brush removal prior to use.

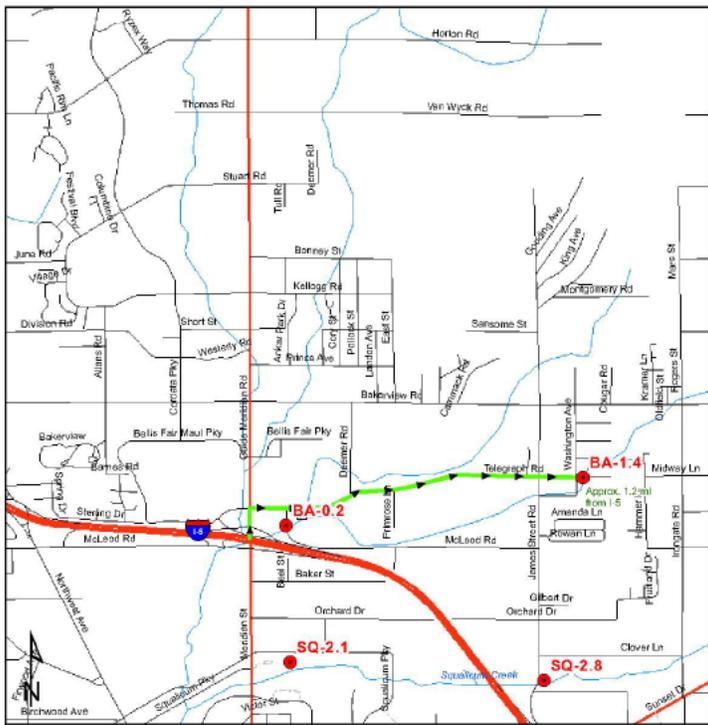
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) N
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, take exit 256 and proceed north on Meridian Street. Turn right (within 100 yards) on Telegraph, and proceed east to 1470.

KINDER MORGAN EMERGENCY RESPONSE

Best Access:

BA-1.4

Oct 20, 2009

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(b) (7)(F)

Review Date 9/27/2005**Location** 4293 Hannegan Road. Entrance of North West Chip and Grind Inc.360-676-9569 **Land Owner** Unknown**WORKSPACE****Size** Regular **Location** Adequate on north side of stream**Description** Pasture/field**Comments** Brushy**WATER BODY****Name** BAKER CREEK **Width** 10 feet**Depth Or Bank Height** Fairly flat near stream, but steep to access road - 15 feet**Bed Type** Clay and silt **Distance To Confluence** 2.5 miles to Squalicum Creek**LOGISTICS****Nearest Response Equipment** Laurel Station**Logistics Comment**

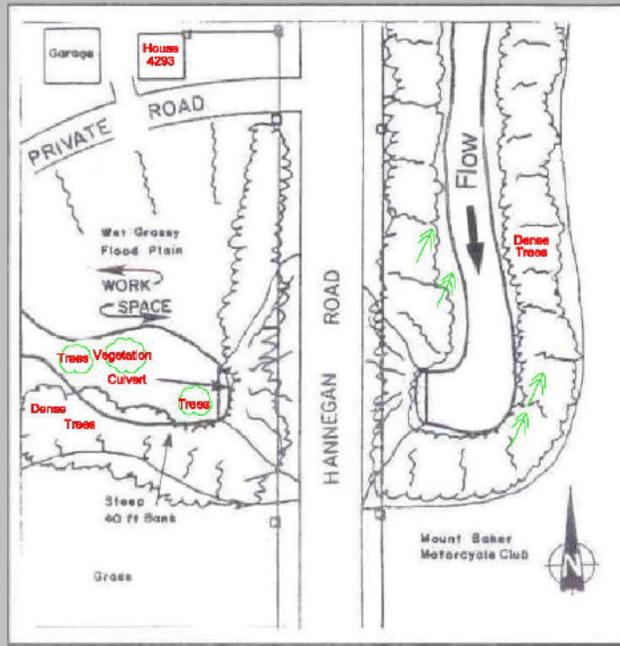
Helicopter: in pasture/field (west side)

Helicopter Operation Excellent**Boat Launch** Not Required**Upstream Cp** None**Downstream Cp** BA-1.4**STRATEGY****Comments**
-Containment and recovery with approximately 150 feet of boom and disk skimmer and/or vacuum truck. Depth will not usually be sufficient for weir skimmer.
-With the steepness of the bank and the dense brush, it is impractical to use the upstream side of the culvert.-Steam is not flowing at all time

PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) SE
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, take exit 258 (West Bakerview Road) and proceed east to Hannegan Road. Proceed north on Hannegan Road to 4291 Hannegan Road.



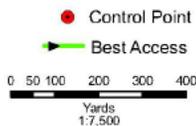
EMERGENCY RESPONSE

Best Access:

BA-2.5

Oct 20, 2009

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Control Point Name HIGHWAY 20**Control Point**

BL-0.5

(b) (7)(F)

Review Date

9/26/2005

Location Just east of Duane Berentson bridge on south side of Highway 20. 3 feet culvert**Land Owner** Highways Department**WORKSPACE****Size** Ample **Location** Large grassy area at side of road.**Description** Good work space. The park under the bridge makes a good staging area.**Comments****WATER BODY****Name** BLIND SLOUGH **Width** Varies to 10 feet**Depth Or Bank Height** 7 feet**Bed Type** Soil **Distance To Confluence** 0.5 miles to Padilla Bay**LOGISTICS****Nearest Response Equipment** Anacortes Station**Logistics Comment**

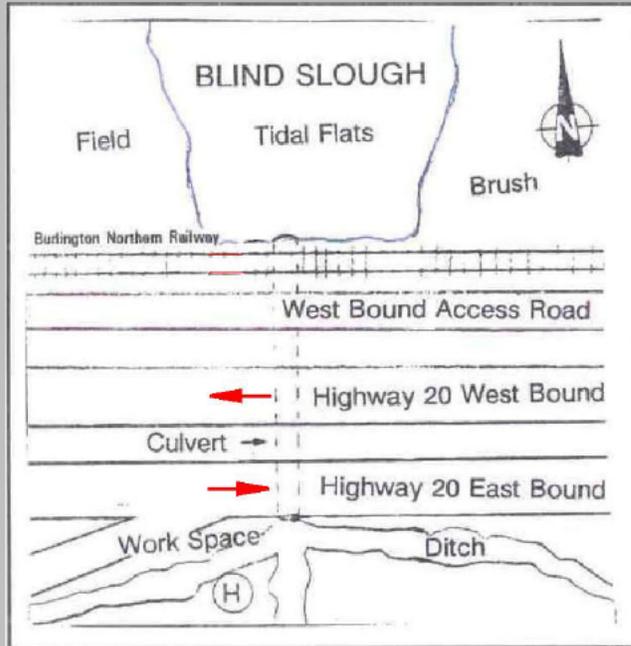
Helicopter: There are high power lines north of Highway 20. During wet weather this Slough rises very quickly.

Helicopter Operation Excellent**Boat Launch** Not Required**Upstream Cp** None**Downstream Cp** Padilla Bay**STRATEGY****Comments** -Culvert block to prevent spill reaching Padilla Bay. Contain and recover south of Highway 20. See strategy GRP B-18 if spill is coming in from Padilla Bay.
-Ditches that feed into the Slough are also culverted under Highway 20.

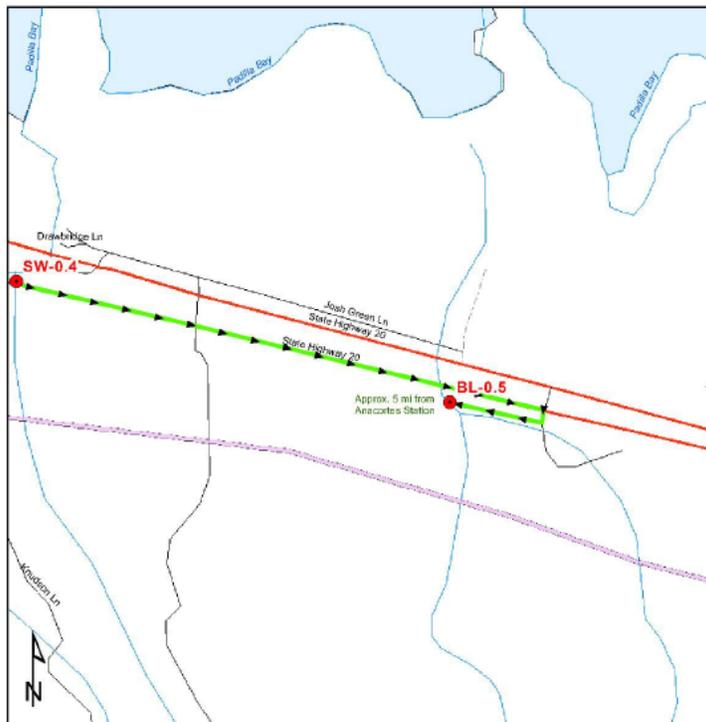
PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) W
Description/Comment



BEST ACCESS



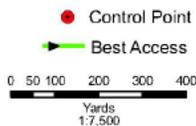
EMERGENCY RESPONSE

Best Access:

BL-0.5

Oct 20, 2009

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Best Access Driving Instruction

On south exit road from park under the Duane Berentson bridge.

Control Point Name 19th STREET BRIDGE **Control Point** CH-0.1

Review Date 9/27/2005

Location At 19th Street bridge over Chuckanut Creek. **Land Owner** Unknown

WORKSPACE

Size Small **Location** Small on north side of creek

Description Creek bank and adjacent lawn area

Comments

WATER BODY

Name CHUCKANUT CREEK **Width** 10 feet at low flow; 25 feet at high flow

Depth Or Bank Height 4 feet; gentle slope

Bed Type Coarse gravel and some cobbles **Distance To Confluence** 0.1 miles to Chuckanut Bay

LOGISTICS

Nearest Response Equipment Laurel Station **Logistics Comment**

Helicopter Operation No

Boat Launch Not Required

Upstream Cp CH-3.0

Downstream Cp Bellingham Bay

STRATEGY

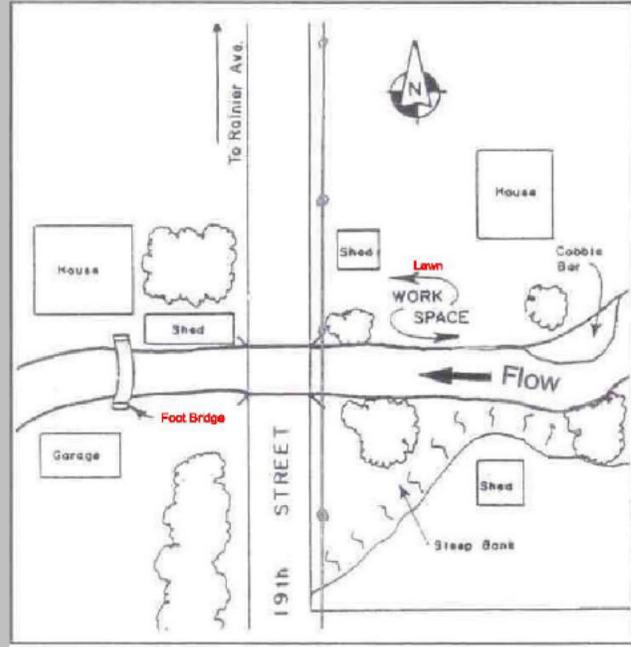
Comments

- Containment and recovery using approximately 100 feet of boom and weir skimmer.
- Creek is very shallow and would likely require digging a deeper channel to use weir skimmer.
- Salmon rearing ponds on Chuckanut Creek just west of Chuckanut Drive and south of Old Samish Road.

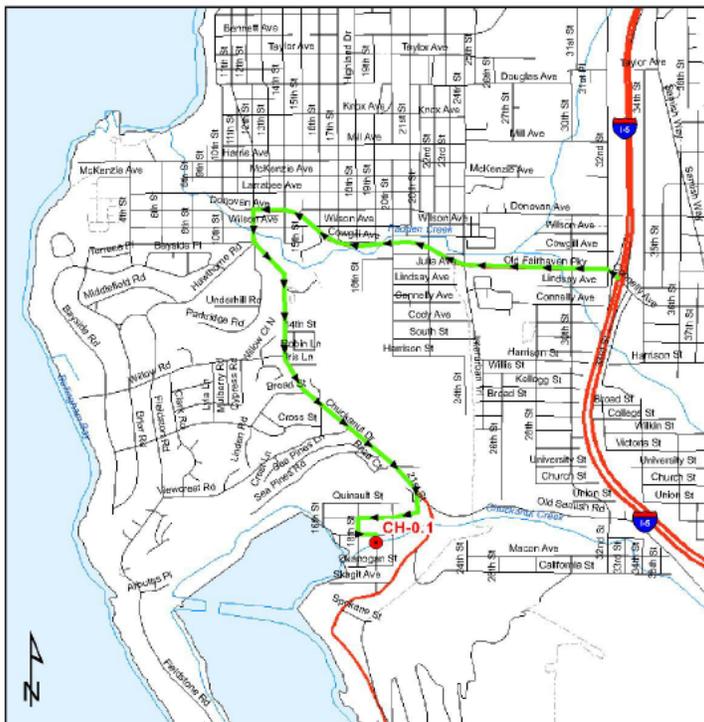
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) E
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, take exit 250 and proceed west along Fairhaven Parkway to 12th Street. Proceed south on 12th Street to Chuckanut Drive. Continue south on Chuckanut Drive to 21st Street. Follow 21st Street south to Fairhaven Avenue, west to 18th Street, south to Rainier Avenue, east to 19th Street and south to bridge.

KINDER MORGAN
CAMDEX INC.

EMERGENCY RESPONSE

Best Access:

CH-0.1

Oct 20, 2009

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OLD SAMISH ROAD

I Point

CH-3.0

(b) (7)(F)

Units Feet

Review Date

9/27/2005

Location 983 Samish Lake Road. Bell Alger sand and gravel pit.

Land Owner Unknown

WORKSPACE

Size Regular Location Good area on driveway over creek and parallel roads

Description Driveway and side roads

Comments

WATER BODY

Name CHUCKANUT CREEK Width 10 feet at low flow; 20 feet at high flow

Depth Or Bank Height 15 feet steep and bushy

Bed Type Silt and pea gravel Distance To Confluence 3.0 miles to Chuckanut Bay

LOGISTICS

Nearest Response Equipment Laurel Station

Logistics Comment

Helicopter: could land in the Bell Alger sand/gravel pit

Helicopter Operation Poor

Boat Launch Not Required

Upstream Cp None

Downstream Cp CH-0.1

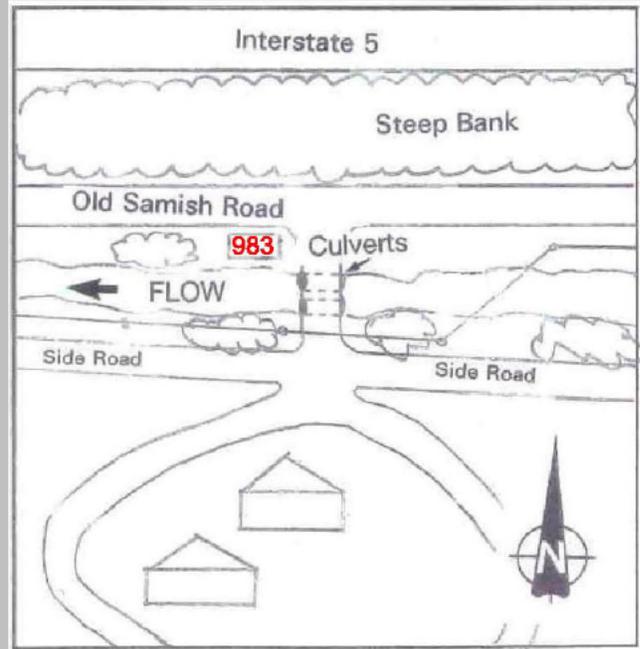
STRATEGY

Comments Containment and recovery using a board weir and disk skimmer and/or vacuum truck.

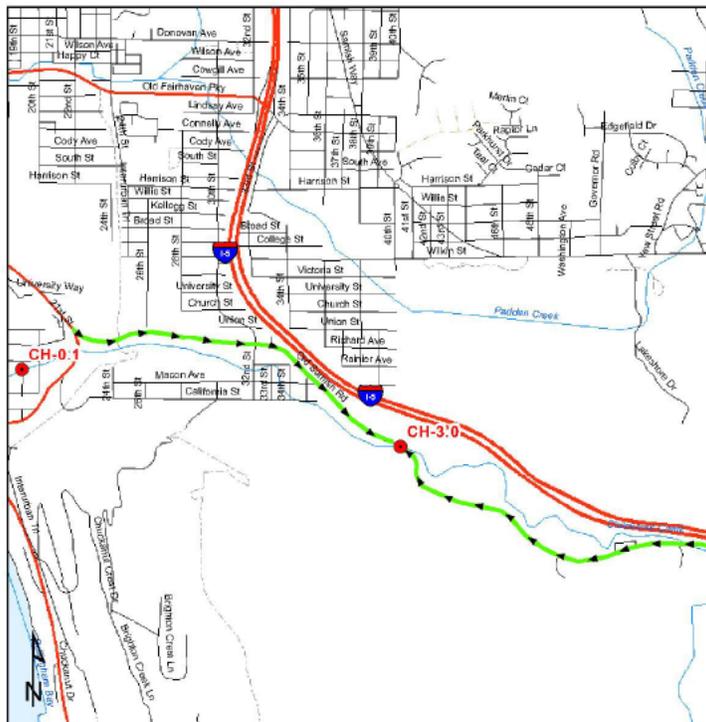
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) E
Description/Comment



BEST ACCESS



Best Access Driving Instruction

Take exit 246 from Interstate 5 and proceed west on Lake Samish Drive. Within 1½ miles, Lake Samish Drive becomes Old Samish Road. Proceed another ¾ mile to 983 Old Samish Lake Road. Alternatively, from Chuckanut Drive proceed east on Old Samish Road to 983 Old Samish Road. Another access approximately 100 yards upstream.



EMERGENCY RESPONSE

Best Access:

CH-3.0

Oct 20, 2009

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Control Point Name DEER CREEK DRIVE ACCESS ROAD**Control Point** [REDACTED]

DE-0.9

View Date

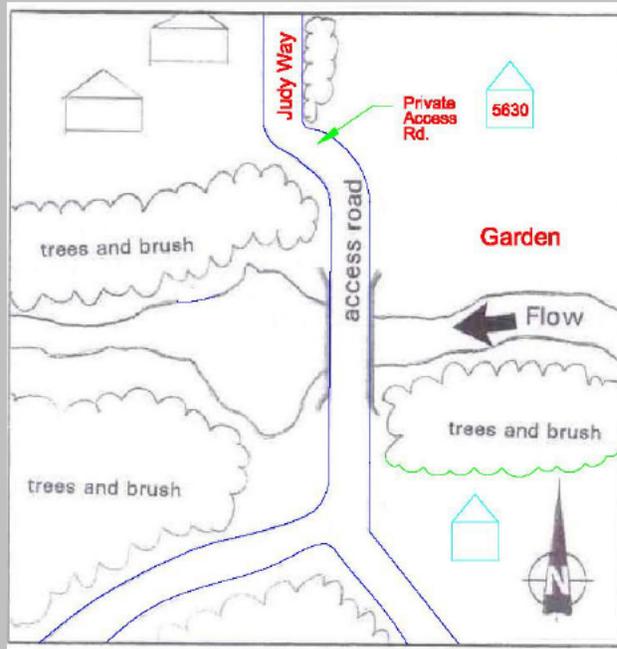
9/26/2005

Location At bridge over Deer Creek, on southern extension of private road (Judy Way) at east end of Deer Creek Drive.**Land Owner** Gene Brown at (360) 384-6055 ?**WORKSPACE****Size** Small **Location** Limited on both sides of creek**Description** Grass field and road**Comments****WATER BODY****Name** DEER CREEK TRIBUTARY **Width** 20 feet**Depth Or Bank Height** Up to 10 feet, moderate**Bed Type** Gravel and mud **Distance To Confluence** 0.9 miles to Ten Mile Creek (Barrett Lake)**LOGISTICS****Nearest Response Equipment** Laurel Station **Logistics Comment****Helicopter Operation** Poor**Boat Launch** Not Required**Upstream Cp** DE-2.4**Downstream Cp** TC-0.2**STRATEGY****Comments** Containment and recovery with approximately 100 feet of boom and weir skimmer.

PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) SE
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, proceed east on Astoria Road to Judy Way. Proceed south on Judy Way to private access road then to bridge.



EMERGENCY RESPONSE

Best Access:

DE-0.9

Oct 20, 2009

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Control Point Name ALDRICH ROAD**Control Point**

DE-2.4

(b) (7)(F)

Review Date

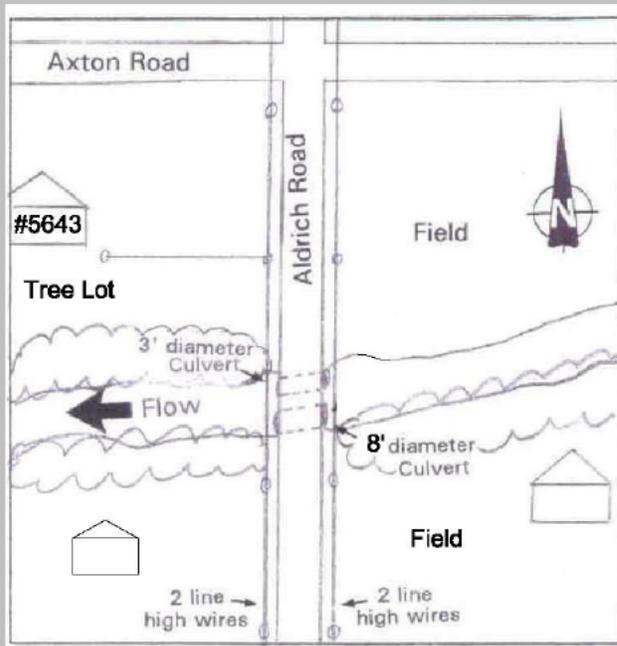
9/26/2005

Location At Deer Creek culverts, 280 yards south of Aldrich Road and Axton Road intersection. South of residence #5643**Land Owner** Unknown**WORKSPACE****Size** Ample **Location** Excellent on either side of creek. East of Aldrich Road.**Description** Fields**Comments****WATER BODY****Name** DEER CREEK TRIBUTARY **Width** 20 feet**Depth Or Bank Height** 8 feet; steep**Bed Type** Mud **Distance To Confluence** 2.4 miles to Ten Mile Creek (Barrett Lake)**LOGISTICS****Nearest Response Equipment** Laurel Station **Logistics Comment****Helicopter Operation** Excellent**Boat Launch** Not Required**Upstream Cp** DE-4.2**Downstream Cp** DE-0.9**STRATEGY****Comments**
-Containment and recovery with board weir and disk skimmer and/or vacuum truck.
-One 8 foot culvert.
-Requires extensive brush removal.

PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) E
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From I-5, take exit 262 and proceed east on Axton Road to Aldrich Road. Proceed south on Aldrich Road to culvert.



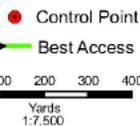
EMERGENCY RESPONSE

Best Access:

DE-2.4

Oct 20, 2009

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Control Point Name GUIDE MERIDIAN ROAD**Control Point**

DE-4.2

(b) (7)(F)

Review Date

9/26/2005

Location At 5602 Guide Meridian.**Land Owner** Unknown**WORKSPACE****Size** Regular **Location** Fair on north side of creek. Staging area behind store (east of store)**Description** Parking area of store**Comments****WATER BODY****Name** DEER CREEK TRIBUTARY **Width** 10 feet (100' swale)**Depth Or Bank Height** 20 feet, moderate**Bed Type** Soil **Distance To Confluence** 4.2 miles to Ten Mile Creek (Barrett Lake)**LOGISTICS****Nearest Response Equipment** Laurel Station **Logistics Comment****Helicopter Operation** Poor**Boat Launch** Not Required**Upstream Cp** DE-6.4**Downstream Cp** DE-2.4**STRATEGY**

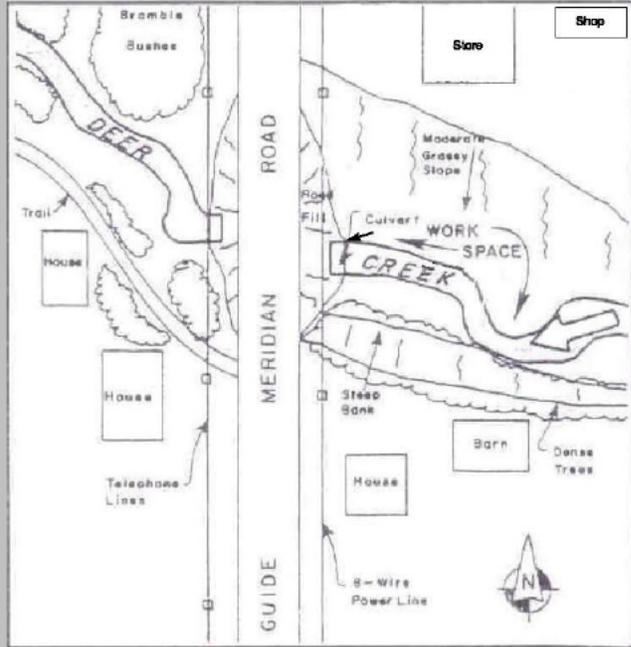
Comments

- Containment and recovery with board weir and disk skimmer and/or vacuum truck. At high flows, approximately 390' of boom and weir skimmer could be used.
- Requires brushing out
- Culvert is 10 feet wide and 3 feet high

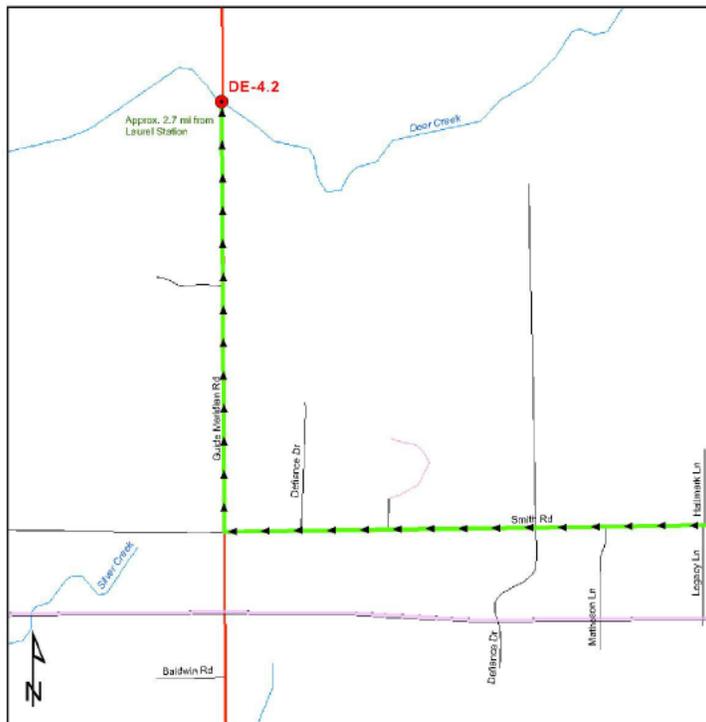
PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) W
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Laurel Station, proceed west on East Smith Road to Guide Meridian Road. Proceed north on Guide Meridian Road to Deer Creek culvert.



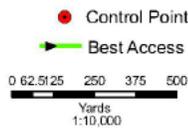
EMERGENCY RESPONSE

Best Access:

DE-4.2

Oct 20, 2009

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Control Point Name EAST 5 AVENUE**Control Point**

DE-6.4

(b) (7)(F)

Review Date

9/26/2005

Location At East 5 Avenue bridge over Deer Creek.**Land Owner** Unknown**WORKSPACE****Size** Ample **Location** Excellent adjacent to creek**Description** Fields**Comments****WATER BODY****Name** DEER CREEK TRIBUTARY **Width** 80 feet**Depth Or Bank Height** Up to 20 feet, moderate**Bed Type** Mud **Distance To Confluence** 6.4 miles to Ten Mile Creek (Barrett Lake)**LOGISTICS****Nearest Response Equipment** Laurel Station**Logistics Comment**

Creek dries up in summer.

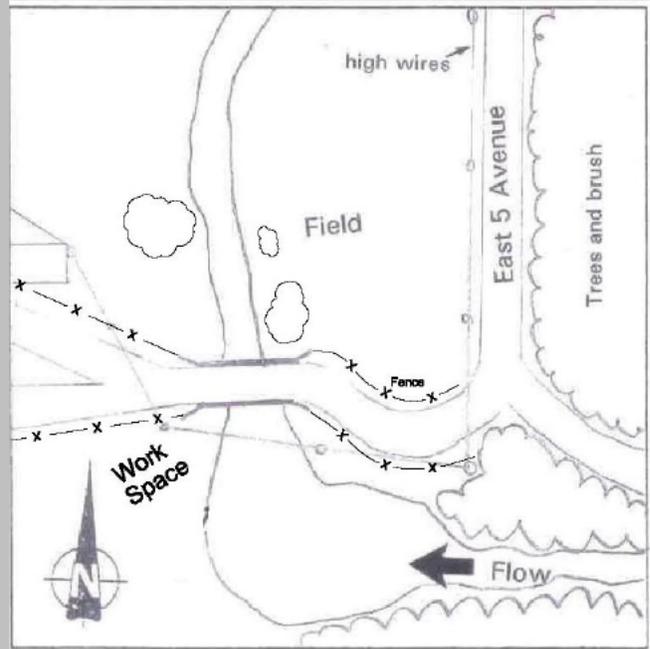
Helicopter Operation Excellent**Boat Launch** Not Required**Upstream Cp** DE-6.6**Downstream Cp** DE-4.2**STRATEGY****Comments** -Containment and recovery with a) disk skimmer at low water, or b) approximately 200 feet of boom and weir skimmer at high water.
-20 foot bridge span.

PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) N

Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Guide Meridian, proceed east on Axton Road to East 5 Avenue. Proceed south on East 5 Avenue to bridge over Deer Creek.



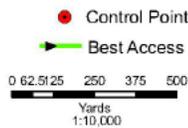
EMERGENCY RESPONSE

Best Access:

DE-6.4

Oct 20, 2009

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Control Point Name EAST ROAD

Control Point

DE-6.6

(b) (7)(F)

Review Date

9/26/2005

Location At Deer Creek culvert at approximately 5627 East Road.

Land Owner Unknown

WORKSPACE

Size Ample

Location Fields

Description

Comments Excellent on either side of creek on East side of culvert.
Brush clearing required

WATER BODY

Name DEER CREEK TRIBUTARY

Width 10 feet

Depth Or Bank Height 10 feet, gradual

Bed Type Mud and gravel

Distance To Confluence 6.6 miles to Ten Mile Creek (Barrett Lake)

LOGISTICS

Nearest Response Equipment Laurel Station

Logistics Comment

Helicopter Operation Excellent

Boat Launch Not Required

Upstream Cp DE-7.0

Downstream Cp DE-6.4

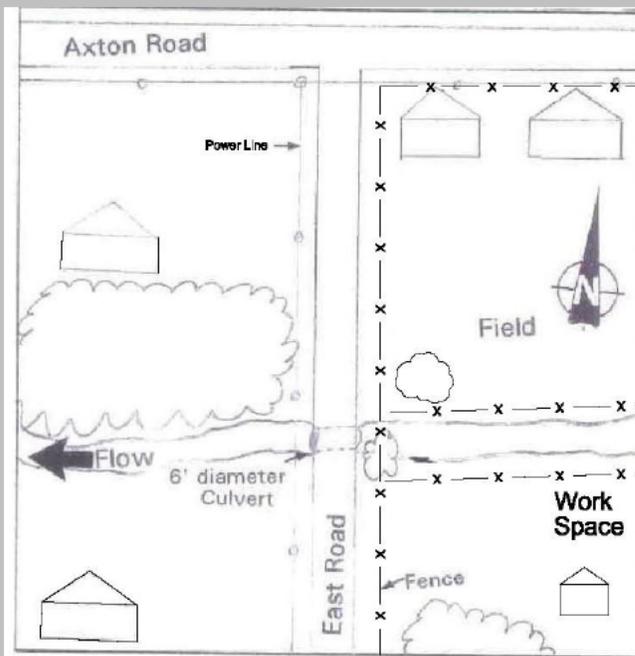
STRATEGY

Comments -Containment and recovery with board weir and disk skimmer, or in high volume flow, approximately 200 feet of boom and weir skimmer could be used.
-6 foot culvert.

PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) W
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Guide Meridian, proceed east on Axton Road to East Road. Proceed south on East Road to Deer Creek culvert.



EMERGENCY RESPONSE

Best Access:

DE-6.6

Oct 20, 2009

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Control Point Name HANNEGAN ROAD**Control Point**

DE-7.0

(b) (7)(F)

Review Date

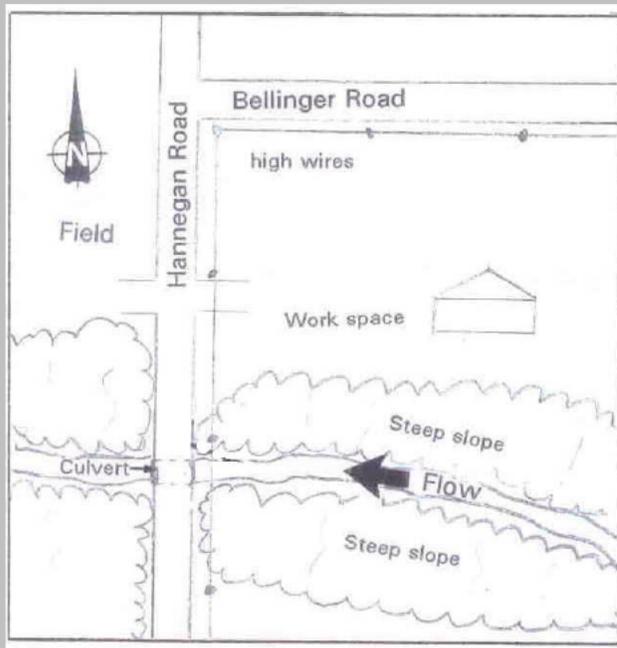
9/26/2005

Location At Deer Creek culvert under Hannegan Road adjacent to 5478 Hannegan Road.**Land Owner** Unknown**WORKSPACE****Size** Regular **Location** Good at adjacent property**Description** Yard**Comments****WATER BODY****Name** DEER CREEK TRIBUTARY **Width** 8 feet**Depth Or Bank Height** 30 feet, steep**Bed Type** Gravel and mud **Distance To Confluence** 7.0 miles to Ten Mile Creek (Barrett Lake)**LOGISTICS****Nearest Response Equipment** Laurel Station**Logistics Comment**Helicopter: Good in field to north-west.
Brush clearing required**Helicopter Operation** Fair**Boat Launch** Not Required**Upstream Cp** DE-7.4**Downstream Cp** DE-6.6**STRATEGY****Comments** Containment and recovery with board weir and disk skimmer and/or vacuum truck.

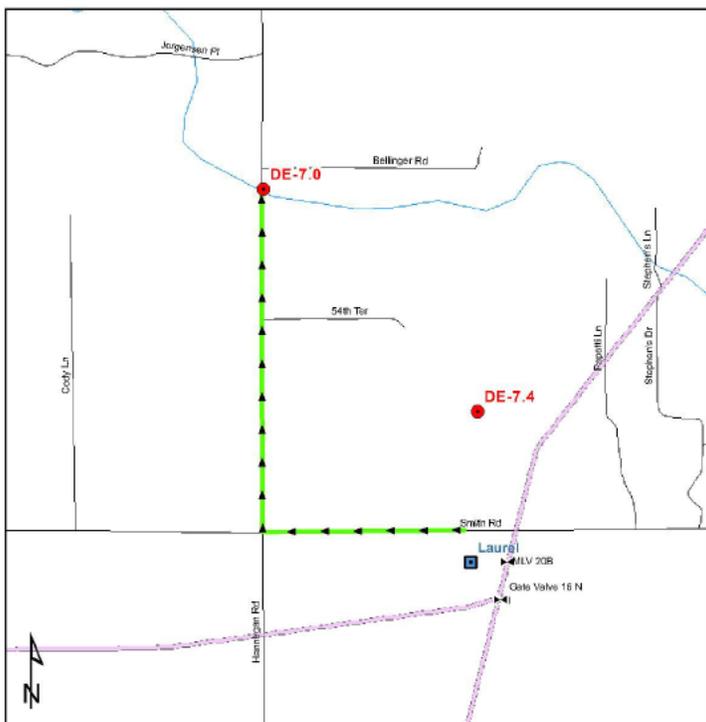
PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Not Required
Orientation (Looking At) NE
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Laurel Station, proceed west on East Smith Road to Hannegan Road. Proceed north to Deer Creek culvert.



EMERGENCY RESPONSE

Best Access:

DE-7.0

Oct 20, 2009

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Control Point Name EAST SMITH ROAD **Control Point** DE-7.4

(b) (7)(F)

Feet

Review Date

9/26/2005

Location East of residence at 980 East Smith Road.**Land Owner** Terasen Pipelines**WORKSPACE****Size** Regular **Location** Adequate on east and west sides of dam**Description** Nearby field and driveway**Comments****WATER BODY****Name** DEER CREEK TRIBUTARY **Width** 20 feet**Depth Or Bank Height** 5 feet, gradual**Bed Type** Mud and silt **Distance To Confluence** 7.4 miles to Ten Mile Creek (Barrett Lake)**LOGISTICS****Nearest Response Equipment** Laurel Station**Logistics Comment**

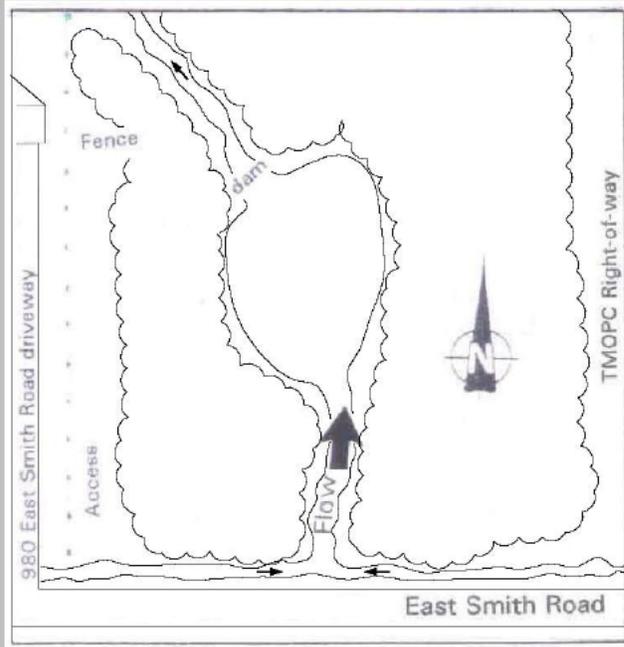
Helicopter: Good in field to the east

Helicopter Operation Fair**Boat Launch** Not Required**Upstream Cp** None**Downstream Cp** DE-7.0**STRATEGY****Comments** -Containment and recovery with syphon dam and disk skimmer and/or vacuum truck.
-This was the location known as Dam 2 at a previous Laurel incident.

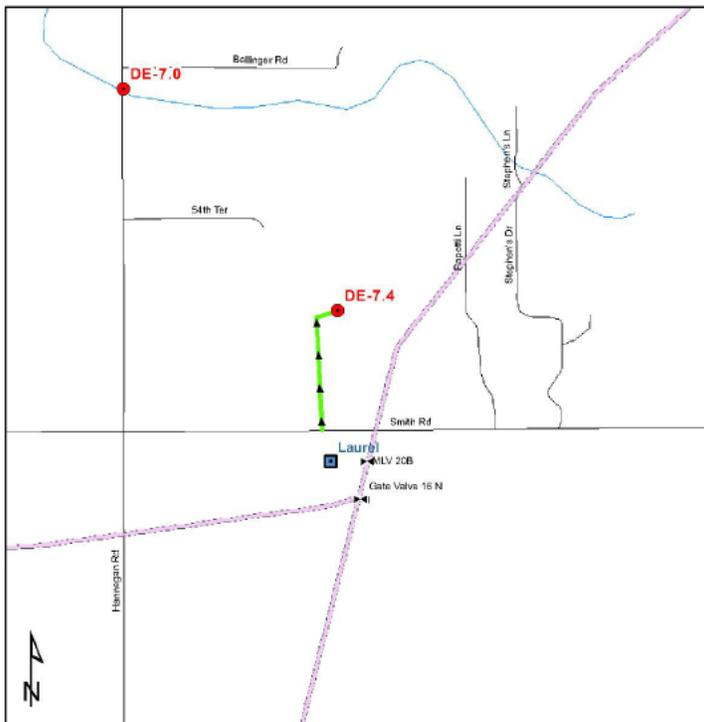
PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) NE
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Guide Meridian, proceed east on East Smith Road to 980. Proceed north along access immediately east of driveway and along west fence line approximately 250 yards. Proceed east another 30 yards to dam.



EMERGENCY RESPONSE

Best Access:

DE-7.4

Oct 20, 2009

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Control Point Name WEST BOW HILL ROAD**Control Point**

ED-0.8

(b) (7)(F)

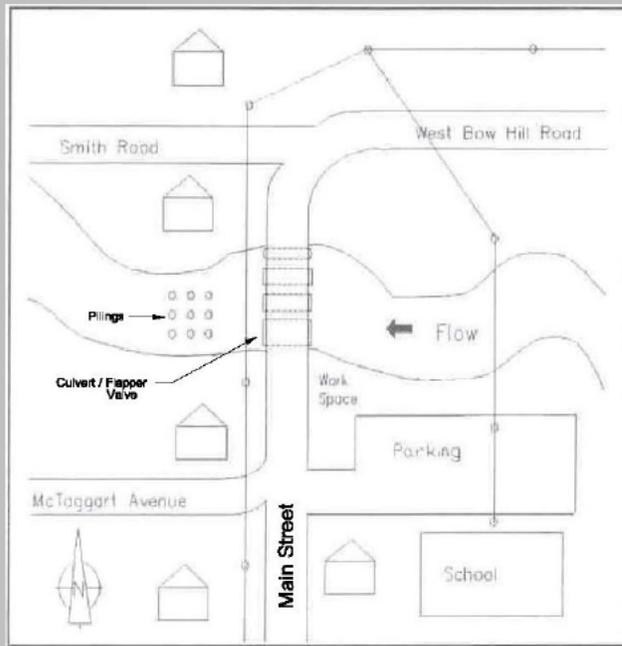
s **Review Date****Location** At bridge in Edison at intersection of West Bow Hill Road**Land Owner** Unknown**WORKSPACE****Size** **Location** Good. Excellent on east side of bridge.**Description** School field and slough bank.**Comments****WATER BODY****Name** EDISON SLOUGH **Width** 20 feet at low tide ; 50 feet at high tide**Depth Or Bank Height** 5 feet**Bed Type** Mud and silt **Distance To Confluence** 0.8 miles to Samish Bay**LOGISTICS****Nearest Response Equipment** Anacortes Station**Logistics Comment****Helicopter Operation** helicopter operation near school
Fire station 100 yards away. School is 50 yards away.
Salt water intrusion gates**Boat Launch** **Upstream Cp** ED-1.5**Downstream Cp** Samish Bay**STRATEGY****Comments** -Containment and Recovery. Boom requirements will be dependent on water flow, but approximately 400 feet of boom will be required. Alternatively, a disk skimmer can be utilized during slower flows.
-There is heavy turbulence on the downstream side of the bridge.

Thursday, November 12, 2009

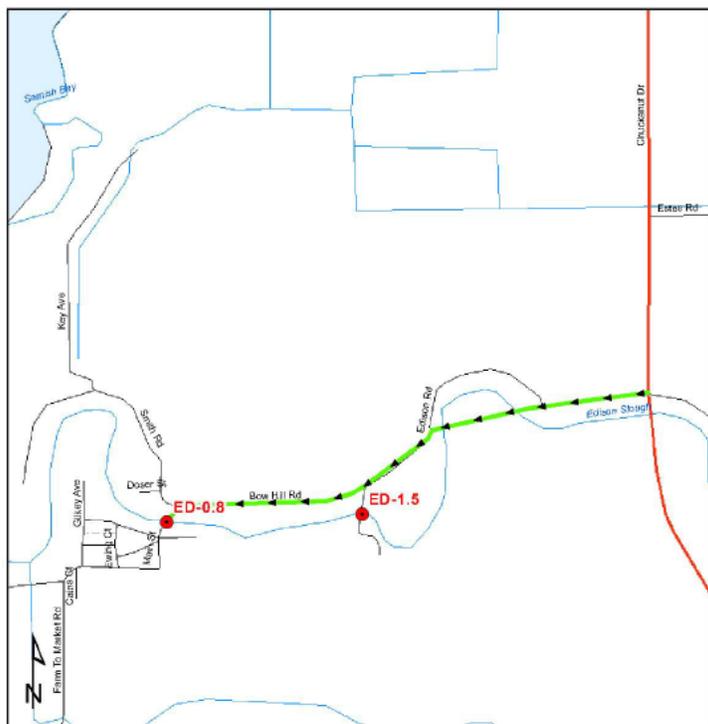
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) E
Description/Comment



BEST ACCESS



KINDER MORGAN
CAMDEX INC.

EMERGENCY RESPONSE

Best Access:

ED-0.8

Oct 20, 2009

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Best Access Driving Instruction

From west Bow Hill Road

Control Point Name 14472 BOW HILL ROAD**Control Point**

ED-1.5

(b) (7)(F)

Review Date

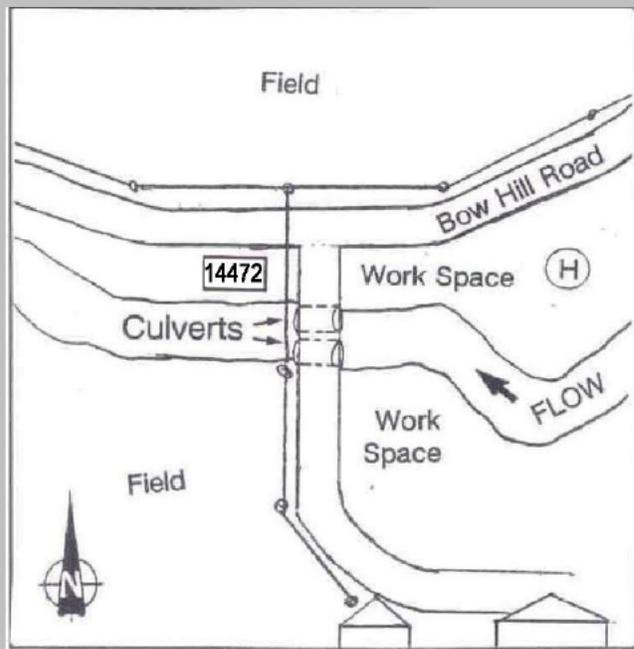
9/27/2005

Location 14472 Bow Hill Road**Land Owner** Unknown**WORKSPACE****Size** Ample **Location** Excellent work space on north and south sides of slough**Description** Field**Comments** excellent location**WATER BODY****Name** EDISON SLOUGH **Width** 15 feet at low flow;45 feet at high flow (no tide)**Depth Or Bank Height** 2 feet**Bed Type** Mud and silt **Distance To Confluence** 1.5 miles to Padilla Bay**LOGISTICS****Nearest Response Equipment** Anacortes Station **Logistics Comment****Helicopter Operation** Excellent**Boat Launch** Not Required**Upstream Cp** ED-3.4**Downstream Cp** ED-0.8**STRATEGY****Comments** Containment and Recovery. Culvert block, board weir and disk skimmer or vacuum truck would work well at this location.

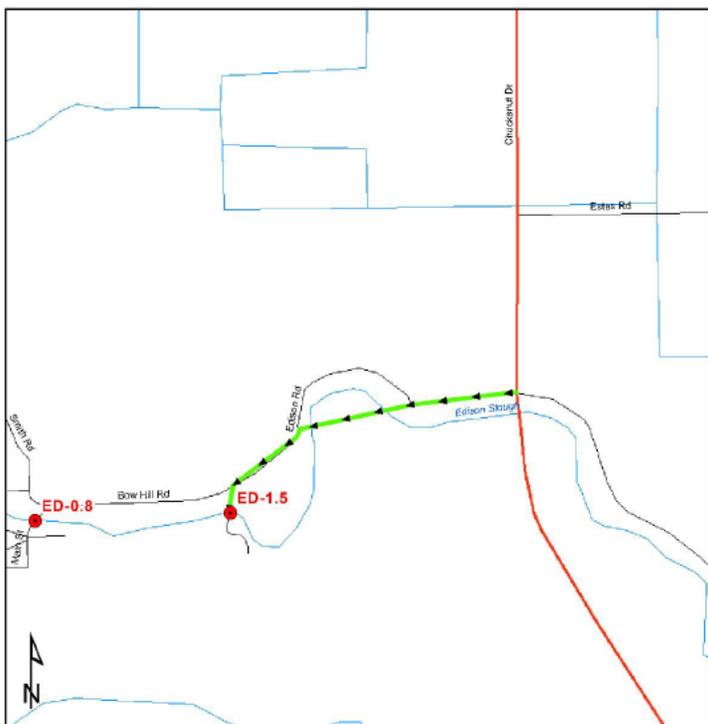
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) E
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Bow Hill Road



EMERGENCY RESPONSE

Best Access:

ED-1.5

Oct 20, 2009

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Control Point Name BOW CEMETERY ROAD**Control Point**

ED-3.4

(b) (7)(F)

Review Date

9/27/2005

Location Bow Hill Road and Bow Cemetery Road**Land Owner** Unknown**WORKSPACE****Size** Ample **Location** Adequate work space on south east side of slough.**Description** Field**Comments** hard to work in not a lot of flow.**WATER BODY****Name** EDISON SLOUGH **Width** 10 feet at low flow; 30 feet at high flow**Depth Or Bank Height** Up to 7 feet**Bed Type** Mud and silt **Distance To Confluence** 3.4 miles to Padilla Bay**LOGISTICS****Nearest Response Equipment** Anacortes Station**Logistics Comment**

Helicopter: in the near vicinity

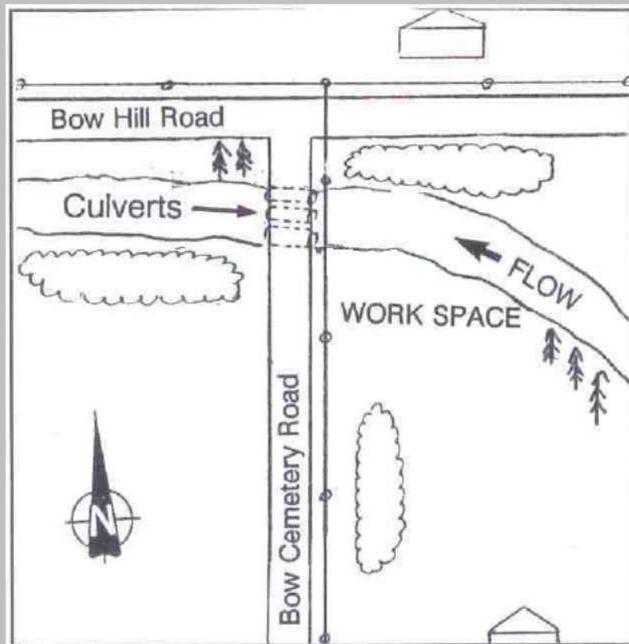
Helicopter Operation No**Boat Launch** Not Required**Upstream Cp** None**Downstream Cp** ED-1.5**STRATEGY**

Comments -Containment and Recovery. Boom requirements will be dependent on water flow, but approximately 200 feet of boom will be required. Alternatively, a boardweir and disk skimmer can be utilized at slow flow.
 -There are 2 culverts under Bow Cemetery Road at this location.

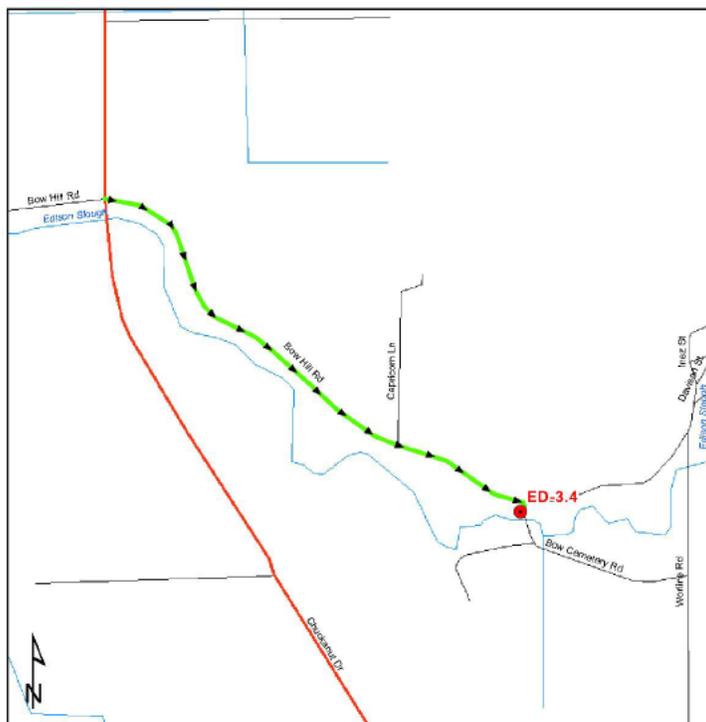
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) E
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Bow Hill, immediately south on Bow Cemetery Road.



EMERGENCY RESPONSE

Best Access:

ED-3.4

Oct 21, 2009

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NORTH GREEN ROAD

FR-0.5

(b) (7)(F)

Review Date

9/27/2005

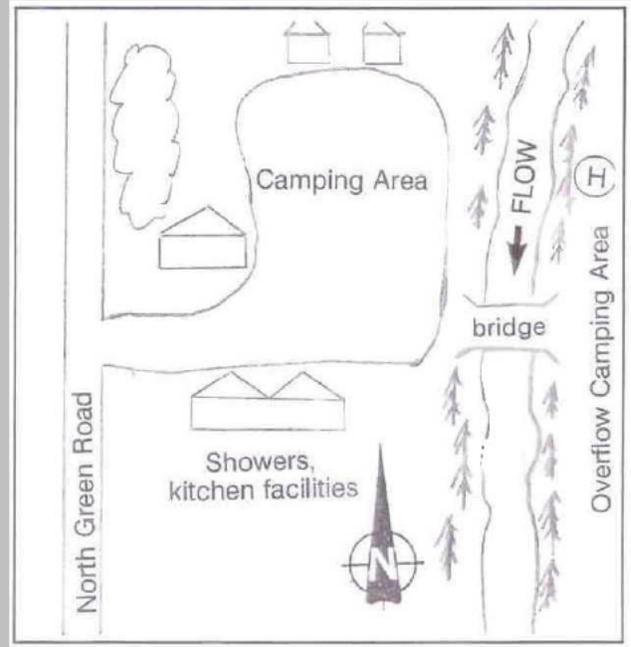
Location At KOA Campground on North Green Road.**Land Owner** Walt and Connie Huffman (KOA Campground Owners)Phone: (360) 724-5511**WORKSPACE****Size** Ample **Location** Large on both sides of the creek**Description** Grassy and gravel areas of campground**Comments****WATER BODY****Name** FRIDAY CREEK **Width** 25 feet at low flow; 45 feet at high flow**Depth Or Bank Height** 5 feet; gentle slope**Bed Type** Cobble and gravel **Distance To Confluence** 0.5 miles to Samish River**LOGISTICS****Nearest Response Equipment** Anacortes Station **Logistics Comment****Helicopter Operation** Excellent**Boat Launch** Not Required**Upstream Cp** FR-1.3**Downstream Cp** SA-10.1**STRATEGY****Comments** -Containment and recovery with approximately 400 feet of boom and weir skimmers.
-Campground is open year-round.Full facilities available (showers, kitchen, toilets, etc.) Located just upstream and down stream of fish hatcheries.

Thursday, November 12, 2009

PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) N
Description/Comment



BEST ACCESS



Best Access Driving Instruction

Take exit 236 from Interstate 5 to Old Highway 99 North, proceed south to North Green Road. The KOA Campground is on the east side of the road approximately 100 yards from the intersection.

KINDER MORGAN
CAMBI, INC.

EMERGENCY RESPONSE

Best Access:

FR-0.5

Oct 21, 2009

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Control Point Name WASHINGTON STATE FISH HATCHERY**Control Point**

FR-1.3

(b) (7)(F)

Review Date

9/27/2005

Location At 5585 Old Highway 99 North/Ponoma Grange Park**Land Owner** Washington Department of Fish & Wildlife**WORKSPACE****Size** Regular **Location** at the Samish fish hatchery on either side of the river**Description** gravel parking area**Comments****WATER BODY****Name** FRIDAY CREEK **Width** 40 feet**Depth Or Bank Height** Up to 10 feet, steep on the West side; 6-7 feet (moderate slope on the East side)**Bed Type** Gravel, cobble and boulders **Distance To Confluence** 1.3 miles to Samish River**LOGISTICS****Nearest Response Equipment** Anacortes and Laurel Station**Logistics Comment**

Helicopter: very difficult.

Helicopter Operation No**Boat Launch** Not Required**Upstream Cp** FR-2.3**Downstream Cp** FR-0.5**STRATEGY****Comments**

(b) (7)(F)

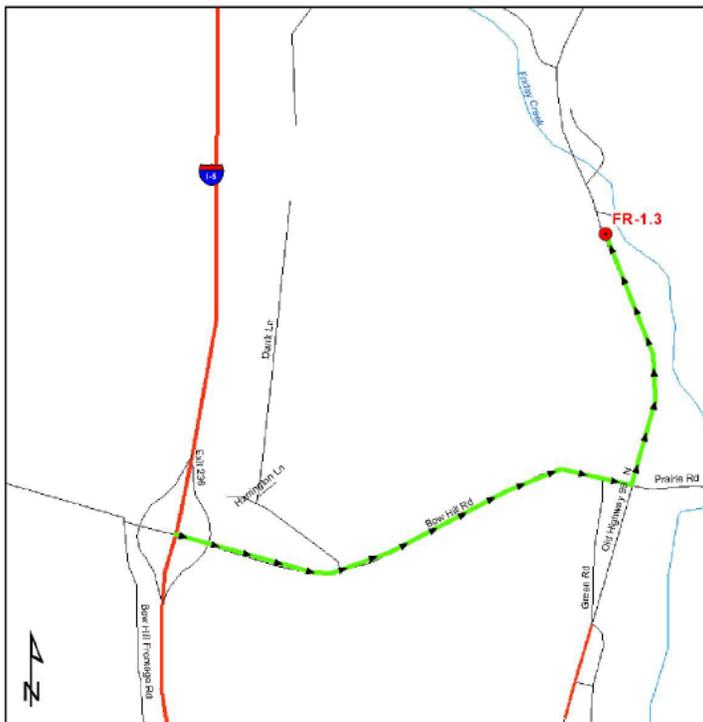
PICTURE

CAD DRAWING

Date 9/27/2005 Position (Looking At) Up Stream
 Orientation (Looking At) N
 Description/Comment



BEST ACCESS



KINDER MORGAN
CAMBI, INC.

EMERGENCY RESPONSE

Best Access:

FR-1.3

Oct 21, 2009

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Best Access Driving Instruction

Take exit 236 from Interstate 5 to Old Highway 99 North, proceed north to 5585 Old Highway 99 North and the hatchery.

Control Point Name FRIDAY CREEK ROAD**Control Point**

FR-2.3

(b) (7)(F)

Review Date

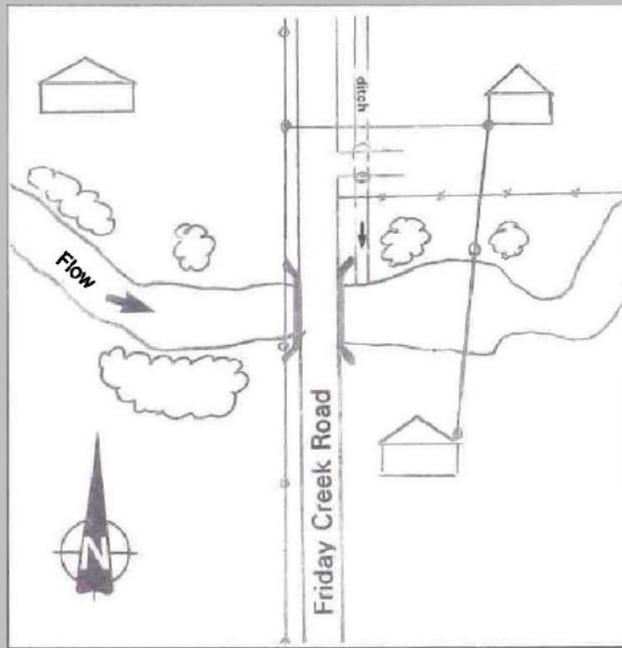
9/27/2005

Location 4789 Friday Creek Road.**Land Owner** Unknown**WORKSPACE****Size** Regular **Location** Good work space on north side of creek**Description** Field**Comments****WATER BODY****Name** FRIDAY CREEK **Width** 45 feet**Depth Or Bank Height** Gradual slope; 7 feet**Bed Type** Silt and gravel **Distance To Confluence** 2.3 miles to Samish River**LOGISTICS****Nearest Response Equipment** Anacortes and Laurel Station **Logistics Comment****Helicopter Operation** Fair**Boat Launch** Not Required**Upstream Cp** FR-3.0**Downstream Cp** FR-1.3**STRATEGY****Comments** -Containment and recovery using approximately 450 feet of boom and a weir skimmer.
-Additional deployment(s) upstream of bridge are possible at this location. The larger boom quantity is required to protect gravel bars and back channels.

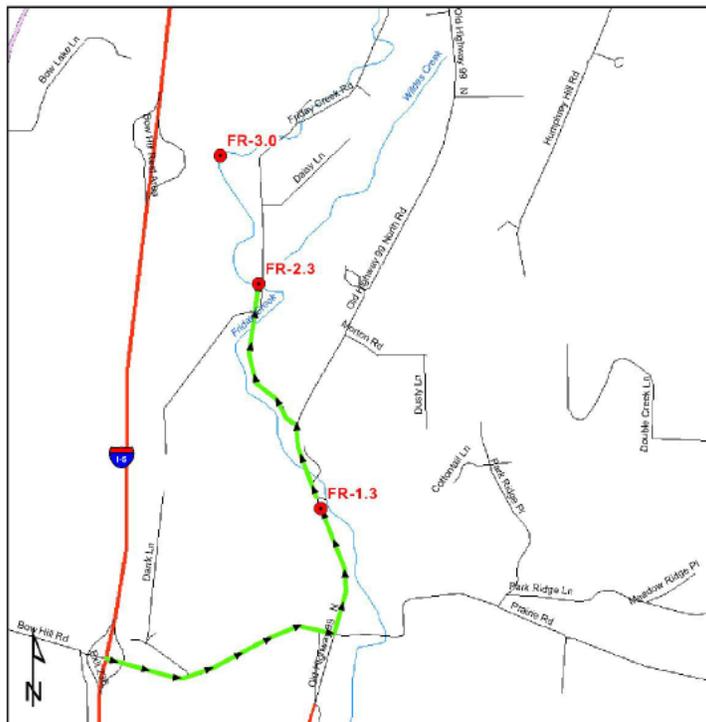
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) N
Description/Comment



BEST ACCESS



KINDER MORGAN
CAMBI, INC.

EMERGENCY RESPONSE

Best Access:

FR-2.3

Oct 21, 2009

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Best Access Driving Instruction

Take exit 236 from Interstate 5 and proceed east on Bow Hill Road to Old Highway 99 North. Proceed north on Old Hwy 99 North approximately ¾ mile to Friday Creek Road. Turn left on Friday Creek Road and proceed approximately ½ mile to 4789 Friday Creek Road.

Control Point Name FRIDAY CREEK CAMPGROUND**Control Point**

FR-3.0

(b) (7)(F)

feet

Review Date

9/27/2005

Location At north end of Friday Creek Campground. 4474 Friday Creek Road**Land Owner** Unknown**WORKSPACE****Size** Regular **Location** Good in campground and stream banks**Description** Campground and gravel bar at stream**Comments****WATER BODY****Name** FRIDAY CREEK **Width** 25 feet at low flow; 50 feet at high flow**Depth Or Bank Height** Gradual on east side**Bed Type** Gravel **Distance To Confluence** 3.0 miles to Samish River**LOGISTICS****Nearest Response Equipment** Anacortes Station**Logistics Comment**

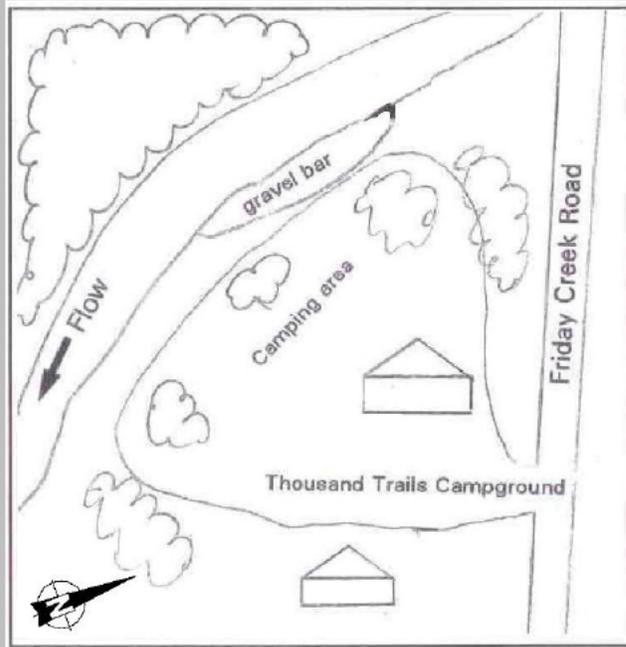
Helicopter: Good in field at campground entrance

Helicopter Operation Fair**Boat Launch** Not Required**Upstream Cp** FR-4.3**Downstream Cp** FR-2.3**STRATEGY****Comments** -Containment and recovery using approximately 200 feet of boom and a weir skimmer.
-Two excellent recovery areas approximately 150 feet apart. Lots of parking and work space.

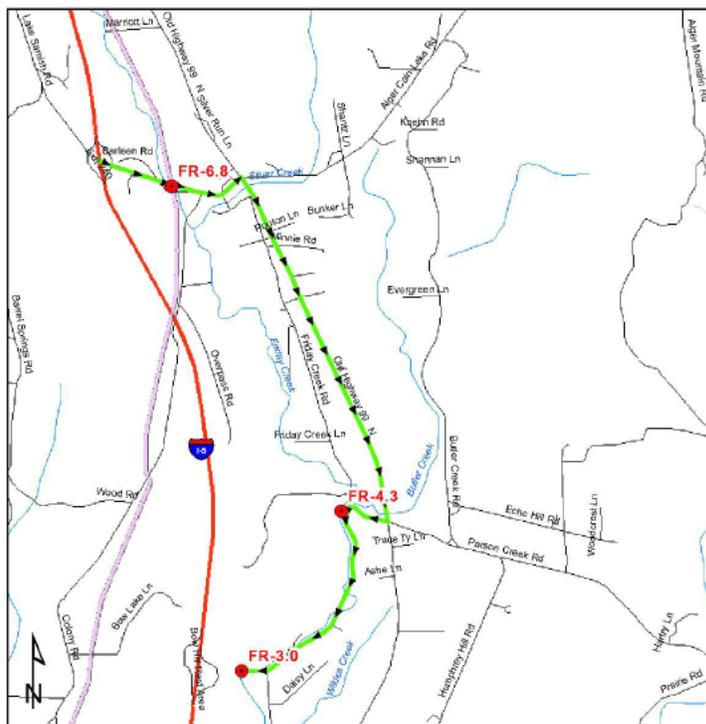
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) SE
Description/Comment



BEST ACCESS



KINDER MORGAN
EMERGENCY RESPONSE

Best Access:

FR-3.0

Oct 21, 2009

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Best Access Driving Instruction

From Interstate 5 take exit 240 and proceed east to Old Highway 99 North. Proceed south on Old Hwy 99 North to Parson Creek Road. Proceed west on Parson Creek Road to Friday Creek Road and proceed south to Thousand Trails Campground.

Control Point Name DONOVAN STATE PARK **Control Point** FR-4.3

(b) (7)(F)

et

Review Date

9/27/2005

Location At Donovan State Park at intersection of Friday Creek Road and Parson Creek Road.

Land Owner Unknown

WORKSPACE

Size Ample **Location** Excellent on east side

Description Park area and stream bank

Comments

WATER BODY

Name FRIDAY CREEK **Width** 20 feet at low flow; 60 feet at high flow

Depth Or Bank Height Gradual on north-east side

Bed Type Gravel **Distance To Confluence** 4.3 miles to Samish River

LOGISTICS

Nearest Response Equipment Anacortes and Laurel Station

Logistics Comment

Helicopter: limited area in Park

Helicopter Operation Poor

Boat Launch Not Required

Upstream Cp FR-6.8

Downstream Cp FR-3.0

STRATEGY

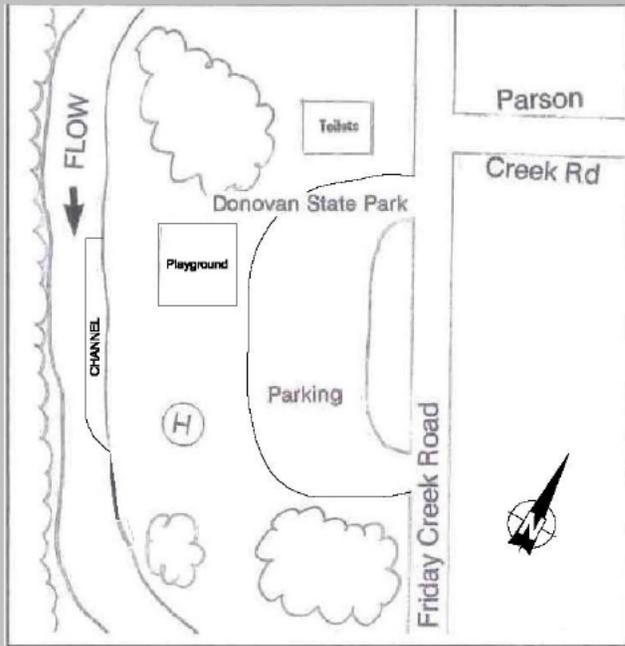
Comments -Containment and recovery using approximately 200 feet of boom and a weir skimmer.
-There is sufficient workspace for a number of deployments at this location.

PICTURE

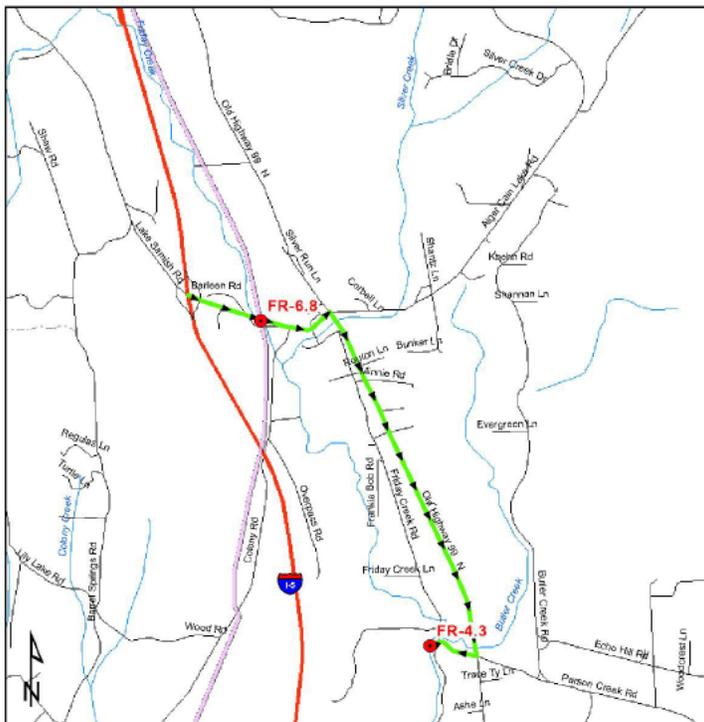
CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) NW

Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5 take exit 240 and proceed to Old Highway 99 North. Proceed south on Old Highway 99 North to Parson Creek Road. Proceed west on Parson Creek road to Donovan State Park (where Parson Creek Road intersects with Friday Creek Road).



EMERGENCY RESPONSE

Best Access:

FR-4.3

Oct 21, 2009

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(b) (7)(F)

Point FR-6.8

Units Feet Review Date 9/27/2005

Location At Lake Samish Road bridge west of Alger and east of Interstate 5.

Land Owner Unknown

WORKSPACE

Size Ample Location On South west side of the creek

Description Bank side

Comments good location

WATER BODY

Name FRIDAY CREEK Width 20 feet at low flow; 30 feet at high flow

Depth Or Bank Height No banks, flat area, but pipeline in vicinity.

Bed Type Boulders and sand Distance To Confluence 6.8 miles to Samish River

LOGISTICS

Nearest Response Equipment Anacortes and Laurel Station Logistics Comment

Helicopter Operation Excellent

Boat Launch Not Required

Upstream Cp LS-0.0

Downstream Cp FR-4.3

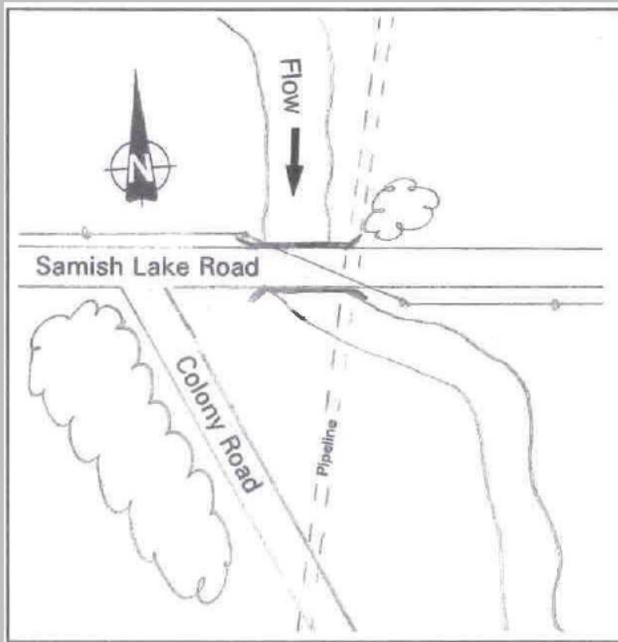
STRATEGY

Comments -Containment and recovery using approximately 100 feet of boom and a weir skimmer.
 -This Control Point is at the last pipeline crossing of Friday Creek.

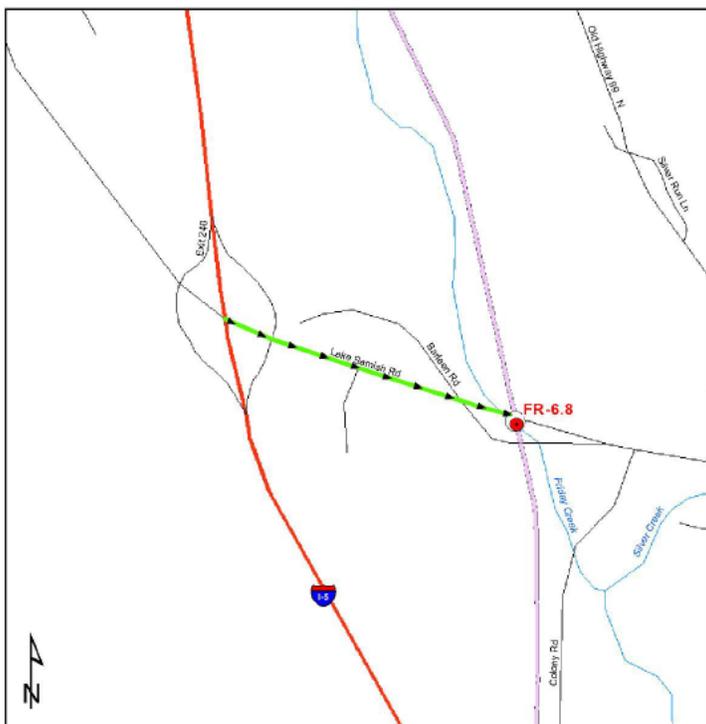
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) NW
Description/Comment



BEST ACCESS



KINDER MORGAN
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EMERGENCY RESPONSE

Best Access:

FR-6.8

Oct 21, 2009

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Best Access Driving Instruction

From Interstate 5 take exit 240 (Alger) and proceed east on Lake Samish Road to bridge.

BAYVIEW-EDISON ROAD

Point

IN-1.5

(b) (7)(F)

Units Feet

Review Date

9/26/2005

Location At flapper valves east of Bayview-Edison Road bridge.

Land Owner Unknown

WORKSPACE

Size Small **Location** Work space is limited to dikes on either side of slough at tide gates; approximately 100 feet upstream of bridge. Depending on time of year, fields on either side may be available.

Description Tidal berms on either side of slough, plus narrow walk way across the tide gate structure and the trash screen.

Comments

WATER BODY

Name INDIAN SLOUGH **Width** 40 feet (40 feet tide gates)

Depth Or Bank Height 10 feet

Bed Type Mud, clay, silt and sand **Distance To Confluence** 1.5 miles to Padilla Bay

LOGISTICS

Nearest Response Equipment Anacortes Station

Logistics Comment

Boat launch: row boat

Helicopter Operation Excellent

Boat Launch Fair

Upstream Cp IN-2.7

Downstream Cp Padilla Bay

STRATEGY

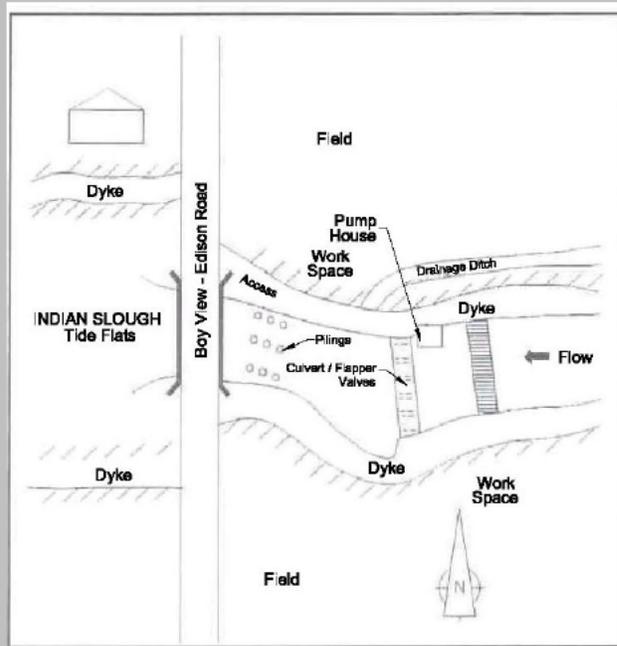
Comments Block culverts/flapper valves. Use disk/drum skimmer and/or vacuum trucks. 100 feet of boom could be placed across trash screen just upstream of culverted wall.

PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) E

Description/Comment



BEST ACCESS



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EMERGENCY RESPONSE

Best Access:

IN-1.5

Oct 21, 2009

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Best Access Driving Instruction

Approximately 1/4 miles north of Highway 20 on Bayview-Edison Road to Indian Slough bridge and tide gates.

Control Point Name FARM TO MARKET ROAD **Control Point** IN-2.7

(b) (7)(F)

Units Feet **Review Date** 9/26/2005

Location At intersection of Highway 20 and Farm to Market Road (formerly Highway 237). **Land Owner** Unknown

WORKSPACE

Size Regular **Location** Adequate work space on top of north bank, downstream of bridge.

Description Grassy area between ditch and railway bridge.

Comments

WATER BODY

Name INDIAN SLOUGH **Width** 15 feet (dry season) 15 yard (high season)

Depth Or Bank Height Up to 20 feet

Bed Type Mud, clay, silt and sand. **Distance To Confluence** 2.7 miles to Padilla Bay

LOGISTICS

Nearest Response Equipment Anacortes Station

Logistics Comment

Helicopter: Good in field to the north of work space. High electrical wires

Helicopter Operation Fair

Boat Launch Not Required

Upstream Cp None

Downstream Cp IN-1.5

STRATEGY

Comments Boom with approximately 100 feet of river boom and recover with disk or weir skimmers.

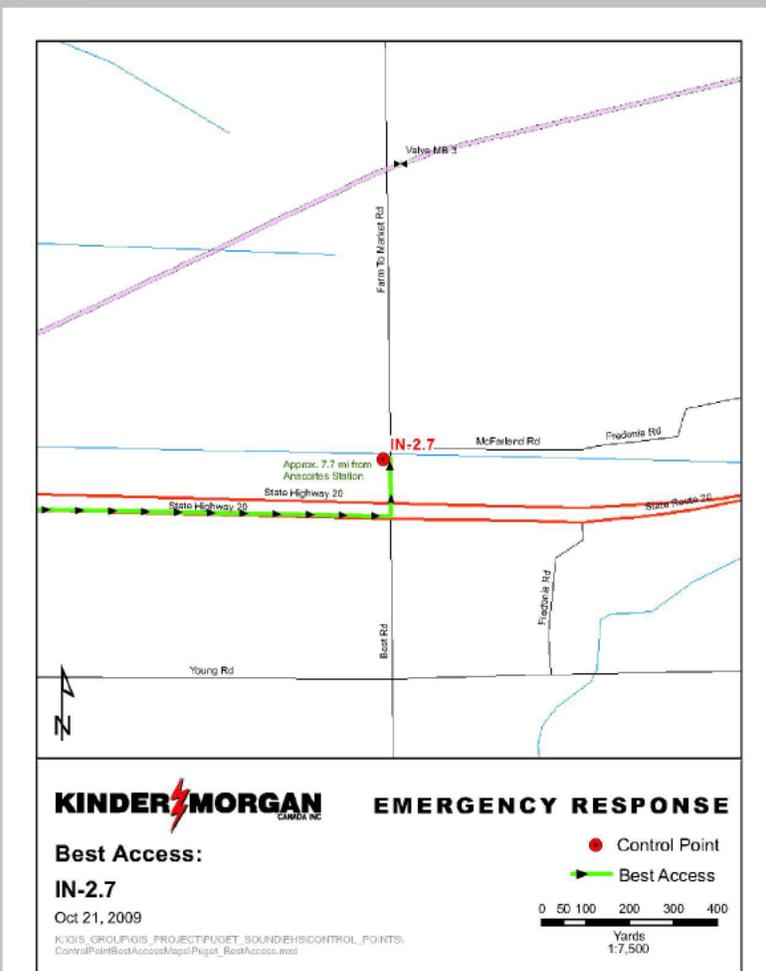
PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) E
Description/Comment



BEST ACCESS



Best Access Driving Instruction

North of Highway 20 on Farm to Market Road, approximately 200 feet to bridge over Indian Slough drain ditch.

Control Point Name BAYVIEW-EDISON ROAD **Control Point** et JO-0.5

(b) (7)(F)

Review Date 9/26/2005

Location At Merritt's Apples farm at 896 Bayview-Edison Road. **Land Owner** Lester and Bernice Merritt; phone: (360) 766-6264 Merritt's Apples phone: (360) 766-6224

WORKSPACE

Size Regular **Location** Good work spaces on both sides of Slough, however south side is slightly better because access is easier. Access trail to the culvert.

Description Top of bank and in field to the North.

Comments

WATER BODY

Name JOE LEARY SLOUGH **Width** 120 feet

Depth Or Bank Height Up to 10 feet on south side; up to 15 feet on north side.

Bed Type Mud, silt and sand **Distance To Confluence** 0.5 miles to Padilla Bay

LOGISTICS

Nearest Response Equipment Anacortes Station

Logistics Comment

Boat launch: could use a row boat.

Helicopter Operation Excellent

Boat Launch No

Upstream Cp JO-1.2

Downstream Cp Padilla Bay

STRATEGY

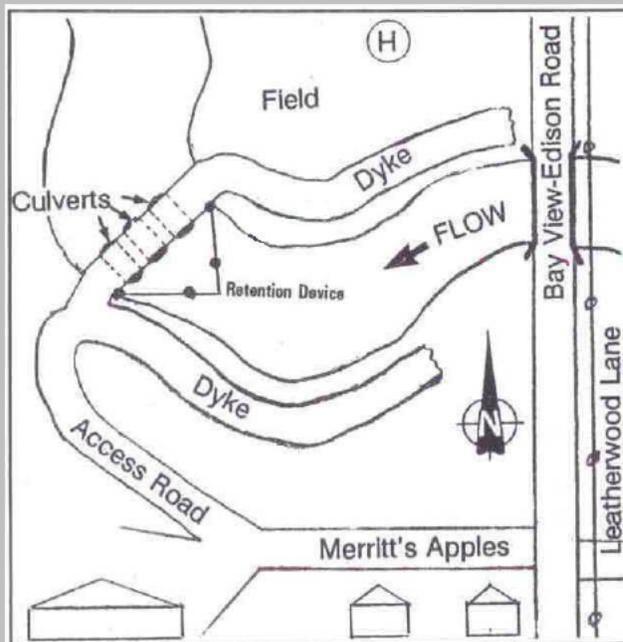
Comments

- Recover with disk skimmers and vacuum trucks.
- Slough backs up at high tides as there are 12 flapper valves on culverts through dyke.
- Permanent retention device would slow progress of spill at this location. Use of 200 feet of boom may be used in front of retention device.

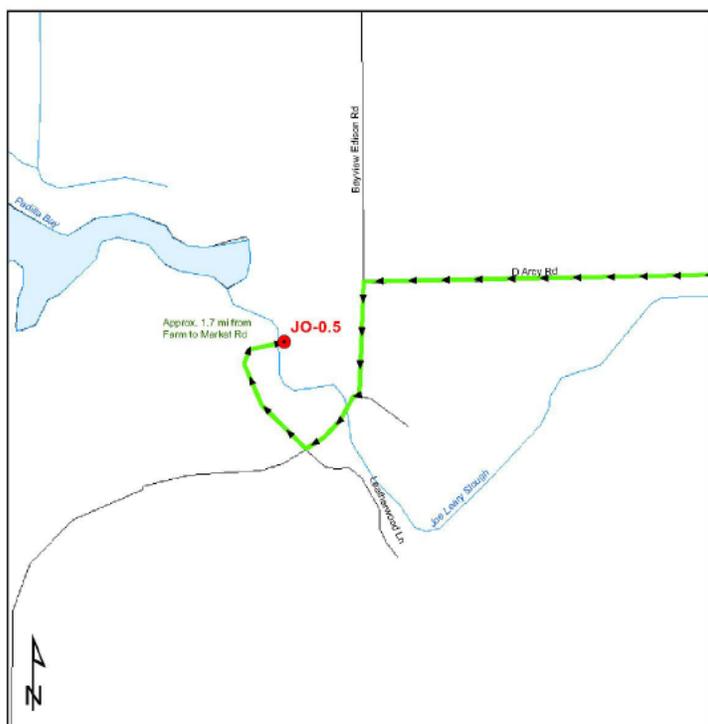
PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) Not Required
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Bayview-Edison Road opposite Leatherwood Lane, enter driveway of Merritt's Apples. Proceed along access road to Slough.



EMERGENCY RESPONSE

Best Access:

JO-0.5

Oct 21, 2009

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Control Point Name D'ARCY ROAD **Control Point** JO-1.2

(b) (7)(F)

its Feet **Review Date** 9/26/2005

Location Adjacent to D'Arcy Road approximately 3/4 mile east of Bay View-Edison Road; 3/4 mile west of Farm to Market Road. **Land Owner** Unknown

WORKSPACE

Size Ample **Location** Excellent work space in adjacent field to the south.

Description Field

Comments

WATER BODY

Name JOE LEARY SLOUGH **Width** 20 feet

Depth Or Bank Height Steep; Up to 10 feet on south side and less than 5 feet on north side.

Bed Type Sand, silt and mud. **Distance To Confluence** 1.2 miles to Padilla Bay

LOGISTICS

Nearest Response Equipment Anacortes Station **Logistics Comment**

Helicopter: electrical wires

Helicopter Operation Excellent

Boat Launch Not Required

Upstream Cp JO-3.2

Downstream Cp JO-0.5

STRATEGY

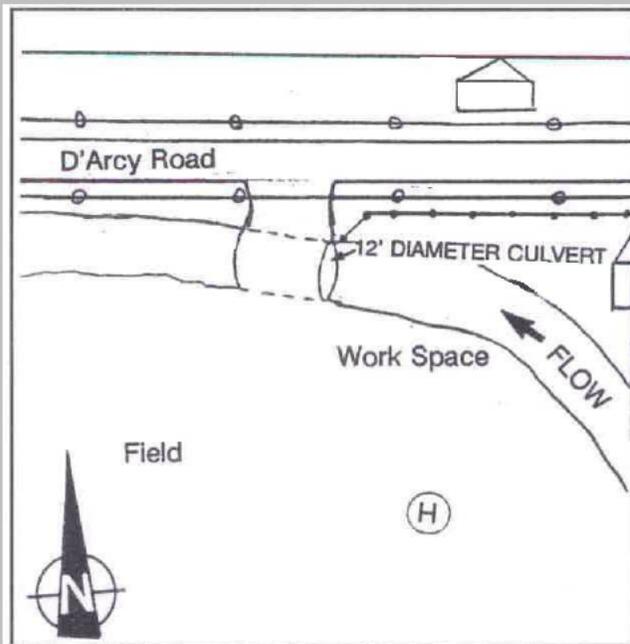
Comments -Containment and Recovery with booms and weir skimmers. Boom requirements will dependent on water flow, but approximately 400 feet of boom will be required.
-Flapper valves at mouth can cause water to back up at high tide in rainy season.

PICTURE

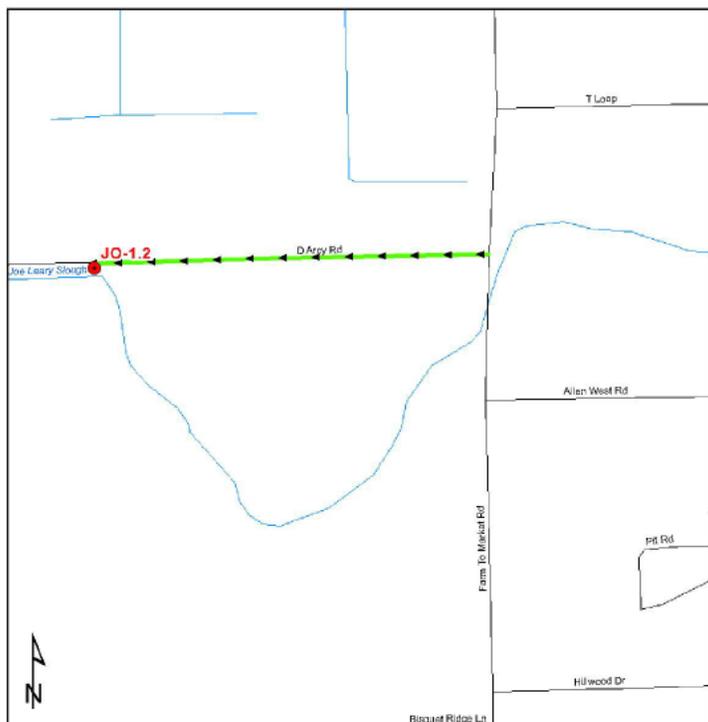
CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) W

Description/Comment



BEST ACCESS



Best Access Driving Instruction

From D'Arcy Road.



EMERGENCY RESPONSE

Best Access:

JO-1.2

Oct 21, 2009

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Control Point Name ALLEN WEST ROAD **Control Point** JO-3.2

(b) (7)(F)

et

Review Date

9/26/2005

Location At intersection of Allen West Road and B.A. Benson Road/Inman Road. Culvert under Allen West Road.

Land Owner Unknown

WORKSPACE

Size Regular **Location** On west side of slough

Description Field and road

Comments

WATER BODY

Name JOE LEARY SLOUGH **Width** 15 feet

Depth Or Bank Height Moderate slope up to 15 feet

Bed Type Sand and silt **Distance To Confluence** 3.2 miles to Padilla Bay

LOGISTICS

Nearest Response Equipment Anacortes Station **Logistics Comment**

Helicopter Operation Excellent

Boat Launch Not Required

Upstream Cp JO-4.2

Downstream Cp JO-1.2

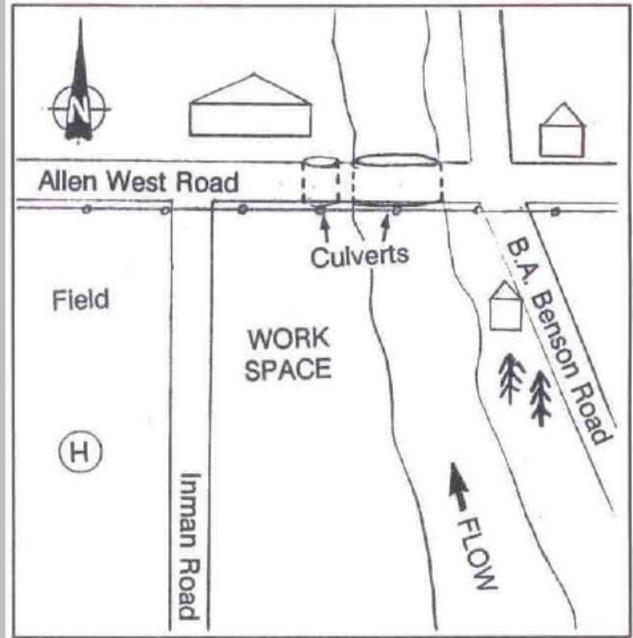
STRATEGY

Comments Culvert block and Recover with weir or disk skimmers and/or vacuum trucks.

PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) N
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Inman Road



EMERGENCY RESPONSE

Best Access:

JO-3.2

Oct 21, 2009

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Control Point Name B.A. BENSON ROAD **Control Point** JO-4.2

Review Date 9/26/2005

Location 976 B.A. Benson Road **Land Owner** Unknown

WORKSPACE

Size Regular **Location** Adequate size on east side of slough.

Description Grassy band and fields

Comments

WATER BODY

Name JOE LEARY SLOUGH **Width** 20 feet

Depth Or Bank Height Moderate to steep, up to 20 feet

Bed Type Sand, silt and vegetation **Distance To Confluence** 4.2 miles to Padilla Bay

LOGISTICS

Nearest Response Equipment Anacortes Station

Logistics Comment

Helicopter: Fair; wires along B.A. Benson Road and parallel bridge to farm house.

Helicopter Operation Fair

Boat Launch Not Required

Upstream Cp JO-6.0

Downstream Cp JO-3.2

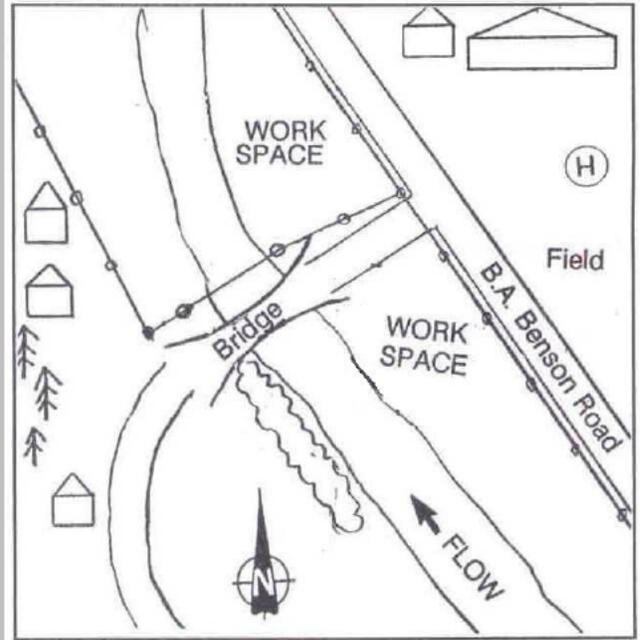
STRATEGY

Comments Containment and Recovery with approximately 200 feet of boom and weir or disk skimmers.

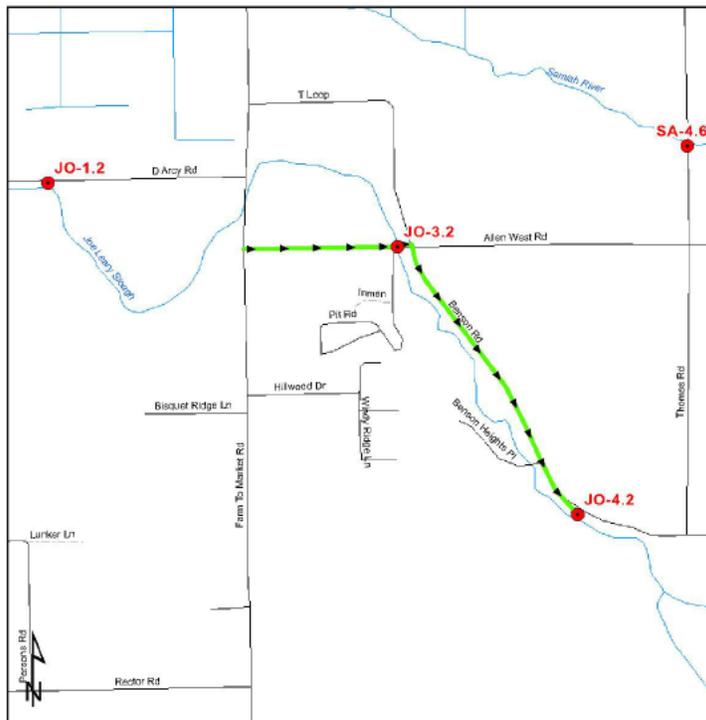
PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) W
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From B.A. Benson Road and Bridge over Joe Leary Slough.



EMERGENCY RESPONSE

Best Access:

JO-4.2

Oct 21, 2009

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Control Point Name JOSH WILSON ROAD **Control Point** JO-6.0

Review Date 9/26/2005

Location Culvert at intersection of Josh Wilson Road and Michael Road. **Land Owner** Unknown

WORKSPACE

Size Ample **Location** Good size work space in south field.

Description Grass field

Comments May require cutting weeds and thorns on bank.

WATER BODY

Name JOE LEARY SLOUGH **Width** 20 feet

Depth Or Bank Height 7 feet

Bed Type Mud, clay and silt **Distance To Confluence** 6.0 miles to Padilla Bay

LOGISTICS

Nearest Response Equipment Anacortes Station

Logistics Comment

Helicopter: high wires

Helicopter Operation Fair

Boat Launch Not Required

Upstream Cp None

Downstream Cp JO-4.2

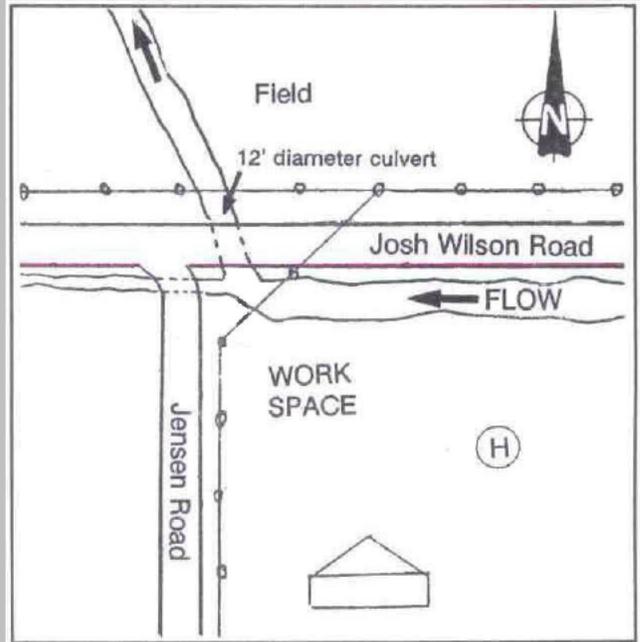
STRATEGY

Comments Culvert block and recover with weir or disk skimmers or vacuum trucks.

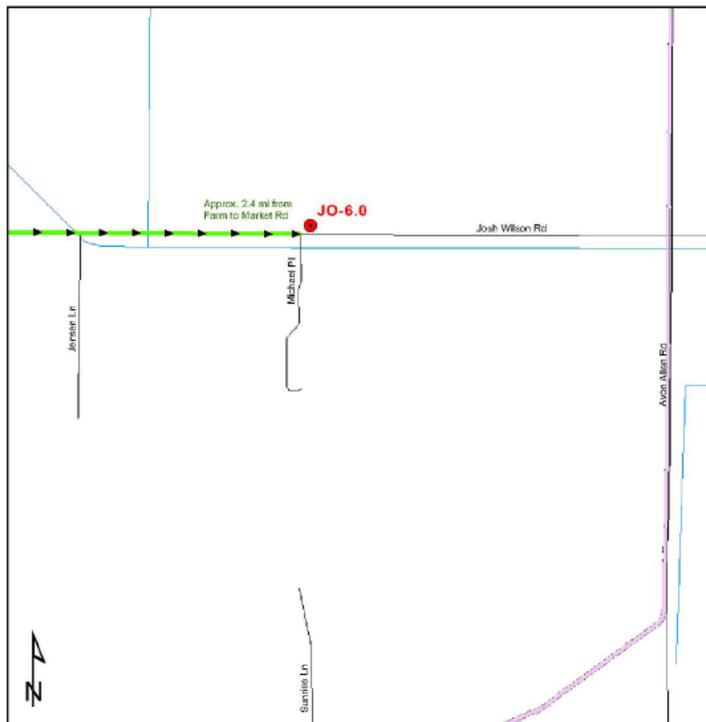
PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) W
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Josh Wilson and Michael Road.



EMERGENCY RESPONSE

Best Access:

JO-6.0

Oct 21, 2009

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Control Point Name NULLE ROAD **Control Point** LS-0.0

(b) (7)(F)

et

Review Date

9/27/2005

Location At Nulle Road Bridge over Friday Creek (2240 Nulle Road). **Land Owner** Unknown

WORKSPACE

Size Small **Location** near the bridge

Description Road side and neighbour garden

Comments

WATER BODY

Name LAKE SAMISH **Width** 30 feet

Depth Or Bank Height 10 feet;gradual slopes

Bed Type Gravel **Distance To Confluence** 0.0 miles to Friday Creek

LOGISTICS

Nearest Response Equipment Laurel Station **Logistics Comment**

Helicopter Operation No

Boat Launch Not Required

Upstream Cp LS-0.2

Downstream Cp FR-6.8

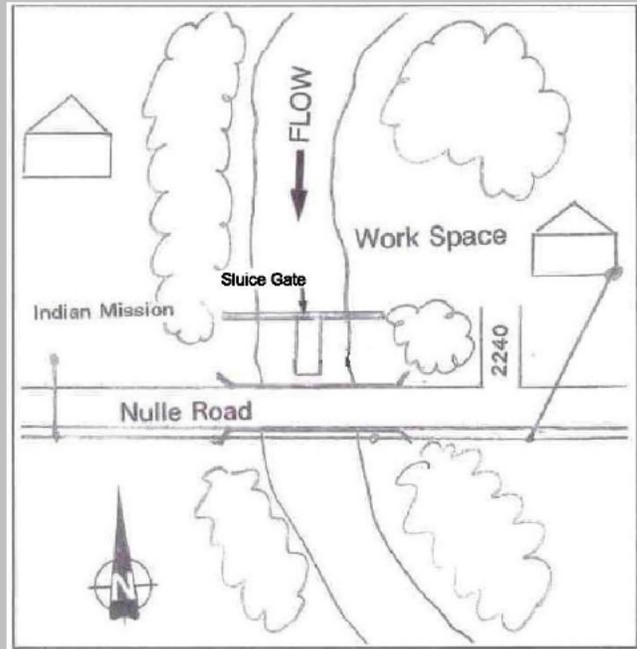
STRATEGY

Comments -Containment and recovery using a 4 x 4 foot board weir and pump to tanks in nearby garden or tank trucks on the road.
-Sluice gate at this location could be used as a weir skimmer.

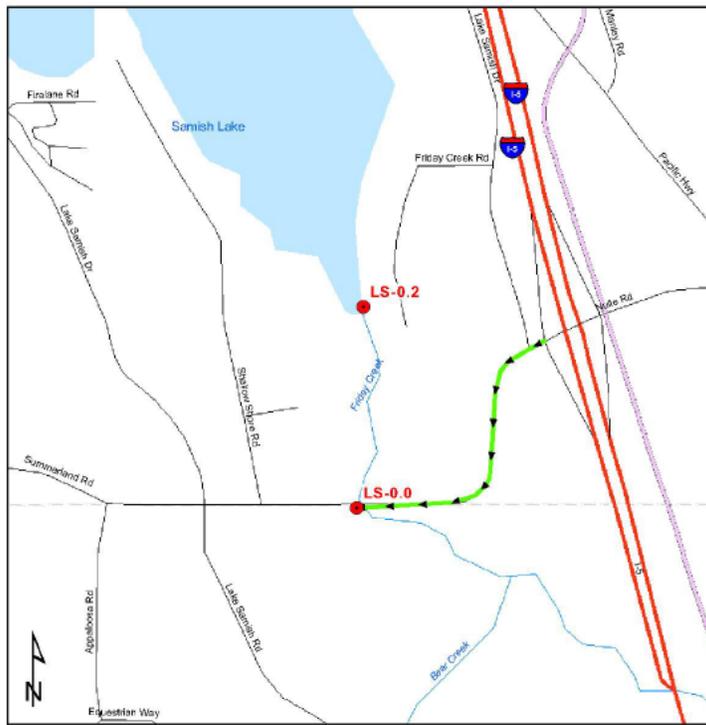
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) NW
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, take Nulle Road exit and proceed west to 2240 Nulle Road.



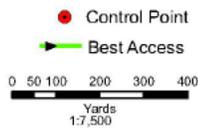
EMERGENCY RESPONSE

Best Access:

LS-0.0

Oct 21, 2009

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Control Point Name FRIDAY CREEK ROAD **Control Point** LS-0.2

its Feet **Review Date** 9/27/2005

Location South end of Lake Samish where lake narrows to enter Friday Creek. **Land Owner** Unknown

WORKSPACE

Size Ample **Location** Excellent on east and west sides

Description Grass lawns

Comments

WATER BODY

Name LAKE SAMISH **Width** 100 feet

Depth Or Bank Height No banks, flat area

Bed Type Mud **Distance To Confluence** 0.2 miles to Friday Creek

LOGISTICS

Nearest Response Equipment Laurel Station

Logistics Comment

Boat Launch: paddle boat . Or use the boat launch at LS-0.5.
Private boats may be in the way.

Helicopter Operation Excellent

Boat Launch Fair

Upstream Cp LS-0.5

Downstream Cp LS-0.0

STRATEGY

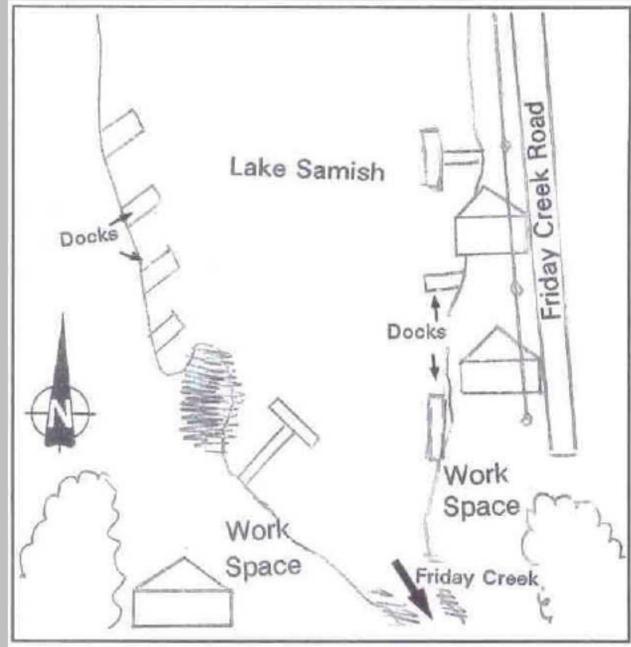
Comments -Containment and recovery using 700 feet of boom and a weir skimmer. 400 feet of exclusion boom is required to prevent petroleum from entering the mouth of Friday Creek.
-For the purpose of this Plan, Friday Creek is considered to start at the Nulle Road bridge. Consider activating Control Point LS-0.0 (Nulle Road) if there is any threat of oil entering Friday Creek.

PICTURE

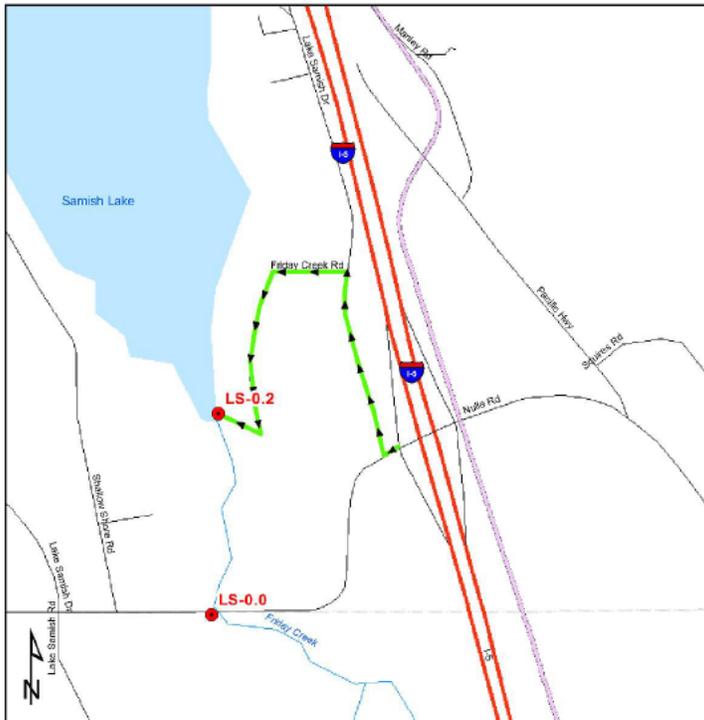
CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) S

Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5 take Exit 242 (Nulle Road) and proceed west to East Lake Samish Drive. Proceed north on East Lake Samish Drive to Friday Creek Road. Turn west on Friday Creek Road and proceed to end (211 Friday Creek Road).



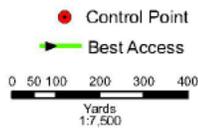
EMERGENCY RESPONSE

Best Access:

LS-0.2

Oct 21, 2009

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Control Point Name BOAT LAUNCH

Control Point

LS-0.5

(b) (7)(F)

its Feet

Review Date

9/27/2005

Washington Dept. of Fish & Wildlife (360) 902 2537

WORKSPACE

Size Ample Location boat launch area

Description Parking area. Gravel; flat

Comments

WATER BODY

Name LAKE SAMISH Width Lake; approx. 1420 feet

Depth Or Bank Height Gradual; flat area

Bed Type Mud Distance To Confluence 0.5 miles to Friday Creek

LOGISTICS

Nearest Response Equipment Laurel Station Logistics Comment

Helicopter Operation Fair

Boat Launch Excellent

Upstream Cp SI-0.0

Downstream Cp LS-0.2

STRATEGY

Comments

- This Control Point could be used as a base for a variety of protection, containment and recovery strategies from open water recovery to booming the mouths of creeks entering the lake.
- During winter, when wind direction is predominantly northeast, consider exclusion booming near north end of lake.
- Containment booming at mouth of Barnes and Wefer Creeks would minimize damage to lake. Any oil escaping this, would have to be recovered in open water. Consider activating Control Point LS-0.2 (Friday Creek Road) and/or LS-0.0 (Nulle Road) if there is any threat of oil entering Friday Creek.

PICTURE

CAD DRAWING

Date 9/27/2005

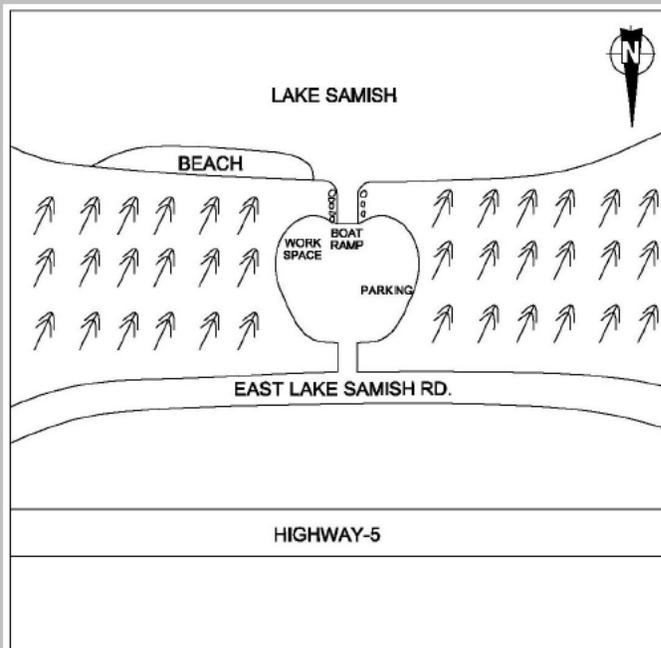
Position (Looking At)

Side to Side

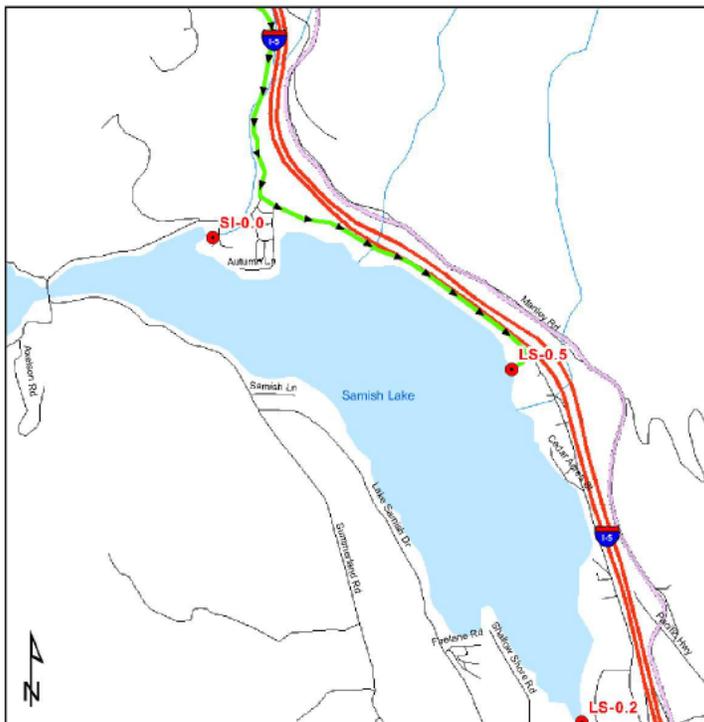
Orientation (Looking At)

W

Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, take exit 246 and proceed south on Lake Samish Drive and boat launch. Alternatively, take exit 242 from Interstate 5 and proceed north on East Lake Samish Drive to boat launch.



EMERGENCY RESPONSE

Best Access:

LS-0.5

Oct 21, 2009

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Control Point Name DECATUR ROAD**Control Point**

LU-0.0

(b) (7)(F)

Review Date

9/26/2005

Location Sandy Point Golf Course**Land Owner** Unknown**WORKSPACE****Size** Ample **Location** On north side**Description** Golf course and dyke**Comments****WATER BODY****Name** LUMMI DELTA **Width** 200 feet**Depth Or Bank Height** 20 feet on south side, 5 feet on north side**Bed Type** Silt **Distance To Confluence** 0.0 miles to Lummi Bay**LOGISTICS****Nearest Response Equipment** Laurel Station**Logistics Comment**

Could use a small Jon Boat

Helicopter Operation Fair**Boat Launch** Not Required**Upstream Cp** LU(T)-0.1**Downstream Cp** Lummi Bay**STRATEGY**

Comments -Containment and recovery with board weir and disk skimmer and/or vacuum truck.
 -Two 4 foot culverts with flapper valves on downstream side.
 Flappers on culvert through dyke open to release water from inland side at low tides.

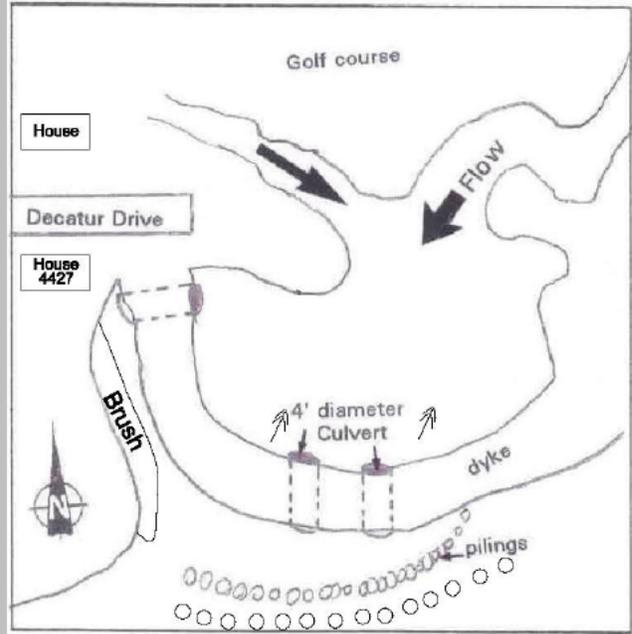
PICTURE

CAD DRAWING

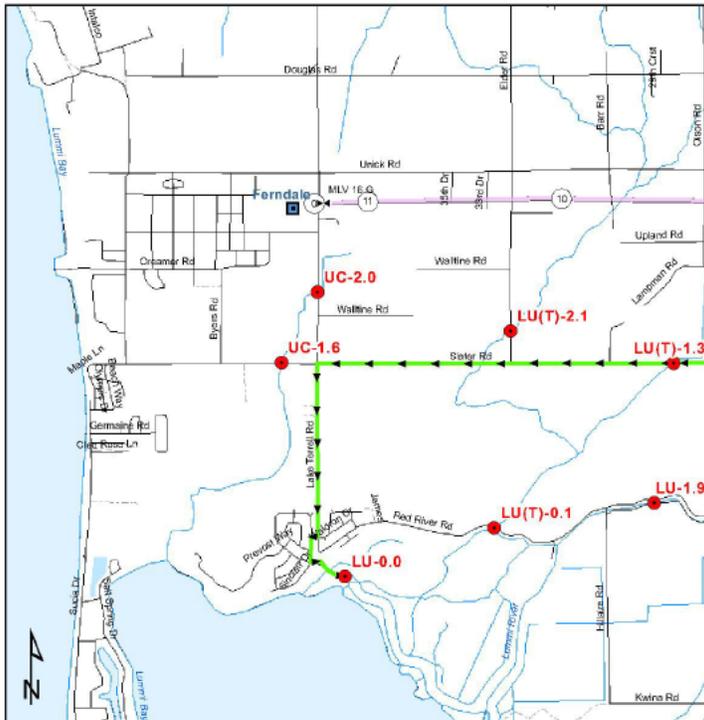
Date 9/26/2005 Position (Looking At) Not Required Orientation (Looking At) Not Required

Description/Comment

Lummi Delta



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, proceed west on Slater Road to Lake Terrel Road. Proceed south on Lake Terrel Road to Waldron Drive, proceed 20 yards west to Orcas Way, proceed 200 yards south to Decatur Road and proceed 500 yards east to Sandy Point Golf Course (Lummi Delta).



EMERGENCY RESPONSE

Best Access:

LU-0.0

Oct 21, 2009

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Control Point Name KWINA ROAD **Control Point** LU-0.1

Review Date 9/26/2005

Location At Unnamed creek culvert under North Red River Road. **Land Owner** Lummi Indian Band

This area is in the heart of Lummi Indian lands.

WORKSPACE

Size Ample **Location** Adjacent to river

Description Dyke and field (may be marshy)

Comments

WATER BODY

Name LUMMI RIVER **Width** 10 feet at time of photo

Depth Or Bank Height 15 foot dyke

Bed Type Mud and silt **Distance To Confluence** 0.1 miles to Lummi Bay

LOGISTICS

Nearest Response Equipment Laurel Station **Logistics Comment**

Helicopter Operation Excellent

Boat Launch Not Required

Upstream Cp LU-1.9

Downstream Cp Lummi Bay

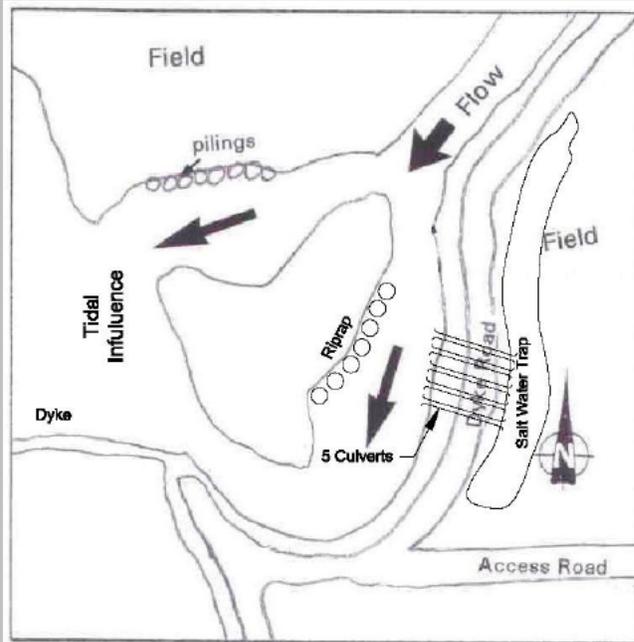
STRATEGY

Comments -Containment and recovery with approximately 100 feet of boom and weir skimmer on upstream side of road. Additionally, a board weir and disk skimmer and/or vacuum truck could be used across culvert.
-Area is subject to tidal influences.

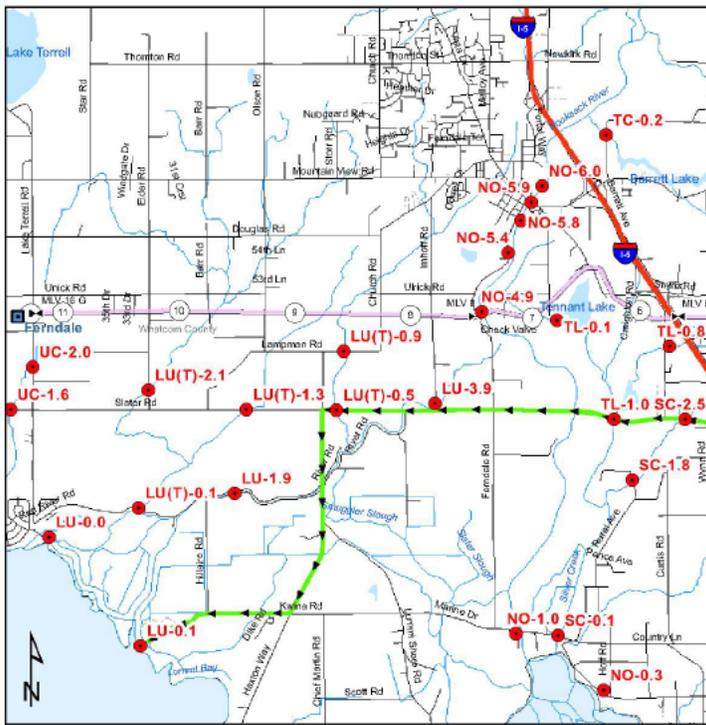
PICTURE

CAD DRAWING

Date 9/26/2005 Position (Looking At) Up Stream
 Orientation (Looking At) N
 Description/Comment



BEST ACCESS



KINDER MORGAN

EMERGENCY RESPONSE

Best Access:

LU-0.1

Oct 21, 2009

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Best Access Driving Instruction

From Interstate 5, proceed west on Slater Road to Haxton Way. Proceed south on Haxton Way to Kwina Road. Turn West on Kwina Road. Continue through gate at end of Kwina Road to dyke adjacent to Lummi River.

Control Point Name SOUTH RED RIVER ROAD **Control Point** LU-1.9

(b) (7)(F)

Review Date 9/26/2005

Location At BellAir Model Flyers Field on South Red River Road adjacent to Lummi River.

Land Owner Lummi Indian Band

WORKSPACE

Size Regular **Location** 50 feet wide adjacent to river

Description Along river bank

Comments

WATER BODY

Name LUMMI RIVER **Width** 30 feet

Depth Or Bank Height 4 feet, steep

Bed Type Mud **Distance To Confluence** 1.9 miles to Lummi Bay (along mainstream)

LOGISTICS

Nearest Response Equipment Laurel Station **Logistics Comment**

Helicopter Operation Excellent

Boat Launch Not Required

Upstream Cp LU-3.9

Downstream Cp LU-0.1 and LU(T)-0.1

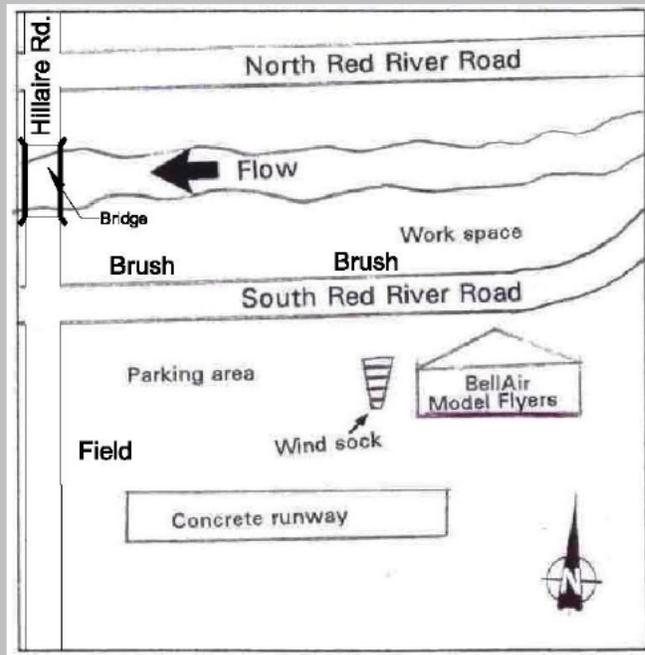
STRATEGY

Comments -Containment and recovery with approximately 100 feet of boom and weir skimmer.
-Hillaire Road bridge 500 feet downstream allows access to opposite bank. Multiple deployments could be effected along this stretch of river. Area subject to tidal influences.

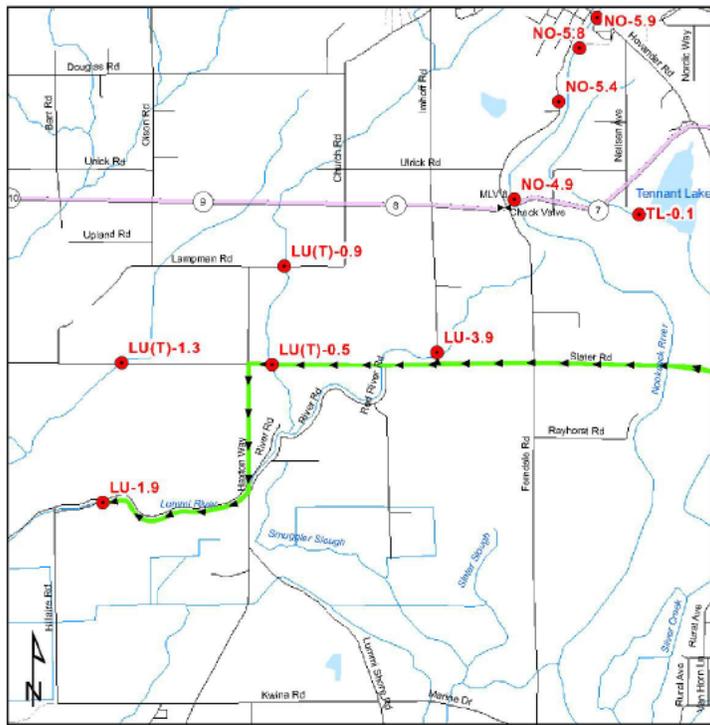
PICTURE

CAD DRAWING

Date 9/26/2005 Position (Looking At) Up Stream
 Orientation (Looking At) E
 Description/Comment



BEST ACCESS



KINDER MORGAN
CANADA INC.

EMERGENCY RESPONSE

Best Access:

LU-1.9

Oct 21, 2009

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● Control Point

➔ Best Access

0 167.375 750 1,125 1,500

Yards
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Best Access Driving Instruction

From Interstate 5, take exit 260 and proceed west on Slater Road to Haxton Way. Proceed south on Haxton Way to South Red River Road. Proceed west on South Red River Road to BellAir Model Flyers Field.

Control Point Name IMHOFF ROAD **Control Point** LU-3.9

(b) (7)(F)

Review Date 9/27/2005

Location At Lummi River culvert under Imhoff Road (approximately 4922 Imhoff Road). **Land Owner** Unknown

WORKSPACE

Size Regular **Location** Adequate on north side, upstream of culvert

Description River bank

Comments

WATER BODY

Name LUMMI RIVER **Width** 10 feet

Depth Or Bank Height 10 feet, moderate

Bed Type Mud, clay and silt **Distance To Confluence** 3.9 miles to Lummi Bay

LOGISTICS

Nearest Response Equipment Laurel Station **Logistics Comment**

Helicopter Operation Excellent

Boat Launch Not Required

Upstream Cp NO-4.5

Downstream Cp LU-1.9

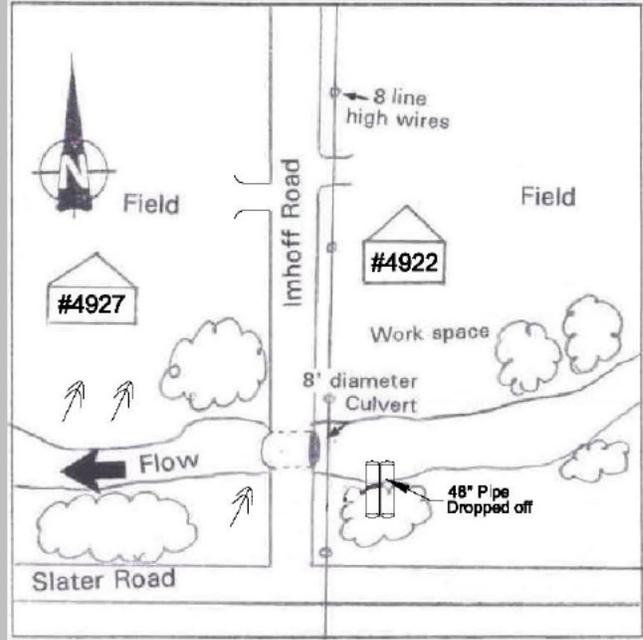
STRATEGY

Comments Containment and recovery with board weir and disk skimmer and/or vacuum trucks. At high flows, approximately 100 feet of boom and weir skimmer could be used.

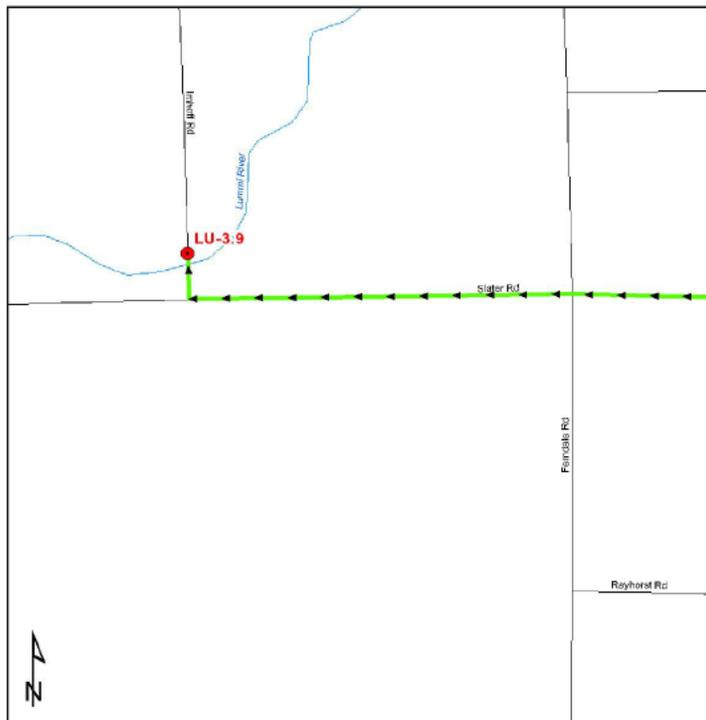
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) W
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, take exit 260 and proceed west on Slater Road to Imhoff Road. Proceed North to Lummi River culvert.



EMERGENCY RESPONSE

Best Access:

LU-3.9

Oct 21, 2009

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Control Point Name NORTH RED RIVER ROAD**Control Point**

LU(T)-0.1

feet

Review Date

9/26/2005

mi Indian Band

This area is in the heart of Lummi Indian lands.

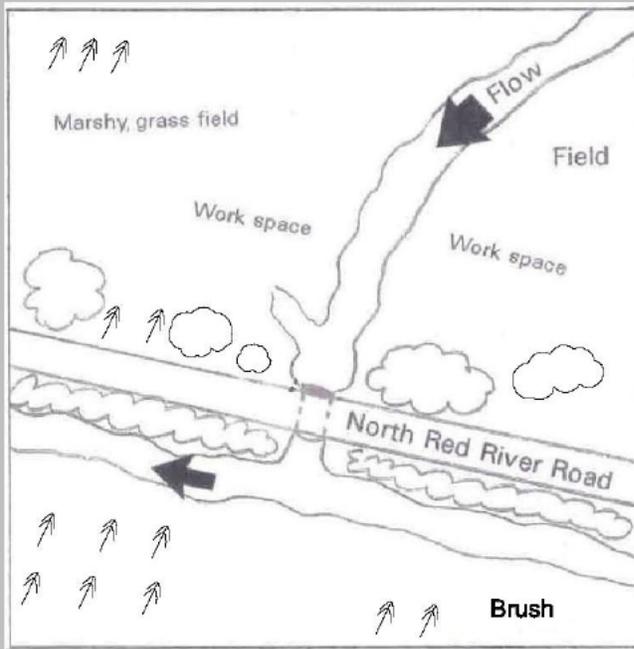
WORKSPACE**Size** Regular **Location** On east and west of creek**Description** Field and flat land (may be marshy)**Comments****WATER BODY****Name** LUMMI TRIBUTARY **Width** 10 feet**Depth Or Bank Height** 5 feet**Bed Type** Mud and silt **Distance To Confluence** 0.1 miles to Lummi River**LOGISTICS****Nearest Response Equipment** Laurel Station **Logistics Comment****Helicopter Operation** Excellent**Boat Launch** Not Required**Upstream Cp** LU-1.9 & LU(T)-2.1**Downstream Cp** LU-0.0**STRATEGY**

Comments -Containment and recovery with approximately 100 feet of boom and weir skimmer on upstream side of road. Additionally, a board weir and disk skimmer and/or vacuum truck could be used across culvert.
 -Area is subject to tidal influences.

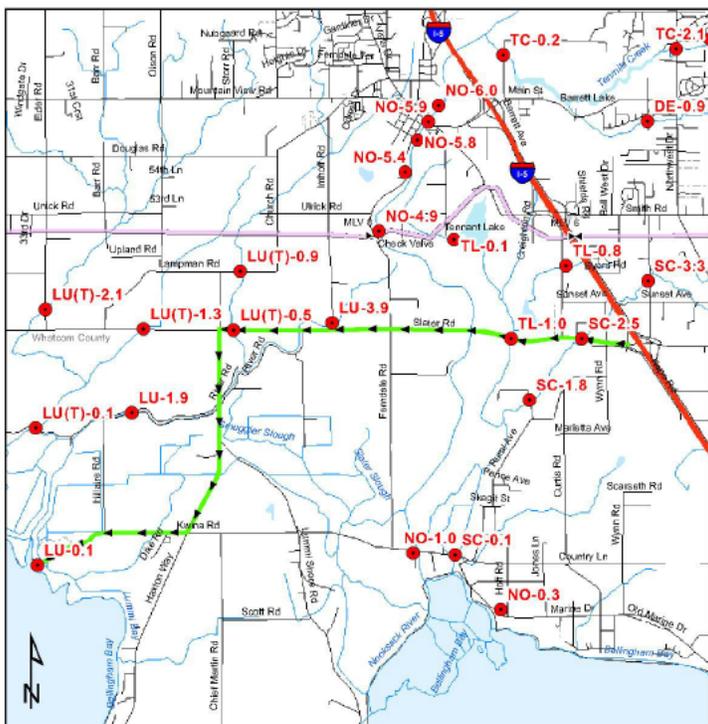
PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) NE
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, proceed west on Slater Road to Haxton Way. Proceed south on Haxton Way to North Red River Road. Proceed west on North Red River Road to culvert. (Approx. 1.8 miles from Haxton Way)



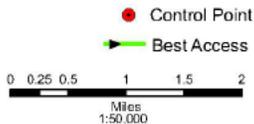
EMERGENCY RESPONSE

Best Access:

LU(T)-0.1

Oct 21, 2009

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Control Point Name SLATER ROAD **Control Point** LU(T)-0.5

(b) (7)(F)

Feet

Review Date

9/27/2005

Location At Schell Ditch culvert under Slater Road.

Land Owner Unknown

The Lummi Indian Band lands are immediately south of Slater Road.

WORKSPACE

Size Regular

Location Good on south sides of Slater Road and adjacent to Ditch

Description Fields

Comments Will require brush cutting.

WATER BODY

Name LUMMI TRIBUTARY (SCHELL DITCH) **Width** 6 feet

Depth Or Bank Height 10 feet, steep

Bed Type Mud and silt **Distance To Confluence** 0.5 mile to Lummi River

LOGISTICS

Nearest Response Equipment Laurel Station **Logistics Comment**

Helicopter Operation Fair

Boat Launch Not Required

Upstream Cp LU(T)-0.9

Downstream Cp LU-1.9

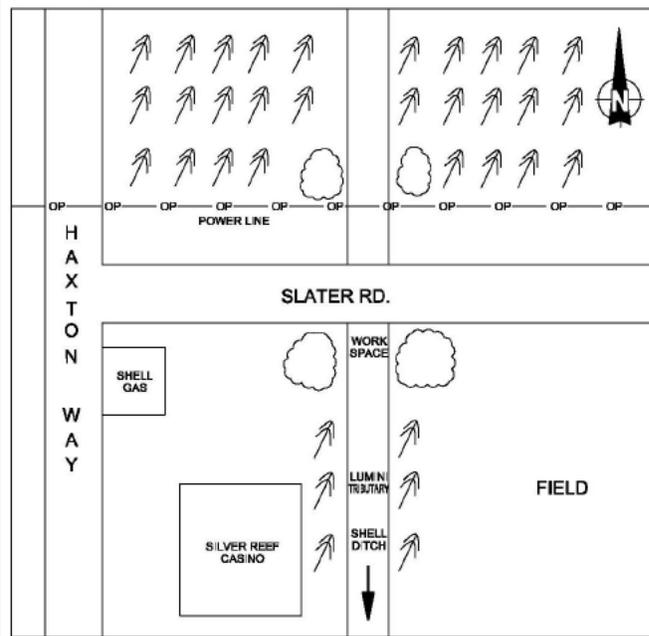
STRATEGY

Comments -Containment and recovery with board weir across culvert and disk skimmer and/or vacuum truck. At high flows, boom and a weir skimmer may be feasible.
-The tidal influences in the delta may affect flows at this location.

PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) N
Description/Comment



BEST ACCESS



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CANADA INC.

EMERGENCY RESPONSE

Best Access:

LU(T)-0.5

Oct 21, 2009

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Best Access Driving Instruction

From Interstate 5, proceed west along Slater Road to Schell Ditch culvert just east of Haxton Way. At Silver Reef Casino

Control Point Name LAMPMAN ROAD **Control Point** LU(T)-0.9

(b) (7)(F)

et

Review Date 9/27/2005

Location At Schell Ditch culvert under Lampman Road. **Land Owner** Unknown

WORKSPACE

Size Regular **Location** (100 feet x 60 feet), immediately east of control point, and north of road.

Description Farm yard and side of road

Comments

WATER BODY

Name LUMMI TRIBUTARY (SCHELL DITCH) **Width** Varies. 8 feet at time of photograph

Depth Or Bank Height Gentle to 8 feet

Bed Type Mud **Distance To Confluence** 0.9 mile to Lummi River

LOGISTICS

Nearest Response Equipment Laurel Station

Logistics Comment

Helicopter: Good in adjacent fields

Helicopter Operation Fair

Boat Launch Not Required

Upstream Cp None

Downstream Cp LU(T)-0.5

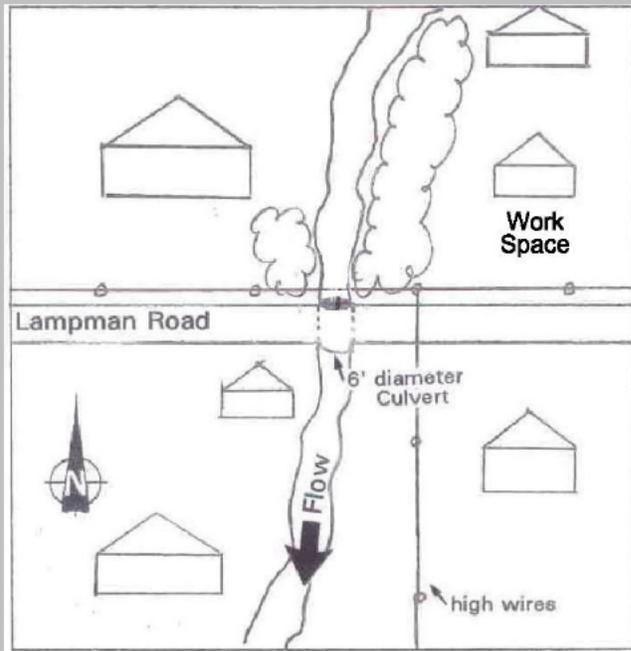
STRATEGY

Comments -Containment and recovery with board weir and disk skimmer and/or vacuum truck.
-6 foot culvert

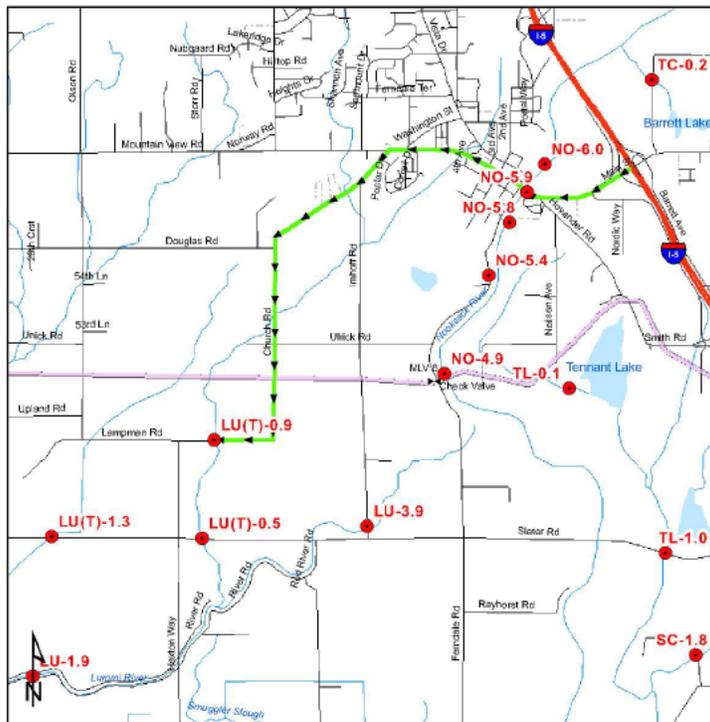
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) S
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, proceed west on Main Street in Ferndale to Douglas Road. Proceed west on Douglas Road to South Church Road. Proceed south to Lampman Road and Schell Ditch culvert.



EMERGENCY RESPONSE

Best Access:

LU(T)-0.9

Oct 21, 2009

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Control Point Name SLATER ROAD **Control Point** LU(T)-1.3

(b) (7)(F)

Review Date 9/27/2005

Location Approximately 1/2 mile west of Haxton Way on Slater Road. **Land Owner** Unknown

WORKSPACE

Size Regular **Location** Adjacent to creek on the north side of the road

Description Cultivated fields

Comments

WATER BODY

Name LUMMI TRIBUTARY **Width** 5 feet

Depth Or Bank Height Up to 5 feet, moderate

Bed Type Soil **Distance To Confluence** 1.3 miles to Lummi River

LOGISTICS

Nearest Response Equipment Laurel Station **Logistics Comment**

Helicopter Operation Fair

Boat Launch Not Required

Upstream Cp None

Downstream Cp LU(T)-0.1

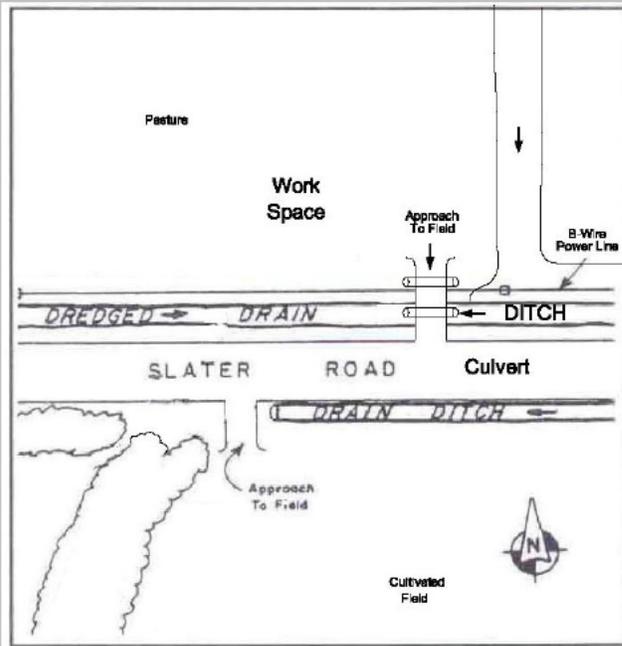
STRATEGY

Comments -Containment and recovery with board weir and disk skimmer and/or vacuum truck.
-3 foot diameter culvert marked by white paint lines on road.

PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) N
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, take exit 260 and proceed west on Slater Road to culvert approximately 1/2 mile west of Haxton Way.



EMERGENCY RESPONSE

Best Access:

LU(T)-1.3

Oct 21, 2009

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Control Point Name ELDER ROAD**Control Point**

LU(T)-2.1

(b) (7)(F)

Review Date

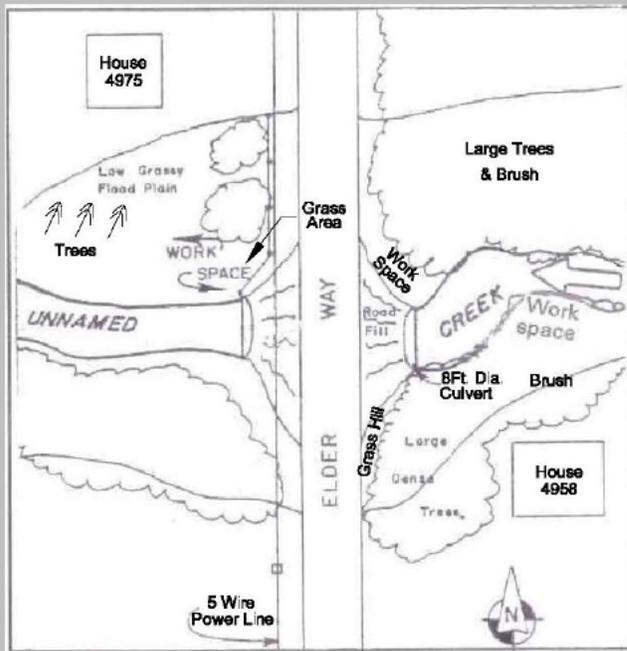
9/26/2005

Location 4958 Elder Road**Land Owner** Unknown**WORKSPACE****Size** **Location** Road side and yard of 4958 Elder Road**Description****Comments** Lots of brushing required.**WATER BODY****Name** LUMMI TRIBUTARY **Width** 8 feet**Depth Or Bank Height** 25 feet, extremely steep**Bed Type** Gravel **Distance To Confluence** 2.1 miles to Lummi River**LOGISTICS****Nearest Response Equipment** Laurel Station **Logistics Comment****Helicopter Operation** **Boat Launch** **Upstream Cp** **Downstream Cp** **STRATEGY****Comments** -Containment and recovery with board weir and disk skimmer and/or vacuum truck.
-8 foot diameter culvert.

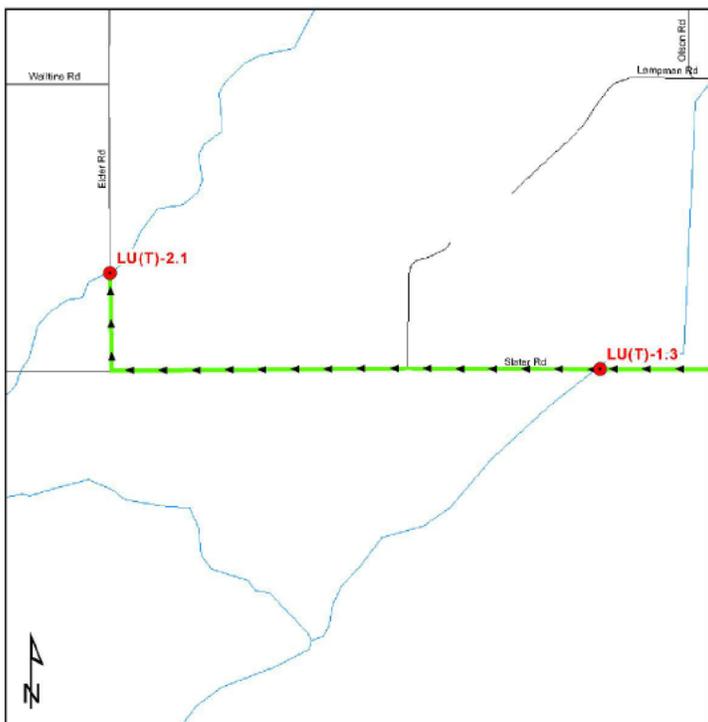
PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) E
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, take exit 260 and proceed west on Slater Road to Elder Road. Proceed north on Elder Road to culvert at 4958.



EMERGENCY RESPONSE

Best Access:
LU(T)-2.1

Oct 21, 2009

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Control Point Name MARCH POINT ROAD **Control Point** MP-0.1

Review Date 9/26/2005

Location The ditches that run alongside North Texas Road downhill to Padilla Bay. The ditches are culverted under March Point road. **Land Owner** Unknown

WORKSPACE

Size Regular **Location** Along Texas Road and in adjacent fields

Description 24" culvert under March Point Road into Padilla Bay at the Texas Road junction. 15" culvert under March Point road into Padilla Bay 63 yards south of junction.

Comments

WATER BODY

Name MARCH POINT DITCH **Width** Varies to 5'

Depth Or Bank Height 6 feet

Bed Type Gravel and sand **Distance To Confluence** 500 feet to Padilla Bay, 18 yard to outfall

LOGISTICS

Nearest Response Equipment Anacortes Station

Logistics Comment

Helicopter: Good in fields on either side of North Texas Road. NOTE: Many high wires in vicinity and high towers at the Tecnal plant.

Helicopter Operation Fair

Boat Launch Not Required

Upstream Cp None

Downstream Cp Padilla Bay

STRATEGY

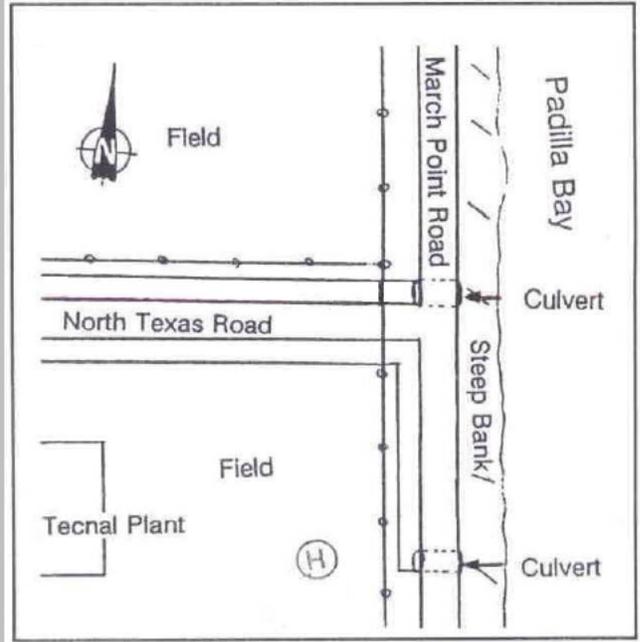
Comments -If sufficient water is in the ditches consider siphon dams or board weirs. Temporary storage ponds could be dug in the fields at the bottom of the hill. As a high priority, block the culverts that run under March Point road into Padilla Bay if there is any indication that the spill might spread that far.
-Prevent spill from reaching Padilla Bay. Total length of ditch from Anacortes Meter Station to Padilla Bay is 0.8 mile with much of it downhill.

(b) (7)(F)

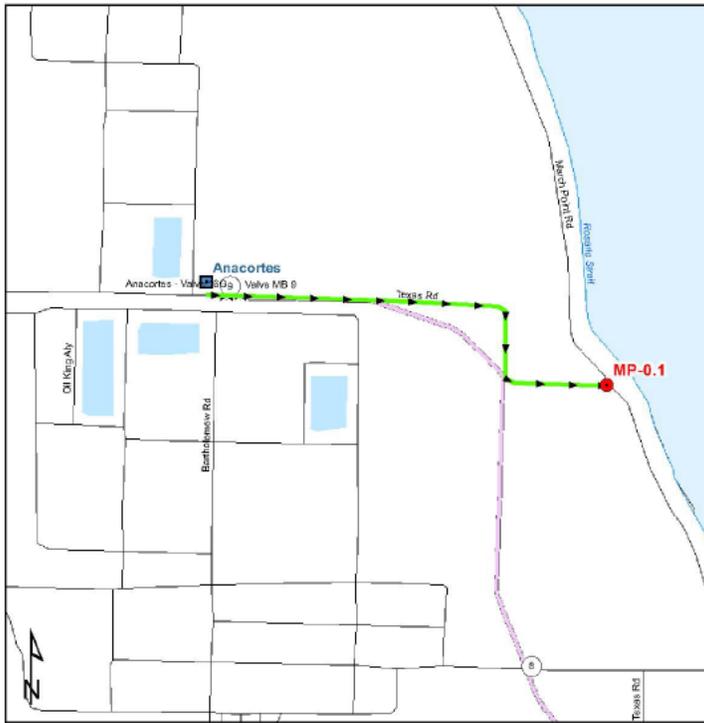
PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) E
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From North Texas Road or at the junction of North Texas and March Point roads



EMERGENCY RESPONSE

Best Access:

MP-0.1

Oct 21, 2009

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Control Point Name BELLINGHAM BAY Control Point NO-0.0

(b) (7)(F)

Feet

Review Date

9/29/2005

Location In Bellingham Bay off the Nooksack delta in tidal water. Land Owner Unknown

WORKSPACE

Size Small Location Work will be done from vessels

Description

Comments

WATER BODY

Name NOOKSACK RIVER Width 1.8 miles across delta mouths

Depth Or Bank Height Low islands

Bed Type Hard packed sand and silt Distance To Confluence 0.0 miles to Bellingham Bay

LOGISTICS

Nearest Response Equipment Laurel Station

Logistics Comment

Helicopter Operation Poor

Helicopter: Could be used to support vessels or ground personnel at low tide.

Boat Launch No

Boat Launch: Squalicum Marina is closest, outside the river.

Upstream Cp NO-0.3

Downstream Cp Bellingham Bay

STRATEGY

Comments -Containment and Recovery. Collect oil with boom and weir skimmers. If GRP strategies B-36, B-37 and B-38 have been successful, recovery will be from the most easterly channel.
 -See geographic Response Plan for strategies to be used in and around Bellingham Bay. A current guide for flood and ebb tidal flow patterns for Bellingham Bay may be found overleaf.

PICTURE

CAD DRAWING

Date 3/29/2006 Position (Looking At) Not Required
 Orientation (Looking At) S
 Description/Comment



BEST ACCESS



Best Access Driving Instruction

By vessel. Will require involvement of CSCI vessels and booms.



EMERGENCY RESPONSE

Best Access:

NO-0.0

Oct 21, 2009

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Control Point Name MARIETTA BOAT LAUNCH **Control Point** NO-0.3

Review Date 9/28/2005

Location Nooksack River boat launch at 1748 Marine Drive. **Land Owner** Lummi Indian Band

WORKSPACE

Size Regular **Location** Good on north-east side of river

Description Boat launch and field area

Comments

WATER BODY

Name NOOKSACK RIVER **Width** 150 feet

Depth Or Bank Height 5 feet, gradual

Bed Type Mud **Distance To Confluence** 0.3 miles to Bellingham Bay

LOGISTICS

Nearest Response Equipment Laurel Station **Logistics Comment**

Helicopter Operation Fair

Boat Launch Fair

Upstream Cp NO-0.7

Downstream Cp NO-0.0

STRATEGY

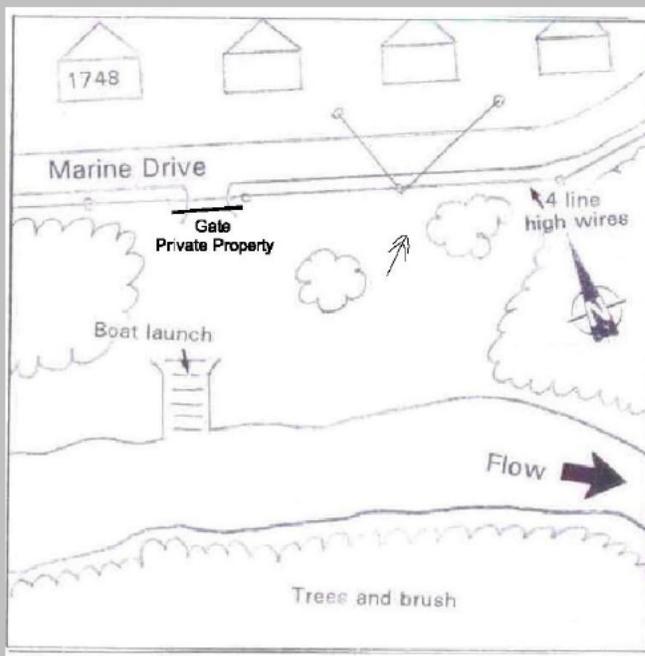
Comments

- Containment and recovery with approximately 600 feet of boom and weir skimmer.
- This is the sacrificial channel from the Nooksack River referred to in GRP B-36.
- Several river deployments could be effected at this location. Permission to use this location and boat launch would likely be required from the Lummi Indian Band. A chain blocks the entrance.

PICTURE

CAD DRAWING

Date 3/29/2006 **Position (Looking At)** Side to Side
Orientation (Looking At) W
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, take exit 258 and proceed west on Airport Drive. Turn Right (west) onto Marine Drive. Proceed on Marine Drive to boat launch.



EMERGENCY RESPONSE

Best Access:

NO-0.3

Oct 21, 2009

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NO-1.0

(b) (7)(F)

Review Date

9/28/2005

Location South-west side of Marine Drive Bridge over Nooksack.**Land Owner** Lummi Indian Band**WORKSPACE****Size** Ample**Location** Adequate work space**Description****Comments****WATER BODY****Name** NOOKSACK RIVER**Width** 300 feet**Depth Or Bank Height** 5 to 8 feet with moderate slope.**Bed Type** Silt and sand**Distance To Confluence** 1 mile to Bellingham Bay**LOGISTICS****Nearest Response Equipment** Laurel Station**Logistics Comment**BOAT LAUNCH: Primitive boat launch on the west side of the river.
Tidal influences**Helicopter Operation** No**Boat Launch** Poor**Upstream Cp** NO-4.9**Downstream Cp** NO-0.0**STRATEGY****Comments** Deflect spill on to east bank on upstream side of bridge. 1000 to 1500 feet of deflection boom required upstream of bridge. Contain and Recover on east bank. Approximately 600 feet of containment and recovery boom required.

Thursday, November 12, 2009

PICTURE

CAD DRAWING

Date 3/29/2006

Position (Looking At)

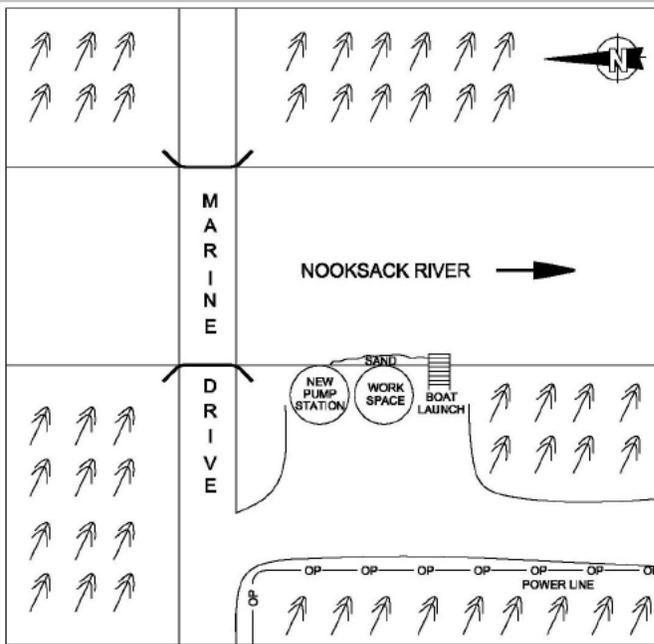
Side to Side

Orientation (Looking At)

SE

Description/Comment

Boat Launch



BEST ACCESS



Best Access Driving Instruction

Side road on south-west side of Marine Drive bridge.

KINDER MORGAN
CANDI INC

EMERGENCY RESPONSE

Best Access:

NO-1.0

Oct 21, 2009

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Control Point Name HOVENDER HOMESTEAD PARK**Control Point**

NO-4.9

Review Date

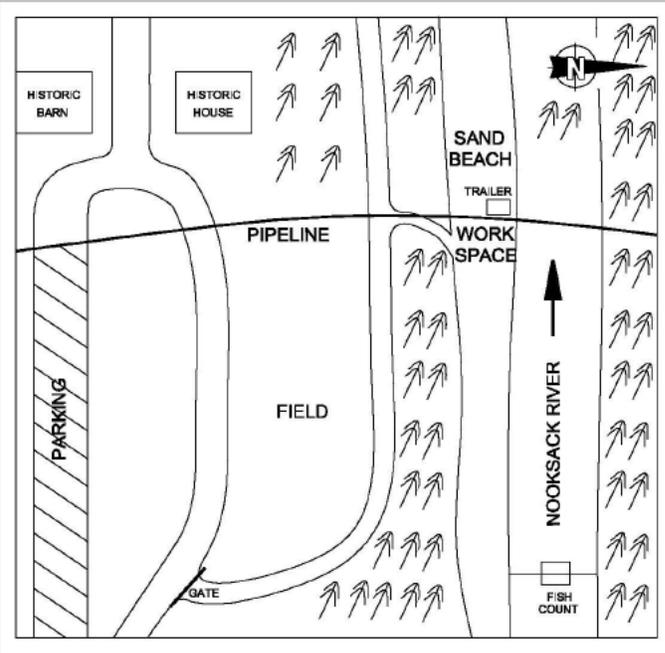
9/28/2005

Location East bank of river at Hovander Homestead Park and Ferndale pipe line crossing.**Land Owner** Whatcom County Park**WORKSPACE****Size** Ample **Location** Large work space on east side of river and at south west corner of Hovander Homestead Park.**Description** Sand, gravel bar and field**Comments****WATER BODY****Name** NOOKSACK RIVER **Width** 200 feet at low flow; 320 feet at high flow**Depth Or Bank Height** West side 10 feet; east side graduated up to 10 feet.**Bed Type** Sand and gravel - beach **Distance To Confluence** 4.9 miles to Bellingham Bay**LOGISTICS****Nearest Response Equipment** Laurel Station**Logistics Comment****Helicopter Operation** ExcellentWork from east bank not feasible at high flows.
Park hours: 08:00 - 19:00 (Winter and Fall); 08:00 - 22:00 (Spring and Summer) Access to river requires removal of pieces of pipe placed as traffic barrier.**Boat Launch** Excellent**Upstream Cp** NO-5.4**Downstream Cp** NO-4.5**STRATEGY****Comments** Containment and Recovery. With booms and weir skimmers. Boom requirements will be dependant on river flow, but approximately 300 feet of collection boom will be needed.

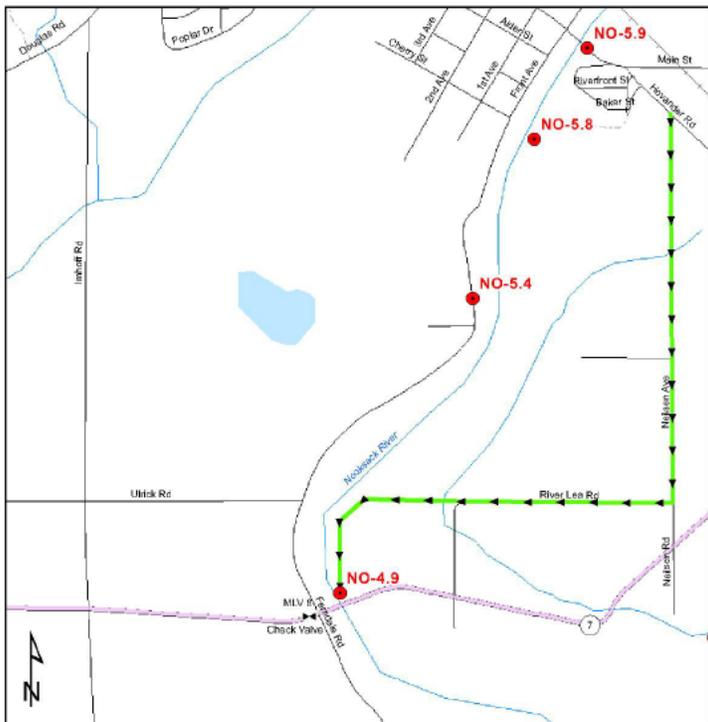
PICTURE

CAD DRAWING

Date 9/28/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) NW
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Hovander Road proceed south on Neilsen Road to River Lea Road (access to Hovander Homestead Park). Proceed to river access road at west end of River Lea Road.



EMERGENCY RESPONSE

Best Access:

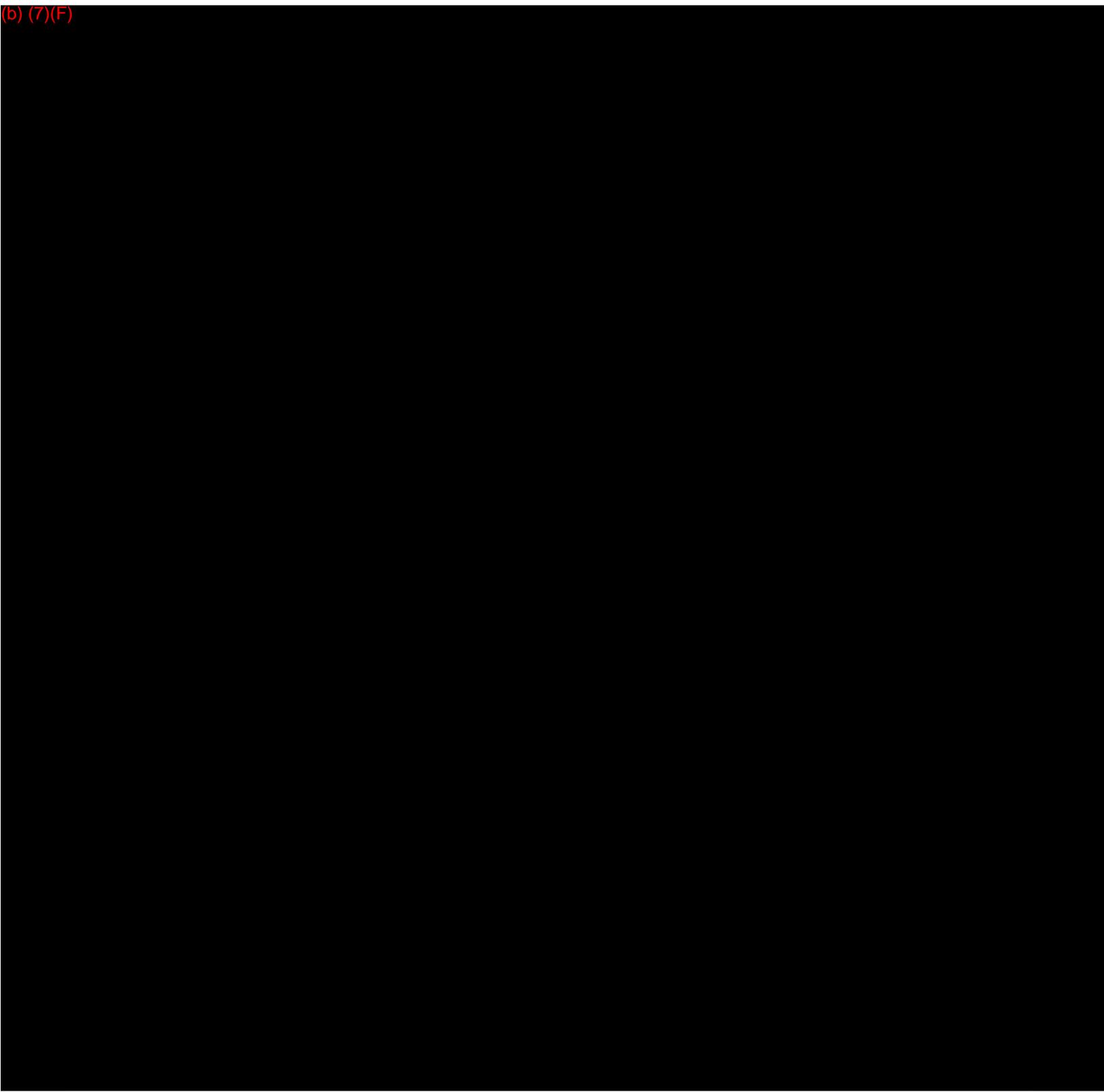
NO-4.9

Oct 21, 2009

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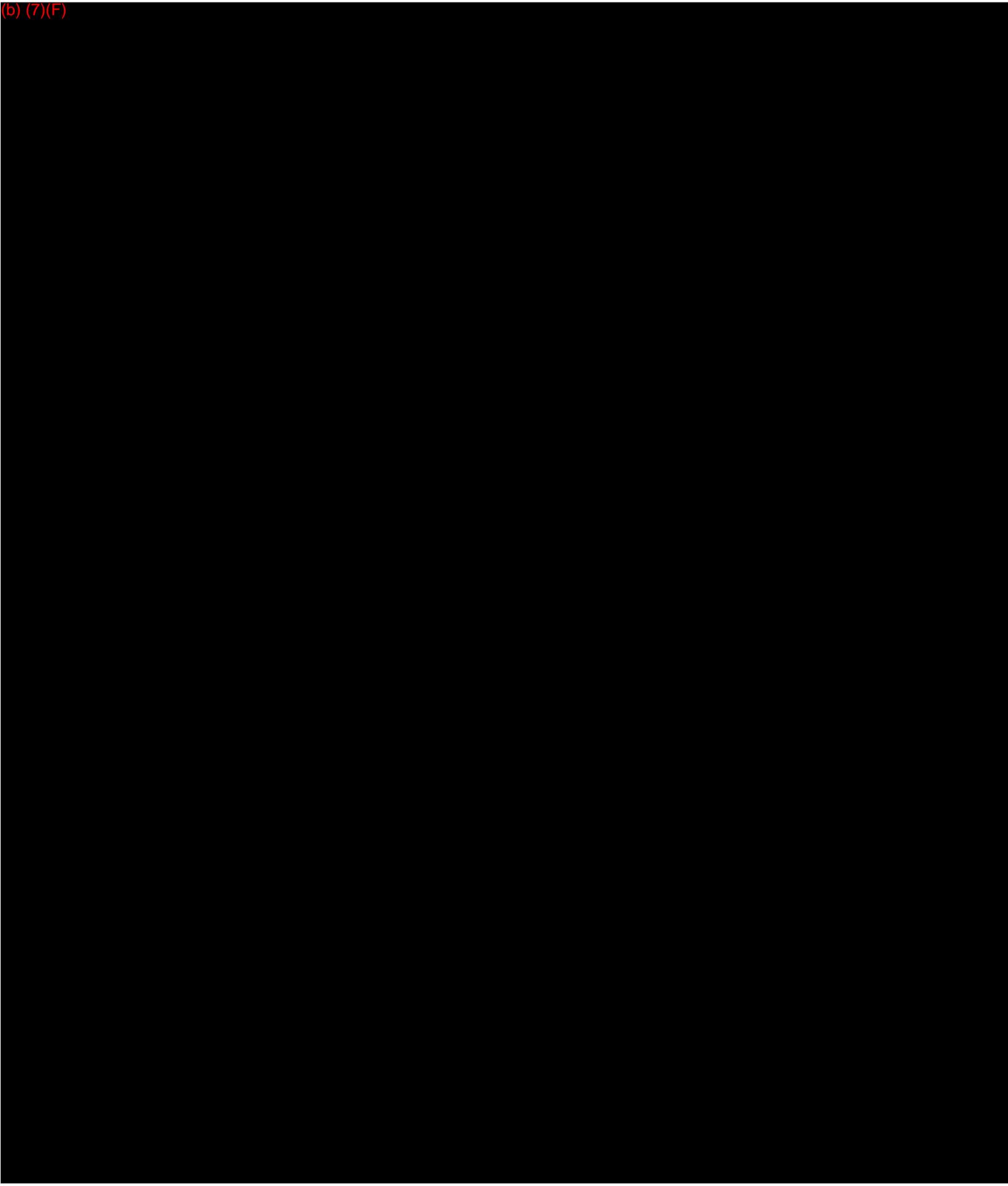


(b) (7)(F)



Thursday, November 12, 2009

(b) (7)(F)



Control Point Name FERNDALE BRIDGE**Control Point**

NO-5.8

(b) (7)(F)

Review Date

9/28/2005

Location From Hovander bridge proceed south to Riverfront Street and river access.**Land Owner** Unknown**WORKSPACE****Size** Small**Location** Limited work space on both sides of river downstream from Hovander and rail bridges. Deploying from boat would be required at this location.**Description****Comments****WATER BODY****Name** NOOKSACK RIVER**Width** 300 feet**Depth Or Bank Height** 15 - 20 feet both banks**Bed Type** Clay, silt and sand**Distance To Confluence** 5.8 miles to Bellingham Bay**LOGISTICS****Nearest Response Equipment** Laurel Station**Logistics Comment**

Acceptable control point at high and low flows.

Helicopter Operation Fair**Boat Launch** Excellent**Upstream Cp** NO-5.9**Downstream Cp** NO-5.4**STRATEGY****Comments** Containment and Recovery. With booms and weir skimmers. Boom requirements will be dependant on river flow, but approximately 300 feet of collection boom will be needed

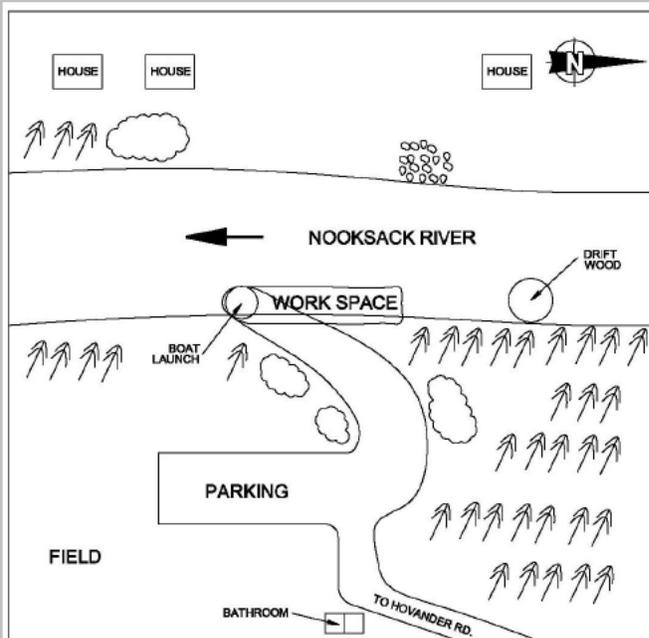
PICTURE

CAD DRAWING

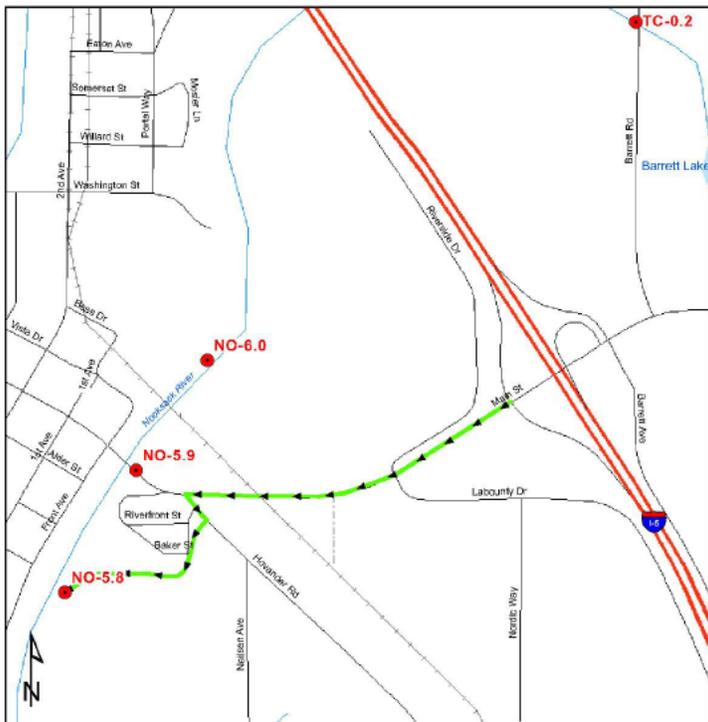
Date 9/28/2005 **Position (Looking At)** Not Required
Orientation (Looking At) Not Required

Description/Comment

Boat Launch



BEST ACCESS



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CAMBI, INC.

EMERGENCY RESPONSE

Best Access:

NO-5.8

Oct 21, 2009

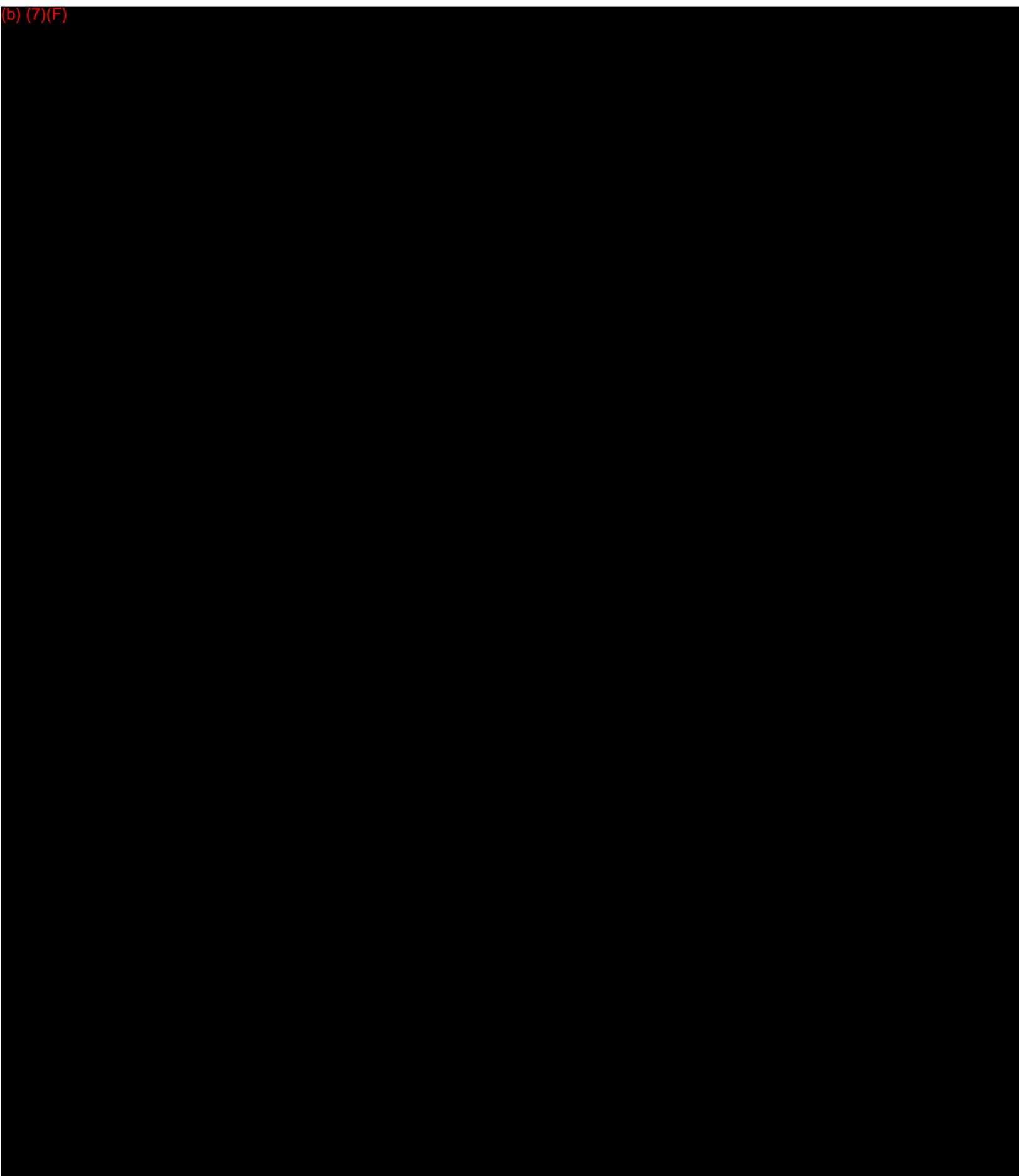
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Best Access Driving Instruction

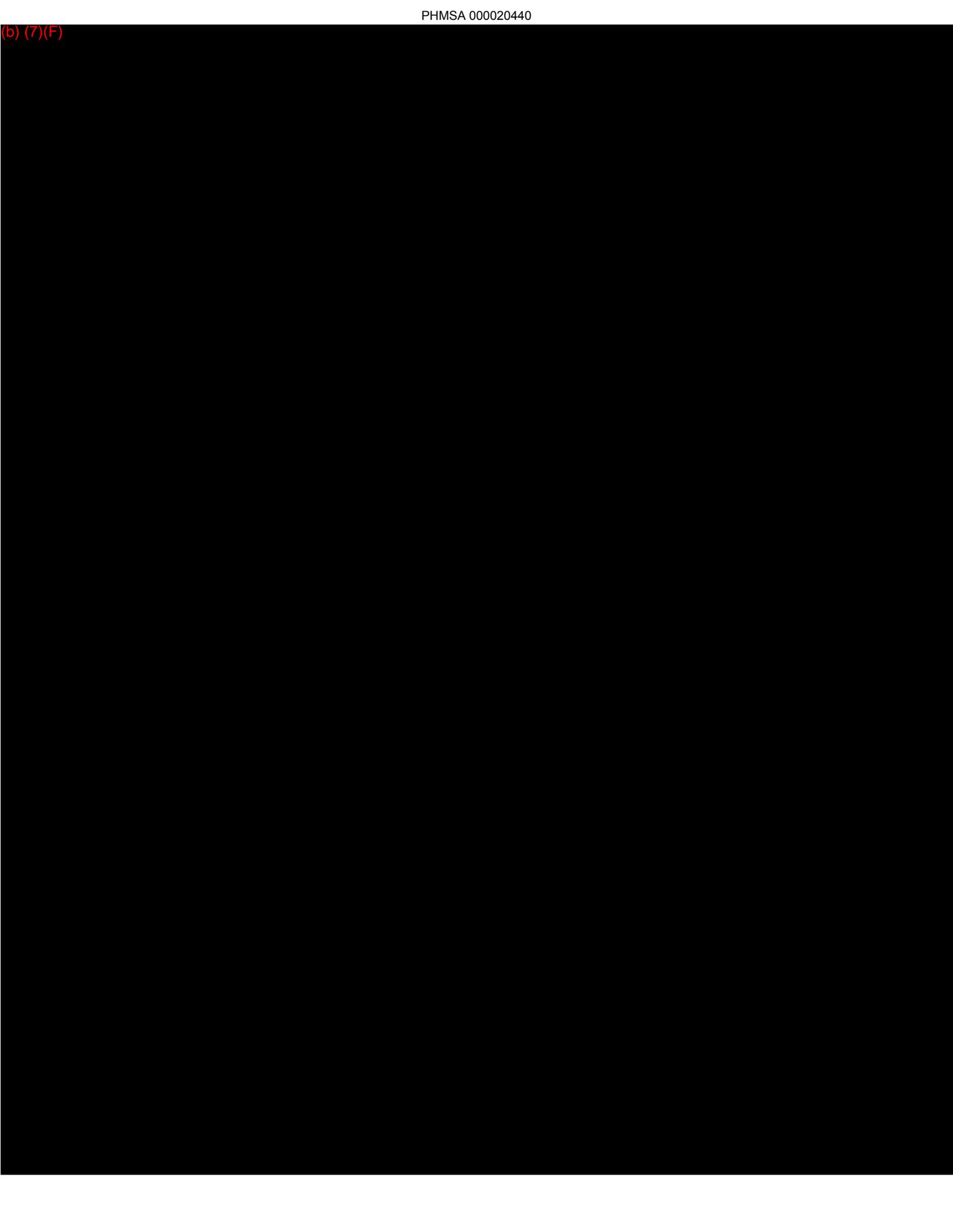
East side of river downstream of Hovander bridge.

(b) (7)(F)



Thursday, November 12, 2009

(b) (7)(F)



Control Point Name VANDER YACHT PARK

Control Point

NO-6.0

(b) (7)(F)

Review Date

9/27/2005

Location West side of river, upstream of the Hovander Road and Rail Bridges at Vander Yacht Park.

Land Owner Unknown

WORKSPACE

Size Regular Location Good size work space at low to moderate flows or park area for work space at high flows.

Description Gravel, sand bar and park area

Comments

WATER BODY

Name NOOKSACK RIVER Width 200 feet

Depth Or Bank Height 10 feet sloping up to 25 feet

Bed Type Gravel Distance To Confluence 6.0 miles to Bellingham Bay

LOGISTICS

Nearest Response Equipment Laurel Station

Logistics Comment

Helicopter Operation Fair

Requires removal of boulders for park access. Second Avenue to Bass Drive is a more direct route, but not suitable for OSCAR approach due to lack of clearance for belly boxes.

Boat Launch Not Required

Back hoe required to make bank access and to transport the boom

Upstream Cp NO-8.8

Downstream Cp NO-5.8

STRATEGY

Comments Containment and Recovery. With booms and weir skimmers. Boom requirements will be dependant on river flow, but approximately 800 feet of collection boom will be needed.

PICTURE

CAD DRAWING

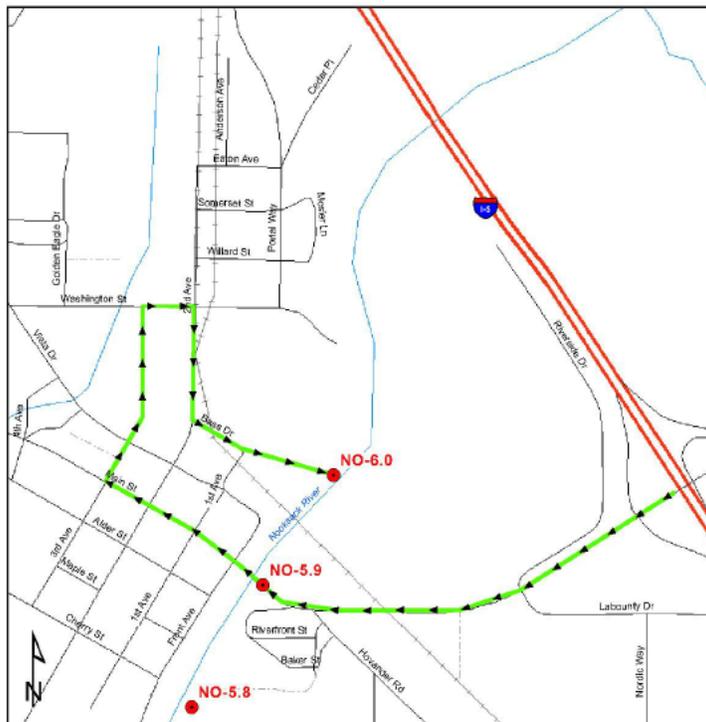
Date 3/29/2006 Position (Looking At) Down Stream
 Orientation (Looking At) S

Description/Comment

workspace



BEST ACCESS



KINDER MORGAN
CAMBI INC

EMERGENCY RESPONSE

Best Access:

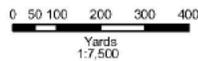
NO-6.0

Oct 21, 2009

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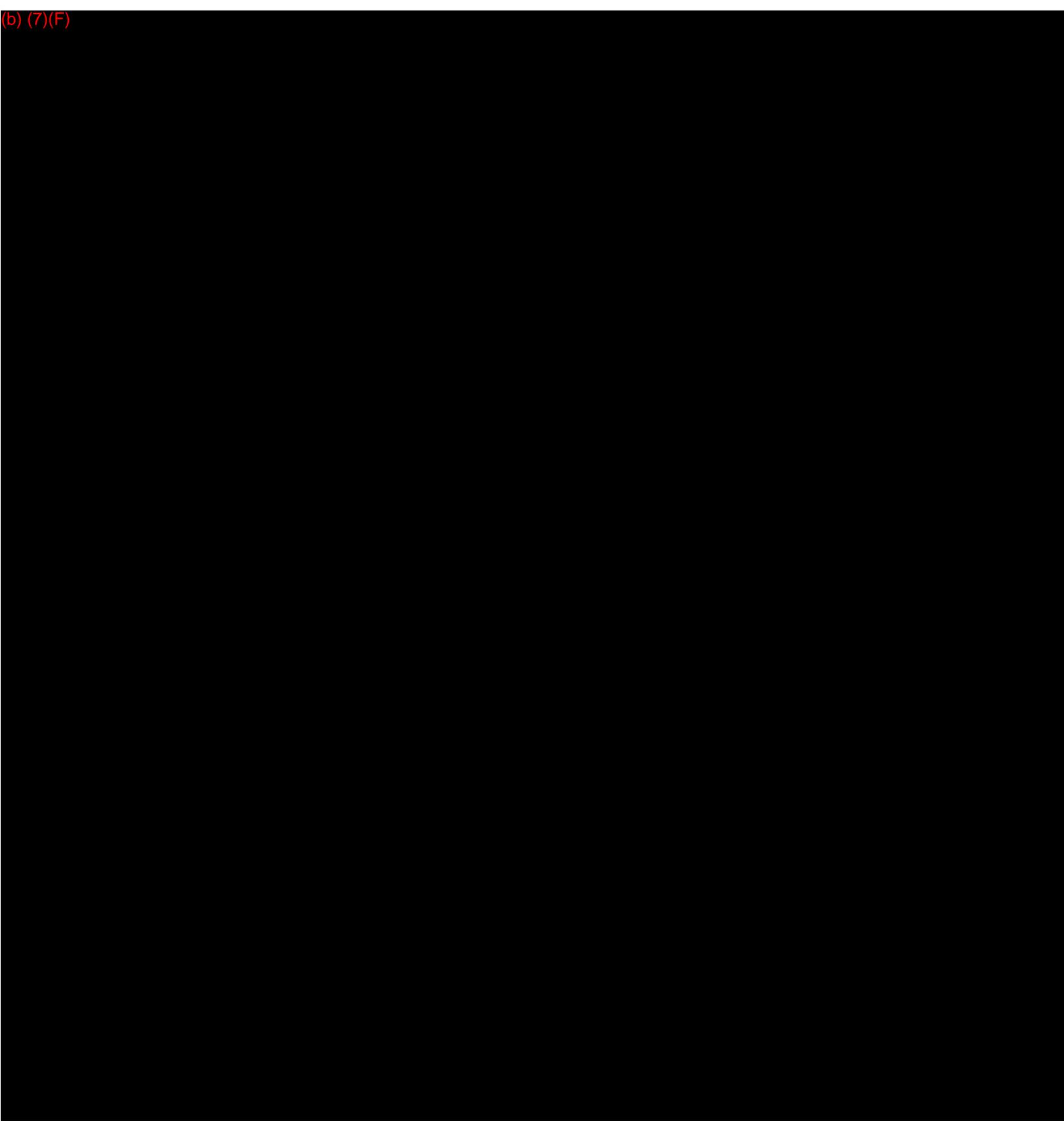
● Control Point

➔ Best Access

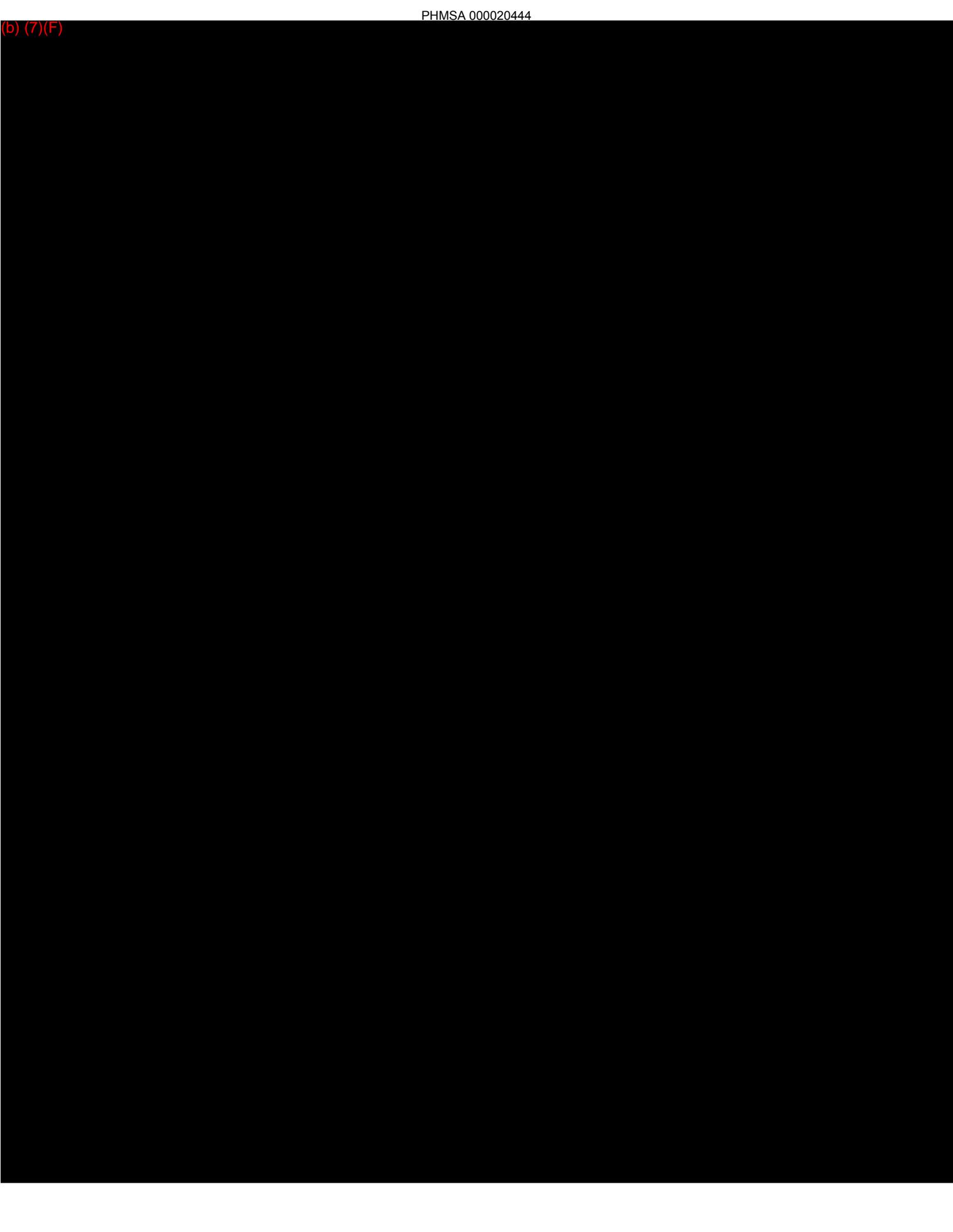


Best Access Driving Instruction

From Hovander Road Bridge, proceed north to Third Avenue. Proceed north on Third to Washington Street. Proceed east on Washington Street to Bass Drive. Proceed along Bass Drive to park and river access. Proceed 500 feet NW to a gravel beach.



(b) (7)(F)



(b) (7)(F)

Review Date

9/28/2005

Location Hard to get to by road. Working from boat may be considered**Land Owner****WORKSPACE****Size** Ample **Location****Description** Adjacent fields.**Comments****WATER BODY****Name** NOOKSACK RIVER **Width** 300 feet**Depth Or Bank Height** 15 feet**Bed Type** Sand/gravel **Distance To Confluence** 10.1 miles to Bellingham Bay**LOGISTICS****Nearest Response Equipment** Laurel Station**Logistics Comment**

When river is low, shore is available for working

Helicopter Operation Excellent**Boat Launch** Fair**Upstream Cp** NO-13.8**Downstream Cp** NO-8.8**STRATEGY****Comments** Full trailer, 1200 feet of boom.

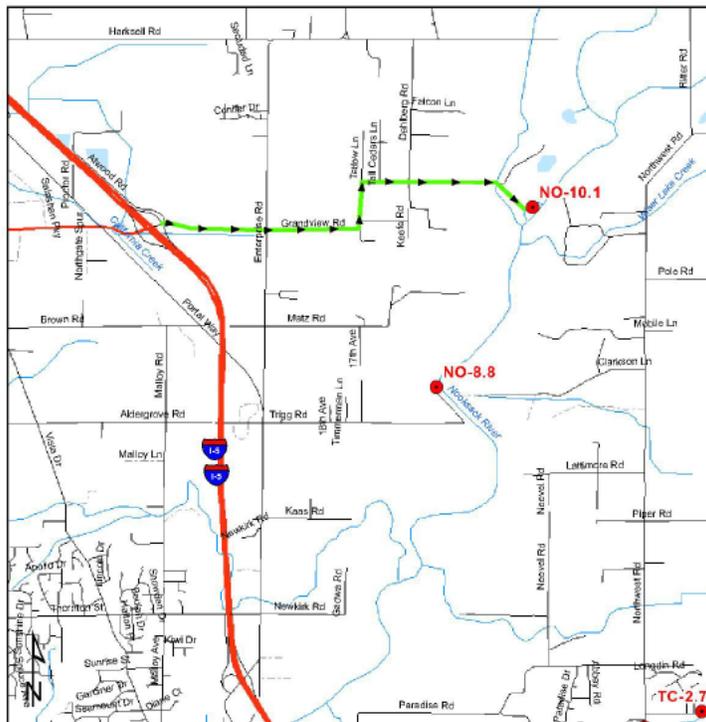
PICTURE

CAD DRAWING

Date 9/28/2005 Position (Looking At) Down Stream
 Orientation (Looking At) NE
 Description/Comment



BEST ACCESS



KINDER MORGAN
CAMBI, INC.

EMERGENCY RESPONSE

Best Access:

NO-10.1

Oct 21, 2009

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Best Access Driving Instruction

Hard to get to by road. Working from boat may be considered. Highway 5, exit for Grandview Road East. On Grandview Road to the stop sign (intersection with Enterprise Road). Continue straight ahead on Grandview Road; it will become Darberg Road. Continue on Darberg Road to 7026 Darberg. Take the dirt road straight ahead (it's a private road) and head straight to the river.

Control Point Name WISER LAKE ROAD**Control Point**

NO-13.8

(b) (7)(F)

Review Date

9/28/2005

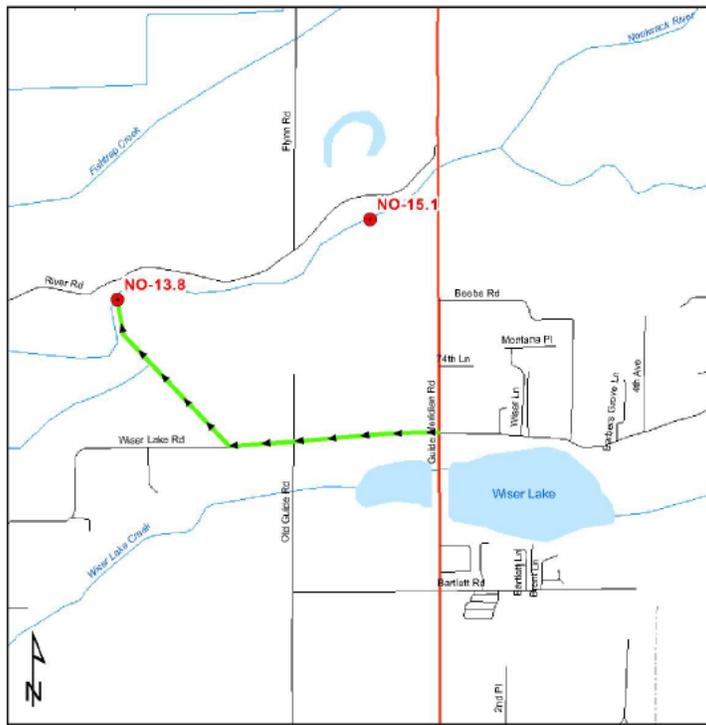
Location On south side of river west of the Guide Meridian.**Land Owner** Unknown**WORKSPACE****Size** Regular**Location** Good sized work space located at end of farm access road on south side of the river.**Description** Gravel and sand bar.**Comments****WATER BODY****Name** NOOKSACK RIVER**Width** 100 feet**Depth Or Bank Height** Slopes up to 15 feet.**Bed Type** Gravel and sand**Distance To Confluence** 13.8 miles to Bellingham Bay**LOGISTICS****Nearest Response Equipment** Laurel Station**Logistics Comment****Helicopter Operation** FairOverhead wires on north bank.
Boat launch not feasible at high flows.
Private access road needs work.**Boat Launch** Fair**Upstream Cp** NO-15.1**Downstream Cp** NO-10.1**STRATEGY****Comments** Containment and Recovery. With booms and weir skimmers. Boom requirements will be dependant on river flow, but approximately 300 feet of collection boom will be needed.

PICTURE

CAD DRAWING

Date 9/28/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) N
Description/Comment
 From south river bank

BEST ACCESS



Best Access Driving Instruction

From the Guide Meridian, proceed west to 506 Wisser Lake Road (0.7 miles). Proceed north on access road on the east side of barn and silo (private road). Between rapberry field.



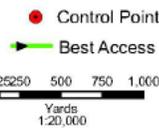
EMERGENCY RESPONSE

Best Access:

NO-13.8

Oct 21, 2009

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GUIDE MERIDIAN BRIDGE

NO-15.1

(b) (7)(F)

Review Date

9/28/2005

Location Just west of Guide Meridian bridge.**Land Owner** John Dickenson; phone: (360) 354-4751**WORKSPACE****Size** Small **Location** Varies with water level. Large area at medium to low flows.**Description** Gravel bar**Comments****WATER BODY****Name** NOOKSACK RIVER **Width** 200 feet**Depth Or Bank Height** 15 feet, moderate**Bed Type** Sand, silt and gravel **Distance To Confluence** 15.1 miles to Bellingham Bay**LOGISTICS****Nearest Response Equipment** Laurel Station**Logistics Comment****Helicopter Operation** Excellent

Bode Cement dispatch office on River Road has key to lock on cable across entry. Blocks that anchor this cable may have to be moved apart to permit OSCAR entry.

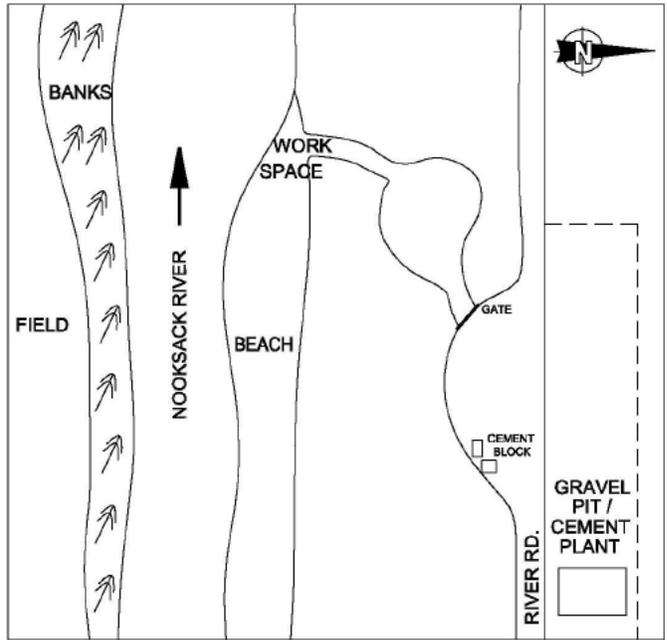
Boat Launch Fair**Upstream Cp** NO-17.4**Downstream Cp** NO-13.8**STRATEGY****Comments** Contain and Recover spill to site on north side of river. Boom requirements will be dependant on river flow, but approximately 300 feet of collection boom will be needed.

Thursday, November 12, 2009

PICTURE

CAD DRAWING

Date 3/29/2006 **Position (Looking At)** Side to Side
Orientation (Looking At) S
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From River Road at north-west side of Guide bridge. Entrance to site 500 yards along River Road. Track to site starts at the 5 silos.



EMERGENCY RESPONSE

Best Access:

NO-15.1

Oct 21, 2009

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Control Point Name POLINDER ROAD**Control Point**

NO-17.4

(b) (7)(F)

Review Date

9/28/2005

Location South side of Nooksack River west of Hannegan Bridge approximately 2 mile.**Land Owner** Jeff Polinder at (360) 354-4358 or Henry Polinder at (360) 354-2557**WORKSPACE****Size** Ample **Location** located on south bank**Description** Long gravel dyke and sandbar.**Comments** Excellent control point**WATER BODY****Name** NOOKSACK RIVER **Width** 125 feet at low flow; 300 feet at high flow**Depth Or Bank Height** South: Gentle slope/beach. North: 15 feet (moderate slope)**Bed Type** Gravel **Distance To Confluence** 17.4 miles to Bellingham Bay**LOGISTICS****Nearest Response Equipment** Laurel Station**Logistics Comment**

Very long workspace.

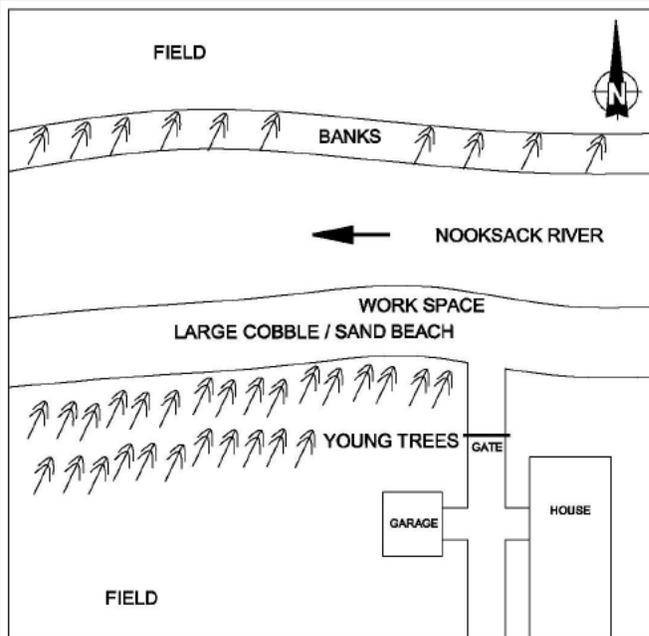
Helicopter Operation Excellent**Boat Launch** Excellent**Upstream Cp** NO-17.8**Downstream Cp** NO-15.1**STRATEGY****Comments** Containment and Recovery. With booms and weir skimmers. Boom requirements will be dependant on river flow, but approximately 300 feet of collection boom will needed.

Thursday, November 12, 2009

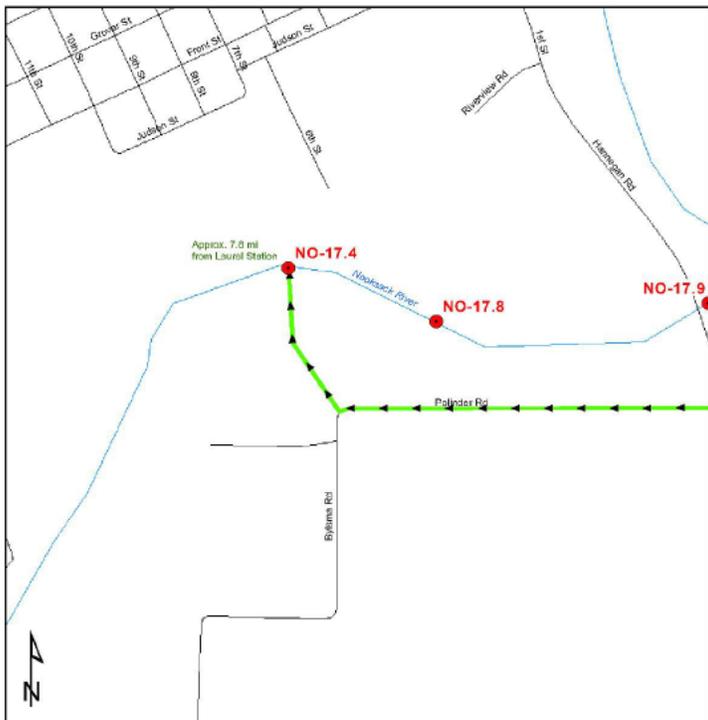
PICTURE

CAD DRAWING

Date 9/28/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) E
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Hannegan Road proceed west along Polinder Road for approximately 2 mile to 694. Proceed north along access between farm houses.



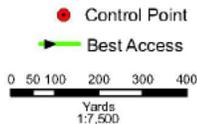
EMERGENCY RESPONSE

Best Access:

NO-17.4

Oct 21, 2009

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HANNEGAN ROAD

NO-17.8

(b) (7)(F)

Review Date

9/28/2005

Location On north side of Nooksack River west of Hannegan Road bridge. **Land Owner** Unknown

WORKSPACE

Size Ample **Location** Excellent work space size at moderate to low flows. Located at end of access road west of bridge.

Description Gravel bar.

Comments

WATER BODY

Name NOOKSACK RIVER **Width** 150 feet at low flow; 300 feet at high flow

Depth Or Bank Height Gentle slope on the north side (beach); 25 feet on south side

Bed Type Gravel **Distance To Confluence** 17.8 miles to Bellingham Bay

LOGISTICS

Nearest Response Equipment Laurel Station

Logistics Comment

Boat launch not feasible at high flows.
Access road requires some brush removal for OSCAR access.

Helicopter Operation Excellent

Boat Launch Excellent

Upstream Cp NO-17.9

Downstream Cp NO-17.4

STRATEGY

Comments Containment and Recovery. With booms and weir skimmers. Boom requirements will be dependant on river flow, but approximately 300 feet of collection boom will be needed.

PICTURE

CAD DRAWING

Date 9/28/2005

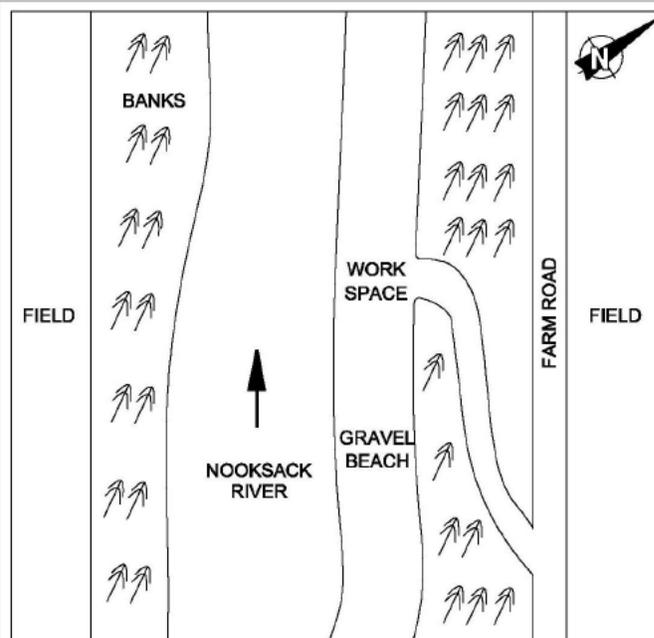
Position (Looking At)

Down Stream

Orientation (Looking At)

W

Description/Comment



BEST ACCESS



Best Access Driving Instruction

From bridge proceed north to access road by farmland. Proceed west to river. Left on the side road off the farm road



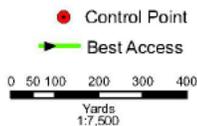
EMERGENCY RESPONSE

Best Access:

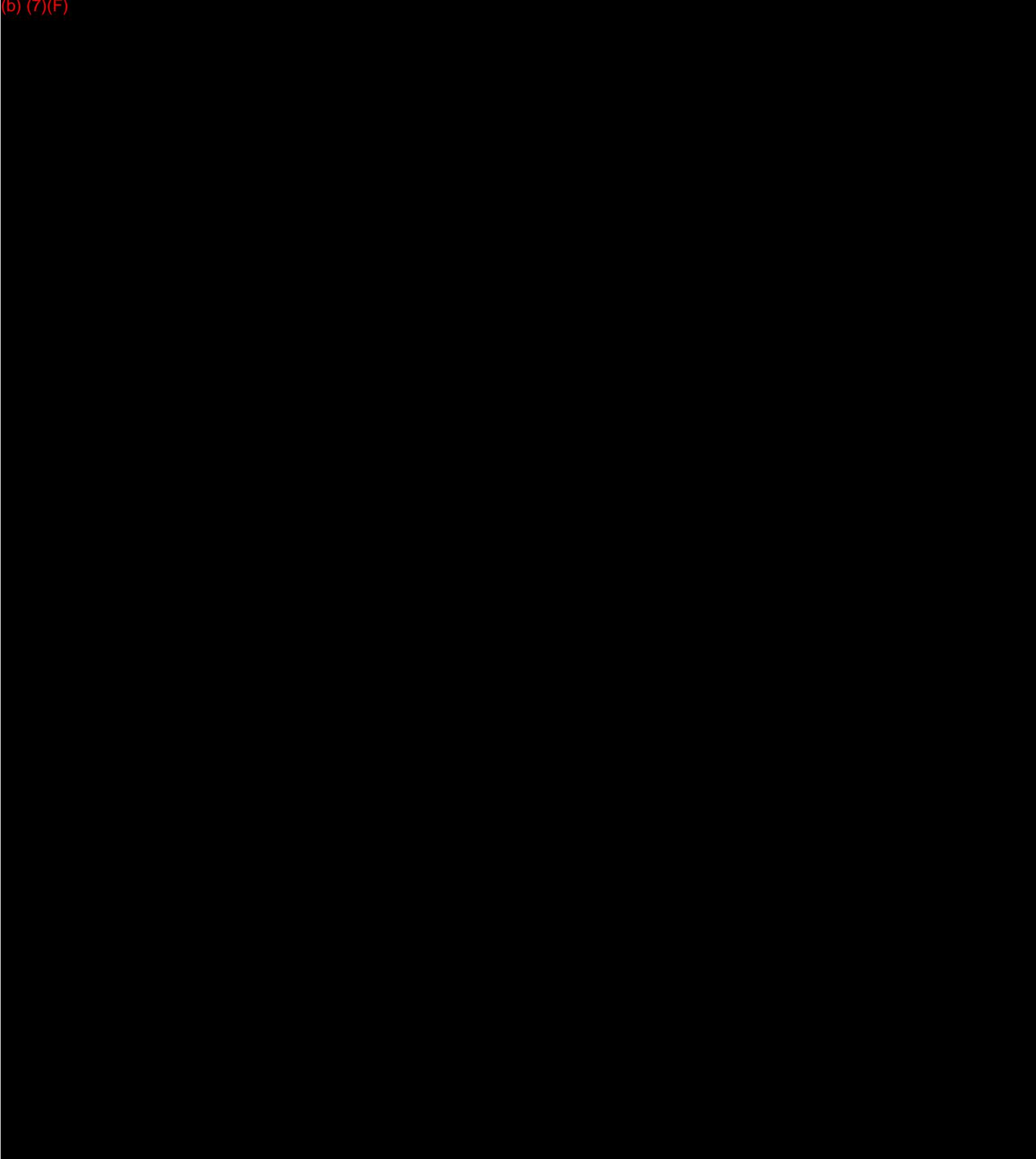
NO-17.8

Oct 21, 2009

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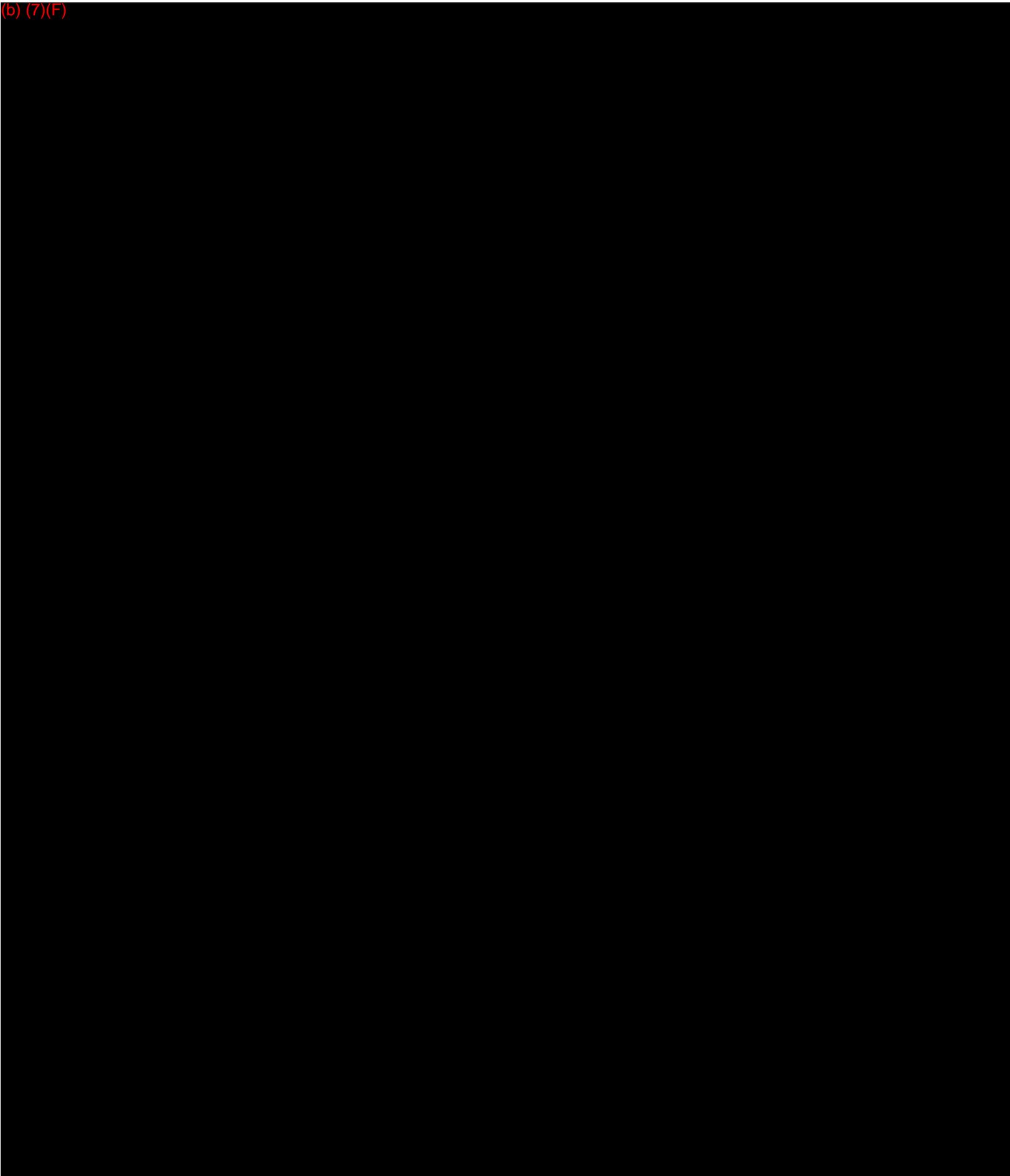


(b) (7)(F)



Thursday, November 12, 2009

(b) (7)(F)



Control Point Name established 09/28/2005**Control Point**

NO-20.7

(b) (7)(F)

Review Date

9/28/2005

WORKSPACE**Size** Ample **Location** Field**Description** Farmer's field, river banks**Comments****WATER BODY****Name** NOOKSACK RIVER **Width** 300 feet**Depth Or Bank Height** Moderate slope**Bed Type** Sand/gravel **Distance To Confluence** 20.7 miles to Bellingham Bay**LOGISTICS****Nearest Response Equipment** Laurel Station**Logistics Comment**

Boat Launch: may be made with if required

Helicopter Operation Fair**Boat Launch** No**Upstream Cp** NO-23.6**Downstream Cp** NO-17.9**STRATEGY****Comments**

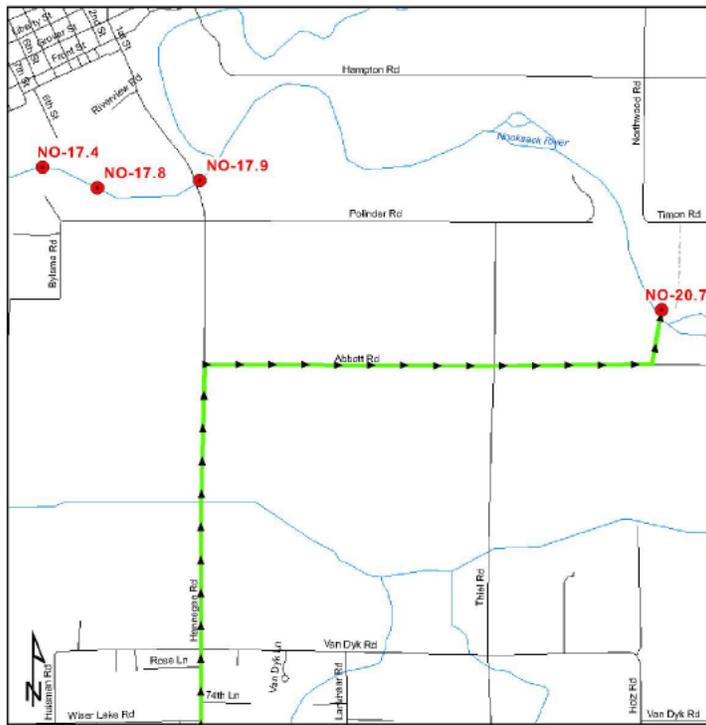
PICTURE

CAD DRAWING

Date 9/28/2005 Position (Looking At) Down Stream
 Orientation (Looking At) NE
 Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Hannegan Road, turn East on Abbott Road. Follow to 1518 Abbott Road. (Approx. 2.5 mile.)



EMERGENCY RESPONSE

Best Access:

NO-20.7

Oct 21, 2009

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EVERSON BRIDGE

NO-23.6

(b) (7)(F)

Review Date

9/28/2005

Road bridge.

WORKSPACE**Size** Ample **Location** Large work space at low to moderate flows located on north side of river downstream of bridge.**Description** Gravel sand bar or banks of park at high water flows.**Comments****WATER BODY****Name** NOOKSACK RIVER **Width** 125 feet at low flow; 600 feet at high flow**Depth Or Bank Height** 10 feet**Bed Type** Silt, sand, fine and coarse gravel and cobbles. **Distance To Confluence** 23.6 miles to Bellingham Bay**LOGISTICS****Nearest Response Equipment** Laurel Station**Logistics Comment**

Boat launch not feasible at high flows. Would be hard to launch the jet boat.

Helicopter Operation Excellent**Boat Launch** Poor**Upstream Cp** None**Downstream Cp** NO-20.7**STRATEGY****Comments** Containment and Recovery. With booms and weir skimmers. Boom requirements will be dependant on river flow, but approximately 300 feet of collection boom will be needed. River may be braided with 2 or channel.

PICTURE

CAD DRAWING

Date 9/28/2005

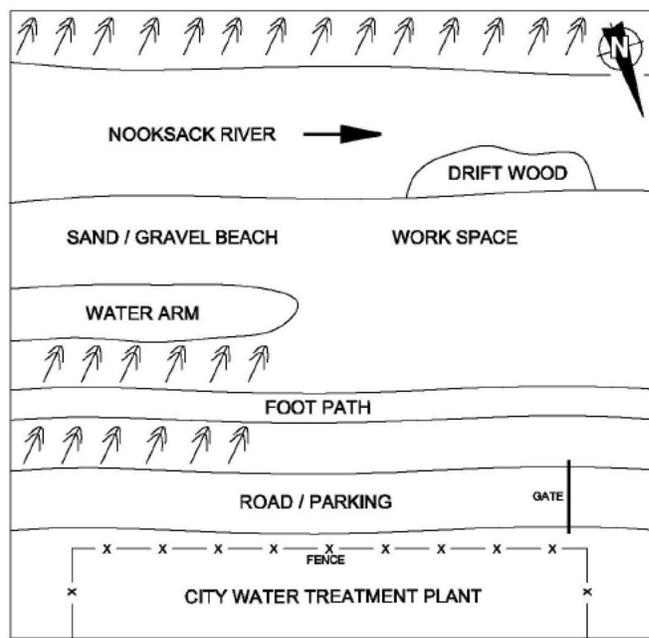
Position (Looking At)

Up Stream

Orientation (Looking At)

E

Description/Comment



BEST ACCESS



Best Access Driving Instruction

From bridge proceed north to West Main Street. Proceed west on West Main Street approximately 400 feet to Everson River Park access.



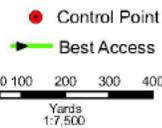
EMERGENCY RESPONSE

Best Access:

NO-23.6

Oct 21, 2009

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Control Point Name BAYVIEW-EDISON ROAD **Control Point** SA-1.0

Review Date 9/27/2005

Location At Bayview-Edison Bridge over Samish River. **Land Owner** Unknown

WORKSPACE

Size Regular **Location** good workspace on boat dock.

Description

Comments Tidal flats may provide additional workspace in dry seasons.

WATER BODY

Name SAMISH RIVER **Width** 150 feet

Depth Or Bank Height 2 feet / tidal

Bed Type Silt **Distance To Confluence** 1.0 mile to Padilla Bay

LOGISTICS

Nearest Response Equipment Anacortes Station

Logistics Comment

Helicopter Operation Fair

Helicopter: Good in fields to the south.
Boat Launch: on northeast side of Bayview - Edison Road.
Parking available.
Tidal influence.
Boats may be in the way on the river.

Boat Launch Excellent

Upstream Cp SA-3.0

Downstream Cp Samish Bay

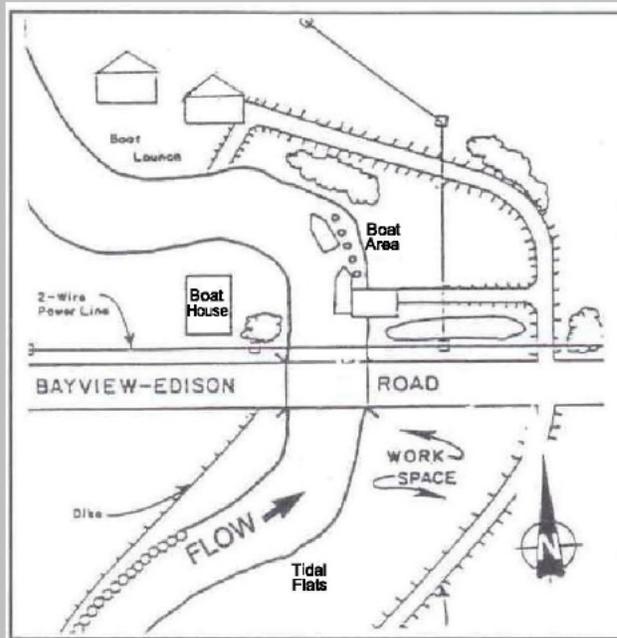
STRATEGY

Comments Containment and recovery with approximately 600 feet of boom and weir or disk skimmers. Have CSCI perform GRP strategy B-25.

PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) SE
Description/Comment



BEST ACCESS



Best Access Driving Instruction

On access road east of Bayview-Edison Road at boat dock.



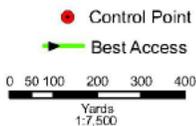
EMERGENCY RESPONSE

Best Access:

SA-1.0

Oct 21, 2009

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Control Point Name FARM TO MARKET ROAD**Control Point**

SA-3.0

(b) (7)(F)

Review Date

9/27/2005

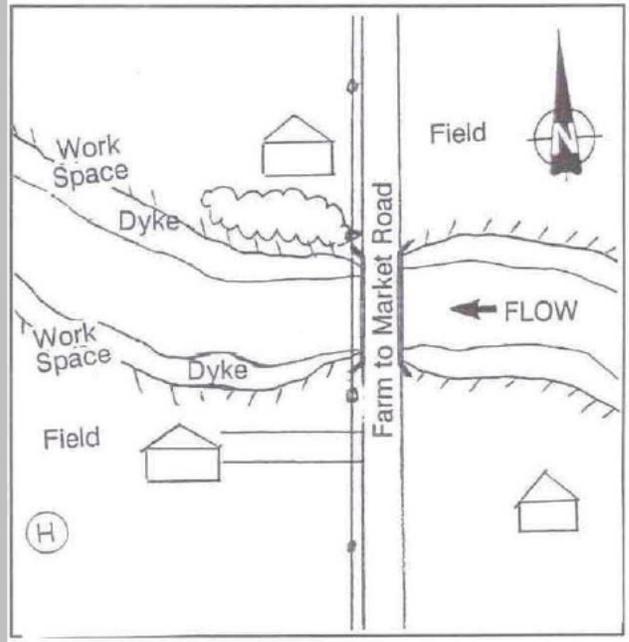
Location**Land Owner****WORKSPACE****Size** **Location** Workspace is limited on dyke, but is good on fields on either side of the river.**Description** Dyke and field areas.**Comments****WATER BODY****Name** **Width** **Depth Or Bank Height** **Bed Type** **Distance To Confluence** **LOGISTICS****Nearest Response Equipment** **Logistics Comment****Helicopter Operation** **Boat Launch** **Upstream Cp** **Downstream Cp** **STRATEGY****Comments** -Containment and recover with approximately 200 feet of boom and weir skimmers.
-There is sufficient work space upstream of bridge on north and south banks as well.

PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) E

Description/Comment



BEST ACCESS



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CAMBI, INC.

EMERGENCY RESPONSE

Best Access:

SA-3.0

Oct 21, 2009

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Best Access Driving Instruction

From Farm to Market Road on north and south sides of bridge.

Control Point Name THOMAS ROAD**Control Point**

SA-4.6

(b) (7)(F)

Review Date

9/27/2005

Location At bridge that crosses the Samish River on Thomas Road. **Land Owner** Unknown**WORKSPACE****Size** Ample **Location** on either side of bridge**Description** Dykes and adjacent fields, walkways to the river**Comments** Brushy banks**WATER BODY****Name** SAMISH RIVER **Width** 45 feet**Depth Or Bank Height** Up to 20 feet. Less steep on north side.**Bed Type** Pea gravel **Distance To Confluence** 4.6 miles to Samish Bay**LOGISTICS****Nearest Response Equipment** Anacortes Station**Logistics Comment**

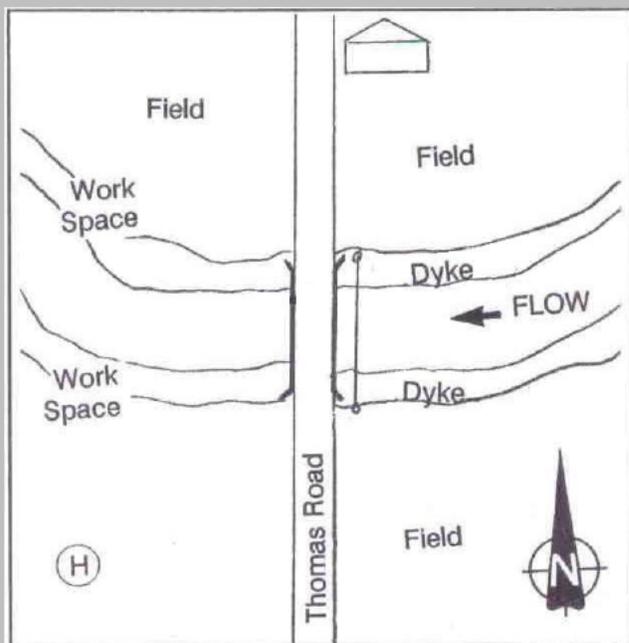
Water gauge under the bridge

Helicopter Operation Excellent**Boat Launch** Not Required**Upstream Cp** SA-10.1**Downstream Cp** SA-3.0**STRATEGY****Comments** Contain and recover with approximately 200 feet of boom and weir skimmers.

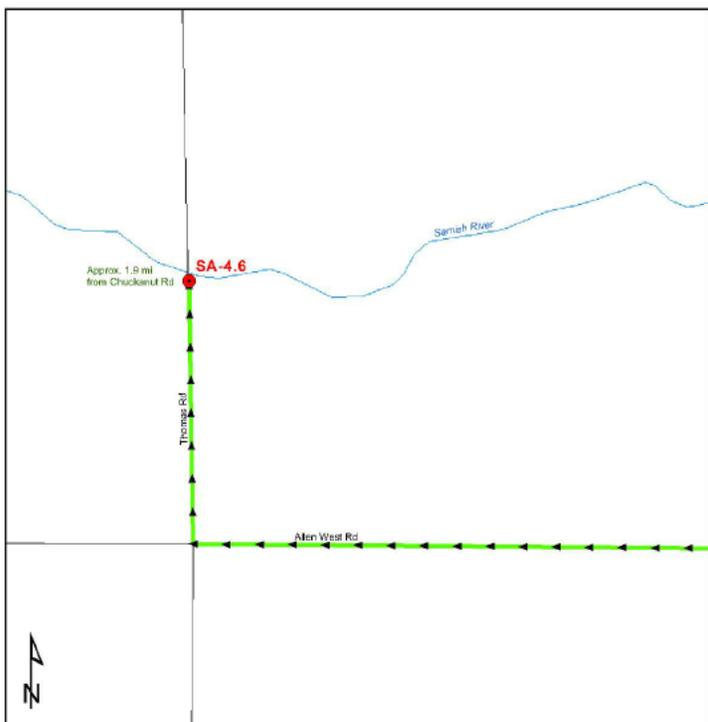
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) E
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Thomas Road



EMERGENCY RESPONSE

Best Access:

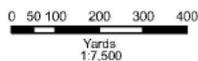
SA-4.6

Oct 21, 2009

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● Control Point

→ Best Access



Control Point Name OLD HIGHWAY 99 NORTH**Control Point**

SA-10.1

(b) (7)(F)

Review Date

9/27/2005

Location At Old Highway 99 bridge over Samish River. 671 Driftin Lane.**Land Owner** W.H. Maynard**WORKSPACE****Size** Small **Location** Small sand bar and yard on south side of river**Description** Gravel bar and yard**Comments** Access trail to the river on the SW side of the bridge**WATER BODY****Name** SAMISH RIVER **Width** 60 feet**Depth Or Bank Height** Gradual to 10 feet**Bed Type** Silt and gravel **Distance To Confluence** 10.1 miles to Samish Bay**LOGISTICS****Nearest Response Equipment** Anacortes Station**Logistics Comment**

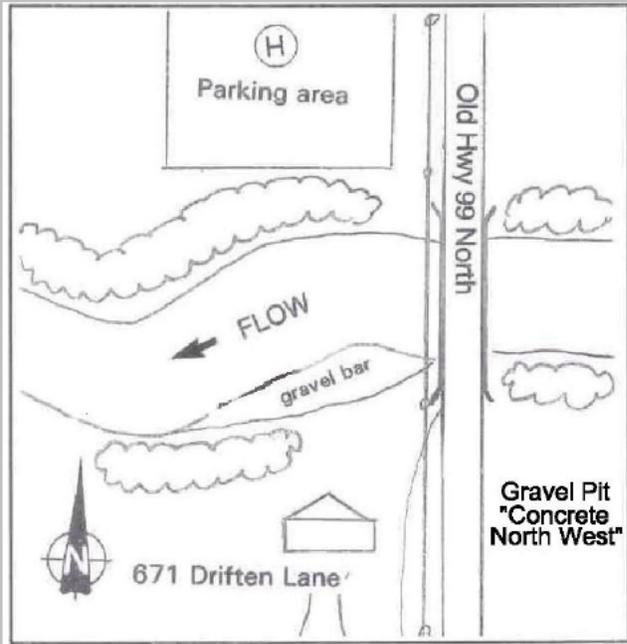
Helicopter: Okay in parking area to north

Helicopter Operation Fair**Boat Launch** Not Required**Upstream Cp** FR-0.5**Downstream Cp** SA 4.6**STRATEGY****Comments** -Containment and recovery using approximately 400 feet of boom and a weir skimmer.
-Fish passage facility immediately upstream of this location at intersection of Friday Creek and Samish River.

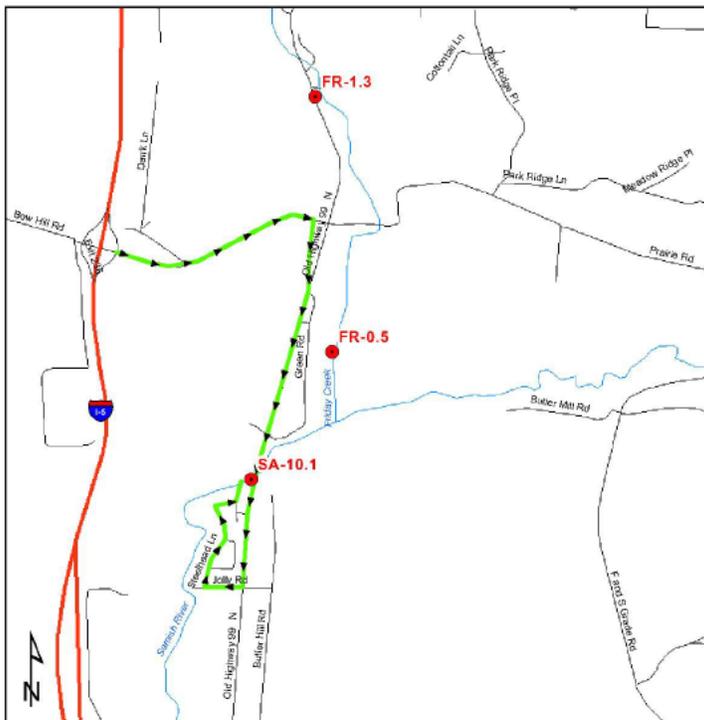
PICTURE

CAD DRAWING

Date 9/27/2005 Position (Looking At) Up Stream
 Orientation (Looking At) E
 Description/Comment



BEST ACCESS



Best Access Driving Instruction

Take exit 246 from Interstate 5 proceed east to Old Highway 99 North. Proceed south on Old Hwy 99 North to Jolly Road (approximately 1/2 mile). Proceed west to Fisherman's Loop, then north to Steelhead Drive. Proceed east to 671 Driften Lane.



EMERGENCY RESPONSE

Best Access:
 SA-10.1
 Oct 21, 2009



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Control Point Name MARINE DRIVE **Control Point** SC-0.1

Review Date 9/27/2005

Location At Marine Drive bridge over Silver Creek. **Land Owner** Unknown

WORKSPACE

Size Regular **Location** Good on South-west side of creek

Description Creek bank and access path

Comments Requires some brushing.

WATER BODY

Name SILVER CREEK **Width** 150 feet

Depth Or Bank Height 20 feet, moderate

Bed Type Silt, mud **Distance To Confluence** 0.1 miles to Nooksack River

LOGISTICS

Nearest Response Equipment Laurel Station **Logistics Comment**

Helicopter Operation Poor

Boat Launch No

Upstream Cp SC-1.8

Downstream Cp NO-0.7

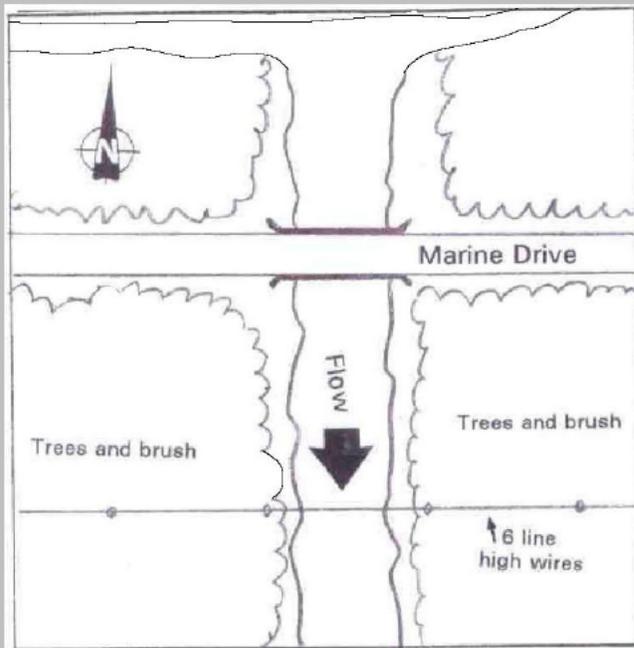
STRATEGY

Comments Containment and recovery with approximately 450 feet of boom and weir skimmer.

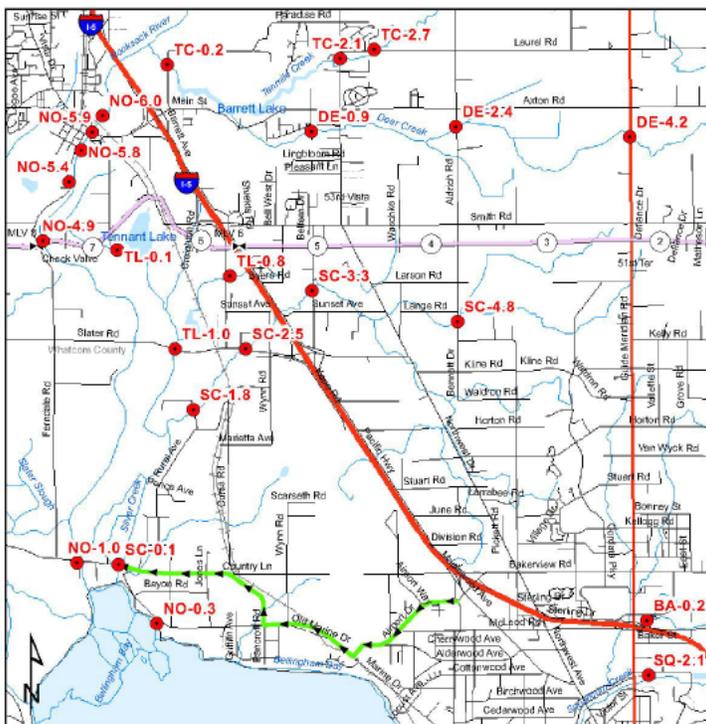
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) S
Description/Comment



BEST ACCESS



KINDER MORGAN
CANADA INC.

EMERGENCY RESPONSE

Best Access:

SC-0.1

Oct 21, 2009

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● Control Point

→ Best Access



Best Access Driving Instruction

From Interstate 5, take Exit 258 and proceed west on Airport Drive to Marine Drive. Proceed west on Marine Drive to Bancroft. Go North to Country Lane. Continue to point where County Lane becomes Marine Drive. Continue to bridge over Silver Creek.

Control Point Name SHADY LANE **Control Point** SC-1.8

Review Date 9/27/2005

Location At Shady Lane bridge over Silver Creek. **Land Owner** Unknown

WORKSPACE

Size Regular **Location** Good to the south of Silver Creek

Description Fields

Comments

WATER BODY

Name SILVER CREEK **Width** 30 feet

Depth Or Bank Height 15 feet, gentle

Bed Type Mud and gravel **Distance To Confluence** 1.8 miles to Nooksack River

LOGISTICS

Nearest Response Equipment Laurel Station **Logistics Comment**

Helicopter Operation Fair

Boat Launch Not Required

Upstream Cp SC-2.5

Downstream Cp SC-0.1 & TL-1.0

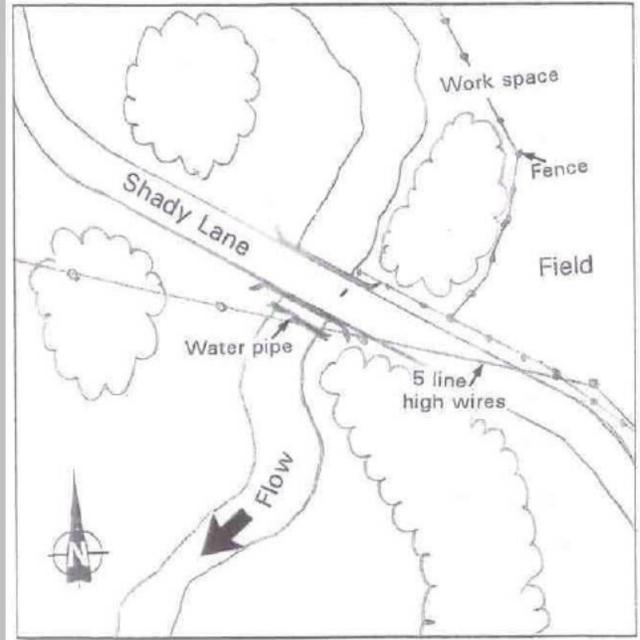
STRATEGY

Comments -Containment and recovery with approximately 100 feet of boom and weir skimmer.
-A number of deployments could be effected at this location.

PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) NE
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, take exit 260 and proceed west on Slater Road to Rural Avenue. Proceed south on Rural Avenue and follow over railroad tracks to Shady Lane. Proceed north on Shady Lane to bridge over Silver Creek.



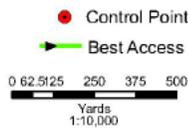
EMERGENCY RESPONSE

Best Access:

SC-1.8

Oct 21, 2009

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Control Point Name SLATER ROAD

Control Point

SC-2.5

(b) (7)(F)

Review Date

9/27/2005

Location At Silver Creek culvert under Slater Road. Culvert indicated by white paint lines on road and Silver Creek sign at road side.

Land Owner Unknown

WORKSPACE

Size Regular **Location** Good adjacent to creek

Description Grassy field to west of creek and on top of creek banks

Comments

WATER BODY

Name SILVER CREEK **Width** 20 feet

Depth Or Bank Height 25 feet, moderate

Bed Type Mud **Distance To Confluence** 2.5 miles to Nooksack River

LOGISTICS

Nearest Response Equipment Laurel Station **Logistics Comment**

Helicopter Operation Fair

Boat Launch Not Required

Upstream Cp SC-3.3

Downstream Cp SC-1.8

STRATEGY

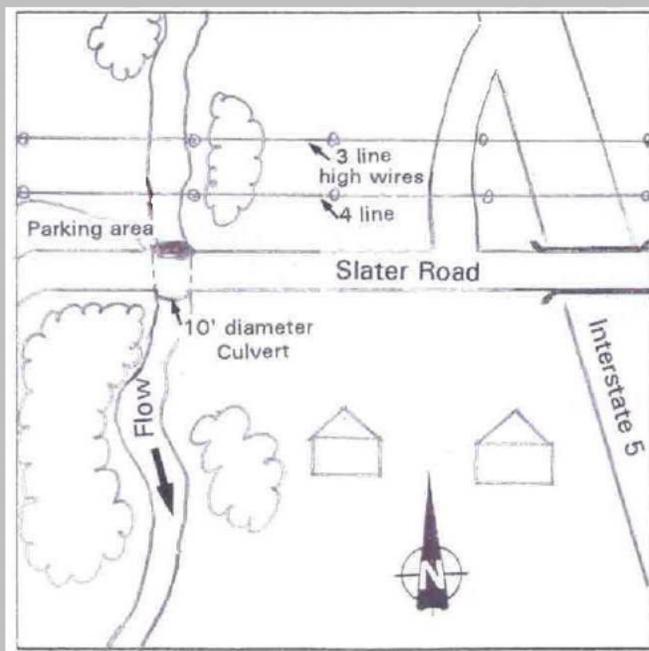
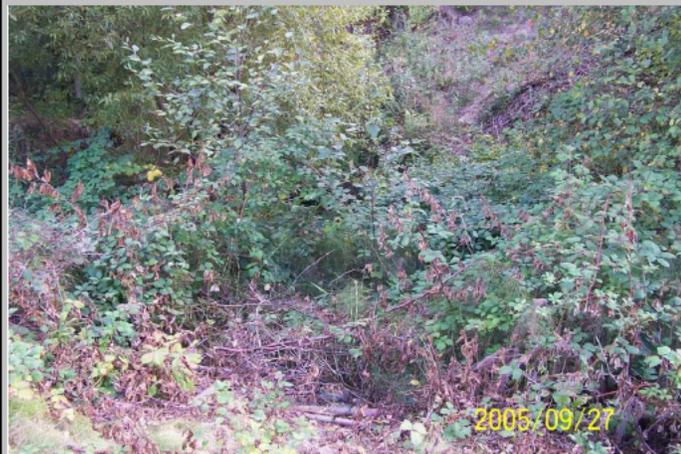
Comments -Containment and recovery with board weir and disk skimmer and/or vacuum truck. Approximately 100 feet of boom and weir skimmer could also be used at this location.
-10 foot diameter culvert.
-Multiple deployments could be effected at this location.

PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) N

Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, take exit 260 and proceed west on Slater Road to Silver Creek culvert.



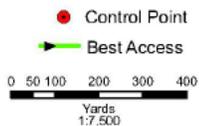
EMERGENCY RESPONSE

Best Access:

SC-2.5

Oct 21, 2009

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Control Point Name GRAVELINE ROAD **Control Point** SC-3.3

(b) (7)(F)

Review Date 9/27/2005

Location At Silver Creek culvert under Graveline Road. **Land Owner** Unknown

WORKSPACE

Size Regular **Location** Good on north side of creek, downstream of culvert

Description Creek and road side and nearby field

Comments

WATER BODY

Name SILVER CREEK **Width** 15 feet

Depth Or Bank Height 30 feet, steep (extremely steep on east side)

Bed Type Rock, silt **Distance To Confluence** 3.3 miles to Nooksack River

LOGISTICS

Nearest Response Equipment Laurel Station

Logistics Comment

Helicopter: Good in north-west field

Helicopter Operation Fair

Boat Launch Not Required

Upstream Cp SC-4.8

Downstream Cp SC-2.5

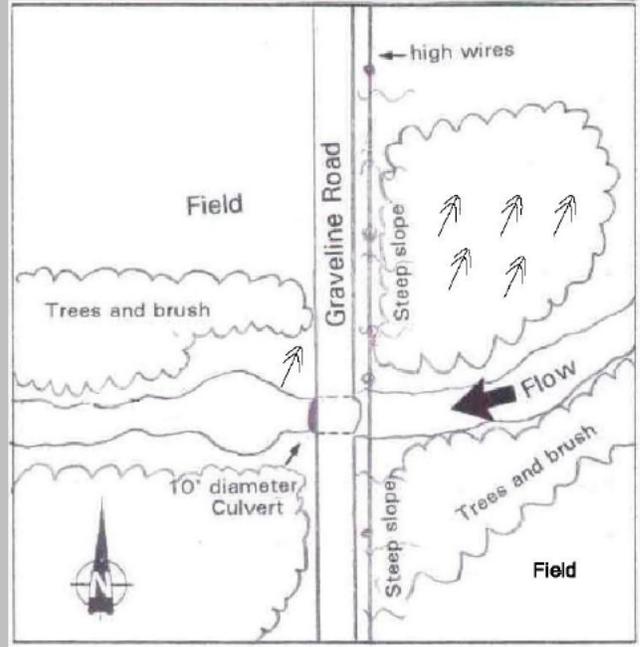
STRATEGY

Comments -Containment and recovery with syphon dam or board weir and disk skimmer and/or vacuum truck. Alternately, approximately 100 feet of boom and weir skimmer could be used.
-10 foot diameter culvert. To access upstream side of road, best method would be to cross through culvert from downstream side.

PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) E
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Guide Meridian, proceed west on West Smith Road to Graveline Road. Proceed south on Graveline Road to Silver Creek culvert marked by white paint lines on road.



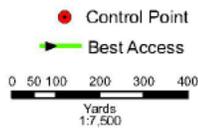
EMERGENCY RESPONSE

Best Access:

SC-3.3

Oct 21, 2009

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Control Point Name ALDRICH ROAD

Control Point

SC-4.8

Review Date

9/27/2005

Location At Silver Creek culvert under Aldrich Road.

Land Owner Unknown

WORKSPACE

Size Ample

Location Excellent on both sides of Aldrich road, adjacent to Silver Creek

Description Fields

Comments

WATER BODY

Name SILVER CREEK

Width 5 feet

Depth Or Bank Height 5 feet, moderate

Bed Type Soil

Distance To Confluence 4.8 miles to Nooksack River

LOGISTICS

Nearest Response Equipment Laurel Station

Logistics Comment

Helicopter Operation Excellent

Boat Launch Not Required

Upstream Cp None

Downstream Cp SC-3.3

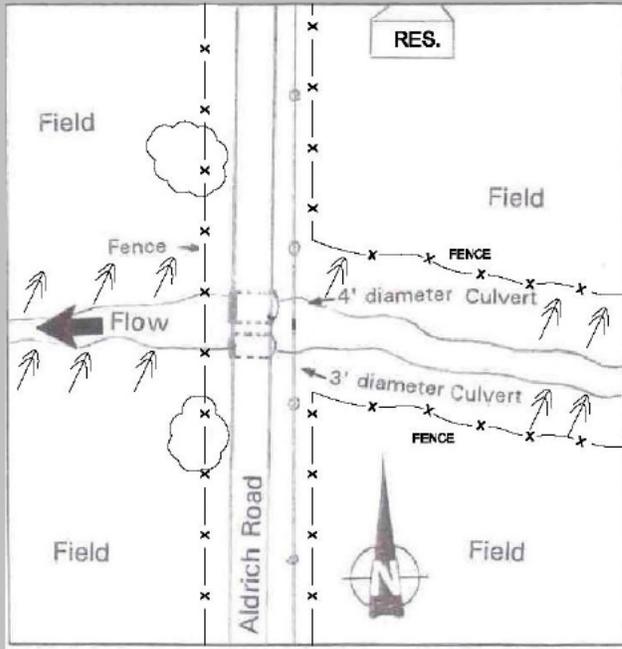
STRATEGY

Comments -Containment and recovery with board weir and disk skimmer and/or vacuum truck.
 -A second culvert (4 feet in diameter), is placed higher for extreme flow conditions, therefore can assume large volume of water volume flows here during wet season.

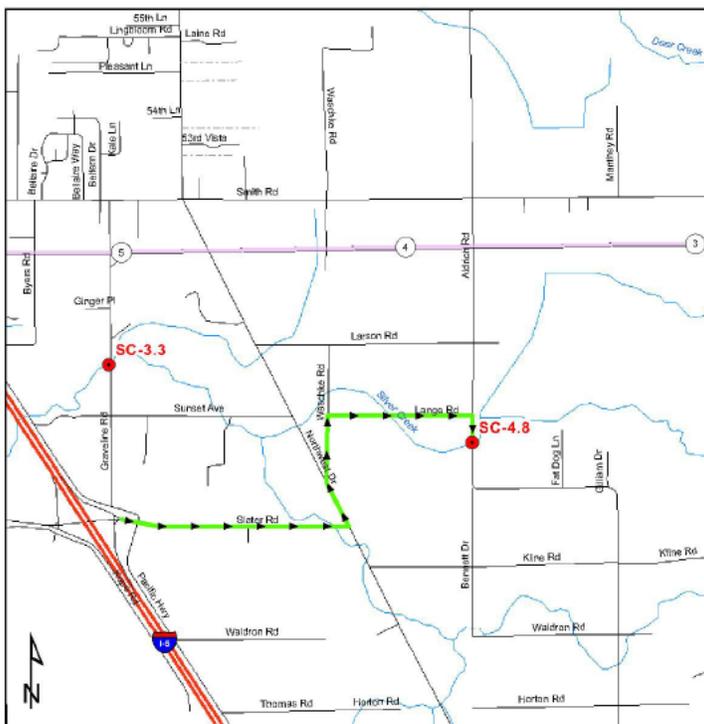
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) E
Description/Comment



BEST ACCESS



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CAMBI, INC.

EMERGENCY RESPONSE

Best Access:

SC-4.8

Oct 21, 2009

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Best Access Driving Instruction

From Interstate 5, take exit 260 and proceed east on Slater Road to Northwest Drive. Proceed north-west on Northwest Drive, proceed north on Waschke Road, proceed east on Lange Road to Aldrich Road. Proceed south on Aldrich road to culvert.

Control Point Name GREENE POINT**Control Point**

SI-0.0

(b) (7)(F)

Review Date

9/27/2005

Location 8 Greene Point where Silver Creek enters Lake Samish.**Land Owner** Unknown**WORKSPACE****Size** Regular **Location** Sandy area at mouth of creek**Description** Creek mouth**Comments** large yard facing 6 Greene Point**WATER BODY****Name** SILVER CREEK (LAKE SAMISH) **Width** 15 feet**Depth Or Bank Height** Gradual sloping to 3 feet**Bed Type** Sand **Distance To Confluence** 0.0 miles to Lake Samish**LOGISTICS****Nearest Response Equipment** Laurel Station**Logistics Comment**

Helicopter and Boat Launch: at 6 Greene Point

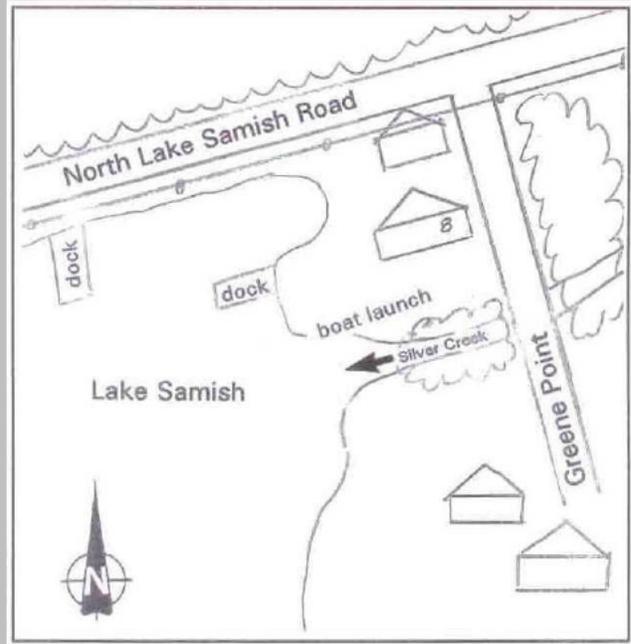
Helicopter Operation Fair**Boat Launch** Fair**Upstream Cp** None**Downstream Cp** Samish Lake**STRATEGY****Comments** -Containment and recovery using approximately 500 feet of boom and a disk skimmer and/or vacuum truck.
-Evacuation of homes in close proximity to Control Point will be required.

PICTURE

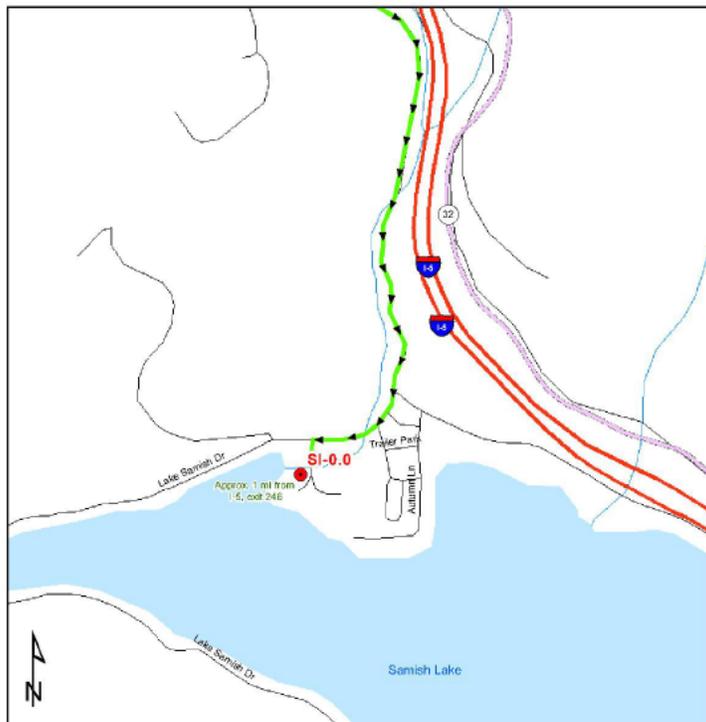
CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) W

Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, take exit 246 and proceed on Lake Samish Drive to North Lake Samish Drive. Proceed East on North Lake Samish Drive to Green Point.



EMERGENCY RESPONSE

Best Access:

SI-0.0

Oct 21, 2009

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Control Point Name ROEDER AVENUE **Control Point** SQ-0.0

Review Date 9/27/2005

Location Bellingham Cold Storage (BCS) at 2825 Roeder Avenue.
Plywood manufacturer within one block to the west.

Land Owner Unknown

WORKSPACE

Size Regular **Location** Good on north bank and in parking areas adjacent to creek.

Description Bank and parking lots.

Comments Good work area

WATER BODY

Name SQUALICUM CREEK **Width** Up to 50 feet in high tide

Depth Or Bank Height Steep to 15 feet

Bed Type Silt and gravel **Distance To Confluence** 0.0 miles to Bellingham Bay

LOGISTICS

Nearest Response Equipment Laurel Station

Logistics Comment

Helicopter: possible to the east in parking lot.

Helicopter Operation Poor

Boat Launch Not Required

Upstream Cp SQ-1.0

Downstream Cp Bellingham Bay

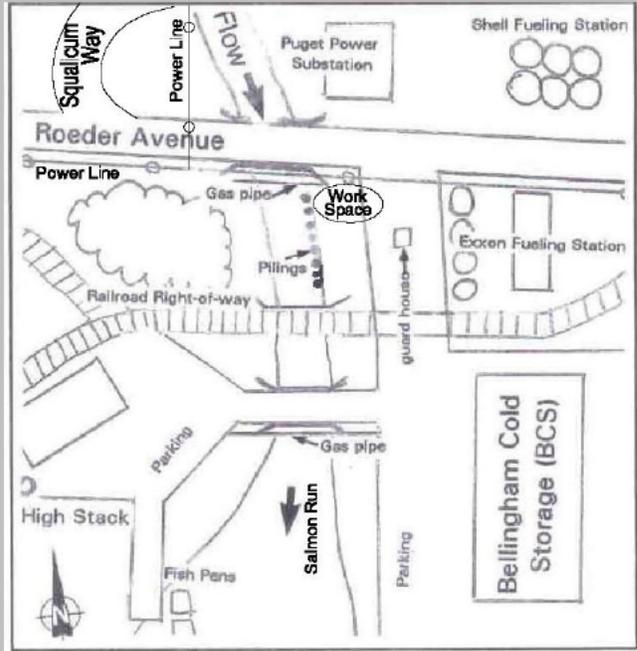
STRATEGY

Comments -Containment and recovery with board weir and disk skimmer and/or vacuum truck.
-Strong tide influence.

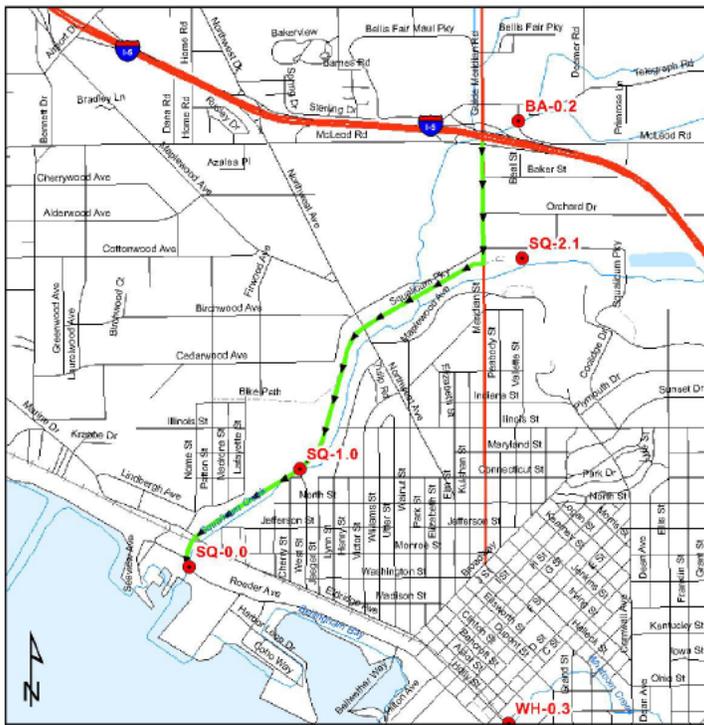
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) W
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, take exit 256 and proceed south on Meridian Street. From Meridian Street, take a right on Squalicum Way and proceed to Roeder Avenue. BCS is just east of Squalicum Way and Roeder Avenue junction.

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CANADA INC.

EMERGENCY RESPONSE

Best Access:

SQ-0.0

Oct 21, 2009

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Control Point Name SQUALICUM WAY **Control Point** SQ-1.0

Review Date 9/27/2005

Location Pacific Concrete at 2800 West Street. (On northern-most side of intersection of Squalicum Way and West Street.) **Land Owner** Unknown

WORKSPACE

Size Ample **Location** Excellent at north side of creek

Description Railroad, nearby fields and Pacific Concrete area

Comments

WATER BODY

Name SQUALICUM CREEK **Width** 25 foot culvert

Depth Or Bank Height Steep to 10 feet on both side

Bed Type Gravel **Distance To Confluence** 1.0 miles to Bellingham Bay

LOGISTICS

Nearest Response Equipment Laurel Station

Logistics Comment

Helicopter: At Pacific Concrete area

Helicopter Operation Excellent

Boat Launch Not Required

Upstream Cp SQ-2.1

Downstream Cp SQ-0.0

STRATEGY

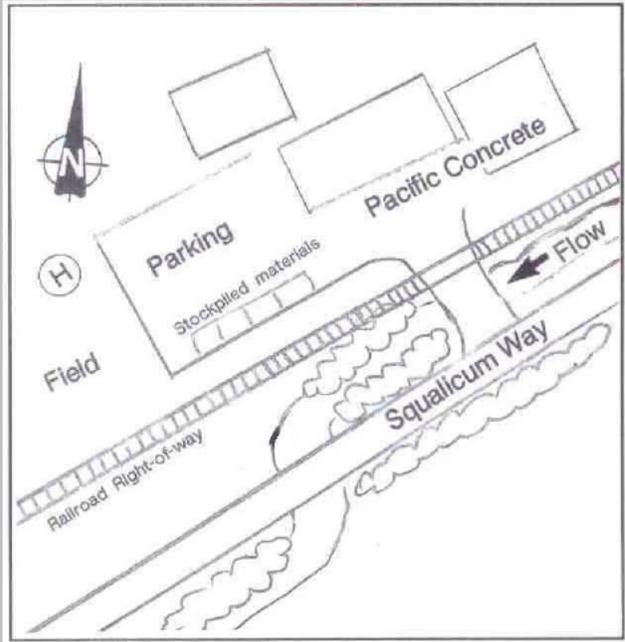
Comments -Containment and recovery using a board weir and disk skimmer and/or vacuum truck.
-Water gage under the north side of the bridge.

(b) (7)(F)

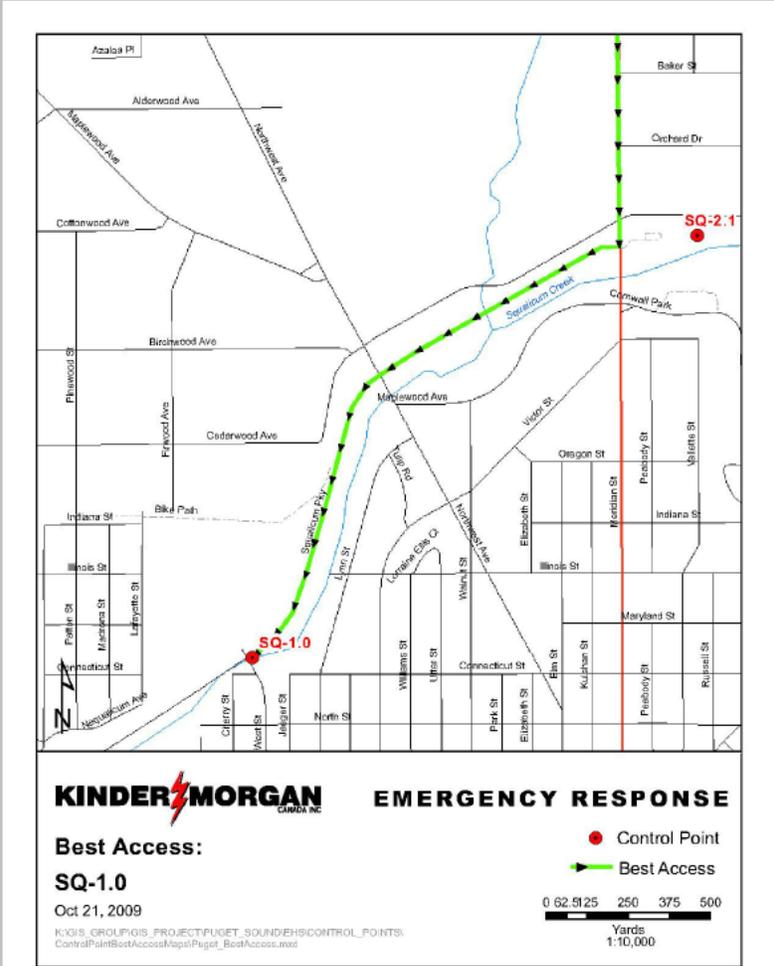
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) E
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, take exit 256 and proceed south on Meridian Street. From Meridian Street, take a right on Squalicum Way and proceed to Pacific Concrete.

Control Point Name CORNWALL PARK **Control Point** SQ-2.1

Review Date 9/27/2005

Location At Cornwall Park off Meridian Street. (eastern bridge-furthest away) **Land Owner** Unknown

WORKSPACE

Size Ample **Location** Excellent work space on north and south sides of creek

Description Park area/parking.

Comments

WATER BODY

Name SQUALICUM CREEK **Width** 10 to 30 feet

Depth Or Bank Height Varying slope up to 15 feet

Bed Type Rock, silt and mud **Distance To Confluence** 2.1 miles to Bellingham Bay

LOGISTICS

Nearest Response Equipment Laurel Station **Logistics Comment**

Helicopter Operation Excellent

Boat Launch Not Required

Upstream Cp SQ-2.8

Downstream Cp SQ-1.0

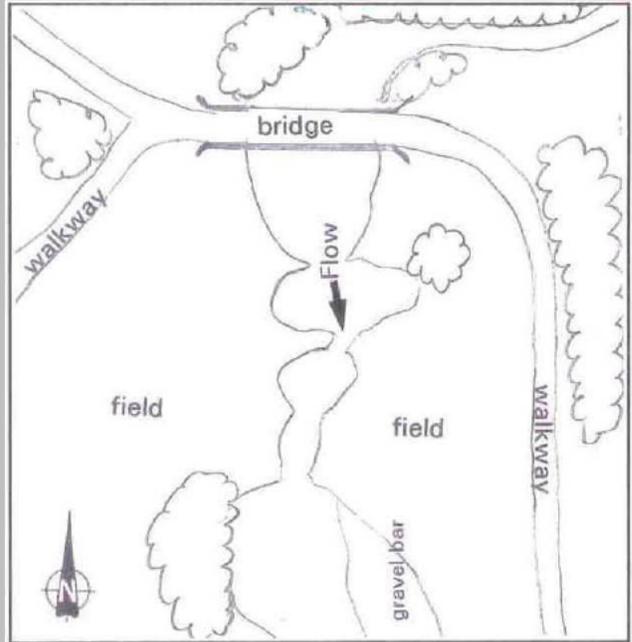
STRATEGY

Comments Containment and recovery with approximately 100 feet of boom and weir skimmer at upstream end of Control Point. Downstream, syphon dams and/or board weirs and disk skimmers and/or vacuum trucks could be used to contain and recover oil.

PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) NE
Description/Comment



BEST ACCESS



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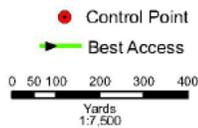
EMERGENCY RESPONSE

Best Access:

SQ-2.1

Oct 21, 2009

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Best Access Driving Instruction

From Interstate 5, take exit 256 and proceed south on Meridian Street to Cornwall Park.

Control Point Name JAMES STREET ROAD**Control Point**

SQ-2.8

(b) (7)(F)

Review Date

9/27/2005

Location At Sunset Pond boat launch, from James Street Road.
Sunset Pond is north of K-Mart.**Land Owner** Unknown**WORKSPACE****Size** Regular **Location** in Sunset Pond Park**Description** Downstream end of pond off James Street Road**Comments** Good working area**WATER BODY****Name** SQUALICUM CREEK (SUNSET POND) **Width** Pond is approximately 1420 feet long**Depth Or Bank Height** 5 feet, flat**Bed Type** Mud, clay and silt **Distance To Confluence** 2.8 miles to Bellingham Bay**LOGISTICS****Nearest Response Equipment** Laurel Station**Logistics Comment**

Helicopter: look for electrical wire

Helicopter Operation Fair**Boat Launch** Fair**Upstream Cp** None**Downstream Cp** SQ-2.1**STRATEGY**

Comments

- Containment and recovery with approximately 100 feet of boom and weir skimmer. Approximately 50 feet of boom required to exclude petroleum from outflow.
- If wind has large south component, corral spill in bay next to boat launch.
- Padlocked 3 foot vertical posts across entrance to work space. Will require key or chain saw.
- Outfall can dry-up.

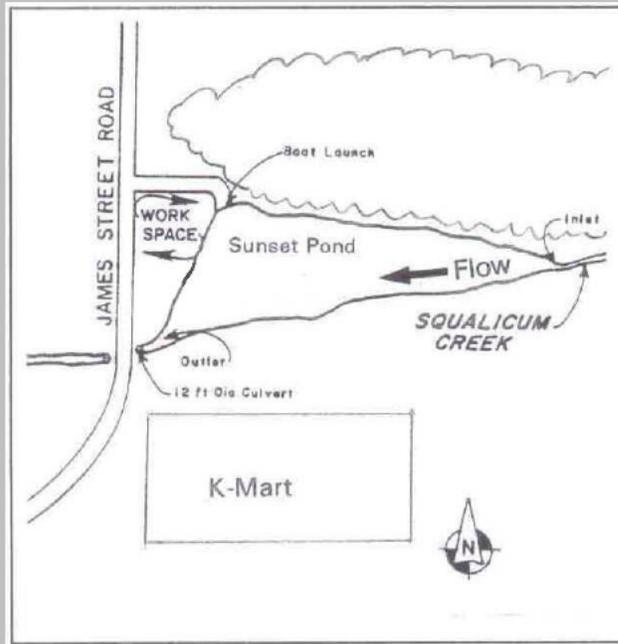
PICTURE

CAD DRAWING

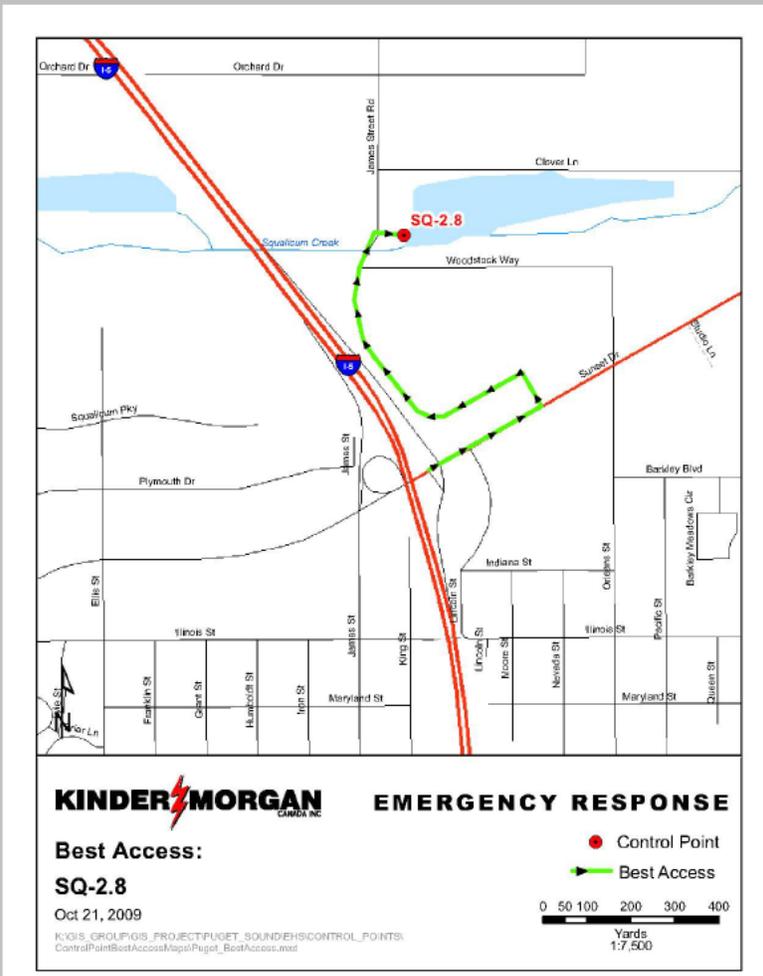
Date 9/27/2005 **Position (Looking At)** Not Required
Orientation (Looking At) E

Description/Comment

Picture of the Sunset Pond



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, take exit 255, and proceed west on Sunset Drive to James Street Road. Proceed north on James Street Road to Sunset Pond.

Control Point Name JONES ROAD

Control Point

SU-25.2

(b) (7)(F)

Review Date

9/27/2005

Location At Jones Road bridge

Land Owner Unknown

WORKSPACE

Size Small Location Good on east side of River

Description Grassy field

Comments

WATER BODY

Name SUMAS RIVER Width 25-40 feet (130 feet at bridge opening)

Depth Or Bank Height West bank, moderately steep; East bank, moderate

Bed Type Mud, clay and silt Distance To Confluence 25.2 miles to Vedder Canal/Fraser River

LOGISTICS

Nearest Response Equipment Laurel Station

Logistics Comment

In case of an incident in this area, the TMPL Western Division Emergency Response Plan must be activated.

Helicopter Operation Excellent

Boat Launch Not Required

Upstream Cp SU-26.8

Downstream Cp MS1-02

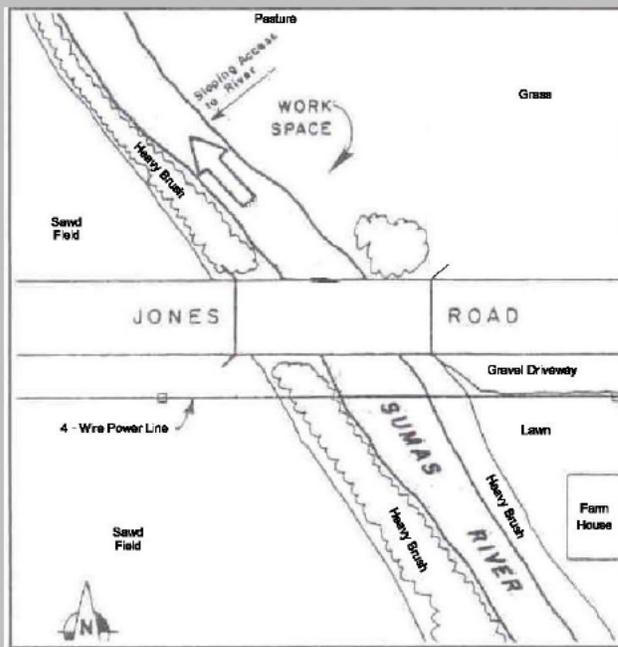
STRATEGY

Comments Containment and recovery with approximately 200 feet of boom and weir skimmer.

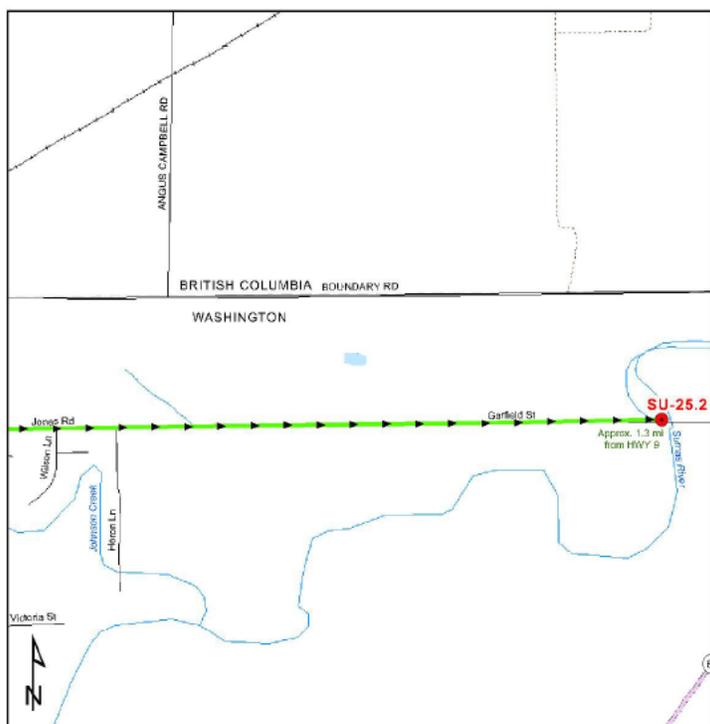
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) NW
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Highway 9 in Sumas, proceed east on Garfield Street which will become Jones Street and then proceed to bridge over Sumas River.



EMERGENCY RESPONSE

Best Access:

SU-25.2

Oct 21, 2009

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Control Point Name ROCK ROAD/ FRONT STREET**Control Point**

SU-26.8

(b) (7)(F)

Review Date

9/27/2005

Location At Rock Road bridge.**Land Owner** Unknown**WORKSPACE****Size** Regular **Location** Low floodplain on west bank upstream of bridge.**Description** Private pasture land**Comments****WATER BODY****Name** SUMAS RIVER **Width** 15-20 feet (120 feet at bridge opening)**Depth Or Bank Height** 10 feet, gradual slope**Bed Type** Mud, clay and silt **Distance To Confluence** 26.8 miles to Vedder Canal/Fraser River**LOGISTICS****Nearest Response Equipment** Laurel Station**Logistics Comment**

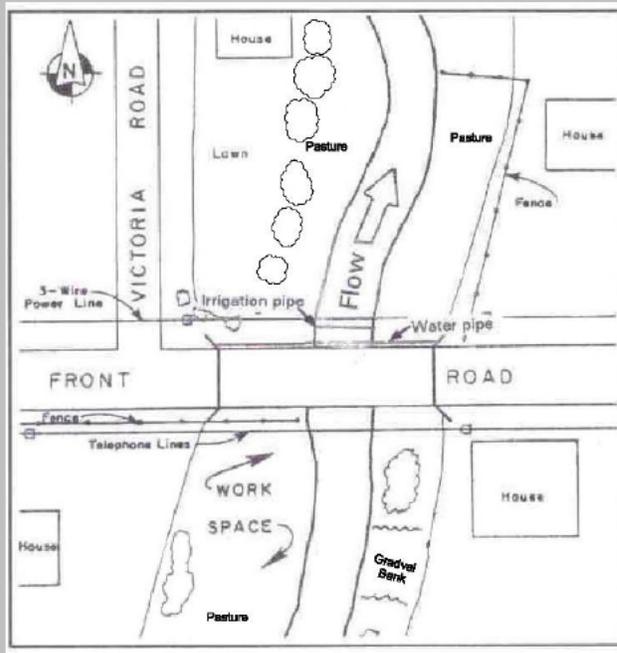
Hekicopter: not requires

Helicopter Operation No**Boat Launch** Not Required**Upstream Cp** SU-28.6**Downstream Cp** SU-25.2**STRATEGY****Comments** Containment and recovery with approximately 100 feet of boom and weir skimmer.

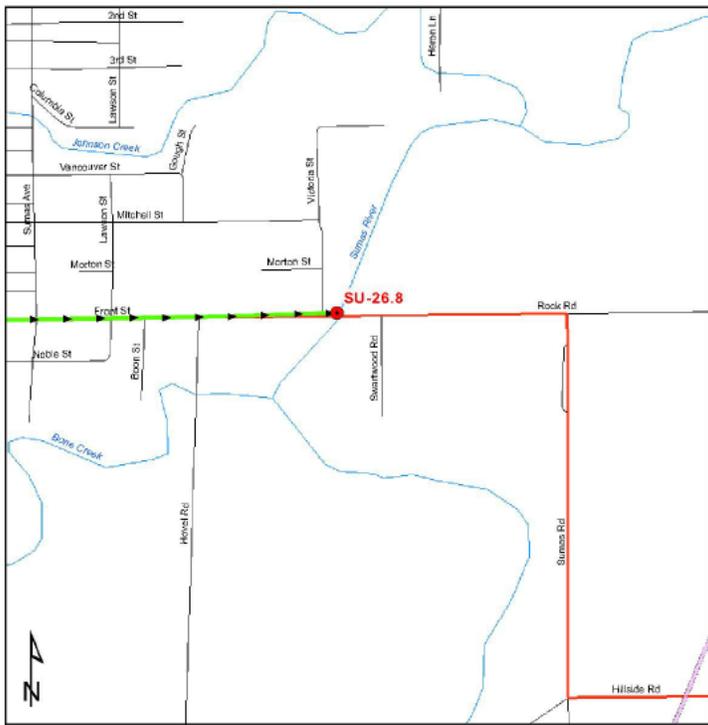
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Not Required
Orientation (Looking At) N
Description/Comment



BEST ACCESS



Best Access Driving Instruction

Approximately 3000 feet from Highway 9 along Front Road to Sumas River bridge. Rock Road is called Front Street in Sumas U.S.A. and the name changes to Rock Road (east) past Hovel.

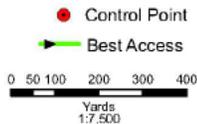


EMERGENCY RESPONSE

Best Access:
SU-26.8

Oct 21, 2009

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9295 TELEGRAPH ROAD

SU-28.6

(b) (7)(F)

Review Date

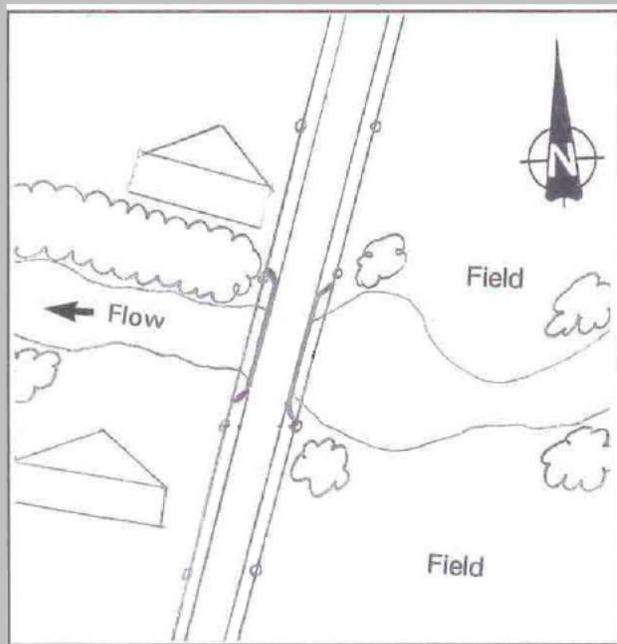
9/27/2005

Location Bridge adjacent to 9295 Telegraph Road.**Land Owner** Unknown**WORKSPACE****Size** Regular **Location** Good on east side of River**Description** Grassy field**Comments****WATER BODY****Name** SUMAS RIVER **Width** 15-20 feet**Depth Or Bank Height** Up to 20 feet**Bed Type** Silt and sand **Distance To Confluence** 28.6 miles to Vedder Canal/Fraser River**LOGISTICS****Nearest Response Equipment** Laurel Station **Logistics Comment****Helicopter Operation** Excellent**Boat Launch** Not Required**Upstream Cp** SU-29.6**Downstream Cp** SU-26.8**STRATEGY****Comments** Containment and recovery using approximately 100 feet of boom and a weir skimmer.

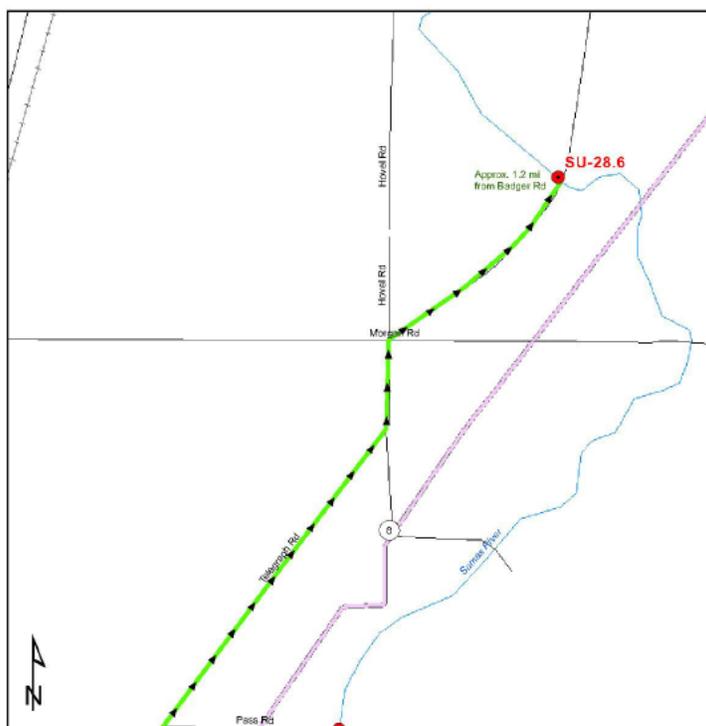
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Not Required
Orientation (Looking At) S
Description/Comment



BEST ACCESS



KINDER MORGAN
CAMBI, INC.

EMERGENCY RESPONSE

Best Access:

SU-28.6

Oct 21, 2009

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Best Access Driving Instruction

From Guide Meridian (539), proceed east on Badger Road (546) to Telegraph Road. Continue north on Telegraph Road past Morgan Road and Hovel Road junction to 9295 Telegraph Road.

Control Point Name NORTH PASS ROAD **Control Point** SU-29.6

(b) (7)(F)

Review Date 9/27/2005

Location 9008 North Pass Road bridge. Bridge #319. **Land Owner** Unknown

WORKSPACE

Size Small **Location** Low and high floodplain on east bank upstream of bridge.

Description Grass field sloping to water

Comments

WATER BODY

Name SUMAS RIVER **Width** 20-25 feet (30 feet at bridge opening)

Depth Or Bank Height 8 feet, moderately steep

Bed Type Mud, clay and silt **Distance To Confluence** 29.6 miles to Vedder Canal/Fraser River

LOGISTICS

Nearest Response Equipment Laurel Station

Logistics Comment

Other bridges in the immediate vicinity could facilitate similar deployments.

Helicopter Operation Fair

Boat Launch Not Required

Upstream Cp SU-32.8

Downstream Cp SU-28.6

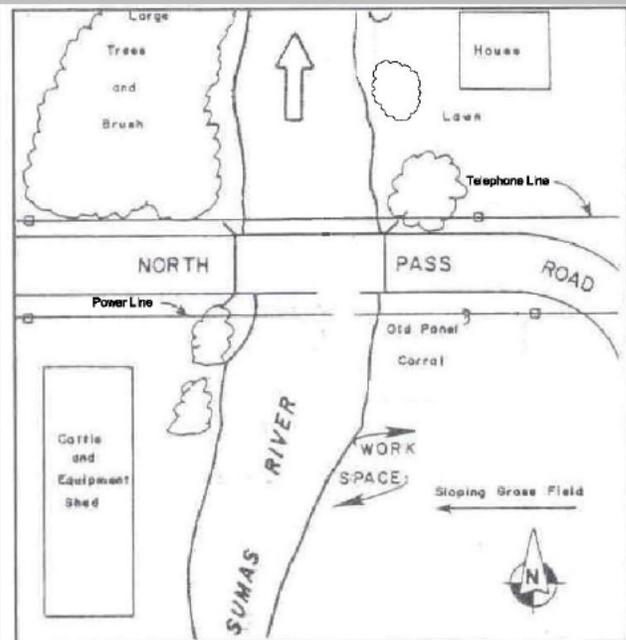
STRATEGY

Comments Containment and recovery with approximately 200 feet of boom and weir skimmer.

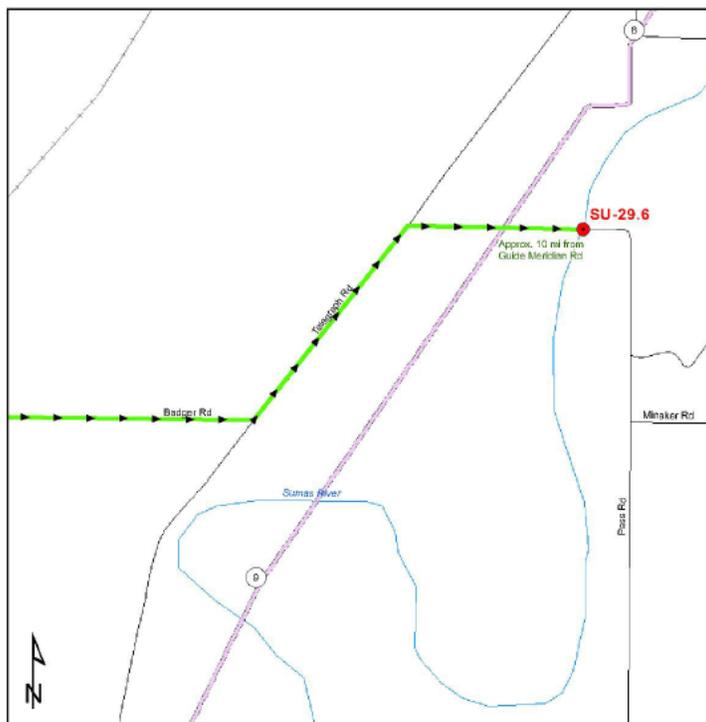
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Not Required
Orientation (Looking At) N
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Guide Meridian (539), proceed east along Badger Road (546) to Telegraph Road. Proceed north on Telegraph Road to North Pass Road. Proceed east to bridge.



EMERGENCY RESPONSE

Best Access:
SU-29.6

Oct 21, 2009

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Control Point Name 8676 TELEGRAPH ROAD **Control Point** SU-32.8

Review Date 9/27/2005

Location Win Fran Holsteins Farm at 8676 Telegraph Road. **Land Owner** Win Fran Holsteins

WORKSPACE

Size Small **Location** Excellent on south side of the river

Description Fields and farm land

Comments

WATER BODY

Name SUMAS RIVER **Width** 10 feet

Depth Or Bank Height Steep to 8 feet

Bed Type Silt and mud **Distance To Confluence** 32.8 miles to Vedder Canal/Fraser River

LOGISTICS

Nearest Response Equipment Laurel Station

Logistics Comment

Other bridges in the immediate vicinity could facilitate similar deployments.

Helicopter Operation Excellent

Boat Launch Not Required

Upstream Cp SU-34.5

Downstream Cp SU-29.6

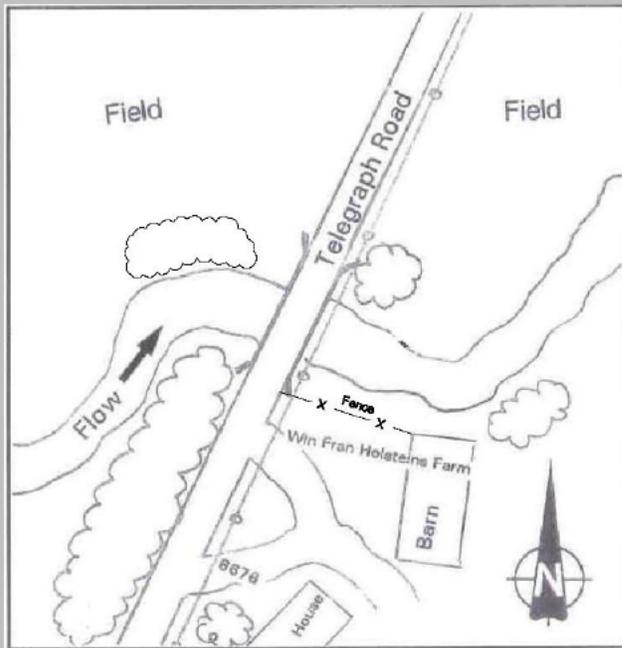
STRATEGY

Comments Containment and recovery with approximately 200 feet of boom and weir skimmer.

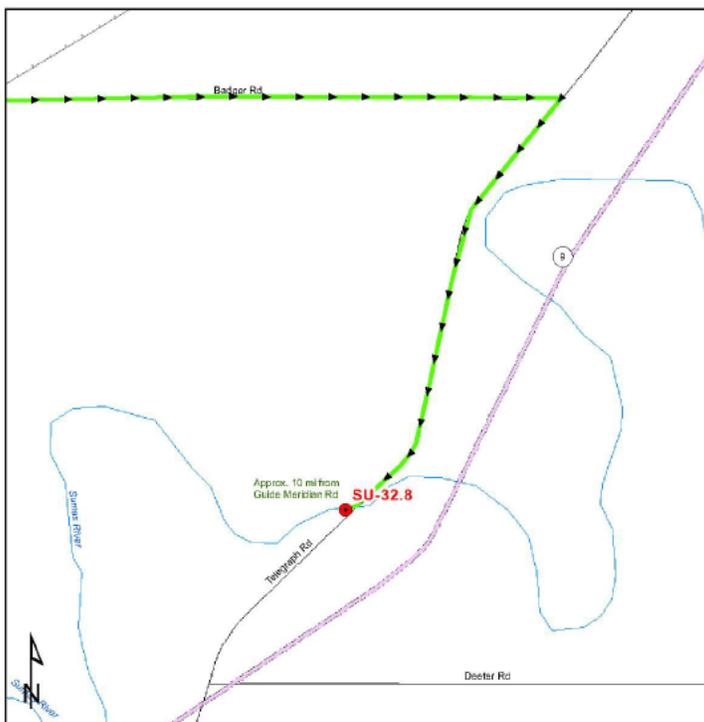
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) E
Description/Comment



BEST ACCESS



KINDER MORGAN
CAMBI, INC.

EMERGENCY RESPONSE

Best Access:

SU-32.8

Oct 21, 2009

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Best Access Driving Instruction

From Guide Meridian (539), proceed east on Badger Road (546) to Telegraph Road. Proceed south on Telegraph Road to 8676 (Win Fran Holsteins Farm).

Control Point Name LINDSAY ROAD**Control Point**

SU-34.5

(b) (7)(F)

ate

9/27/2005

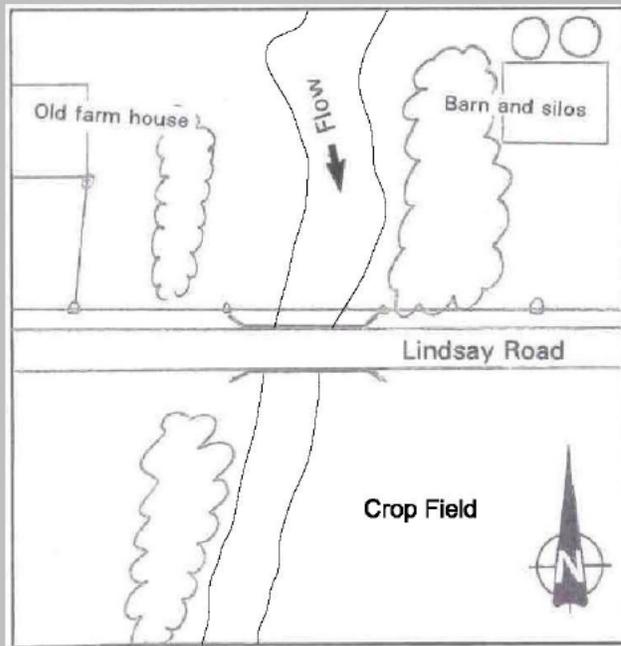
Location At west Lindsay Road bridge. Bridge #304**Land Owner** Unknown**WORKSPACE****Size** Small **Location** Good on southeast side of river**Description** Grassy banks and crop field**Comments****WATER BODY****Name** SUMAS RIVER **Width** 10 feet**Depth Or Bank Height** 10 feet steep**Bed Type** Sand and gravel **Distance To Confluence** 34.5 miles to Vedder Canal/Fraser River**LOGISTICS****Nearest Response Equipment** Laurel Station **Logistics Comment****Helicopter Operation** Excellent**Boat Launch** Not Required**Upstream Cp** SU-36.5**Downstream Cp** SU-32.8**STRATEGY****Comments** Containment and recovery with approximately 100 feet of boom and a weir skimmer.

PICTURE

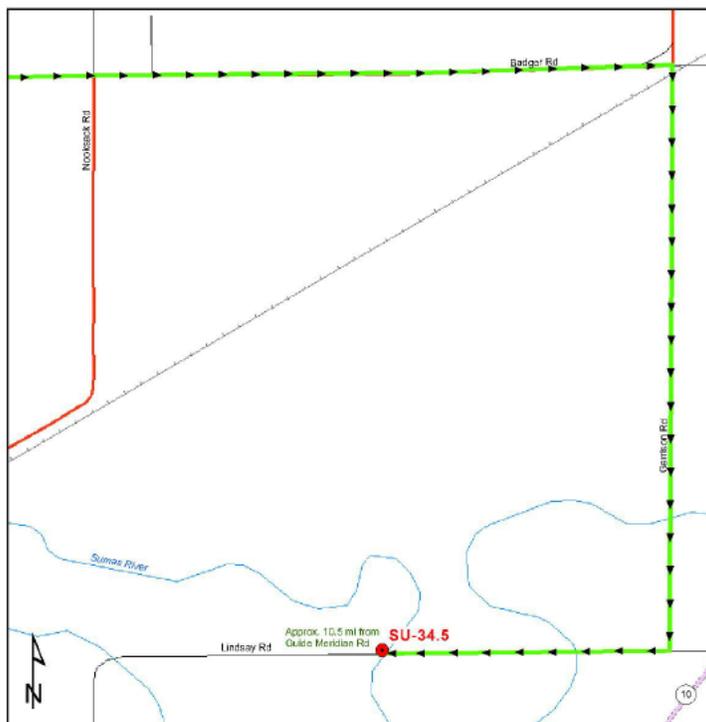
CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) N

Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Guide Meridian (539), proceed east on Badger Road (546) to Garrison Road. Proceed south on Garrison Road to Lindsay Road. Proceed west on Lindsay Road to 2nd bridge over Sumas River.



EMERGENCY RESPONSE

Best Access:

SU-34.5

Oct 21, 2009

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Control Point Name 8386 GILLIES ROAD **Control Point** SU-36.5

(b) (7)(F)

view Date 9/27/2005

Location Gillies Road bridge at approximately 8386. Bridge #309. **Land Owner** Unknown

WORKSPACE

Size Small **Location** Low floodplain and terrace on north bank downstream of bridge.

Description Cultivated flat land and grassy area adjacent to bank.

Comments

WATER BODY

Name SUMAS RIVER **Width** 20-25 feet (30 feet at bridge opening)

Depth Or Bank Height Moderate

Bed Type Mud, clay and silt **Distance To Confluence** 36.5 miles to Vedder Canal/Fraser River

LOGISTICS

Nearest Response Equipment Laurel Station

Logistics Comment

Other bridges in the immediate vicinity could facilitate similar deployments.

Helicopter Operation Fair

Boat Launch Not Required

Upstream Cp SU-37.3

Downstream Cp SU-34.5

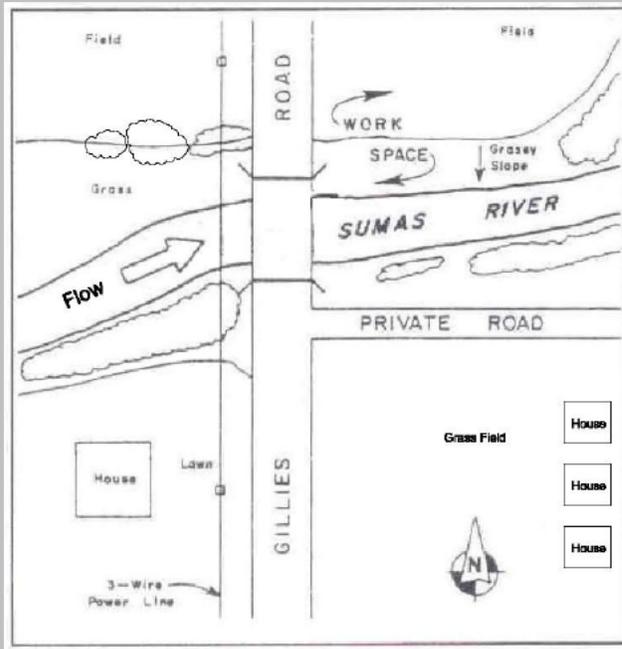
STRATEGY

Comments Containment and recovery with approximately 200 feet of boom and weir skimmer.

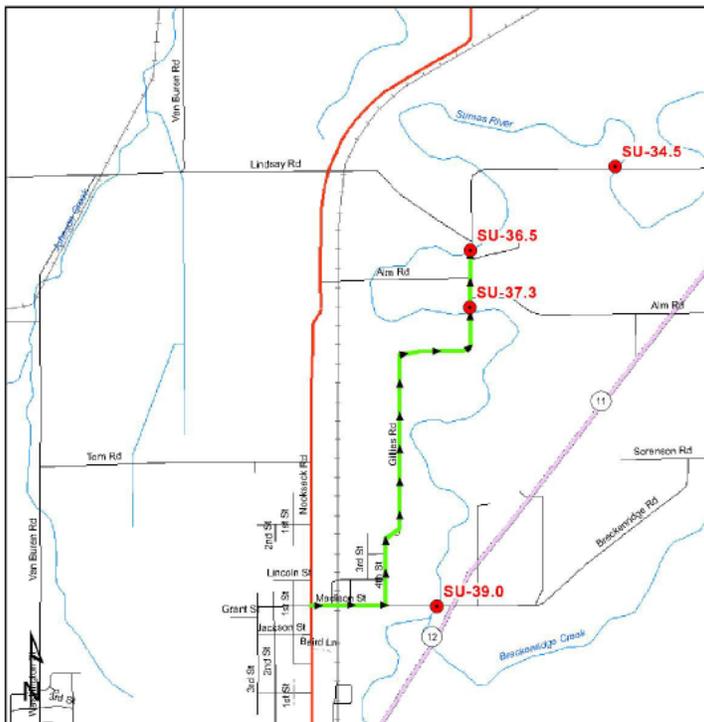
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) E
Description/Comment



BEST ACCESS



KINDER MORGAN
ENERGY INC.

EMERGENCY RESPONSE

Best Access:

SU-36.5

Oct 21, 2009

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Best Access Driving Instruction

From Highway 9 in Nooksack, proceed east on Madison Street which will become Breckenridge Road. Proceed to Gillies Road and continue to second bridge over Sumas River at 8386 Gillies Road.

Control Point Name 8292 GILLIES ROAD**Control Point**

SU-37.3

(b) (7)(F)

Date 9/27/2005**Location** Gillies Road bridge at approximately 8292.**Land Owner** Unknown**WORKSPACE****Size** Small **Location** Good on north sides of river**Description** Field and grassy slope**Comments****WATER BODY****Name** SUMAS RIVER **Width** 20-25 feet (30 feet at bridge opening)**Depth Or Bank Height** Moderate**Bed Type** Mud, clay and silt **Distance To Confluence** 37.3 miles to Vedder Canal/Fraser River**LOGISTICS****Nearest Response Equipment** Laurel Station**Logistics Comment**

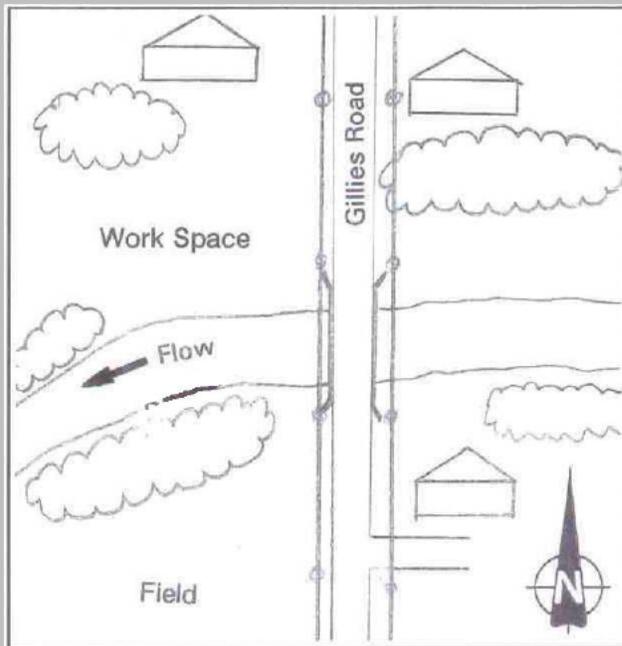
Other bridges in the immediate vicinity could facilitate similar deployments.

Helicopter Operation Fair**Boat Launch** Not Required**Upstream Cp** SU-39.0**Downstream Cp** SU-36.5**STRATEGY****Comments** Containment and recovery with approximately 200 feet of boom and weir skimmer.

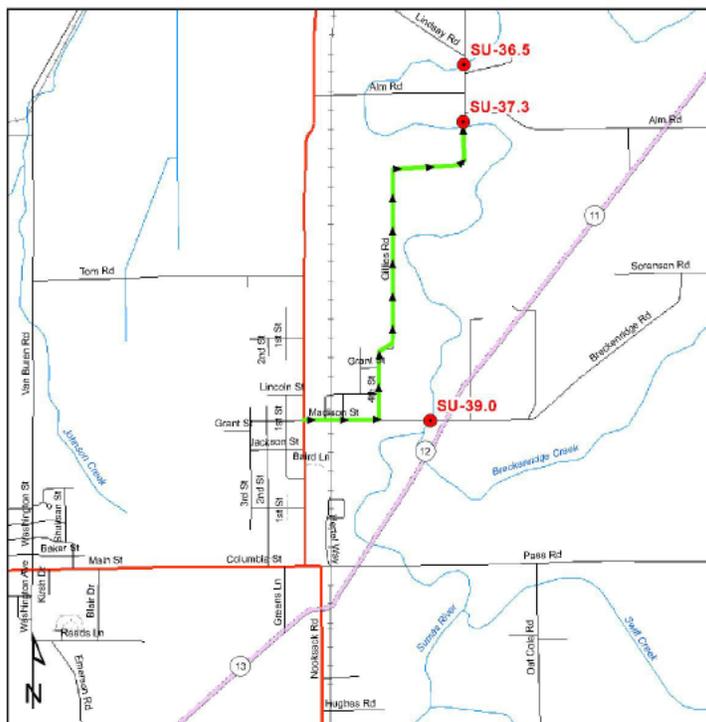
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) W
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Highway 9 in Nooksack, proceed east on Madison Street which will become Breckenridge Road. Proceed to Gillies Road and continue to first bridge over Sumas River at 8292 Gillies Road.



EMERGENCY RESPONSE

Best Access:

SU-37.3

Oct 21, 2009

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Control Point Name BRECKENRIDGE ROAD **Control Point** SU-39.0

(b) (7)(F)

Review Date 9/26/2005

Location At Breckenridge Road bridge over Sumas River. **Land Owner** Unknown

WORKSPACE

Size Ample **Location** Low floodplain on west bank downstream of bridge.

Description Flat pastureland

Comments

WATER BODY

Name SUMAS RIVER **Width** 25-30 feet (75 feet at bridge opening)

Depth Or Bank Height Steep to 20 feet on east bank and flat on west bank

Bed Type Mud, clay, silt and sand **Distance To Confluence** 39.0 miles to Vedder Canal/Fraser River

LOGISTICS

Nearest Response Equipment Laurel Station

Logistics Comment

Both sides of river are workable. Breckenridge Creek enters Sumas River immediately upstream of bridge.

Helicopter Operation Fair

Boat Launch Not Required

Upstream Cp None

Downstream Cp SU-37.3

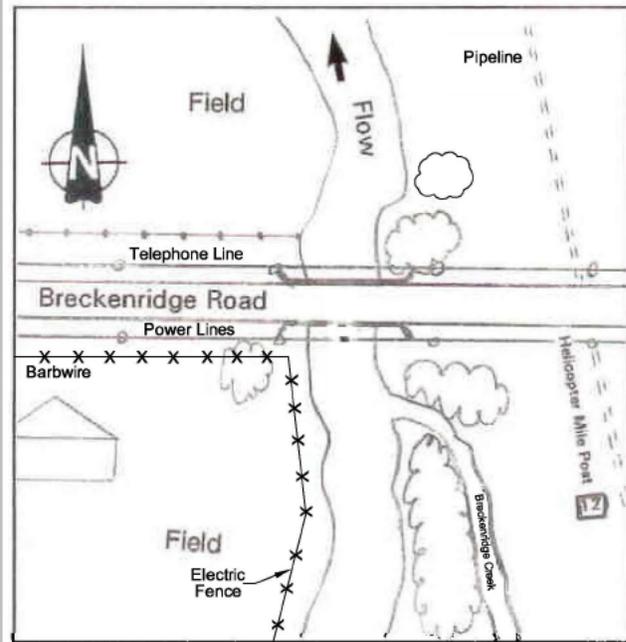
STRATEGY

Comments Containment and recovery with approximately 200 feet of boom and a weir skimmer.

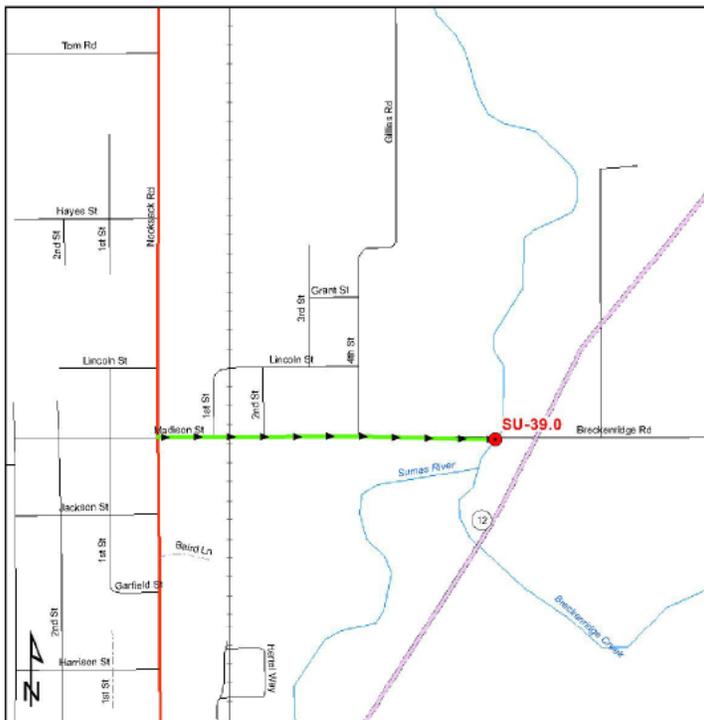
PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) S
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Highway 9 in Nooksack, proceed east on Madison Street which will become Breckenridge Road to bridge over Sumas River.

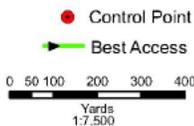


EMERGENCY RESPONSE

Best Access:
SU-39.0

Oct 21, 2009

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Control Point Name HIGHWAY 20**Control Point**

SW-0.4

(b) (7)(F)

Review Date

9/26/2005

Location Control Point is beneath the elevated lanes of the Duane Berentson bridge on east side of Highway 20. A similar location is available on west side of Channel.**Land Owner** Skagit County (Park)

Swinomish Indian Reservation is on the west bank of Channel.

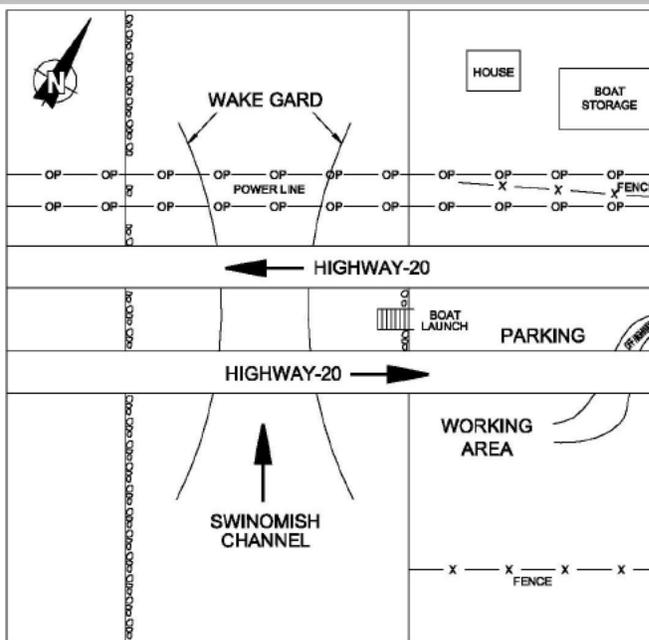
WORKSPACE**Size** Ample**Location** Large parking lot beneath Duane Berentsen Bridge on Highway 20.**Description** Area is paved and could be made secured relatively easily**Comments****WATER BODY****Name** SWINOMISH CHANNEL**Width** 150 yards**Depth Or Bank Height** moderate slopes to 20' along Channel. Sloped boat launch at Control Point.**Bed Type** Sand & silt**Distance To Confluence** 0.4 miles (to rail crossing) of Padilla Bay(tidal)**LOGISTICS****Nearest Response Equipment** Anacortes Station**Logistics Comment****Helicopter Operation** ExcellentHelicopter: Good on dyke at the east side pipe crossing
Boat Launch: Concrete ramp. Good at all stages of the tide**Boat Launch** Excellent**Upstream Cp** None**Downstream Cp** Padilla Bay**STRATEGY****Comments** -Containment, recovery and exclusion. Boom to prevent oil entering Padilla Bay. Boom to prevent oil travelling south down Channel. There are small inlets on each side of Channel that could be used as collection/retrieval areas. Collect oil with booms and skimmers. CSCI vessels can operate within the channel. See strategy GRP B-17 if spill coming in from Padilla Bay.
-The Olympic Pipe Line petroleum products line and Cascade Natural Gas pipeline parallel the Trans Mountain line at the Swinomish crossing.

PICTURE

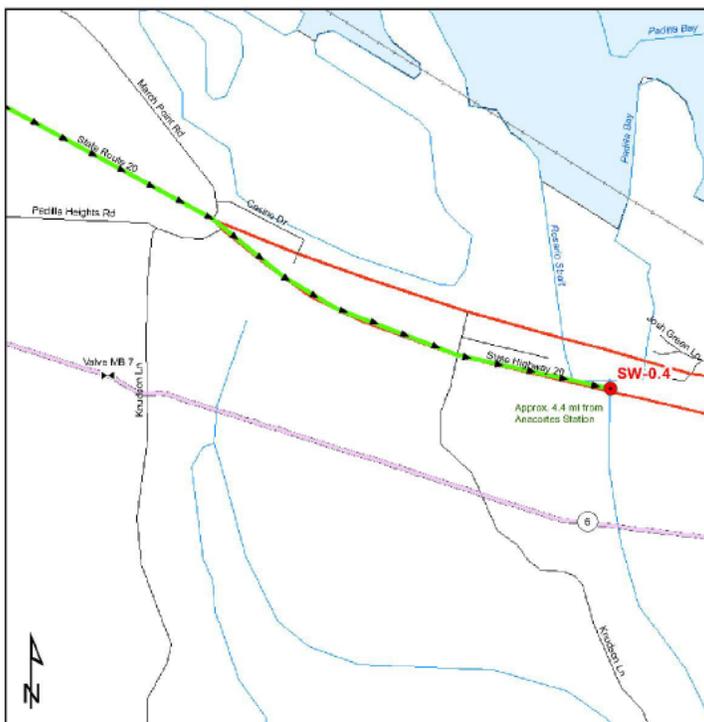
Date 9/26/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) SE
Description/Comment



CAD DRAWING



BEST ACCESS



Best Access Driving Instruction

Enter Control Point from slip road off Highway 20 just east of Duane Berentson bridge.



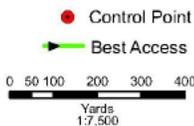
EMERGENCY RESPONSE

Best Access:

SW-0.4

Oct 21, 2009

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BARRETT ROAD

TC-0.2

(b) (7)(F)

Review Date

9/26/2005

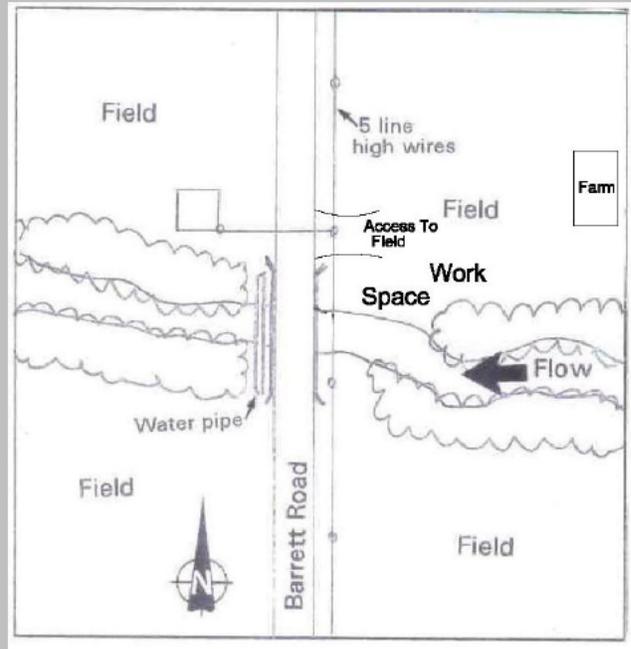
Location At Barrett Road bridge over outflow from Barrett Lake.
Bridge #13.**Land Owner** Unknown**WORKSPACE****Size** Ample **Location** Excellent on east side of bridge and on both sides of creek**Description** Pasture land**Comments****WATER BODY****Name** TEN MILE CREEK **Width** 15 to 25 feet**Depth Or Bank Height** 20 feet, steep**Bed Type** Mud, gravel and some cobble **Distance To Confluence** 0.2 miles to Nooksack River**LOGISTICS****Nearest Response Equipment** Laurel Station **Logistics Comment****Helicopter Operation** Excellent**Boat Launch** Not Required**Upstream Cp** TC-2.1 & DE-0.9**Downstream Cp** NO-6.0**STRATEGY****Comments** -Containment and recovery with approximately 200 feet of boom and a weir skimmer.
-60 foot bridge span.Last control point before the Nooksack River.

Thursday, November 12, 2009

PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) SE
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, take exit 262 and proceed east on Main Street (Axton Road) to Barrett Road (approximately 50 yards from off ramp). Proceed north on Barrett Road to bridge.



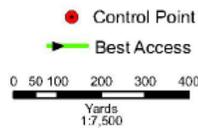
EMERGENCY RESPONSE

Best Access:

TC-0.2

Oct 21, 2009

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NORTHWEST DRIVE

TC-2.1

(b) (7)(F)

View Date

9/26/2005

Location At Northwest Drive bridge over Ten Mile Creek adjacent to 5889 Northwest Drive. Bridge #15. **Land Owner** Unknown

WORKSPACE

Size Small **Location** Limited on both creek sides

Description Creek banks

Comments Creek restoration Project(2004) on west side of the road, south side of the creek.

WATER BODY

Name TEN MILE CREEK **Width** 20 to 40 feet

Depth Or Bank Height 15 feet, moderate

Bed Type Mud, gravel **Distance To Confluence** 2.1 miles to Nooksack River

LOGISTICS

Nearest Response Equipment Laurel Station **Logistics Comment**

Helicopter Operation Poor

Boat Launch Not Required

Upstream Cp TC-2.7

Downstream Cp TC-0.2

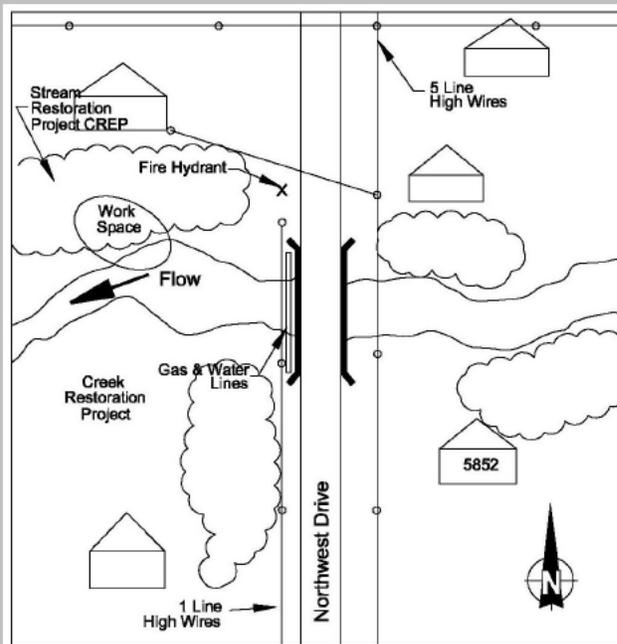
STRATEGY

Comments -Containment and recovery with approximately 200 feet of boom and weir skimmer. Also possible to use disk skimmer and/or vacuum truck.
-Fire hydrant on north side of bridge. Gas and water pipes span the creek on the west side of the bridge.

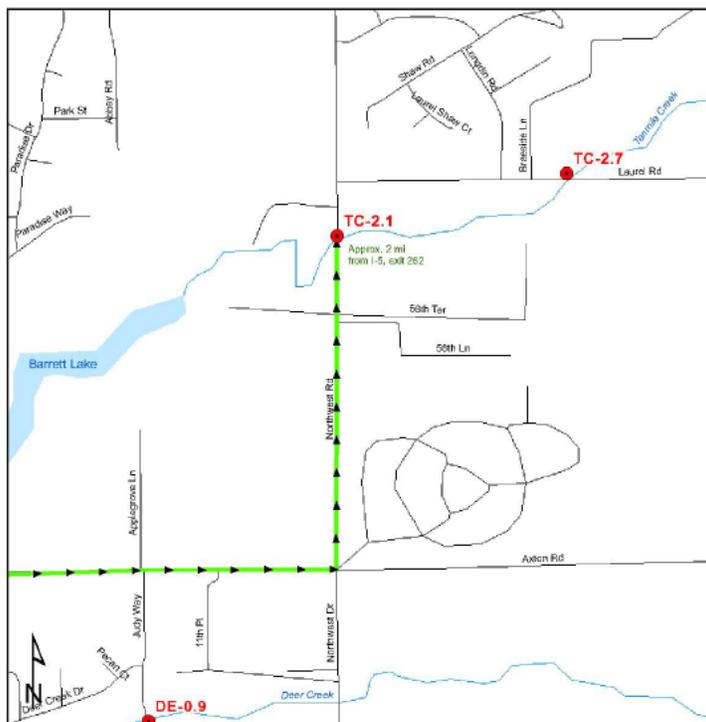
PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) SW
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, proceed east on West Axton Road to Northwest Drive. Proceed north on Northwest Drive to bridge over Ten Mile Creek.



EMERGENCY RESPONSE

Best Access:

TC-2.1

Oct 22, 2009

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Control Point Name WEST LAUREL DRIVE **Control Point** TC-2.7

(b) (7)(F)

Date 9/26/2005

Location At bridge over Ten Mile Creek, just west of 948 West Laurel Road. Bridge # 17. **Land Owner** Unknown

WORKSPACE

Size Ample **Location** Excellent north of road and on east side of creek.

Description Grassy areas

Comments Creek restoration project (2004), North side of the road, west side of the creek.

WATER BODY

Name TEN MILE CREEK **Width** 15 feet

Depth Or Bank Height 8 feet, gradual

Bed Type Mud **Distance To Confluence** 2.7 miles to Nooksack River

LOGISTICS

Nearest Response Equipment Laurel Station **Logistics Comment**

Helicopter Operation Poor

Boat Launch Not Required

Upstream Cp TC-4.5

Downstream Cp TC-2.1

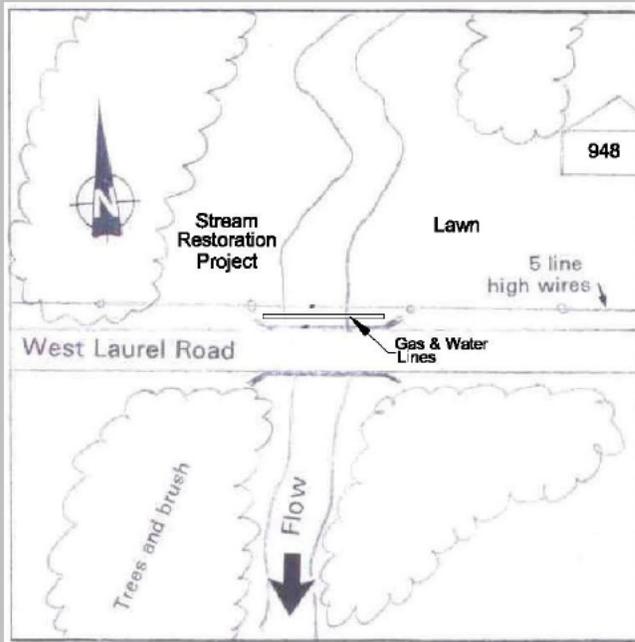
STRATEGY

Comments -Containment and recovery with approximately 200 feet of boom and a weir skimmer.
-60 foot bridge span.
-Gas and water lines span on the north side of the bridge

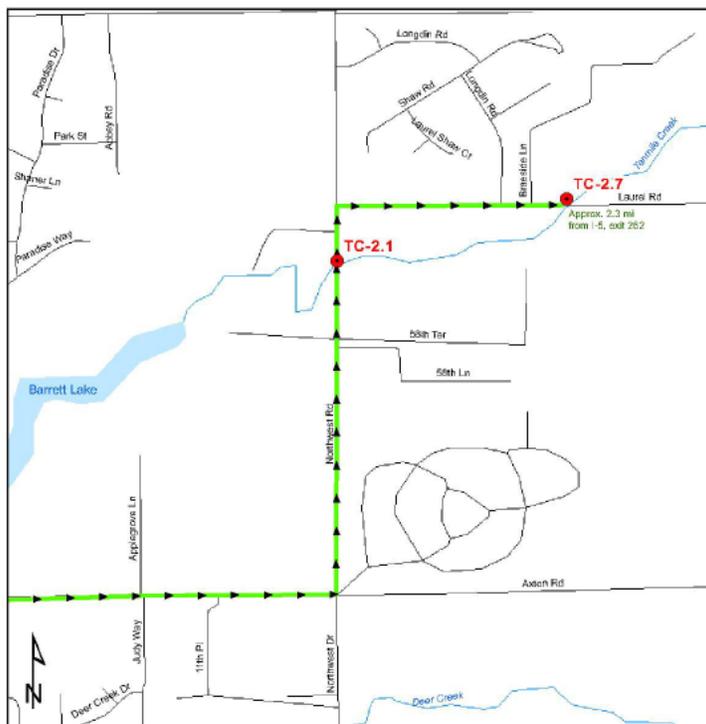
PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) N
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, take exit 262 and proceed east on West Axton Road to Northwest Drive. Proceed north on Northwest Drive to West Laurel Road. Proceed east on West Laurel Road to bridge.



EMERGENCY RESPONSE

Best Access:

TC-2.7

Oct 22, 2009

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Control Point Name WEST HEMMI ROAD **Control Point** TC-4.5

(b) (7)(F)

Review Date 9/26/2005

Location At West Hemmi Road bridge adjacent to 618. Bridge # 16. **Land Owner** Unknown

WORKSPACE

Size Regular **Location** Good on north side of road

Description Grass lawn

Comments

WATER BODY

Name TEN MILE CREEK **Width** 20 feet

Depth Or Bank Height Up to 20 feet, moderate

Bed Type Mud **Distance To Confluence** 4.5 miles to Nooksack River

LOGISTICS

Nearest Response Equipment Laurel Station **Logistics Comment**

Helicopter Operation Poor

Boat Launch Not Required

Upstream Cp TC-6.0

Downstream Cp TC-2.7

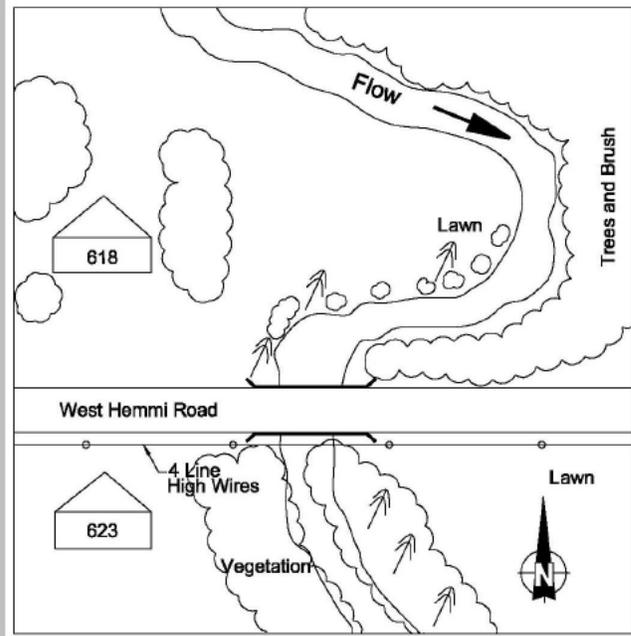
STRATEGY

Comments -Containment and recovery with approximately 200 feet of boom and a weir skimmer. Good location for all types of recovery operations.
-40 foot bridge span. The downstream bridge on Aldrich could also be used, but not included because sufficient quantity of higher quality control points.

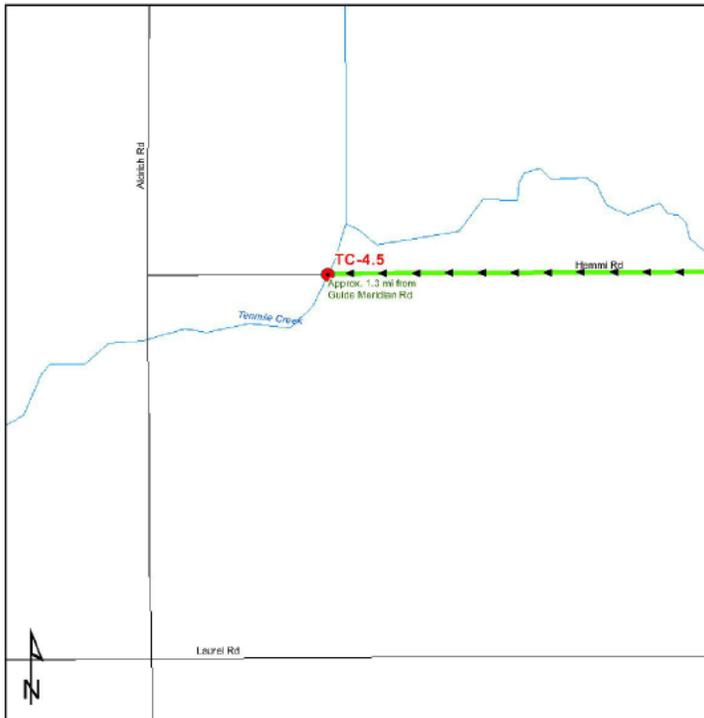
PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) N
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Guide Meridian, proceed west on West Hemmi Road to bridge over Ten Mile Creek, adjacent to 618 West Hemmi Road.



EMERGENCY RESPONSE

Best Access:

TC-4.5

Oct 22, 2009

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Control Point Name OLD GUIDE ROAD **Control Point** TC-6.0

(b) (7)(F)

Review Date 9/26/2005

Location At Ten Mile Creek bridge on Old Guide Road, immediately north of West Hemmi Road. Bridge #21. **Land Owner** Unknown

WORKSPACE

Size Ample **Location** Excellent on both sides of creek, west of Old Guide Road.

Description Fields

Comments East side of Old Guide Road is a stream restoration project (2003).

WATER BODY

Name TEN MILE CREEK **Width** 20 feet

Depth Or Bank Height 5 feet, gradual

Bed Type Mud **Distance To Confluence** 6.0 miles to Nooksack River

LOGISTICS

Nearest Response Equipment Laurel Station **Logistics Comment**

Helicopter Operation Excellent

Boat Launch Not Required

Upstream Cp TC-7.5

Downstream Cp TC-4.5

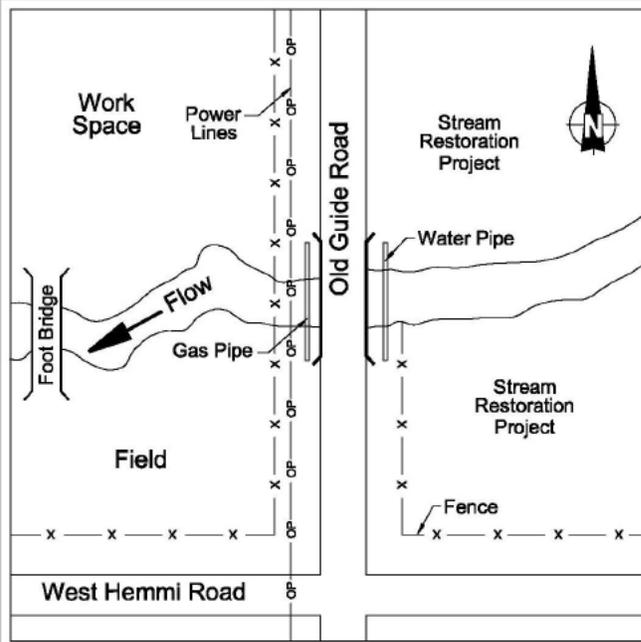
STRATEGY

Comments -Containment and recovery with approximately 200 feet of boom and a weir skimmer.
-20 foot bridge span. Gas pipe spans Ten Mile Creek on west side of bridge.

PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) W
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Guide Meridian, proceed west on West Hemmi Road to Old Guide Road. Proceed north to bridge over Ten Mile Creek.



EMERGENCY RESPONSE

Best Access:

TC-6.0

Oct 22, 2009

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Control Point Name CHASTEEN ROAD**Control Point**

TC-7.5

(b) (7)(F)

Review Date

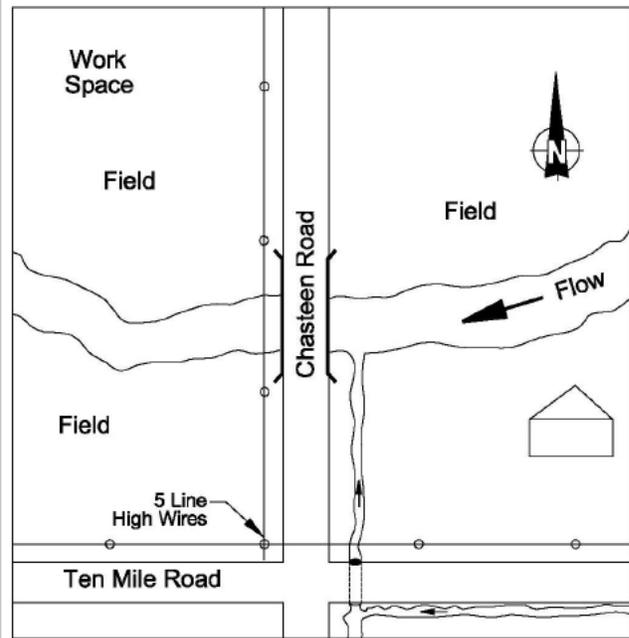
9/26/2005

Location At Chasteen Road bridge just north of intersection with Ten Mile Road.**Land Owner** Unknown**WORKSPACE****Size** Ample **Location** Excellent on both sides of creek**Description** Fields**Comments****WATER BODY****Name** TEN MILE CREEK **Width** 10 feet**Depth Or Bank Height** 15 feet, gradual**Bed Type** Silt and soil **Distance To Confluence** 7.5 miles to Nooksack River**LOGISTICS****Nearest Response Equipment** Laurel Station **Logistics Comment****Helicopter Operation** Excellent**Boat Launch** Not Required**Upstream Cp** TC-9.2**Downstream Cp** TC-6.0**STRATEGY****Comments** -Containment and recovery with approximately 200 feet of boom and a weir skimmer.
-20 foot bridge span. Guide Meridian bridge could also be used as a control point, but not included because sufficient number of better quality control points upstream. Other deployments also possible just down stream at another bridge on Ten Mile Road.

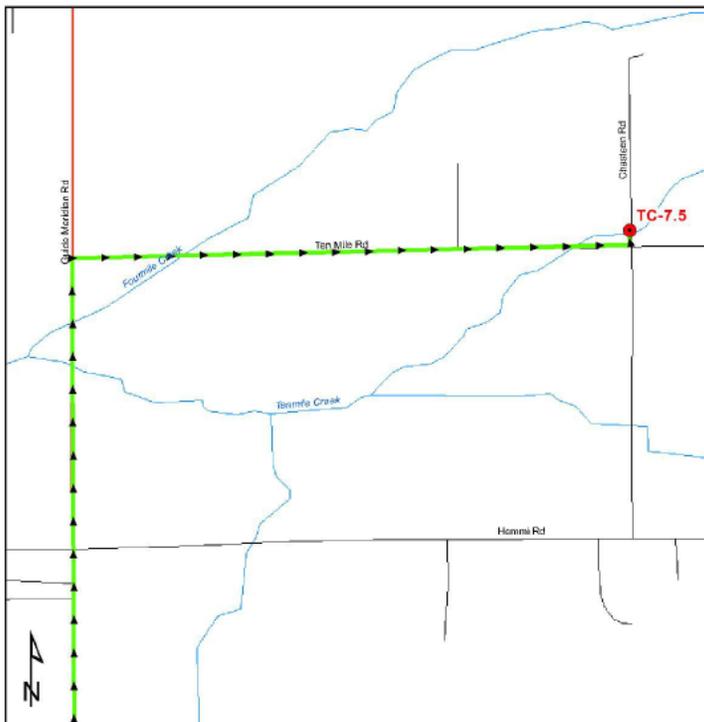
PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Not Required
Orientation (Looking At) Not Required
Description/Comment



BEST ACCESS



EMERGENCY RESPONSE

Best Access:

TC-7.5

Oct 22, 2009

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Best Access Driving Instruction

From Laurel Station, proceed west on East Smith Road to Guide Meridian. Proceed north on Guide Meridian to Ten Mile Road. Proceed east on Ten Mile Road to Chasteen Road and then north to bridge.

TEN MILE ROAD

TC-9.2

(b) (7)(F)

Review Date

9/26/2005

Location At bridge over Ten Mile Creek on Ten Mile Road.**Land Owner** Unknown**WORKSPACE****Size** Ample **Location** Excellent on each side of creek**Description** Fields**Comments****WATER BODY****Name** TEN MILE CREEK **Width** 15 feet**Depth Or Bank Height** 15 feet gradual on east bank; Steep on the west bank**Bed Type** Soil **Distance To Confluence** 9.2 miles to Nooksack River**LOGISTICS****Nearest Response Equipment** Laurel Station **Logistics Comment****Helicopter Operation** Excellent**Boat Launch** Not Required**Upstream Cp** TC-10.0**Downstream Cp** TC-7.5**STRATEGY**

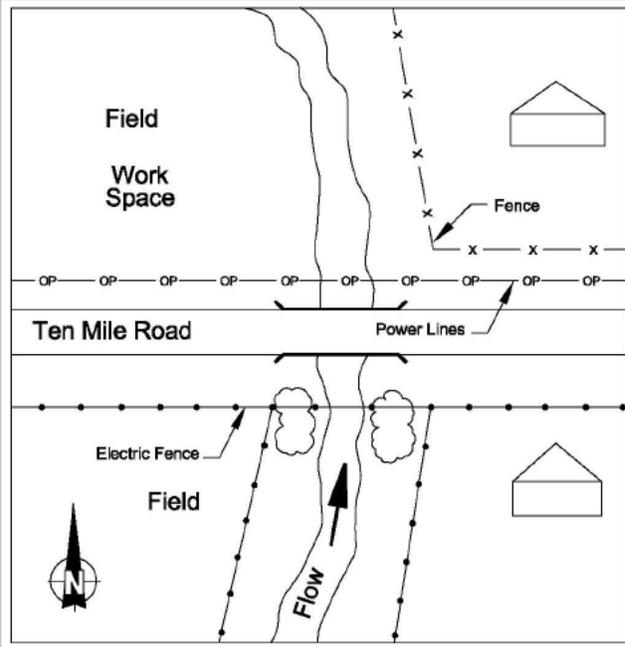
Comments -Containment and recovery with approximately 100 feet of boom and a weir skimmer.
 -20 foot bridge span. Multiple deployments possible at this location. Another possible control point downstream at Hannegan Road, however much busier road and quality not as good as this location.

PICTURE

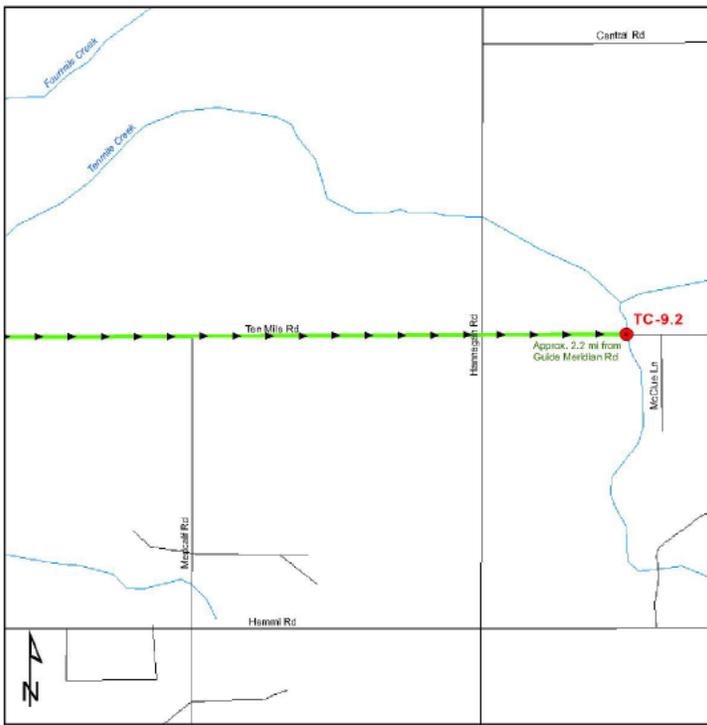
CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) N

Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Laurel Station, proceed east on East Smith Road to Hannegan Road. Proceed north on Hannegan Road to Ten Mile Road. Proceed east on Ten Mile Road to bridge over Ten Mile Creek.



EMERGENCY RESPONSE

Best Access:

TC-9.2

Oct 22, 2009

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Control Point Name EAST HEMMI ROAD**Control Point**

TC-10.0

(b) (7)(F)

Review Date

9/26/2005

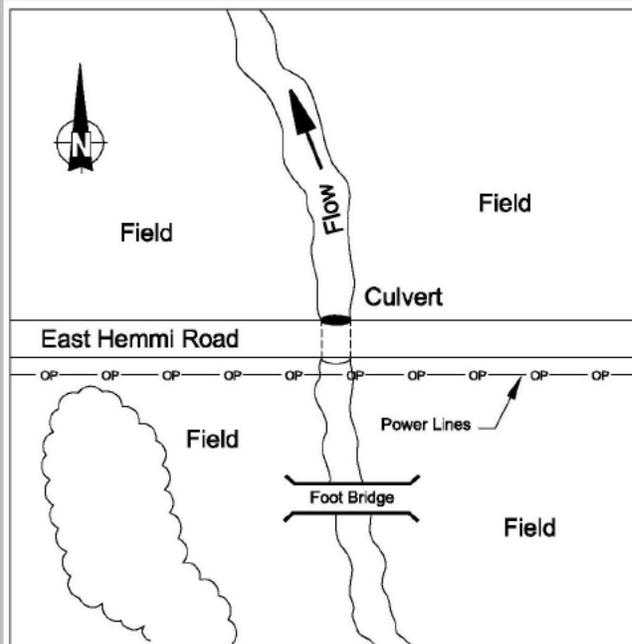
Location From Guide Meridian, proceed east on East Hemmi Road to first culvert after 1045.**Land Owner** Unknown**WORKSPACE****Size** Ample **Location** Excellent in fields adjacent to creek**Description** Pasture land/fields**Comments****WATER BODY****Name** TEN MILE CREEK **Width** 10 to 20 feet**Depth Or Bank Height** 5 feet, gradual**Bed Type** Mud **Distance To Confluence** 10.0 miles to Nooksack River**LOGISTICS****Nearest Response Equipment** Laurel Station **Logistics Comment****Helicopter Operation** Excellent**Boat Launch** Not Required**Upstream Cp** TC-11.8**Downstream Cp** TC-9.2**STRATEGY****Comments** -Containment and recovery with board weir and disk skimmer and/or vacuum truck.
-Culvert marked by white painted lines on road.

Thursday, November 12, 2009

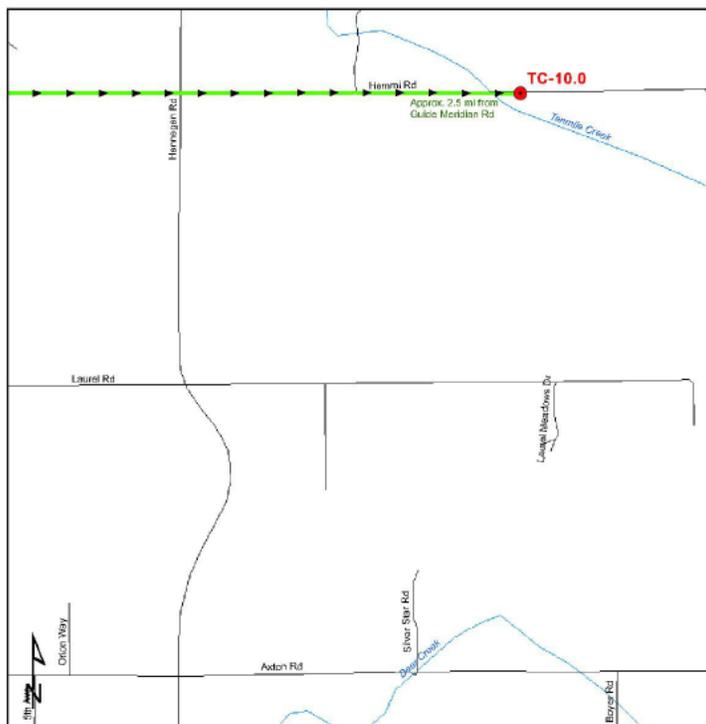
PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) S
Description/Comment



BEST ACCESS



Best Access Driving Instruction

At first culvert under East Hemmi Road, east of 1045.



EMERGENCY RESPONSE

Best Access:

TC-10.0

Oct 21, 2009

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Control Point Name NOON ROAD **Control Point** TC-11.8

(b) (7)(F)

Review Date 9/26/2005

Location At Deer Creek culvert at approximately 5901 Noon Road. **Land Owner** Unknown

WORKSPACE

Size Ample **Location** Excellent to the east and south

Description Golf course and grassy fields

Comments

WATER BODY

Name TEN MILE CREEK **Width** 5 feet

Depth Or Bank Height 5 feet

Bed Type Soil and mud **Distance To Confluence** 11.8 miles to Nooksack River

LOGISTICS

Nearest Response Equipment Laurel Station **Logistics Comment**

Brush clearing required.

Helicopter Operation Excellent

Boat Launch Not Required

Upstream Cp None

Downstream Cp TC-10.0

STRATEGY

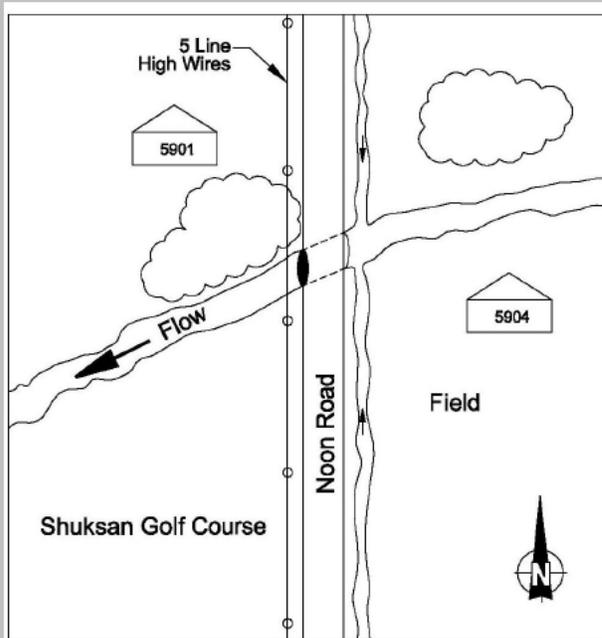
Comments -Containment and recovery with board weir and disk skimmer and/or vacuum trucks.
-Immediately east of Shuksan Golf Course which could facilitate more similar recoveries.

PICTURE

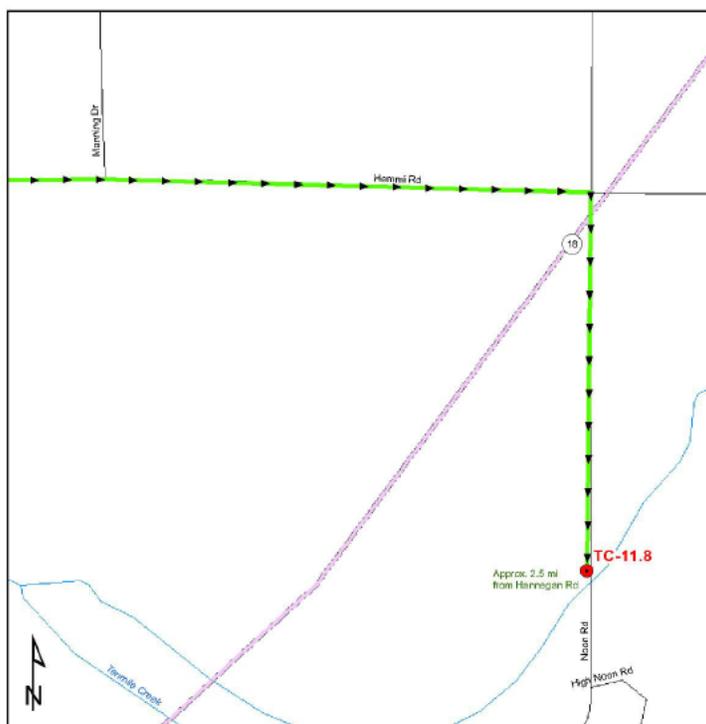
CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Not Required
Orientation (Looking At) E

Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Laurel Station proceed west on East Smith Road to Hannegan Road, proceed north to Hemmi Road, proceed east to Noon Road and proceed south to culvert.



EMERGENCY RESPONSE

Best Access:

TC-11.8

Oct 21, 2009

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Control Point Name HIGHWAY 20**Control Point**

TE-1.0

(b) (7)(F)

Review Date

9/26/2005

Location Adjacent to Highway 20, approximately ½ mile west of La Conner Whitney Road. CP is a 12 inch pipe**Land Owner** Unknown**WORKSPACE****Size** Regular **Location** Adequate workspace on road side. May require highway closure.**Description** Pavement and gravel roadside.**Comments****WATER BODY****Name** TELEGRAPH SLOUGH **Width** 1 feet**Depth Or Bank Height** Up to 10 feet, snall slope**Bed Type** Sand, silt and gravel. **Distance To Confluence** 1.0 miles to Padilla Bay**LOGISTICS****Nearest Response Equipment** Anacortes Station**Logistics Comment**

helicopter: Poor at site (High wires). Fields in area would support helicopter operations.

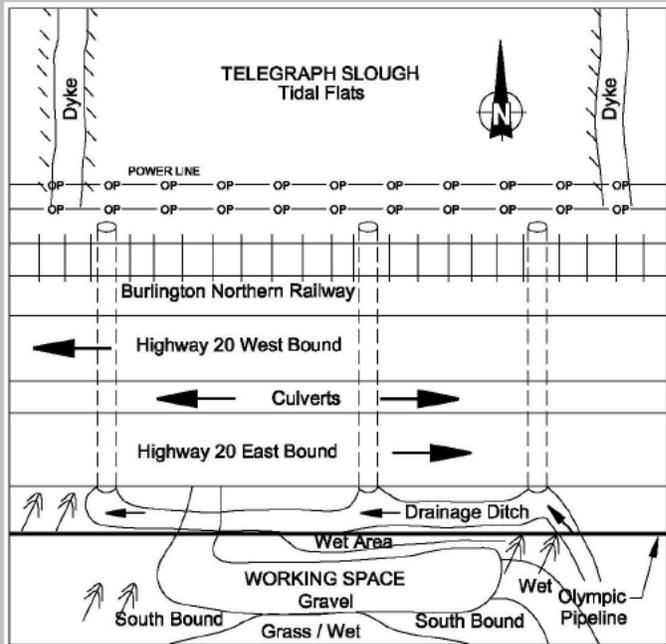
Helicopter Operation Fair**Boat Launch** Not Required**Upstream Cp** None**Downstream Cp** Padilla Bay**STRATEGY****Comments** -Board weirs and disk skimmers and/or vacuum trucks can be used in front of culverts on south side of Highway 20.
-Steep railroad banks adjacent to site. Ditches along Highway 20 are culverted may times under highway.

Thursday, November 12, 2009

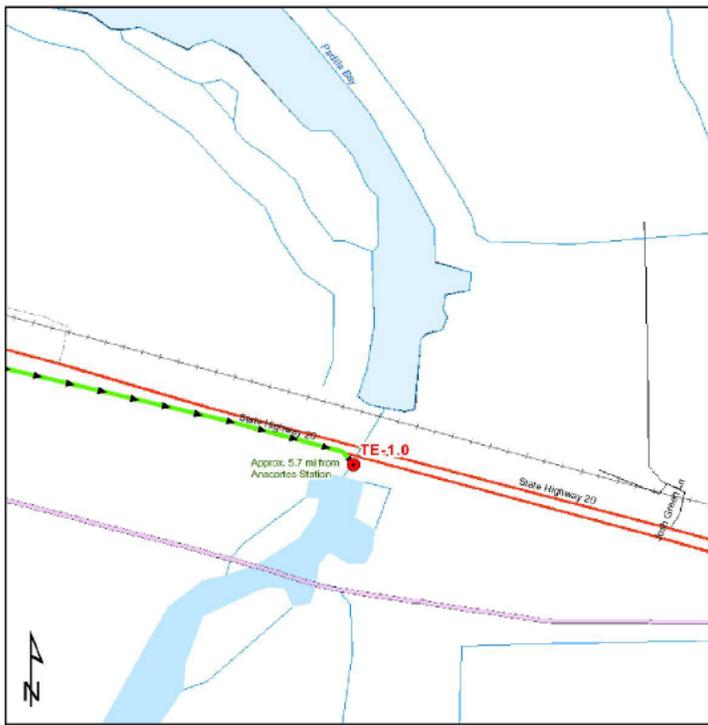
PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) N
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Highway 20, side road access (off the highway)



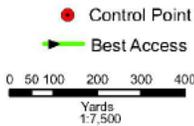
EMERGENCY RESPONSE

Best Access:

TE-1.0

Oct 22, 2009

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Control Point Name NEILSEN ROAD**Control Point**

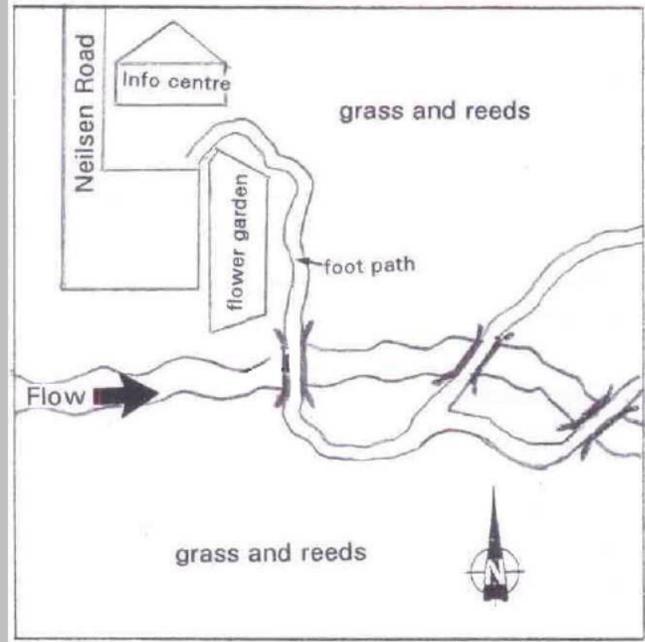
TL-0.1

Review Date 9/27/2005**Location** At public Fragrance Garden demonstration park just east of south end of Neilsen Road.**Land Owner** Unknown**WORKSPACE****Size** **Location****Description** Wetland/marsh with boardwalk and 3 bridges over tributary (first bridge 100 yards from parking lot, next 2 bridges spaced ~80 yards downstream)**Comments** Require weed eaters to allow a pickup to reach first bridge.**WATER BODY****Name** TENNANT CREEK TRIBUTARY **Width** 10 feet**Depth Or Bank Height** 2 feet, gentle**Bed Type** Mud and silt **Distance To Confluence** 0.1 miles to Tennant Lake**LOGISTICS****Nearest Response Equipment** Laurel Station **Logistics Comment****Helicopter Operation** **Boat Launch** **Upstream Cp** TL-1.0**Downstream Cp** Tennant Lake**STRATEGY****Comments** -Containment and recovery with board weirs and syphon dams and disk skimmers and/or vacuum trucks.
-Prevent spill reaching the lake at all costs. Once oil entered the area surrounding the lake it would be practically impossible to recover. Possibly a road could be made from parking area to bridge #1.

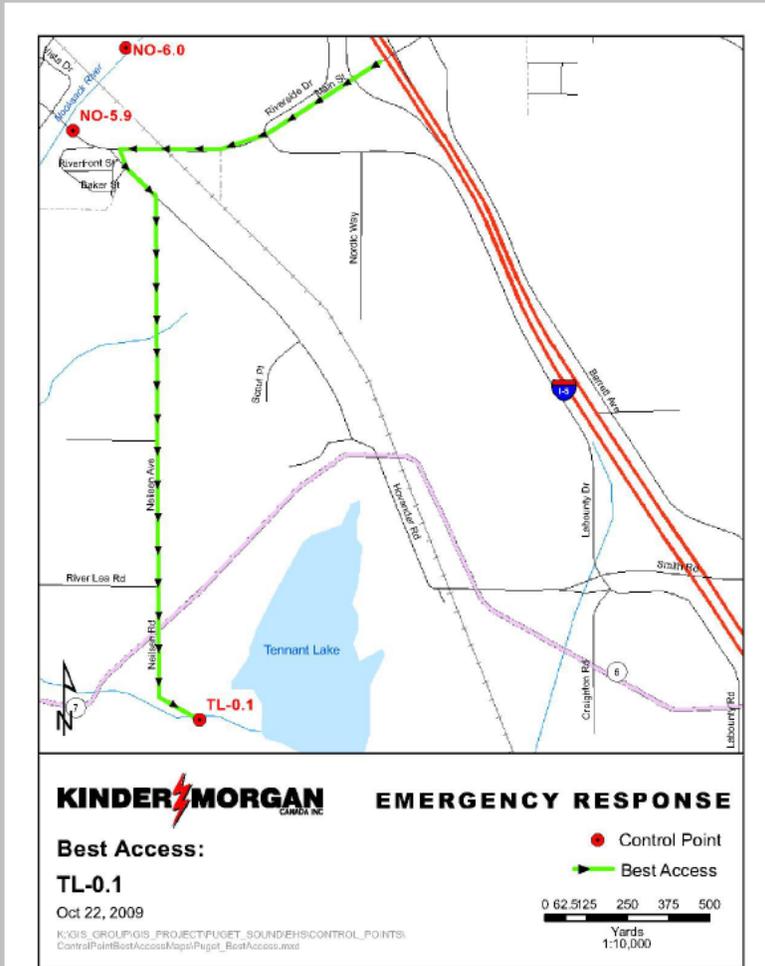
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Down Stream
Orientation (Looking At) E
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, take exit 262 and proceed west on Main Street to Hovander Road. Proceed south-east on Hovander to Neilsen Road. Proceed south on Neilsen Road to the Interpretative Centre parking lot.

Control Point Name LLABOUTY DRIVE **Control Point** TL-0.8

(b) (7)(F)

Review Date 9/27/2005

Location 5114 Labounty Drive. **Land Owner** Unknown

WORKSPACE

Size Small **Location** Nearby neighbour yards and creek bank

Description

Comments Lots of brushing required.

WATER BODY

Name TENNANT CREEK TRIBUTARY **Width** 10 feet

Depth Or Bank Height Approximately 25 feet, steep

Bed Type Mud, gravel **Distance To Confluence** 0.8 miles to Tennant Creek

LOGISTICS

Nearest Response Equipment Laurel Station **Logistics Comment**

Helicopter Operation Poor

Boat Launch Not Required

Upstream Cp TL-1.0

Downstream Cp Tennant Creek

STRATEGY

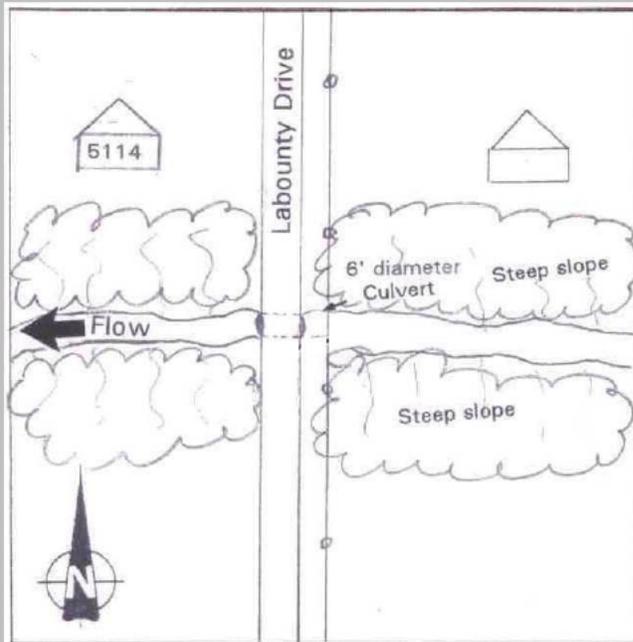
Comments

- Containment and recovery with board weir and disk skimmer and/or vacuum truck.
- 6 foot diameter culvert.
- This control point is required to protect marsh area downstream of this location and upstream of Silver Creek.

PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) E
Description/Comment



BEST ACCESS



KINDER MORGAN
CAMBI, INC.

EMERGENCY RESPONSE

Best Access:

TL-0.8

Oct 22, 2009

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Best Access Driving Instruction

From Interstate 5, take exit 260 and proceed west on Slater Road. Proceed north on Rural Avenue to Snet Road to Labounty Drive to culvert adjacent to 5114 Labounty Drive.

Control Point Name SLATER ROAD

Control Point

TL-1.0

view Date

9/27/2005

Location At Tennant Creek (drainage from Tennant Lake) culvert under Slater Road.**Land Owner** Unknown**WORKSPACE****Size** Regular **Location** Adequate (20 feet), on either side of creek and upstream of Slater Road**Description** Flat land**Comments****WATER BODY****Name** TENNANT CREEK TRIBUTARY **Width** 30 feet**Depth Or Bank Height** 3 feet steep, lined with bulrushes**Bed Type** Mud and silt **Distance To Confluence** 1.0 mile to Silver Creek**LOGISTICS****Nearest Response Equipment** Laurel Station**Logistics Comment**

Helicopter: Good in field south-west of road and creek

Helicopter Operation Fair**Boat Launch** Not Required**Upstream Cp** SC-1.8**Downstream Cp** TL-0.8 & TL-0.1**STRATEGY**

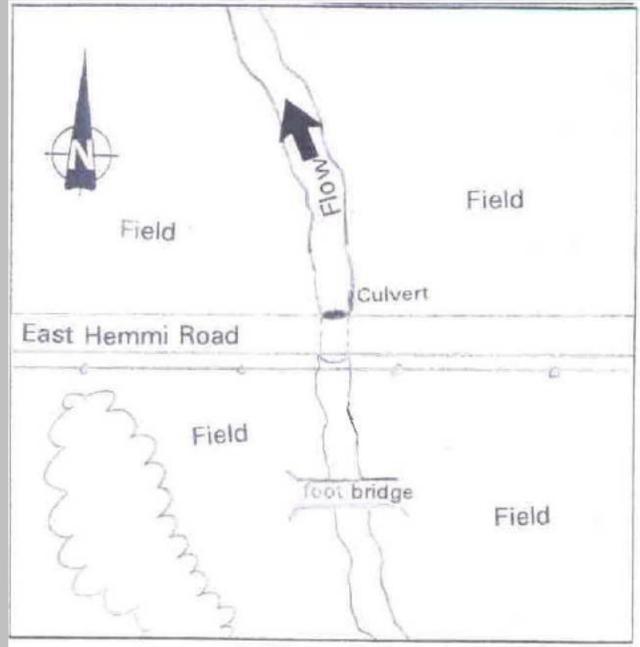
Comments

- Containment and recovery with board weir and disk skimmer and/or vacuum truck.
- Low, marsh ground. Vehicles will be restricted to parking at side of Slater Road.
- No vehicle access to work areas.
- At low flow, a mud/grass causeway appears across mouth of culverts.

PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) N
Description/Comment



BEST ACCESS



KINDER MORGAN
CAMBI, INC.

EMERGENCY RESPONSE

Best Access:

TL-1.0

Oct 22, 2009

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Best Access Driving Instruction

From Interstate 5, take exit 260 and proceed west on Slater Road to culvert.

Control Point Name SLATER ROAD **Control Point** UC-1.6

Review Date 9/26/2005

Location Just before culvert under Slater Road within Tosco Refinery yard. **Land Owner** ConocoPhillips Refinery

WORKSPACE

Size Small **Location** Limited, adjacent to unnamed creek, but good on Tosco property

Description ConocoPhillips Refinery property and road side

Comments

WATER BODY

Name UNNAMED CREEK (DRAINED FROM FERNDALE SCRAPER TRAP) **Width** 5 feet

Depth Or Bank Height 5 feet

Bed Type Gravel **Distance To Confluence** 1.6 miles to Lummi Bay

LOGISTICS

Nearest Response Equipment Laurel Station **Logistics Comment**

Helicopter Operation Poor

Boat Launch Not Required

Upstream Cp UC-2.0

Downstream Cp Lummi Bay

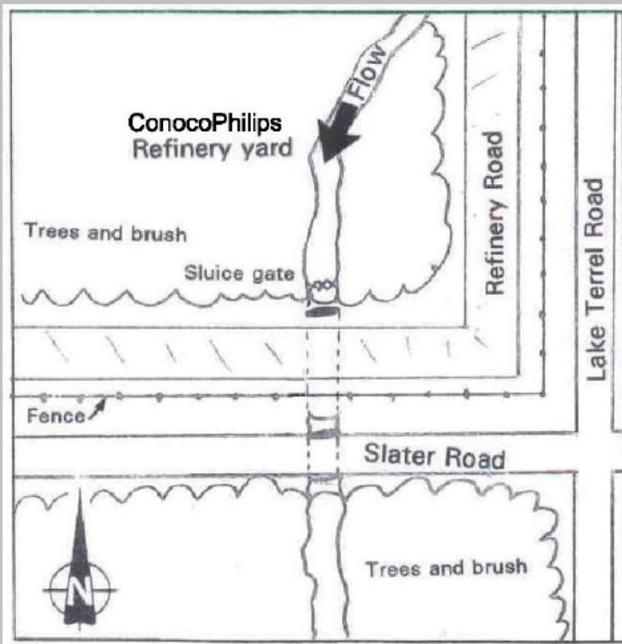
STRATEGY

Comments -Call ConocoPhillips Refinery and have them block sluice on their property. Recover with vacuum trucks and/or disk skimmer.
-This creek does not cross the pipeline but drains the area south of Ferndale Scrapper Trap. It is an independent system. The creek enters Lummi Indian land south of Slater Road.

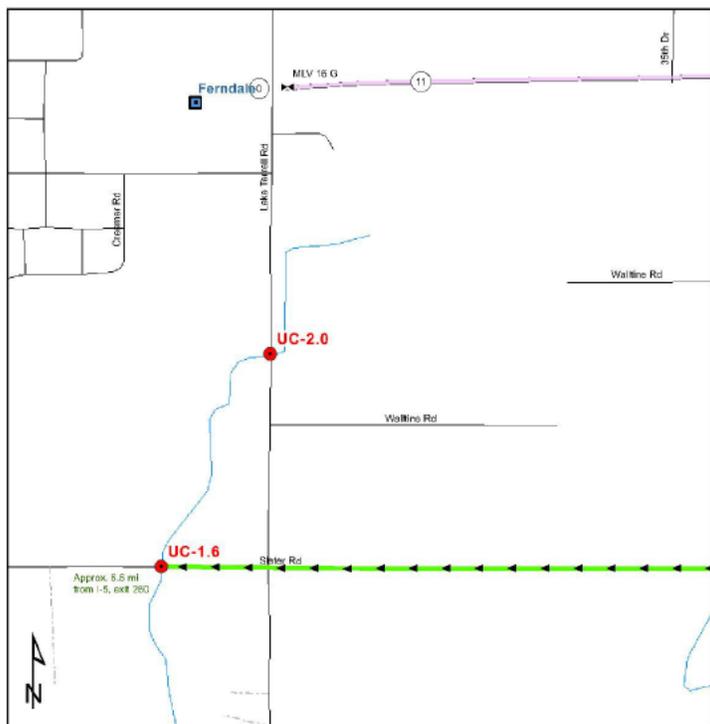
PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) N
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, take exit 260 and proceed west on Slater to Unnamed Creek culvert as it exits ConocoPhillips Refinery's property, just west of Lake Terrell Road.



EMERGENCY RESPONSE

Best Access:

UC-1.6

Oct 22, 2009

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LAKE TERRELL ROAD

UC-2.0

(b) (7)(F)

Review Date

9/26/2005

Location At Unnamed Creek culvert entering Conoco/Phillips refinery on Terrell Road.**Land Owner** ConocoPhillips Refinery**WORKSPACE****Size** Small **Location** Adequate at culvert. Good inside ConocoPhillips property**Description** Road side and ConocoPhillips property**Comments****WATER BODY****Name** UNNAMED CREEK (DRAINED FROM FERNDAL E SCRAPER TRAP) **Width** 5 feet**Depth Or Bank Height** 5 feet**Bed Type** Gravel **Distance To Confluence** 2.0 miles to Lummi Bay**LOGISTICS****Nearest Response Equipment** Laurel Station**Logistics Comment**

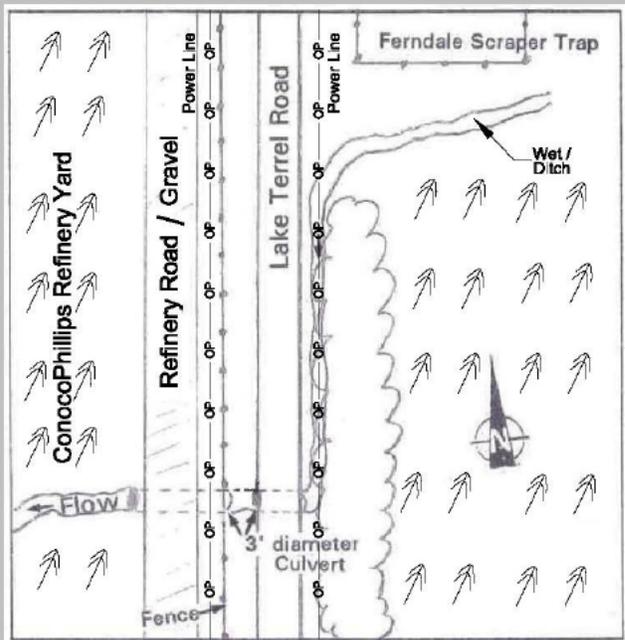
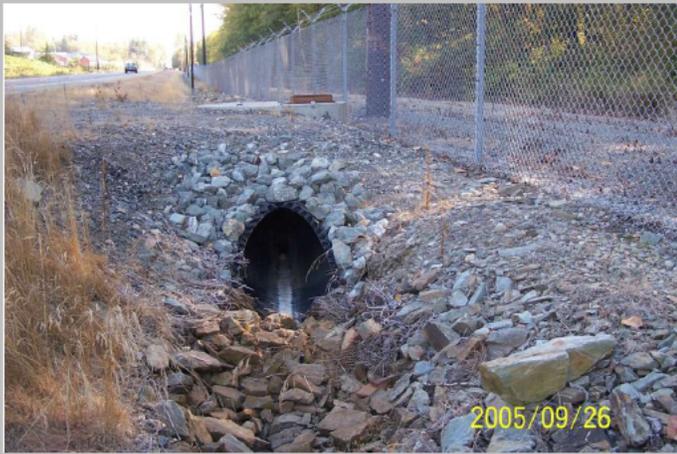
Helicopter: Good in fields close to Scrapper Trap

Helicopter Operation Fair**Boat Launch** Not Required**Upstream Cp** None**Downstream Cp** UC-1.6**STRATEGY****Comments** -Containment and recovery with board weir and disk skimmer and/or vacuum truck.
-Although this does not cross the pipeline, this creek drains the area south of the Ferndale Scrapper Trap. It is an independent system.

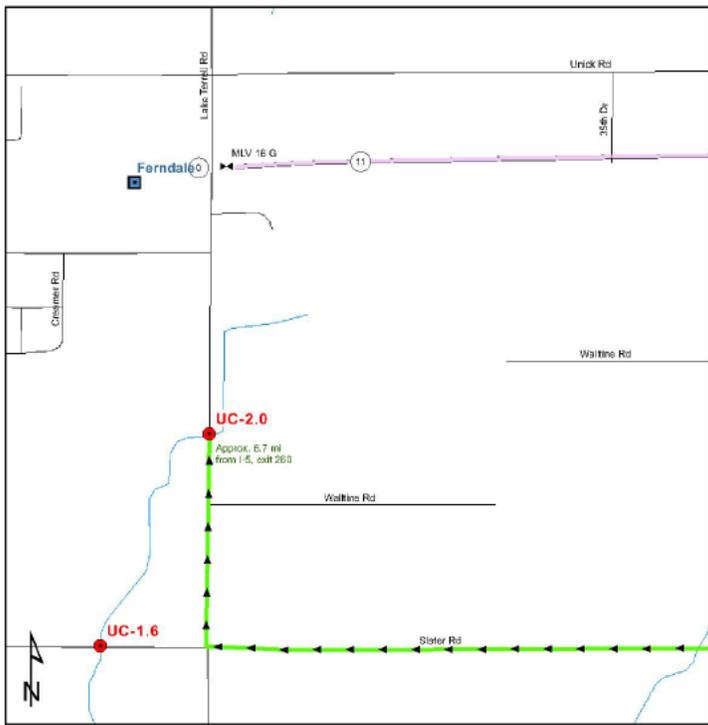
PICTURE

CAD DRAWING

Date 9/26/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) S
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, take exit 260 and proceed west along Slater Road to Lake Terrell Road. Proceed north on Lake Terrell Road to culvert entering ConocoPhillips Refinery.



EMERGENCY RESPONSE

Best Access:
UC-2.0
 Oct 22, 2009



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Control Point Name WEST HOLLY STREET**Control Point**

WH-0.3

(b) (7)(F)

Review Date

9/27/2005

Location Approximately 550 West Holly Street at road bridge.**Land Owner** Unknown**WORKSPACE****Size** Regular **Location** Good on west creek bank**Description** Brush; grassy creek side**Comments****WATER BODY****Name** WHATCOM CREEK **Width** 100 feet**Depth Or Bank Height** East bank: very steep up to 20 feet. West bank: moderate slope (more accessible)**Bed Type** Mud **Distance To Confluence** 0.3 miles to Bellingham Bay**LOGISTICS****Nearest Response Equipment** Laurel Station**Logistics Comment****Helicopter Operation** Fair

Helicopter: Landing in Marine Heritage Park.

Boat: might need a John boat.

In case of emergency call: Earl Steele, Hatchery Manager; Tel.: (360) 715-8352, or Technical School; Tel.: (360) 676-6406

Boat Launch Not Required**Upstream Cp** WH-1.0**Downstream Cp** Bellingham Bay**STRATEGY**

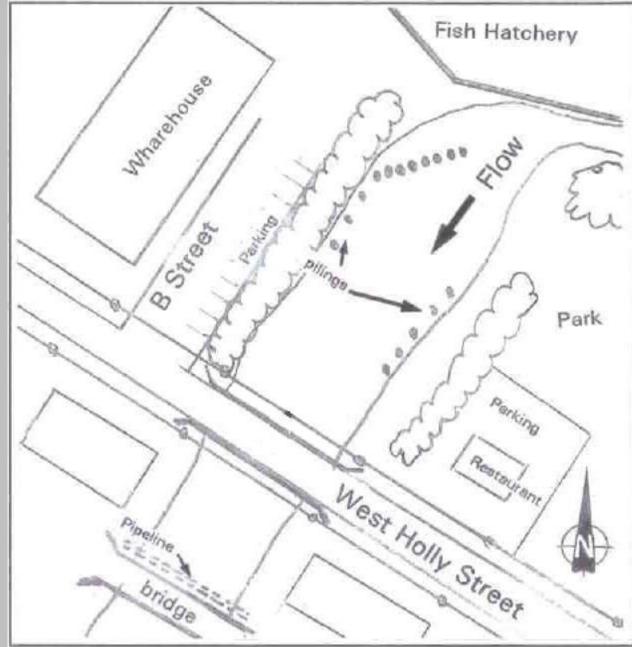
Comments

- Containment and recovery with approximately 400 feet of boom and weir skimmers.
- Fish rearing immediately upstream of this location.
- Tidal waters.
- Dinghy will be required. Large diameter pipe across river just downstream of site will prevent jet boat reaching area.

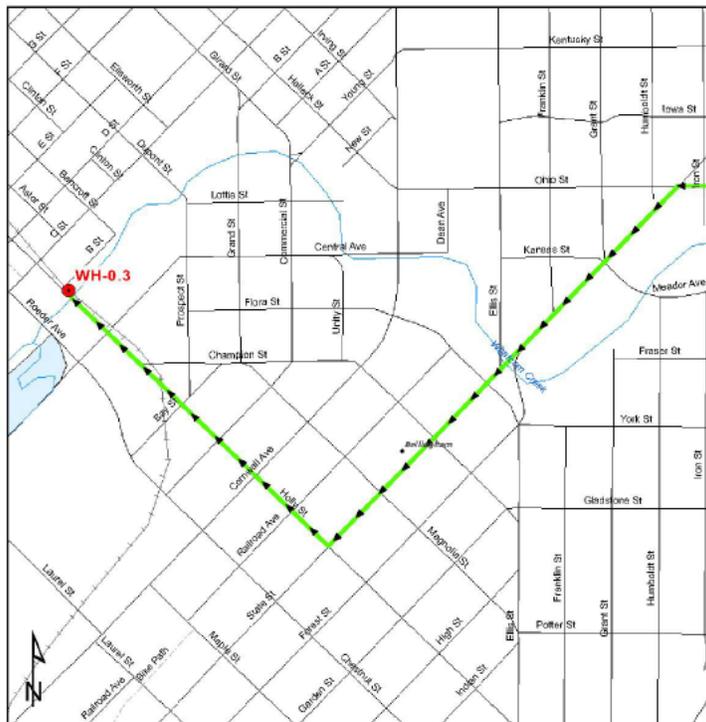
PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) N
Description/Comment



BEST ACCESS



Best Access Driving Instruction

From Interstate 5, take exit 254 and proceed west on Ohio street to get to State Street. Proceed to Holly Street, turn right and proceed to road bridge on West Holly Street.



EMERGENCY RESPONSE

Best Access:

WH-0.3

Oct 22, 2009

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Control Point Name JAMES STREET**Control Point**

WH-1.0

(b) (7)(F)

Review Date

9/27/2005

Location Approximately 1800 James Street at road bridge.**Land Owner** Unknown**WORKSPACE****Size** Regular **Location** 40 x 80 feet on east side. Steep on west side caused by terraced rock filled wire baskets.**Description** Sloping grassy bank. Will require weed eaters.**Comments** Ample parking if car sales lots on either side of creek could be cleared.**WATER BODY****Name** WHATCOM CREEK **Width** 50 feet**Depth Or Bank Height** 20 feet sloping. Very steep**Bed Type** Cobble and pebble **Distance To Confluence** 1.0 miles to Bellingham Bay**LOGISTICS****Nearest Response Equipment** Laurel Station**Logistics Comment**

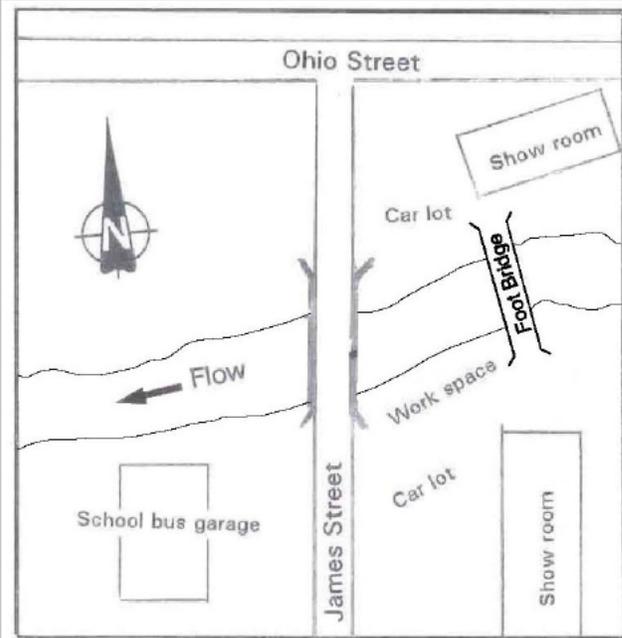
Helicopter: Good if car lots cleared. (Diehl Ford dealer)

Helicopter Operation No**Boat Launch** Not Required**Upstream Cp** NONE**Downstream Cp** WH-0.3**STRATEGY****Comments** Contain and recover with approximately 100 feet of boom and weir skimmer.

PICTURE

CAD DRAWING

Date 9/27/2005 **Position (Looking At)** Up Stream
Orientation (Looking At) NE
Description/Comment



BEST ACCESS



KINDER MORGAN
CAMBI, INC.

EMERGENCY RESPONSE

Best Access:

WH-1.0

Oct 22, 2009

KGI'S_GROUP\GIS_PROJECT\PUGET_SOUND\HS\CONTROL_POINTS\
 ControlPointBestAccess\Map\Puget_BestAccess.mxd



Best Access Driving Instruction

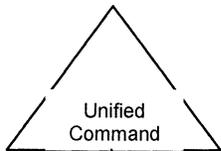
Leave Interstate 5 at exit 254. Proceed west on Ohio Street for 50 yards, then left on James Street for 30 yards.

9.0 FORMS

1. Incident Name	2. Prepared by: (name) Date _____ Time: _____	INCIDENT BRIEFING ICS 201-OS (pg 1 of 4)
3. Map/Sketch (include maps drawn here or attached, showing the total area of operations, the incident site/area, overflight results, trajectories, Impacted shorelines, or other graphics depicting situational and response status)		
INCIDENT BRIEFING	June 2000	ICS 201-OS (pg 1 of 4)

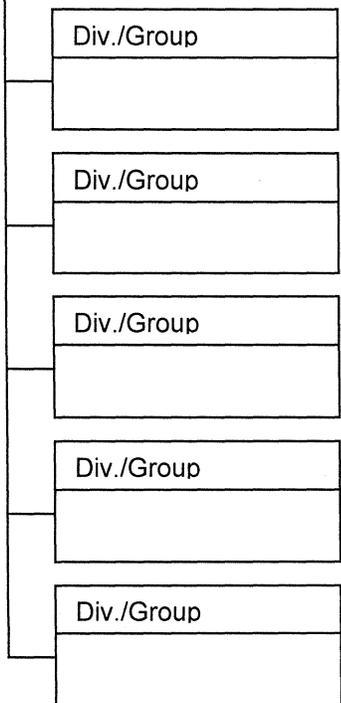
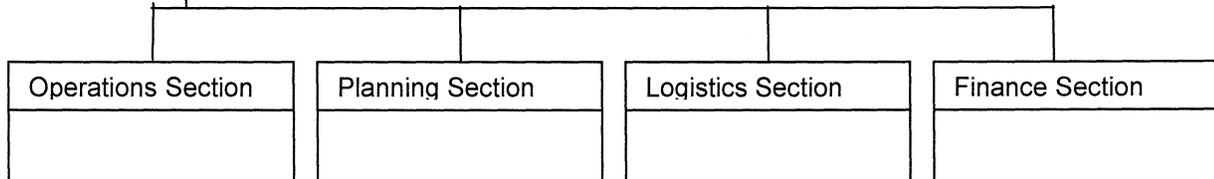
1. Incident Name	2. Prepared by: (name) Date _____ Time: _____	INCIDENT BRIEFING ICS 201-OS (pg 3 of 4)
------------------	--	---

3. Current Organization



FOSC _____
SOSC _____
RPIC _____

— Safety Officer _____
— Liaison Officer _____
— Information Officer _____





INITIAL SITE HEALTH & SAFETY PLAN

INCIDENT PARTICULARS					
Incident Name:			Date/ Time:		
Command Post Location:			Site Phone Number:		
Product:	Est. Vol:	m ³	MSDS Available: <input type="checkbox"/> Yes <input type="checkbox"/> No		
ICS 201 Form Initiated:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Person Responsible:			
Internal/ External Notifications Made:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Person Responsible:			
SITE CHARACTERIZATION					
<input type="checkbox"/> Pipeline	<input type="checkbox"/> Storage Facility	<input type="checkbox"/> Truck	<input type="checkbox"/> Land	<input type="checkbox"/> Water	<input type="checkbox"/> Other (please specify)
SITE SECURITY & ACCESS POINTS					
Description:					
SITE HAZARDS					
<input type="checkbox"/> Fire Explosion	<input type="checkbox"/> Equipment Operations	<input type="checkbox"/> Trenching Excavation	<input type="checkbox"/> Fatigue	<input type="checkbox"/> Slips, Trips, and Falls	
<input type="checkbox"/> Chemicals	<input type="checkbox"/> Motor Vehicles	<input type="checkbox"/> Confined Spaces	<input type="checkbox"/> Heat Stress	<input type="checkbox"/> Restricted Work Area	
<input type="checkbox"/> Electrical	<input type="checkbox"/> Boat Operations	<input type="checkbox"/> UV Radiation	<input type="checkbox"/> Cold Stress	<input type="checkbox"/> Heavy Lifting	
<input type="checkbox"/> Steam/ Hot Water	<input type="checkbox"/> Helicopter Operations	<input type="checkbox"/> Overhead/ Buried Utilities	<input type="checkbox"/> Weather	<input type="checkbox"/> Drum Handling	
<input type="checkbox"/> Noise	<input type="checkbox"/> Shore Line Operations	<input type="checkbox"/> Pumps and Hoses	<input type="checkbox"/> Visibility	<input type="checkbox"/> Plants/ Wildlife	
<input type="checkbox"/> Other:					
ATMOSPHERIC MONITORING – INITIAL READING					
O ₂	%	LEL	%	Other (specify):	
H ₂ S	ppm	Benzene	ppm		
NOTE: Additional results to be recorded in 'Emergency Response/ Safety Watch Log'					
CONTROL MEASURES			SITE SETUP		
<input type="checkbox"/> Source of Release Secured			Communications Established <input type="checkbox"/> Yes <input type="checkbox"/> No		
<input type="checkbox"/> Site Secured			Hot Zone Established <input type="checkbox"/> Yes <input type="checkbox"/> No		
<input type="checkbox"/> Valve(s) Closed			Fire Extinguisher Accessible <input type="checkbox"/> Yes <input type="checkbox"/> No		
<input type="checkbox"/> Energy Sources Locked/ Tagged Out			Decontamination Stations Established <input type="checkbox"/> Yes <input type="checkbox"/> No		
<input type="checkbox"/> Facility Shut Down			Illumination Equipment Provided <input type="checkbox"/> Yes <input type="checkbox"/> No		
<input type="checkbox"/> Other:			Medical Surveillance Provided <input type="checkbox"/> Yes <input type="checkbox"/> No		
			Sanitation Facilities Provided <input type="checkbox"/> Yes <input type="checkbox"/> No		
HOT ZONE PPE REQUIREMENTS					
General		Other		Respiratory	
<input type="checkbox"/> Hard Hat	<input type="checkbox"/> Face Shield	<input type="checkbox"/> Rubber boots	<input type="checkbox"/> Leather gloves	<input type="checkbox"/> SABA/ Air Line w/ Esc	<input type="checkbox"/> Cartridge Type OV
<input type="checkbox"/> FR Clothing	<input type="checkbox"/> Tinted Lens	<input type="checkbox"/> High Vis. Vests	<input type="checkbox"/> Nitrile gloves	<input type="checkbox"/> SCBA to be worn	<input type="checkbox"/> Cartridge Type P(M)-100
<input type="checkbox"/> Steel toes	<input type="checkbox"/> Impact Goggles	<input type="checkbox"/> PFD's	<input type="checkbox"/> Rubber gloves	<input type="checkbox"/> SCBA to be avail. #	<input type="checkbox"/> Cartridge Type P(M)-100/OV
<input type="checkbox"/> Safety Glasses	<input type="checkbox"/> Chemical Res. Clothing	<input type="checkbox"/> Safety Harness	<input type="checkbox"/> Hearing Protection	<input type="checkbox"/> Air Purifying (full mask)	
		<input type="checkbox"/> FR Rain Gear	<input type="checkbox"/> FR Tyvek	<input type="checkbox"/> Air Purifying (half mask)	
WARM ZONE PPE REQUIREMENTS					
General		Other		Respiratory	
<input type="checkbox"/> Hard Hat	<input type="checkbox"/> Face Shield	<input type="checkbox"/> Rubber boots	<input type="checkbox"/> Leather gloves	<input type="checkbox"/> SABA/ Air Line w/ Esc	<input type="checkbox"/> Cartridge Type OV
<input type="checkbox"/> FR Clothing	<input type="checkbox"/> Tinted Lens	<input type="checkbox"/> High Vis. Vests	<input type="checkbox"/> Nitrile gloves	<input type="checkbox"/> SCBA to be worn	<input type="checkbox"/> Cartridge Type P(M)-100
<input type="checkbox"/> Steel toes	<input type="checkbox"/> Impact Goggles	<input type="checkbox"/> PFD's	<input type="checkbox"/> Rubber gloves	<input type="checkbox"/> SCBA to be avail. #	<input type="checkbox"/> Cartridge Type P(M)-100/OV
<input type="checkbox"/> Safety Glasses	<input type="checkbox"/> Chemical Res. Clothing	<input type="checkbox"/> Safety Harness	<input type="checkbox"/> Hearing Protection	<input type="checkbox"/> Air Purifying (full mask)	
		<input type="checkbox"/> FR Rain Gear	<input type="checkbox"/> FR Tyvek	<input type="checkbox"/> Air Purifying (half mask)	
TRAINING AND REVIEW					
Hazwoper Training Records Verified for U.S.A. Operations <input type="checkbox"/> Yes <input type="checkbox"/> No			All Responders have reviewed this Plan <input type="checkbox"/> Yes <input type="checkbox"/> No		
Completed by:					



SITE HEALTH & SAFETY PLAN

This document is intended to facilitate the rapid development of a written site health and safety plan (SHSP) during the emergency and post emergency phases of an incident response. It is intended to address all health & safety aspects for response personnel. SHSPs help mount a rapid response to an oil release, or other type of incident in a safe manner, as well as, provide readily available information to all affected parties.

INCIDENT PARTICULARS					
Incident Name:		Date/ Time:			
Command Post Location:		Site Phone Number:			
Product:		Estimated Volume:		MSDS Available:	<input type="checkbox"/> Yes <input type="checkbox"/> No
ICS 201 Form Initiated:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Person Responsible:			
Internal/ External Notifications Made:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Person Responsible:			
SITE CHARACTERIZATION					
<input type="checkbox"/> Land	<input type="checkbox"/> Water	<input type="checkbox"/> Other (please specify)			
IMPACTED ASSETS					
<input type="checkbox"/> Pipeline	<input type="checkbox"/> Storage Facility	<input type="checkbox"/> Truck	<input type="checkbox"/> Other (please specify)		
WEATHER			WIND		
<input type="checkbox"/> Clear	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Fog	<input type="checkbox"/> Calm (0.5 km/ hr; 0.3 mi./ hr)		
<input type="checkbox"/> Rain	<input type="checkbox"/> Freezing Rain	<input type="checkbox"/> Hail	<input type="checkbox"/> Light (5-15 km/ hr; 3-10 mi./ hr)		
<input type="checkbox"/> Snow	<input type="checkbox"/> Lightning		<input type="checkbox"/> Moderate (15-30 km/ hr; 10-20 mi./ hr)		
			<input type="checkbox"/> Strong (30+ km/ hr; 20+ mi./ hr)		
SITE SECURITY & ACCESS POINTS					
Description:					
SITE HAZARDS					
<input type="checkbox"/> Fire/ Explosion	<input type="checkbox"/> Equipment Operations	<input type="checkbox"/> Trenching/ Excavation	<input type="checkbox"/> Fatigue	<input type="checkbox"/> Slips, Trips, and Falls	
<input type="checkbox"/> Chemicals	<input type="checkbox"/> Motor Vehicles	<input type="checkbox"/> Confined Spaces	<input type="checkbox"/> Heat Stress	<input type="checkbox"/> Restricted Work Area	
<input type="checkbox"/> Electrical	<input type="checkbox"/> Boat Operations	<input type="checkbox"/> UV Radiation	<input type="checkbox"/> Cold Stress	<input type="checkbox"/> Heavy Lifting	
<input type="checkbox"/> Steam/ Hot Water	<input type="checkbox"/> Helicopter Operations	<input type="checkbox"/> Overhead/ Buried Utilities	<input type="checkbox"/> Weather	<input type="checkbox"/> Drum Handling	
<input type="checkbox"/> Noise	<input type="checkbox"/> Shore Line Operations	<input type="checkbox"/> Pumps and Hoses	<input type="checkbox"/> Visibility	<input type="checkbox"/> Plants/ Wildlife	
				<input type="checkbox"/> Other:	
ATMOSPHERIC MONITORING – INITIAL READING					
O ₂	%	LEL	%	Other (specify):	
H ₂ S	ppm	Benzene	ppm		
NOTE: Additional results to be recorded in 'Event/ Safety Watch Log'					
CONTROL MEASURES			SITE SETUP		
<input type="checkbox"/> Source of Release Secured			Communications Established	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<input type="checkbox"/> Site Secured			Work Zones Established	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<input type="checkbox"/> Valve(s) Closed			Fire Extinguisher Accessible	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<input type="checkbox"/> Energy Sources Locked/ Tagged Out			Decontamination Stations Established	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<input type="checkbox"/> Facility Shut Down			First Aid Stations Established	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<input type="checkbox"/> Other			Illumination Equipment Provided	<input type="checkbox"/> Yes <input type="checkbox"/> No	
			Medical Surveillance Provided	<input type="checkbox"/> Yes <input type="checkbox"/> No	
			Sanitation Facilities Provided	<input type="checkbox"/> Yes <input type="checkbox"/> No	

SITE HEALTH & SAFETY PLAN

GENERAL SITE REQUIREMENTS

- 1) Personnel entering the site must **Sign-in** at the Field Command Post or designated area, and must **Sign-out** before leaving the site.
- 2) Personnel entering the site for the first time must attend a **Pre-Entry Briefing** at the Field Command Post before they will be permitted site entry. The briefing will cover the Site Health and Safety Plan and the site specific hazards present.
- 3) The spill site has a “No Smoking” policy – Security at the Field Command Post will give directions to the designated “Smoking Area”.
- 4) Cameras and other electronic devices are not permitted on the Site unless approval has been given by the Health and Safety Department
- 5) All Injuries or Unsafe Activities/ Conditions shall be immediately reported to the Work Leader or the Safety Watch.
- 6) Site Emergency – 3 blasts of air horn or megaphone (unless otherwise advised) – all personnel must immediately leave the area and report to the Field Command Post.
- 7) The site will be divided into work zones with access control points. As a minimum, personnel will always work in pairs. Personnel must follow decontamination procedures when exiting the work zones.

THE BUDDY SYSTEM IS MANDATORY FOR EVERYONE ON SITE

HEALTH & SAFETY BRIEFINGS/ MEETINGS

1. All personnel, employees, contractors, and subcontractors shall be provided with an initial site safety briefing to communicate the nature, level and degree of hazards expected on site.
2. Personnel will also receive regular briefings before and after each shift, before making a hot zone level entry, or when significant changes are made in the work procedures or safety plans. These site safety meetings/ briefings shall be held by the on-scene commander or safety watch. At a minimum these meeting will describe the work to be accomplished, discuss safety procedure changes, and note any items which need to be passed to other crews. General safety training topics should also be covered based on points raised in previous meetings and the site health and safety plan attachments.
 - The Tailgate Meeting Form should be utilized for this purpose.

LOCAL SOURCES OF ASSISTANCE

General: When calling emergency responders provide the following information to the responding agency: *(see Emergency Numbers for Ambulance, Fire and Police)*

Type of Emergency:

Incident Location and directions to incident: (e.g. SW25-53-11-W5, Highway 16, South RR 11)

Ambulance	Name:		Telephone:	
Fire Dept.	Name:		Telephone:	
Police Dept.	Name:		Telephone:	
Hospital	Name:		Telephone:	

Directions To Hospital:

Travel Time:

PRODUCT INFORMATION

Hazardous Material (Known or Suspected): The following are the products that could be expected to be in the vicinity of the incident. (Obtain copies of MSDS)

Material:		MSDS Number:		Quantity:	
Material:		MSDS Number:		Quantity:	



SITE HEALTH & SAFETY PLAN

Toxicological Hazards:				
<input type="checkbox"/> Inhalation				
<input type="checkbox"/> Ingestion				
<input type="checkbox"/> Skin				
Substance:	PEL/ TLV:	IDLH:		
Substance:	PEL/ TLV:	IDLH:		
Substance:	PEL/ TLV:	IDLH:		
Future weather conditions that may affect Incident Site:				
Job Assignment/ Task	Cold Zone	Warm Zone	Hot Zone	
General Labour on Land				
General Labour on Water				
Equipment Operator				
Vac-Truck Operator/ Crew				
Site Assessment/ Investigation				
Boom Deployment/ Maintenance				
Welder				
Corrosion/ Coating				
Wildlife Hazing				
Decon Workers				
Land/ Water Surveillance				
Supervisory Personnel				
Select the appropriate level of PPE for each of the applicable Job Assignment/ Tasks from the following list, as well as, any additional PPE that is required. (e.g. Level C, 7 and 11).				
PPE REQUIREMENTS				
Level A	Level B	Level C	Level D	Additional PPE
Not used by Company Employees	SCBA (or Air Line with escape back)	Full/ Half face air purifying respirator	Flame Resistant or normal work clothing	1. Hard hat 10. High Vis vests 19. SABA/ air lines w/ Esc 2. FR Clothing 11. PFD's 20. SCBA to be worn 3. Steel toes 12. Safety Harness 22. SCBA to be avail. # 4. Safety Glasses 13. FR rain gear 23. Air Purifying (full mask) 5. Face Shield 14. Leather Gloves 24. Air Purifying (half mask) 6. Tinted Lens 15. Nitrile gloves 25. Cartridge Type OV 7. Splash Goggles 16. Rubber Gloves 26. Cartridge Type P(M) – 100 8. Chemical resist. clothing 17. Hearing Protection 27. Cartridge Type P(M)-100/ OV 9. Rubber boots 18. FR Tyvek
	Flame Resistant or Coated Tyvex	Flame Resistant or Coated Tyvex	Eye & face protection	
	Chemical resistant steel toe boots	Chemical resistant steel toe boots	Protective footwear	
	Chemical resistant gloves	Chemical resistant or leather gloves	Gloves	
		Eye protection		
	Hard hat			

SITE HEALTH & SAFETY PLAN

WORK ZONES

Control boundaries have been established in the site safety map below according to the following guidelines:

- The **HOT ZONE**, or **EXCLUSION ZONE**, is the area where contamination or product hazards are expected.
- The **WARM ZONE**, or **CONTAMINATION REDUCTION ZONE**, is a transition area between the **HOT ZONE** and the **COLD ZONE**. It is the area where a **DECONTAMINATION** is conducted for personnel and equipment leaving the **HOT ZONE**.
- The **COLD ZONE**, or **SUPPORT ZONE**, is an area adjacent to the **WARM ZONE** that is intended to remain safe and as free of contamination as possible.

SITE DIAGRAM

See Site diagram or Site Map from ICS form 201.

GENERAL DIAGRAM INSTRUCTIONS

1. Site Diagram should include the following:

<ol style="list-style-type: none"> a. Sketch with major feature locations (buildings, drainage paths, roads, etc.) b. Hazardous substance location c. Work zones (exclusion, contamination reduction, support) d. Command center and decontamination area e. Access and access restrictions f. Routes of entry 	<ol style="list-style-type: none"> f. Wind direction g. Emergency evacuation routes h. Assembly points i. First aid locations j. Communication system
--	--



SITE HEALTH & SAFETY PLAN

CONTINGENCY PLANS

In the event of an emergency (at this incident site) the person first noticing the emergency is to notify other workers in the immediate area. Evacuation must commence at once if the emergency poses any threat to the safety of the workers. Upon receiving notification of an emergency, the individual in charge of the work area is to take appropriate measures to protect human life, the environment (including wildlife) and property.

Escape Routes:

Evacuation Procedures:

Alerting Methods:

Muster Point:

MEDICAL SURVEILLANCE

Special medical monitoring required:

Urinary/ Phenol
 Blood Test
 Chest X-ray
 Other:

Procedure:

Facility to perform medical testing/ monitoring

NAME:

LOCATION:

HAZWOPER (US OPERATIONS ONLY)

Personnel are required to be trained in accordance with 29CFR 1910.120 for the level at which they are performing duties. Personnel approaching the release and performing offensive actions are to meet the Hazardous Materials Technician Level. Personnel working away from the release area performing defensive actions are to be trained at the First Responder – Operational Level.

Site specific training required: In addition to the training requirements above, the following site specific training topics are to be reviewed prior to work on the site:

Site Hazards (material released, physical hazards, etc.)

Work areas/ activities identified

Site Emergency Alerting/ Contingency Plan

Evacuation Route/ Assembly Areas

Required PPE

Obtaining Medical Treatment/ First Aid

Decontamination procedures

SITE HEALTH & SAFETY PLAN

Other Types of Training:

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

INCLUDED ATTACHMENTS:

Amendment form

Tailgate meeting form

- Wild Animals: Ungulates, Reptiles & Insects; ref. H&S Standards Manual Section 4, #417
- Boat operation; ref. H&S Standards Manual Section 6, #603
- Thermal Stress (Cold & Hypothermia); ref. H&S Standards Manual Section 4, #423, #424
- Confined Space Entry; ref. H&S Standards Manual Section 7, #701
- Cranes & Mechanical Lifting Equipment; ref. H&S Standards Manual Section 5, #511
- Manual lifting; ref. H&S Standards Manual Section 5, #523
- Organic Solvents; ref. H&S Standards Manual Section 4, #409
- Hydrogen Sulfide; ref. H&S Standards Manual Section 4, #406
- Helicopter Safety; ref. H&S Standards Manual Section 6, #605
- PPE; ref. H&S Standards Manual Section 5, #527
- Sanitation Requirement; ref. H&S Standards Manual Section 5, #532
- Traffic Safety; ref. H&S Standards Manual Section 6, #609
- Action levels; ref. H&S Standards Manual Section 5, #502
- MSDS
- Medical Monitoring Form
-
-

Note: Air Monitoring Results, and Hot Zone Personnel Tracking is to be documented in the Emergency Response/ Safety Watch Log

PLAN PREPARATION

Prepared by:

Date:

Time:

Signature:

Prepared by:

Date:

Time:

Signature:

ALL RESPONSE PERSONNEL ARE TO REVIEW THE SITE HEALTH & SAFETY PLAN

AMENDMENTS TO SITE SPECIFIC HEALTH & SAFETY PLAN

This Site Health and Safety Plan is based on information available at the time of preparation. Unexpected conditions may arise which necessitate changes to this plan. It is important that personal protective measures be thoroughly assessed prior to and during the planned activities. Unplanned activities and/ or changes in the hazard status should initiate a review of major changes in this plan.

Changes in the hazard status or unplanned activities are to be submitted on "Amendments to Site Health and Safety Plan" which is included as Page _____ of this plan.

Amendments must be approved by the Safety Officer prior to implementation of amendment.

All notes, documentation and records must NOT be discarded after their use. Documents are to be submitted to Documentation (Planning Section) for records retention.

SITE HEALTH & SAFETY PLAN

AMENDMENTS TO SITE HEALTH & SAFETY PLAN

Changes in field activities or hazards:

Proposed Amendment:

Proposed By:

Date:

Approved By:

Date:

Amendment
Number

Amendment
Effective Date

Time:



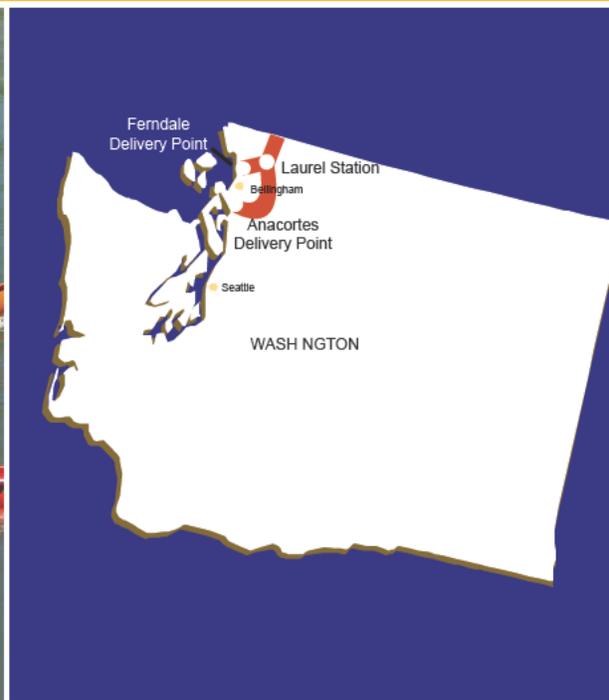
TAILGATE MEETING MINUTES

Location:	Date	MM DD YYYY	Time	HH MM	
Description of work to be performed:					
HAZARD IDENTIFICATION AND SAFETY DISCUSSION (Check and discuss all relevant hazards)					
<input type="checkbox"/> Flammables/ Combustibles/ Explosives	<input type="checkbox"/> Overhead Work/ Suspended Loads/ Chains/ Slings	<input type="checkbox"/> High Noise Levels			
<input type="checkbox"/> Trapped or Stored Pressure/ Energy	<input type="checkbox"/> Falling from Heights	<input type="checkbox"/> Walking/ working surfaces			
<input type="checkbox"/> Hazardous/ Toxic Substances	<input type="checkbox"/> Slips/ trips and falls	<input type="checkbox"/> Insect bites/ bird droppings			
<input type="checkbox"/> Pinch Points/ Moving/ Rotating Equipment	<input type="checkbox"/> Radiation	<input type="checkbox"/> Sharp Edges			
<input type="checkbox"/> Electrical Current	<input type="checkbox"/> Extreme Heat/ Cold	<input type="checkbox"/> Animals			
<input type="checkbox"/> Traffic	<input type="checkbox"/> Exertion/ Heavy Lifting	<input type="checkbox"/> Other			
<input type="checkbox"/> Working in awkward positions	<input type="checkbox"/> Weather (ice, snow, rain)	<input type="checkbox"/> Other			
REQUIRED HAZARD CONTROLS (Check applicable)					
<input type="checkbox"/> Gas Detection (Available & Calibrated)	<input type="checkbox"/> Signage and/ or Barricades Provided	<input type="checkbox"/> Emergency Retrieval Equipment			
<input type="checkbox"/> Mechanical & Electrical Lockout Complete	<input type="checkbox"/> Traffic Control	<input type="checkbox"/> Full Body Harness w/ "D" Ring			
<input type="checkbox"/> Safety Watch	<input type="checkbox"/> Grounding and/ or bonding in place	<input type="checkbox"/> Life Lines & Lanyards			
<input type="checkbox"/> Proper Ventilation	<input type="checkbox"/> MSDS Available & Reviewed	<input type="checkbox"/> 2 Way Radios			
<input type="checkbox"/> Piping/ Vessel Isolated	<input type="checkbox"/> Fire Extinguishers	<input type="checkbox"/> Other			
<input type="checkbox"/> Trained/ Cert. Personnel Available	<input type="checkbox"/> Lighting (Class 1, Div. 1- Explosion Proof)	<input type="checkbox"/> Other			
REQUIRED PERSONAL PROTECTIVE EQUIPMENT (Check applicable)					
General	Other			Respiratory	
<input type="checkbox"/> Hard Hat	<input type="checkbox"/> Face Shield	<input type="checkbox"/> Rubber boots	<input type="checkbox"/> Leather gloves	<input type="checkbox"/> SABA/ Air Line w/ Esc	<input type="checkbox"/> Cartridge Type OV
<input type="checkbox"/> FR Clothing	<input type="checkbox"/> Tinted Lens	<input type="checkbox"/> High Vis. Vests	<input type="checkbox"/> Nitrile gloves	<input type="checkbox"/> SCBA to be worn	<input type="checkbox"/> Cartridge Type P-100
<input type="checkbox"/> Steel toe boots	<input type="checkbox"/> Impact Goggles	<input type="checkbox"/> PFD's	<input type="checkbox"/> Rubber gloves	<input type="checkbox"/> SCBA to be avail. #	<input type="checkbox"/> Cartridge Type P-100/ OV
<input type="checkbox"/> Safety Glasses	<input type="checkbox"/> Chemical Res. Clothing	<input type="checkbox"/> Safety Harness	<input type="checkbox"/> Ear Protection	<input type="checkbox"/> Air Purifying (full mask)	
				<input type="checkbox"/> Air Purifying (half mask)	
ADDITIONAL TOPICS/ HAZARDS & HAZARD CONTROLS – identified and discussed					
EMERGENCY PREPARATION					
<input type="checkbox"/> ERP	<input type="checkbox"/> Muster Areas	<input type="checkbox"/> Communication Equipment	<input type="checkbox"/> Means of Egress	<input type="checkbox"/> Emergency Equipment	
<input type="checkbox"/> Designated First Aid Attendant:			<input type="checkbox"/> First Aid equipment available	<input type="checkbox"/> Other	
JOB INTERRUPTION					
Were additional hazards identified during the work?			<input type="checkbox"/> Yes	<input type="checkbox"/> No	
If yes, list them here:					
Additional Comments:					
Company Meeting Facilitator:					



TAILGATE MEETING MINUTES

Name	Company
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	
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Emergency Response Plan - E.R.P.

Puget Sound

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Plan Implementation

This Emergency Response plan will be implemented for any response to any emergency in the Puget Sound operating area either real or simulated. If another plan is deemed more appropriate to the situation the decision to use such plan will be first approved by the state and federal on-scene coordinators along with the incident commander from Kinder Morgan.

Plan Maintenance

Responsibility

Single point accountability for the Puget Sound Pipeline Emergency Response Plan development and maintenance rests with the Emergency Response and Security Advisor. This accountability is for:

- Ensuring the systems (ICS) and response structure are in place and able to meet the requirements set out in the Plan, and
- Ensuring a minimum annual audit of the Plan takes place, and that the plan is reviewed in full every 5 years. Any revisions will be distributed to WDOE and PHMSA for review and approval or if no plan changes are needed a letter will be sent to the WDOE and PHMSA confirming the existing plan is still accurate as per WAC 173-182-140.

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/corrections to 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 Emergency Response and Security Advisor 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 Response and Security Group as specified. Only revisions to the Distribution List will not be distributed to all manual holders, however they will be maintained electronically. All other changes will be distributed to all manual holders in a timely manner. A revised date is shown at the bottom of each updated or new page. The original revision date of the manual is 07/2013. All revisions will be tracked on the Control Sheet.

Revisions after a Release or an Exercise

In the event that Kinder Morgan Canada experiences a release (worst case or otherwise), or conducts an exercise or training session, the effectiveness of the plan will be evaluated and updated as necessary. The review of the plan may include a debrief with WDOE and/or PHMSA and/or other responding agencies, if appropriate especially when significant plan updates are identified or significant lessons can be recorded and implemented. The changes will be submitted to U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) and Washington Department of Ecology (WDOE) within 30 days.

Changes in Operating Conditions

If a new or different operating condition or information would substantially affect the implementation of the plan, Kinder Morgan Canada will modify the plan to address such a change, and within 30 days of making such a change, submit the change to PHMSA and WDOE, in addition to a 24 Hour notice of such changes occurring.

If at any point there is a permanent or temporary change in the personnel or response equipment described in this ERP, Kinder Morgan Canada will notify WDOE in writing within 24 hours of the change and provide a schedule for the prompt return of the plan to full operational status and a proposal for any backfill to compensate for the temporary significant changes. Changes that are considered significant include:

- the loss of equipment that results in being out of compliance with the planning standard either due to transfer out-of-region for spill response, or great than 10% of equipment is moved from its current location (boom, recovery and storage);
- a change or permanent loss of response personnel including initial response personnel, command and general staff, the binding agreement signer;
- changes to the type of oil handled, storage capacity, handling transporting or processing of products;
- change in equipment ownership if used to satisfy planning standards; or
- modification or discontinuation of any mutual aid, letter of intent or contract agreement.

Notes: If the proposed change to the plan is to be made permanent, KMC will have 30 days from notification to distribute the amended pages of this ERP for review and approval by WDOE. If WDOE finds that the ERP no longer meets approval criteria, WDOE may place conditions on approval or disapprove the ERP.

The resulting changes to the plan will also be submitted to PHMSA within 30 days of the change occurring.



1-888-876-6711

Emergency Response Plan

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: Emergency Response and Security Advisor Kinder Morgan Canada 2700-300 - 5 th Avenue S.W. Calgary, AB T2P 5J2 Canada Fax: (403) 514-6401	

To be completed by Emergency Response and Security Advisor	
Date Received:	Comments:
Date Reviewed:	
Issued as Revision: Y/ N	
If No, reason for Rejection:	
Signature Emergency Response and Security Advisor	



Control Sheet

The control sheet will record revisions and updates to the plan. The log sheet will identify the section amended including date, and verification of notification to WDOE and PHMSA and the person who made the changes and the purpose of the changes, where applicable.

Revision Number	Date of Revision	Change(s)	Name
1	October 2012	New Issue ERP	Kelly Malinoski
2	July 16 2013	Updates to all sections to incorporate requirements for WDOE, and issue for approval. Updates to QI back-up and RSPA references in Section 16 as outlined in PHMSA letter dated June 18, 2013.	Kelly Malinoski
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Distribution

This Plan is a controlled document and all copies have been numbered prior to distribution. Copies are found in the locations shown below, or have been given to the person/organization listed.

No.	Issued To	Non Confidential	E-Copy
1	U.S. Department of Transportation – PHMSA		X
2	U.S. Department of Transportation – PHMSA		X
3	Department of Ecology, Washington		X
4	Department of Ecology, Washington*	X	X
5	Whatcom County Emergency Management		x
6	Skagit County Emergency Management		X
7	Utilities and Transportation Commission		X
8	Control Centre		
9	Control Centre (back up)		
10	Director, EHS Department		
11	Manager, Emergency Response & Security		
12	Manager, Environment		
13	Manager, Health and Safety		
14	EHS Coordinator (Puget Sound)		
15	Emergency Response and Security Advisor		
16	Director, Western Region		
17	Western Region Burnaby Office		
18	Sumas Station		
19	Supervisor, Puget Sound		
20	Laurel Station Control Room		
21	Anacortes Control Room		
22	Ferndale Station		
23	Operations Section Go-Box		
24	Planning Section Go-Box		
25	Logistics/Finance Section Go-Box		
26	Command Go-Box		
27	Spare		
28	Spare		
29	Spare		
30	Spare		

* Non-Confidential Copy for Public Review/Access

Acronyms

Acronym	Meaning
ADIOS	Automated Data Inquiry for Oil Spills
API	American Petroleum Institute
ASTM	American Society for Testing and Materials
ATV	All Terrain Vehicle
bbbl	Barrel
C	Centigrade (temperature)
CCG	Canadian Coast Guard
CHS	Canadian Hydrographic Service
cm	Centimetre
cm/s	Centimetre per second
cp	Centipoises
cs (cSt)	Centistokes
decon	Decontamination
DHP	Duty Harbour Pilot
DWT	Deadweight
EHS	Environment, Health and Safety
EMT	Emergency Medical Technician
ESI	Environmental Sensitivity Index
F	Fahrenheit (temperature)
FOSET	Fisherman's Oil Spill Emergencies Team
FSA	Forward Staging Area
ft	Feet
GIS	Geographic Information System
gpm	Gallons per Minute
GPS	Global Positioning Satellite
GRT	Gross Registered Tons
H ₂ S	Hydrogen Sulphide
Ha	Hectare
HAZMAT	Hazardous Materials
HAZWOPER	Hazardous Waste Operations and Emergency Response
HF	High Frequency
HFO	Heavy Fuel Oil
HP	Horsepower
HQ	Headquarters
HR	Human Resources
IACS	International Association of Classification Societies
IBRRC	International Bird Rescue and Rehabilitation Centre
IC	Incident Command (Commander)
ICLL	International Convention on Load Lines



Acronym	Meaning
ICP	Incident Command Post
ICS	Incident Command System
IMO	International Maritime Organisation
IMT	Incident Management Team
IPIECA	International Petroleum Industry Environmental Conservation Association
IR	Infra Red
IRG	Incident Response Guide
IRT	Initial Response Team (Tier 1)
ISF	International Shipping Federation
ISGOTT	International Safety Guide for Oil Tankers and Terminals
ISM	International Management Code for Safe Operations of Ships and for Pollution Prevention
ITOPF	International Tanker Owners Pollution Federation
ITZ	Intertidal Zone
IUCN	International Union for Conservation of Nature and Natural Resources
KBOD	Thousand Barrels of Oil per Day
kg	Kilogram
km	Kilometre
kts	Knots (nautical miles per hour)
kW	Kilowatt
l	Litre
LFO	Light Fuel Oil
LOA	Length Over all
LR	Lloyd's Register of Shipping
m	Metre
m ³	Cubic Meter
m/s	Metres per Second
MARPOL	Marine Pollution (International Convention for the Prevention of Pollution from Ships)
MB	Million Barrels
MCTS	Marine Communications and Traffic Services
MFO	Medium Fuel Oil
MGO	Marine Gas Oil
MHz	Megahertz
min	Minute
mm	Millimetre
MOV	Manually Operated Valve
MSDS	Material Safety Data Sheet
NAPL	Non-Aqueous Phase Liquids
NCP	National Contingency Plan
NEBA	Net Environmental Benefit Analysis
NGL	Natural Gas Liquid

Acronym	Meaning
NO ₂	Nitrogen Oxides
NOAA	National Oceanic and Atmospheric Administration (USA)
O ₂	Oxygen
OEL	Occupational Exposure Limit
OGC	Oil and Gas Commission
OHF	Oil Handling Facility
OPRC	Oil Pollution Preparedness, Response and Co-operation Convention 1990
Ops	Operations
OSC	On-Scene Commander
OSCP	Oil Spill Contingency Plan
OSHA	Occupational Safety and Health Administration (USA)
OSIC	On-Scene Incident Commander (Facility Manager/Designated IRT Supervisor)
OSR	Oil Spill Response
OSRL	Oil Spill Response Limited (UK)
OSRPs	Oil Spill Response Plans
OSRV	Oil Spill Response Vessel
PAHs	Polynuclear Aromatic Hydrocarbons
PC	Personal Computer (IBM based)
PEL	Permissible Exposure Limits
PEP	Provincial Emergency Program
PFD	Personal Flotation Device
PIC	Person In Charge
PM10	Particulate Matter having a diameter less than 10 microns
PPE	Personal Protective Equipment
ppm	Parts per Million
psi	Pounds per square inch (pressure)
PVC	Poly Vinyl Chloride
REET	Regional Environmental Emergencies Team
RO	Response Organization
SCAT	Shoreline Cleanup Assessment Team
SCBA	Self-Contained Breathing Apparatus
sec	Second
SO ₂	Sulfur Dioxide
SOLAS	(International Convention for) Safety of Life at Sea
SOS	Shoreline Oiling Summary
SSB	Single Side Band (Radio)
STEL	Short-term Exposure Limit
TLV	Threshold Limit Value
TRS	Tiered Response System
TWA	Time-weighted Average
UHF	Ultra High Frequency

Acronym	Meaning
UK	United Kingdom
USA	United States of America
UV	Ultra Violet
VCR	Videotape Cassette Recorder
VHF	Very High Frequency
VOSS	Vessel of Opportunity Skimming System
VRP	Vessel Response Plan
VTC	Vessel Traffic Control
VTS	Vessel Traffic Services
WCB	WorkSafe BC
WCMRC	Western Canada Marine Response Corporation

Introduction

Initial Incident Actions

The initial responder to arrive at a spill site will take some immediate actions to ensure responder and public safety and to protect the environment. The initial responder will complete the following tasks, if appropriate and safe to do so while waiting for the Qualified Individual(QI).

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 Supervisor immediately to activate the Emergency Response Line (ERL/ERL+) System as outlined in Section 2.
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 to the 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:



Emergency Actions

- 1 Responder Health & Safety
- 2 Alert Others (Internal and External Notifications)
- 3 Spill and Site Assessment
- 4 Spill Containment & Recovery
- 5 Protection of Sensitive Areas
- 6 Multiple Hazards



Support Information

- 7 Site Information
- 8 Incident Management
- 9 Operations/Response Equipment
- 10 Planning
- 11 Logistics
- 12 Finance/Administration
- 13 Wildlife Care
- 14 MSDS



Regulatory Information

- 15 Environmental Policy
- 16 Regulatory Background
- 17 Training and Exercises
- 18 Worst Case Calculations
- 19 Certifications

In the event of an incident, Kinder Morgan Canada will utilize the Incident Command System (ICS) to ensure a safe, comprehensive and effective response. This Plan includes initial objectives for the first

Operational Period of the incident (to be captured on the ICS 201) as well as objectives and strategies for subsequent Operational Periods.

Purpose of the Plan

This is the Emergency Response Plan (Spill Contingency Plan) for the assets operated by Trans Mountain Pipeline (Puget Sound) LLC. These entities are all referred to as "Kinder Morgan", "Kinder Morgan Canada" or "The Company".

The purpose of this Plan is to provide guidelines to quickly, safely and effectively respond to an emergency, in order to protect:

- Public and Company Personnel
- Public and Company Property
- The Environment

Regulatory Scope of the Plan

This Plan is intended to satisfy the requirements of the Oil Pollution Act of 1990 (OPA 90), and has been prepared in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and applicable Area Contingency Plans (ACP), EPA Regions V and VII Regional Contingency Plans. Specifically, this Plan is intended to satisfy The Pipeline Hazardous Material Safety Administration (PHMSA), and the Washington Department of Ecology (WDOE) requirements under Washington Administrative Code (WAC) 173-182.

Scope of the Plan

This Emergency Response Plan (ERP) will cover all emergencies that originate on the Puget Sound pipeline and/or associated stations in Washington State including spills, security incidents, natural hazards, explosions and fires. This plan will not cover the tactical response techniques for a fire, however it will cover the response actions for the effects of radiant heat and air monitoring for plumes (smoke or otherwise), on the public, that result from a fire event, and rate as requiring specific response actions as set out in the Emergency Response Risk Assessment. 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 within Washington State. 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 the state and federal on-scene coordinators.

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

Emergency Response Philosophy

On all emergency incidents, Kinder Morgan will follow the following basic response approach:

1. 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
 - Establish and announce command at the ICP, either at the incident scene location or, if necessary at a remote location
 - Establish and maintain an isolation perimeter, with hot, warm and cold zones
 - Establish staging area(s)

2. Size up the Situation

- A site assessment will identify the scope and nature of the incident, as well as any potential hazards to responders:
 - Recognize and identify any hazardous materials involved
 - Source of any releases
 - Potential exposures

3. 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 (MSDSs, etc.)
 - Conduct vapor monitoring

4. 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

5. Select and Don 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*.

6. 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

7. 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, fire-fighting, spill source control)
 - Defensive (i.e., protecting the public, fire control, spill response)
 - Non-intervention (protecting the public)

8. 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

9. 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.

Emergency Levels

The Kinder Morgan Canada 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 Kinder Morgan Incident Commander will invite the participation of Federal, State 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.	<ul style="list-style-type: none"> • 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
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.	<ul style="list-style-type: none"> • 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
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.	<ul style="list-style-type: none"> • Major emergency condition such as: <ul style="list-style-type: none"> ○ 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.

1.0 RESPONDER HEALTH AND SAFETY

It is important to understand that the different crude oils handled pose different hazards when spilled, depending on their chemical composition. Therefore, the primary hazards, and the need for vapor monitoring, and the cleanup techniques will depend on the characteristics and volume of crude oil spilled.

Many crude oils (including "sweet" crudes) can emit potentially dangerous levels of H₂S, and most crude oils also contain Benzene. Some crude oils have low flash points, especially during the initial hours after being spilled. In all of these cases, the risk of accidental ignition and/or the inhalation of toxic vapors must be mitigated, and a detailed site assessment (see Section 3) must be completed before on-scene operations are initiated. This assessment will be made by the Safety Officer.

Typically, the risks associated with the concentration of potentially-dangerous vapors will diminish with time, due to reduced vapor production as the lighter components volatilize, and vapors 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 vapors. Later, if the skin is broken and the oil disturbed, the oil might emit vapors normally associated with freshly-spilled oil. In all cases, the results of the initial site assessment should be used to develop a Safety and Health Plan.

The Initial Site Health & Safety Plan (ISHSP – Section 1.2) 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 Vapors

The need for respiratory protection will be determined by the Safety Officer after a review of the MSDS and data retrieved from the initial site assessment (see Section 3). If toxic vapor levels are determined to exceed safe working limits (see Section 3.4 for details), it might be possible for responders to work while wearing half-face respirators fitted with Organic cartridges. In this case, on-going vapor monitoring is essential to ensure that vapor 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 MSDS to determine the flash point of the material spilled and to perform vapor monitoring (for LEL). However, the MSDS does not replace the need for vapor monitoring. Whenever vapor levels are approaching 10% of the LEL for any spilled product, responders should leave the area immediately.

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 vessels/water and equipment. Special care should be taken when walking on oiled surfaces or shoreline, 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:
http://kmonline/business_units/KMC/Pages/EHS_Forms.aspx

1.3 Health and Safety Plan

The Health and Safety Plan form is available on the intranet site:
http://kmonline/business_units/KMC/Pages/EHS_Forms.aspx

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 Kinder Morgan 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 KMC or other personnel, and members of the public and/or Emergency Services (Police, Ambulance, Fire).

2.1.1 Automated -Spill Detection

(b) (7)(F)



- Training – all operators are compliant with DOT 195 Operator Qualification Requirements.

2.1.2 Automated - Fire Detection

Fire detection at Laurel Station consists of fire wire alarms in the foam dam area on the top of the two tanks. If a fire was to occur along the rim seal of either tank it will melt the wire which then alarms to the Control Centre and Laurel Station. All enclosed buildings on site have fire alarms which also alarm to the Control Centre and Laurel station.

2.1.3 Automated – Intrusion Alarm

All buildings at Laurel Station have intrusion alarms which send a signal to the alarm monitoring company who then begins a callout starting with the on-call person, district supervisor and finally the Control Centre.

2.1.4 Automated/Complaint Detection Verification

If the detection method comes from alarms to the CCO or a member of the public the potential incident must then be visually verified by KMC 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.

2.1.5 Early Detection Methods

Aerial patrol flights will be made at least 26 times a year, and will not to exceed 21 days apart. 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 at Laurel Station when employees perform daily scheduled inspections of the site. At Anacortes and Ferndale locations, inspections are performed during scheduled deliveries.

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 Kinder Morgan 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 a discharge and conduct preliminary assessment
- Notify their immediate supervisor and provide assessment results.

2.1.6 Detection in Adverse Weather

A conservative shutdown time of 15 minutes has been established for calculating worst case discharge. Line ruptures and tank failures that cause worst case spills in adverse weather conditions would normally be detected and acted upon within 5 minutes. In the event that visual detection cannot occur due to adverse weather, and/or low visibility the pipeline will be shut down for safety until detection can occur. Equipment that may be used in these situations includes vapor detection, and thermal/infrared imagery.

2.1.7 Detection of Spills to Groundwater

In an area where a spill occurs that is not on impermeable ground a contractor will be contacted to assist with the detection and ongoing evaluation of a spill that may impact groundwater. The contacts for the specific contractors can be found in Section 2.10 Support Services - Primary Response Contractors (PRC).

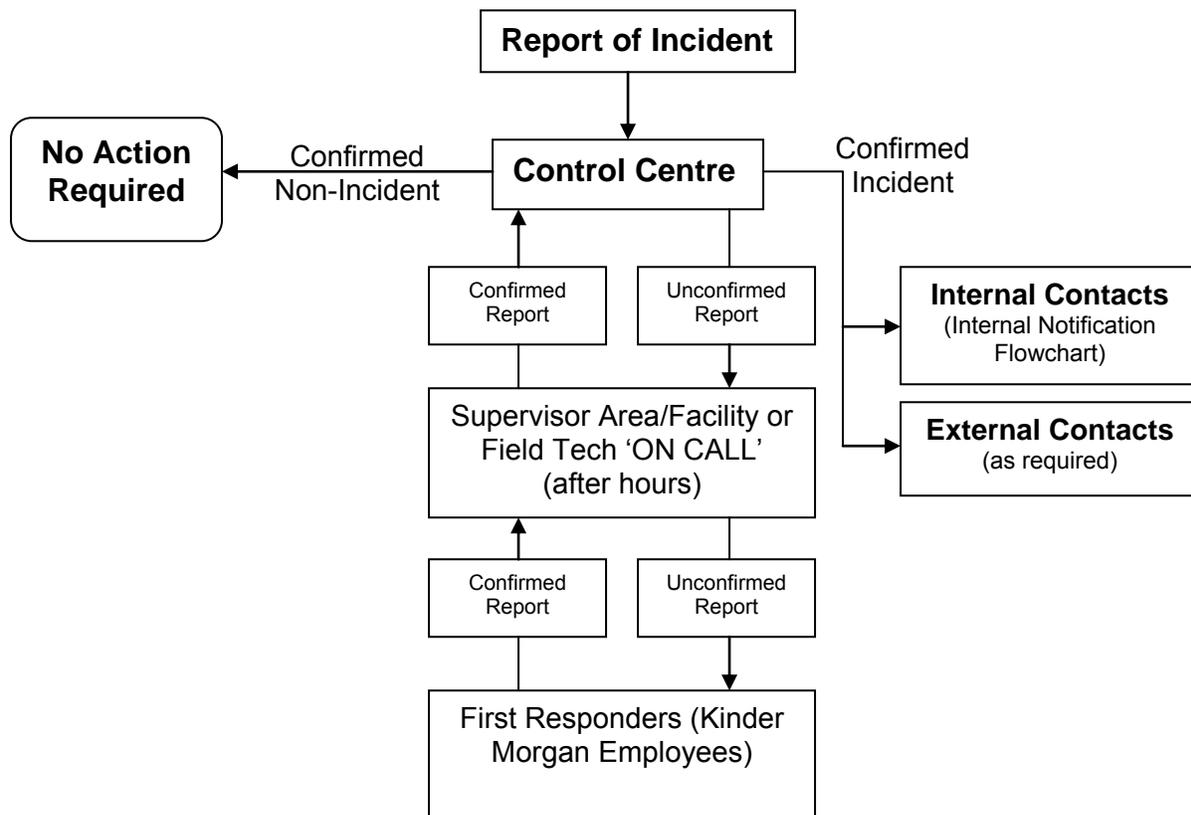
2.1.8 Shutdown Events

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 personnel may include, but are not limited to:

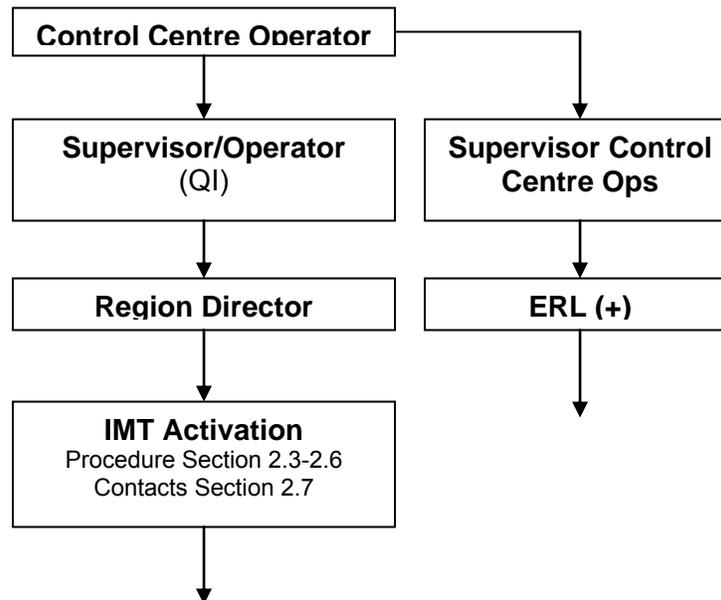
- Shut down affected line segment if there is an indication of a leak
- Isolate line segment
- Depressurize line
- Start internal and external notifications
- Mobilize additional personnel as required.

2.1.9 Spill 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 received the following flowchart shows the direction of communication to verify an incident.



2.2 Internal Notification Chart



2.3 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 a description of the 3 Response Levels)
- Initiate the notification of company and external personnel

2.3.1 Information to Report

Information about the spill should be as clear, concise, accurate and timely as possible. The minimum information reported, 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 Spill
- Product(s) Spilled
- Estimated Quantity
- Actions Taken To-Date
- Assistance Required
- Injuries
- Weather Conditions
- Reason for discharge (if known)

2.3.2 How to report

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

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

2.4 Incident Management Team (IMT) Notification/Activation

Upon being notified of the incident, the CC Supervisor will issue an ERL or ERL+. The ERL system is an online tool that delivers an automated group text message to designated Kinder Morgan personnel when notification of an emergency or non-emergency event is required. The CCO fills in the Emergency Condition Report and issues an ERL/ERL+ 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:

- Regional Director, affected area
 - The following people are contacted at the discretion of the Regional Director
 - Pipeline Protection Supervisor, affected area
 - Director, External Relations
 - Scheduler, Shipper Services, affected area
- Director, Central Region and Control Centre
- Director, Technical Services
- Field Representative
- EHS, regional contact
- Director, EHS (Calgary)
- Legal Representative
- Manager, Emergency Response & Security

If the on-line 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, at a minimum, will be assigned during this call:

- Safety Officer
- Information Officer
- Liaison Officer
- Legal Officer
- Operations Section Chief
- Planning Section Chief
- Logistics Section Chief
- Finance/Administration Section Chief

The full procedure for the Emergency Response Line (ERL/ERL+) can be found at E:\Manuals\Operating Systems\Control Centre\General Procedures\ 2.1.5.3 Emergency Response Line.pdf

2.5 IMT Fan-Out

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 Emergency Response Line (ERL/ERL+) Initial Contacts

This listing serves as the manual back-up ERL and ERL+ call down listing for the Puget Sound operating area.

Position	Name (s)	Office	(b) (6)	Cell
Qualified Individual Field Representative	Patrick Davis	(360) 398-1541		(360) 319-0800
Regional Director	Bruce Jamer	(604) 268-3030		(604) 314 -1970
Director, Central Region and Control Centre	Dan Carter	(780) 449-5930		(780) 886-4939
Director, Technical Services	Paul Huddleston	(403) 514-6510		(403) 874-8925
Director, EHS	Dan O'Rourke	(403) 514-6641		(403) 669-6991
Manager Emergency Response and Security	Wayne Arcand	(604) 291-2744		(604) 868-0436
Legal Representative	Peter Forrester	(403) 514-6643		(403) 650-7229
Director, External Relations	Andrew Galarnyk	(403) 514-6536		(403) 826-6464
EHS Regional Contact	Dan Chow	(604) 268-3008		(604) 209-1351
Pipeline Protection Supervisor	Andrew Mark	(604) 268-3060		(604) 612-7073

2.7 Kinder Morgan IMT Contacts

* Unit Leader

Position	Name	Office	(b) (6)	Cell
Command Staff				
Incident Commander (IC)	Arcand, Wayne	(604) 291-2744		(604) 868-0436
Incident Commander (IC)	Carter, Dan	(780) 449-5930		(780) 886-4939
Incident Commander (IC)	Davies, Michael	(403) 514-6597		(403) 990-1641
Incident Commander (IC)	Davis, Patrick	(360) 398-1541		(360) 319-0800
Incident Commander (IC)	Glenn, Lee	(780) 449-5957		(780) 913-6197
Incident Commander (IC)	Hadden, Rob	(604) 268 3019		(604) 861 1921
Incident Commander (IC)	Huddleston, Paul	(403) 514-6510		(403) 874-8925
Incident Commander (IC)	Jamer, Bruce	(604) 268-3030		(604) 314 -1970
Incident Commander (IC)	Rishaug, Ron	(780) 449-5940		(780) 668-5940
Information Officer	Galarnyk, Andrew	(403) 514-6536		(403) 826-6464
Information Officer	Hawthorne, Kristjana	(604) 268-3011		(604) 790-5537
Information Officer	Hobenshield, Lexa	(604) 268-3013		(604) 809-9869
Information Officer	Loban, Natalie	(604) 268-3007		(778) 877-5576
Legal Officer	Forrester, Peter	(403) 514-6643		(403) 650-7229
Legal Officer	Kennedy, Kristine	(403) 514-6542		(403) 828-1703
Liaison Officer	Arcand, Wayne	(604) 291-2744		(604) 868-0436
Liaison Officer	Malinoski, Kelly	(403) 514-6538		(403) 804-6771
Liaison Officer	O'Rourke, Dan	(403) 514-6641		(403) 669-6991



1-888-876-6711

Emergency Response Plan

Position	Name	Office	(b) (6)	Cell
Safety Officer	Arbo, Brian	(403) 514-6707		(403) 875-4978
Safety Officer	Chow, Dan	(604) 268-3008		(604) 209-1351
Safety Officer	Fleming, Edna	(403) 514-6437		(403) 519-3411
Safety Officer	Leier, Ryan	(703) 449-5918		(708) 991-3755
Safety Officer	Turner, Jason	(250) 371-4017		(250) 319-5331
Operations Section				
Section Chief	Buysse, Glen	(604) 268-3041		(604) 861-0085
Section Chief	Davis, Patrick	(360) 398-1541		(360) 319-0800
Section Chief	Glenn, Lee	(780) 449-5957		(780) 913-6197
Section Chief	Hansen, Steve	(604) 268-3080		(604) 813-8149
Section Chief	Jahnke, Brian	(250) 371-4040		(250) 371-4521
Section Chief	MacDonald, Scott	(250) 587-6350		(250) 819-9381
Section Chief	McClary, Dale	(360) 398-1541		(360) 319-2794
Section Chief	Nelson, Mike	(780) 449-5980		(780) 920-1384
Section Chief	Rishaug, Ron	(780) 449-5940		(780) 668-5940
Section Chief	Rutherford, Tom	(780) 852-4225		(780) 931-2734
Section Chief	Stelter, Kelvin	(250) 587-6305		(250) 674-8401
Section Chief	Telford, Craig	(604) 268-3040		(778) 828-0730
Section Chief	Wenner, Jim	(780) 449-5960		(780) 717-0911
Staging Area Manager	Ferrigan, Kevin	(250) 371-4093		(250) 314-4590
Staging Area Manager	Lincoln, Alan	(250) 371-4090		(250) 319-4443
Staging Area Manager	Mark, Andrew	(604) 268-3060		(604) 612-7073
Staging Area Manager	McCurrach, Allan	(250) 371-4092		(250) 372-7974
Staging Area Manager	Pleadwell, Todd	(360) 398-1541		(360) 319-3154
Staging Area Manager	Smith, Jason	(250) 371-4089		(250) 574-5826
Planning Section				
Section Chief	Chan, Rich	(604) 268-3055		(604) 328-4068
Section Chief	Feser, David	(403) 514-6405		(587) 894-0700
Section Chief	Fufezan, Dan	(780) 449-5914		(780) 983-7671
Section Chief	Hadden, Rob	(604) 268 3019		(604) 861 1921
Section Chief	Huddleston, Paul	(403) 514-6510		(403) 874-8925
Section Chief	Lalli, Raj	(250) 371-4011		(250) 319-2730
Section Chief	Toth, Greg	(403) 514-6490		(403) 875-0034
Documentation Unit*	Berry, Karen	(780) 449-5910		(780) 920-5513
Documentation Unit*	Couture, Anna Marie	(780) 852-4233		
Documentation Unit*	Frankova, Maria	(604) 268-3014		
Documentation Unit	Harsulla, Rita	(780) 449-5979		
Documentation Unit	Holmquist, Lisa	(360) 398-1541		
Documentation Unit*	Keenan, Marie	(403) 514-6621		(403) 479 0572
Documentation Unit	Malinoski, Kelly	(403) 514-6538		(403) 804-6771
Documentation Unit	Martens, Kathy	(403) 514-6527		(403) 608-9447
Documentation Unit	Reid, Corrine	(250) 371-4043		(250) 318-7706
Documentation Unit	Sommerfeldt, Gail	(250) 587-6372		(250) 674-8394
Situation Unit	DeLong, Terry	(403) 514-6517		(403) 651-2216



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Emergency Response Plan

Position	Name	Office	Cell
Situation Unit	Farrell, Conan	(403) 514-6575	(403) 512-6797
Situation Unit*	Greig, Andrew	(403) 514-6530	(403) 862-4187
Situation Unit	Horn, Mike	(403) 514-6503	(403) 771-0315
Situation Unit	Huntington, Grant	(403) 514-6586	
Situation Unit*	Lind, Adam	(403) 514-6429	(403) 512-5145
Situation Unit	Mark, Andrew	(604) 268-3060	(604) 612-7073
Situation Unit*	McLeod, Jennie	(780) 449-5926	(778) 877-1933
Situation Unit*	Pearson, Jeff	(604) 268-3037	(778) 875-2963
Situation Unit*	Pleadwell, Todd	(360) 398-1541	(360) 319-3154
Situation Unit	Sobol, Sandra	(403) 206-6936	(403) 880-9633
Resource Unit*	Ireland, Yvanna	(403) 514-6496	(403) 998-0710
Resource Unit*	Lind, Adam	(403) 514-6429	(403) 512-5145
Resource Unit	Mark, Andrew	(604) 268-3060	(604) 612-7073
Resource Unit	McLeod, Jennie	(780) 449-5926	(778) 877-1933
Environment Unit*	Chow, Dan	(604) 268-3008	(604) 209-1351
Environment Unit*	Droppo, Mike	(403) 514-6537	(403) 630-0161
Environment Unit*	Leier, Ryan	(703) 449-5918	(708) 991-3755
Environment Unit	Longpre, Tracy	(403) 206-6977	(403) 862-0439
Environment Unit	Thesen, Cheryl	(403) 514-6483	
Environment Unit*	Turner, Jason	(250) 371-4017	(250) 319-5331
Logistics Section			
Section Chief	Berry, Karen	(780) 449-5910	(780) 920-5513
Section Chief	Hellevang, Shelley	(403) 514-6533	(403) 803-2466
Section Chief	Imola, Delia	(604) 268-3022	(604) 720-7623
Service Branch	Berrouard, Dave	(604) 268-3093	(604) 880-1204
Service Branch	Berry, Karen	(780) 449-5910	(780) 920-5513
Service Branch	Couture, Anna Marie	(780) 852-4233	
Service Branch	Frankova, Maria	(604) 268-3014	
Service Branch	Harsulla, Rita	(780) 449-5979	
Service Branch	Holmquist, Lisa	(360) 398-1541	
Service Branch	Keenan, Marie	(403) 514-6621	(403) 479 0572
Service Branch	Kowalik, Terry	(780) 449-5936	(780) 719-9573
Service Branch	Love, Steve	(403) 514-6435	(403) 993-6122
Service Branch	Malinoski, Kelly	(403) 514-6538	(403) 804-6771
Service Branch	Martens, Kathy	(403) 514-6527	(403) 608-9447
Service Branch	Reid, Corrine	(250) 371-4043	(250) 318-7706
Service Branch	Sommerfeldt, Gail	(250) 587-6372	(250) 674-8394
Support Branch	Arcand, Wayne	(604) 291-2744	(604) 868-0436
Support Branch	Berry, Karen	(780) 449-5910	(780) 920-5513
Support Branch	Couture, Anna Marie	(780) 852-4233	
Support Branch	Darrell, John	(403) 514-6598	(403) 650-4844
Support Branch	Frankova, Maria	(604) 268-3014	
Support Branch	Harsulla, Rita	(780) 449-5979	
Support Branch	Hellevang, Shelley	(403) 514-6533	(403) 803-2466



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Emergency Response Plan

Position	Name	Office	(b) (6)	Cell
Support Branch	Holmquist, Lisa	(360) 398-1541		
Support Branch	Keenan, Marie	(403) 514-6621		(403) 479 0572
Support Branch	Lambert, Sean	(604) 268-3038		
Support Branch	Lincoln, Alan	(250) 371-4090		(250) 319-4443
Support Branch	Love, Steve	(403) 514-6435		(403) 993-6122
Support Branch	Malinoski, Kelly	(403) 514-6538		(403) 804-6771
Support Branch	Martens, Kathy	(403) 514-6527		(403) 608-9447
Support Branch	McCurrach, Allan	(250) 371-4092		(250) 372-7974
Support Branch	McLean, Cody	(403) 514-6651		
Support Branch	Reid, Corrine	(250) 371-4043		(250) 318-7706
Support Branch	Sommerfeldt, Gail	(250) 587-6372		(250) 674-8394
Finance Section				
Section Chief	Bangle, Mike	(403) 514-6690		(403) 826-9342
Section Chief	Imola, Delia	(604) 268-3022		(604) 720-7623
Section Chief	Senio, Lori	(780) 449-5922		(780) 940-5835
Section Chief	Aitkenhead, Diane	(780) 449-5915		(780) 233-0342
Claims Unit	Berrouard, Dave	(604) 268-3093		(604) 880-1204
Claims Unit	Imola, Delia	(604) 268-3022		(604) 720-7623
Claims Unit*	Love, Bob	(604) 268-3097		(604) 992-1955
Claims Unit	Martens, Kathy	(403) 514-6527		(403) 608-9447
Time Unit	Beitel, Corinne	(780) 449-5905		(780) 405-5330
Time Unit	Gutierrez, Monica	(403) 514-6491		
Time Unit	Senio, Lori	(780) 449-5922		(780) 940-5835
Cost Unit	Bangle, Mike	(403) 514-6690		(403) 826-9342
Cost Unit	Imola, Delia	(604) 268-3022		(604) 720-7623
Cost Unit	Modafferi, Sarina	(403) 514-6564		
Procurement Unit	Bangle, Mike	(403) 514-6690		(403) 826-9342
Procurement Unit	Gutierrez, Monica	(403) 514-6491		
Procurement Unit	McLean, Cody	(403) 514-6651		

2.8 External Notification

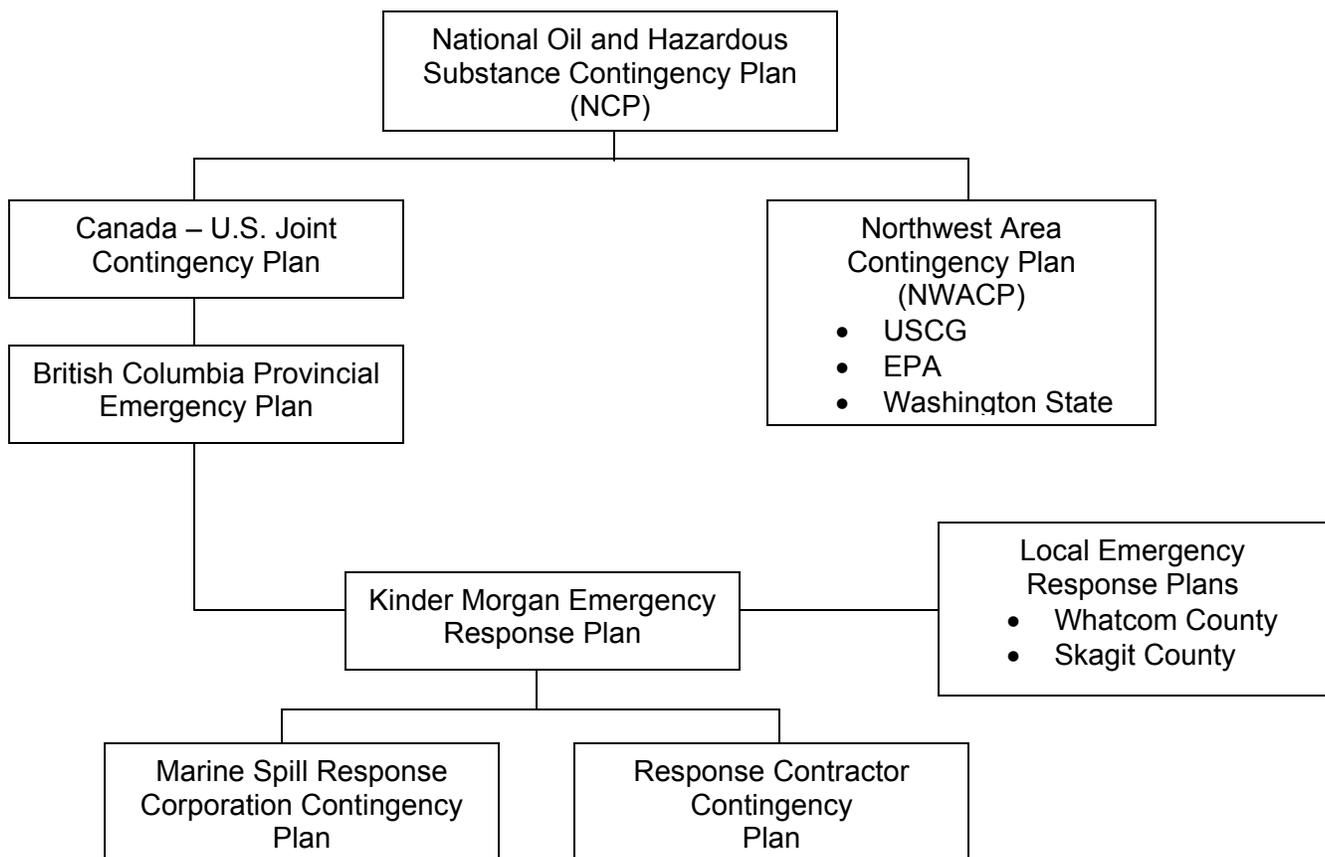
2.8.1 Interface With Other Plans

Kinder Morgan will respond to spills from its pipeline system to the best of its ability. In the event of a worst case spill, Kinder Morgan may require assistance, advice or direction from state and federal agencies regarding shoreline protection and cleanup measures. The relationship of the emergency Response Plan to federal, state and local plans is shown on the chart below.

Kinder Morgan is a member of Marine Spill Response Corporation (MSRC), an industry oil spill cooperative headquartered in Herndon, Virginia, with a Regional Response Center in Everett, Washington. The MSRC area of operation includes all of the inland water and marine areas that could be impacted by a spill from the pipeline system.

Kinder Morgan will rely on MSRC to provide response assistance for inland water and marine waters that may be impacted by potential spills from its pipeline system. However, MSRC will also provide initial response for a pipeline leak in the Anacortes area until appropriate company personnel reach the site.

The British Columbia Provincial Emergency Program is identified on the following chart due to the possible migration of petroleum from Washington State into Canada should a spill occur from the pipeline system into the Sumas River upstream of the international boundary.



2.8.2 External Notification – Potential Emergency Condition

In the case of a potential emergency condition¹ Washington State Department of Ecology will be contacted as per WAC 173-182-264(2) 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 shutdown 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. Odor 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.

WDOE Reporting Line: (800) 258-5990

The on site supervisor will make contact with the WDOE while investigating the potential spill location(s) prior to the confirmation of an incident to allow WDOE maximum response time possible.

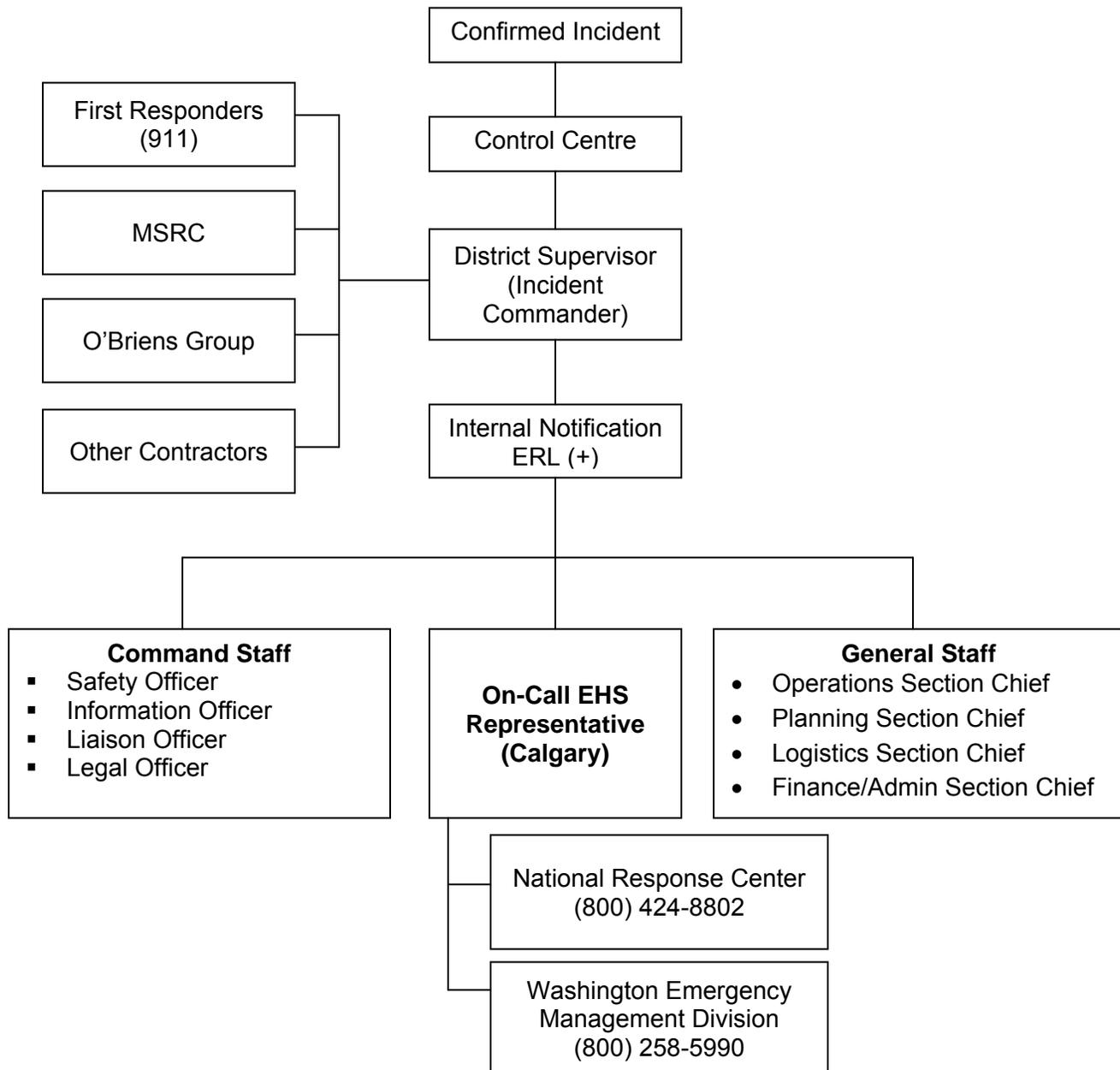
Notes: The CCO has the authority and the responsibility to shutdown a pipeline, station, or terminal during an emergency or as a precaution when in his/her judgment, further operation is unsafe. The CCO will not be faulted for shutting down under these conditions.

An Operator 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.

¹ A potential emergency can be defined as a spill of unknown volume, unconfirmed and is adjacent to waters of the state or where there is a pathway to waters of the state, and the environmental conditions, such as rain events or known shallow groundwater make impacts to waters of the state likely.

2.8.3 External Notification Chart – Confirmed Emergency Condition

In the case of a confirmed or known emergency condition the following chart will be used to identify who is to be contacted upon confirmation of the incident.





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2.8.4 Initial Notification Requirements – Confirmed Emergency Condition

Kinder Morgan's policy is to make all of the calls directly to ensure that all appropriate government agencies are notified. This would be done by the EHS Department, and/or the on-site representative as needed.

Order of Call	Agency	Reporting Requirements	Comments
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.
2	MSRC 1-800-645-7745		Primary Response Contractor to assist with equipment and personnel.
KMC On-Call EHS Representative			
1	U.S. National Response Center (NRC) 1-800-424-8802 (24 Hour Number) (Covers PHMSA, EPA and USCG)	The NRC must be notified as soon as possible by telephone of any failure that causes death or injury, results in a fire or explosion, damage exceeds 50,000 US, pollutes any water body or is significant even though it did not meet the criteria of any other paragraph of this section. A report must also be made for any failure that results in a loss of 5 or more US gallons of hazardous liquid.	Use the form on the following page to make the initial report to ensure all known information is included. Following initial report PHMSA requires the F-7000-1 Accident Report Form to be filed electronically. The form and instructions can be found online http://www.phmsa.dot.gov/pipeline/library/forms
2	Washington State Emergency Management Division 1-800-258-5990 Northwest Regional Office (WDOE) 1-425-649-7000	All spills are required to be reported to WDOE if it has the potential to impact waters of the state ² except where the spill is less than 42 Gallons (1 bbl) which does not/cannot impact waters of the state. WAC 173-182-264	State and local authorities must be notified immediately if there is a release of hazardous substances under Superfund Regulations in excess of reportable quantities and which could result in exposure of persons outside the boundaries of the facility site. A follow up written notification is required to the LEPC as soon as practical after the release.

² Waters of the State means all lakes, rivers, ponds, streams, inland waters, underground water, salt waters, estuaries, tidal flats, beaches and lands adjoining the seacoast of the state, sewers, and all other surface waters and watercourses within the jurisdiction of the state of Washington. WAC 173-182-030(67)



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2.8.5 Emergency Condition Agency Report Form

Name and Address of Company
Name of Pipeline
Time of Discharge
Location of Discharge
Name of Oil Involved
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



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2.9 Additional Government Contacts

These agencies may be contacted on an as-needed basis.

Agency	Contact
Federal Government – U.S.A.	
National Response Center (NRC)	(800) 424-8802 (202) 267-2675
Occupational Safety & Health Administration (OSHA)	(800) 321-6742
Poison Center Emergency Contact	(800) 222-1222
United States Coast Guard	(800) 424-8802
Federal Government - Canada	
National Energy Board (NEB)	(403) 807-9473
Transportation Safety Board Occurrence Hotline	(819) 997-7887
Washington State Government	
Washington Call Before You Dig	(800) 424-5555
Washington Department of Natural Resources	(360) 902-1000
Washington Emergency Management Agency, Spill Reporting Line and Burn Permits	(800) 258-5990
Northwest Air Pollution Authority	(800) 622-4627
Washington Department of Fish & Wildlife	(360) 466-4345
Washington State Department of Ecology	(425) 649-7000
Washington State Department of Transportation	(360) 676-2100
Washington State Police	911
Provincial Government – British Columbia	
Provincial Emergency Program (PEP)	(800) 663-3456
Skagit County	
Skagit County Emergency Management (LEPC)	(360) 428-3250
Skagit County Sheriff Department	(360) 336-3131 (911)
Skagit Valley Hospital Switchboard	(360) 424-4111
Whatcom County	
Whatcom County Sheriffs Office - Division of Emergency Management (LEPC)	(360) 676-6681 (911)
St. Joseph's Hospital	(360) 734-5400
Lummi Tribe	
Ronald Tso, Chief of Police	(360) 384-2266

2.10 Support Services - Primary Response Contractors (PRC)

<i>Name/Agency</i>	<i>Services/Personnel</i>	<i>Contact</i>
Washington State Approved - Primary Response Contractors		
Marine Spill Response Corporation (MSRC)*	<ul style="list-style-type: none"> • A listing of individuals is available by contacting MSRC. • Response Equipment can be provided as needed a list of available equipment is found in Section 9. 	1-800-645-7745
NRC Environmental Services**	<ul style="list-style-type: none"> • Spill Management Teams and Response Supervisors • Equipment Decontamination and Management • Waste Minimization, Management and Disposal • Contact NRC for current list of trained individuals. 	(800) 337-7455
Global Diving, Salvage Inc*	<ul style="list-style-type: none"> • Provides personnel and equipment for subsurface marine environments, and shoreline cleanup. • Equipment is located in Anacortes, WA • Contact Global for current list of trained individuals 	(800) 441-3483
Additional Kinder Morgan Response Contractors		
O'Brien's Group*	<ul style="list-style-type: none"> • Provides personnel for ICS and expertise currently trained individual lists can be obtained by contacting O'Brien's 	(985) 781-0804
Focus Wildlife*	<ul style="list-style-type: none"> • Provides Wildlife support for Washington State • Contact Focus for current list of trained individuals 	(800) 578-3048 (310) 386-5965 (778) 574-1501
Polaris Applied Sciences, Inc*	<ul style="list-style-type: none"> • Provides SCAT services for Washington State and British Columbia Canada 	(425) 823-4841 (206) 369-5686
CTEH*	<ul style="list-style-type: none"> • Air Monitoring, Air Modeling, environmental sampling, data management and toxicology consulting services. 	(866) 869-2834 (317) 473-0688
URS Corporation*	<ul style="list-style-type: none"> • Environmental Plan development, Field Sampling/support, Data management, waste management, groundwater spills and regulatory support 	(206) 438-2700



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Name/Agency	Services/Personnel	Contact
BAI Environmental Services*	<ul style="list-style-type: none"> Provides Vacuum Truck, and other response equipment/personnel 	(360) 354-1134 Ivan DeVries Cell (360) 815-0238 Jeff TenPas (360) 815-0270 (360) 354-3822
Baker Tanks*	<ul style="list-style-type: none"> Provides temporary storage tanks. 	(800) 225-3712 (425) 347-8811

* Contract or letter of intent on file available in Section 19.

** No formal work directive, or letter of intent specific to Trans Mountain (Puget Sound) ULC, however there is an MSA in place covering Kinder Morgan and its subsidiaries for further creation of work directives in the event of an emergency.

2.11 Oil Company Contacts

Name/Office	Emergency/24-Hour Phone	Description
BP Cherry Point Refinery	(360) 371-1500	The Laurel Station to Ferndale Meter Station and delivers to a BP pipeline that then delivers to the Cherry Point Refinery
Phillips 66 Ferndale Refinery	(360) 384-1011	The Laurel Station to Ferndale Meter Station delivers to the Phillips 66 Ferndale Refinery.
Shell Oil Products Refinery	(360) 293-0800	The Laurel Station to Anacortes Pipeline delivers to the Shell Oil Products Refinery
Tesoro Refinery	(360) 293-9119	The Laurel Station to Anacortes Pipeline delivers to the Tesoro Refinery

2.12 Additional Resources Suppliers

Name	Location	Contact
Equipment/Construction		
Crowley Marine Services	Seattle	(800) 248-8632
J.T.I. Commercial Services (tractor, crane truck, backhoe, mowers, wood chipper, posi-trac, mower/skidder)	Everson	(360) 815-0693
Mid Mountain Contractors (various trucks, trackers, loaders, excavators, welding rig and equipment, and Hazwoper trained laborers)	Kirkland	(425) 202-3600



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Name	Location	Contact
Strider Construction (excavators, dozers, loaders, backhoes, grader, compaction equipment, trucks/trailers, generators, trench boxes & steel plate, air compressor, lasers, pumps, saws)	Bellingham	(360) 380-1234
Western Refinery Services Inc. (vac trucks, roll-off boxes, pumps, skimmers, portable tanks, excavation equipment)		(360) 366-3303 24 hr
Granite Construction Company (various backhoes, trucks, compressor trucks, dozers, dump trucks, etc)	Bellingham	(360) 676-2450
Aviation		
Aero-Copters Inc.	Renron	(206) 763-2177
Classic Helicopter Corp.	Seattle	(206) 767-0515
Glacier Aviation	Olympia	(360) 705-3214
Security		
SSP Security	Bellingham	(360) 647-2441
Transportation		
Snelsons Companies (Tractor units for Kinder Morgan Oscars available on 24 hr basis)	Sedro-Woolley	(800) 624-6536 (360) 856-6511
Svensen Trucking (Tractor units for Kinder Morgan Oscars available on 24 hr basis)	Mt. Vernon	(360) 424-0258
Pipeline Repair		
Caldwell Welding Enterprises	Kamloops, BC	(250) 374-2982
Snelsons Companies	Sedro-Woolley	(800) 624-6536 (360) 856-6511
Waste Management		
US Ecology and Idaho	Grandview, ID	(208) 834-2274
Waste Management Services	Woodinville	(800) 592-9995
Wildlife Specialists		
Tri-State Bird Rescue	Newark, DE	(302) 737-9543
Environmental Specialists		
EML Environmental Mapping Limited	Saanich, BC	(250) 652-9739

3.0 SPILL/SITE ASSESSMENT

The primary purpose of a spill/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 spill should be gathered as quickly as possible in order to evaluate the situation and develop an initial response plan. It might also be possible for the Site Assessment Team to take measures to reduce possible spill impacts.

The nature of Spill/Site Assessments will depend on the product spilled, the spill size and the location (i.e., land, groundwater or marine).

Site Assessment Team members should don half-face respirators for all spill until the nature of the material can be assessed for safety.

Product	Spill Size	Vapor Monitoring	Assessment Team PPE	
			Skin/Eyes	Respiratory
Crude	All	LEL, O ₂ and Toxins (see Sections 3.2 - 3.4)		

NOTE: If vapor levels reach 10% of the LEL, Site Assessment Team members should leave the area immediately

3.1 Site Assessment Guidelines

3.1.1 Safety Checklist

- Conduct Pre-Entry Safety Checklist
- Remove all non intrinsically-safe radios, pagers, etc.
- Establish communications procedures/schedules
- Don appropriate PPE
- Refer to MSDS
- Determine wind speed and direction
- Determine current direction
- Approach spill from upwind/up current if possible
- Conduct vapor 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
- Block escaping product

3.2 Vapor Monitoring on Marine Spills

3.2.1 Pre-Assessment Preparation

A trained team should conduct an initial site assessment from land and, if available and spill impacts water, a second team in a workboat should conduct an assessment. If only one team is available, they will be required to make both assessments. The site assessment team(s) should wear appropriate PPE for the initial site assessment unless specifically instructed otherwise by the Incident Commander. The Incident Commander may downgrade the level of PPE required by the site assessment team if the product and amount spilled are known, and a lesser level of PPE is deemed appropriate.

- Calibrate and check battery charge levels on each air monitoring instrument.
- Complete an *Initial Health and Safety Plan*. Conduct the pre-entry briefing, using the completed *Permit to Work Form* and any other relevant documentation. Select and use the *Gas Testing Certificate* that matches the level of respiratory protection in use by the assessment team.
- Ensure that all air monitoring instruments are well secured and protected from weather. Be careful that any "protection" does not cover any of the meters' ports that require continuous airflow.

3.2.2 Site Assessment Procedures

The on-water team should move toward the spill and stop at an upwind location to make final preparations for the assessment. Air monitoring requires accurate position information. A global positioning system (GPS) is the preferred method for determining positions.

Due to the lack of elevation and the rapid spread of the oil on water, the site assessment team may not be able to accurately judge the spill parameters. Lacking any other guidance, the assessment team must make judgments on where the main body of oil may be, and how to approach it. Vapor readings should be taken frequently.

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 "worst case" assessment. A safe and effective site assessment will require caution, persistence and field decisions.

As the assessment team moves toward the oil, or its anticipated location, periodic stops will be made to record results. The team leader must take immediate action if at any time the air monitoring instrument readings meet or exceed "evacuation" levels (see Vapor Monitoring Flowchart - Section 3.4). 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 spill characterization is complete. The identification of physical, environmental, chemical or other hazards will complete the assessment.

3.3 Vapor Monitoring on Land Spills

3.3.1 Site Assessment Procedures

The team should move toward the area and stop at an acceptable location, preferably upwind, to make final preparations for assessment. The GPS is the preferred method for determining position of air sampling results ashore.

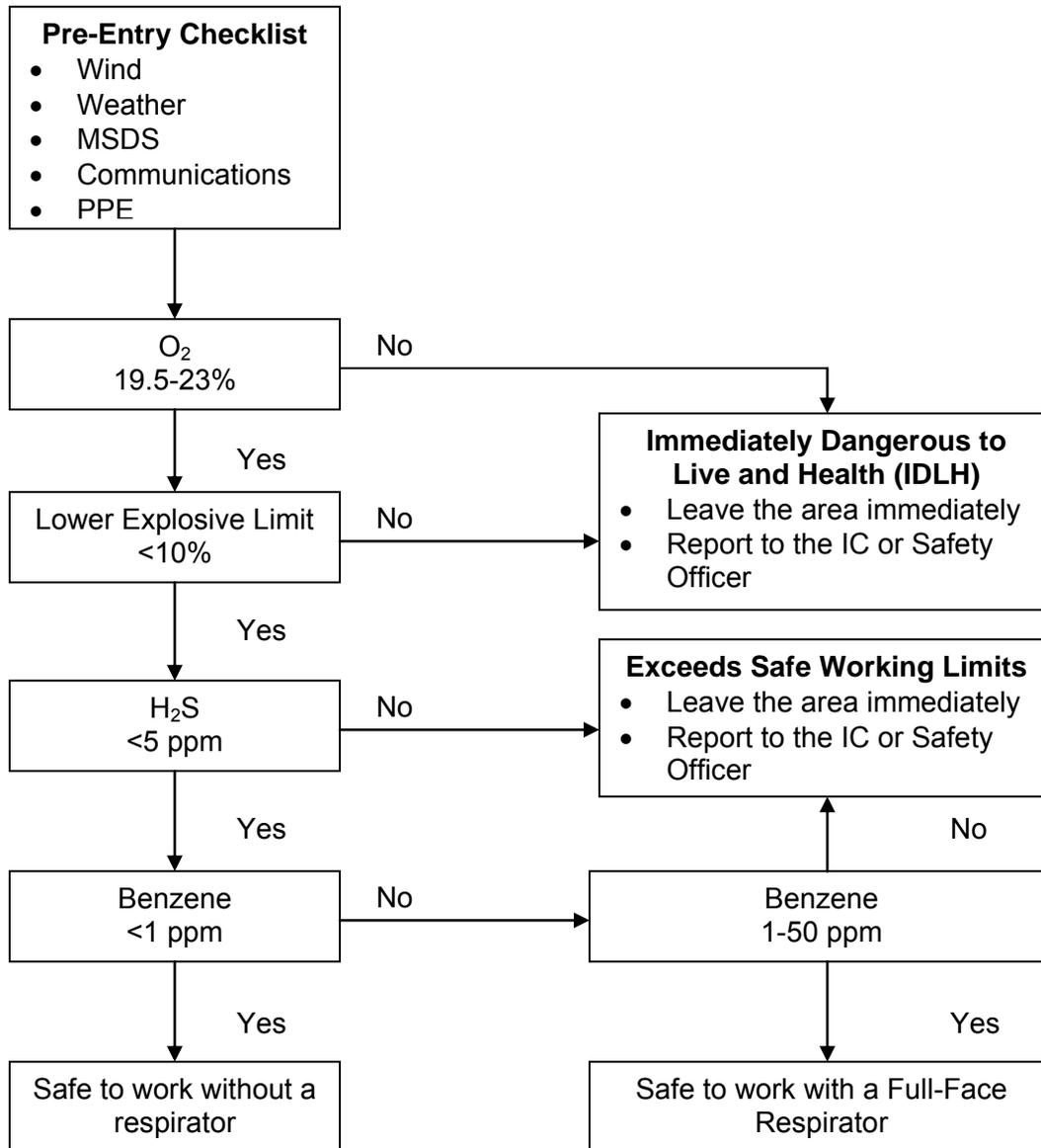
On shoreline assessments, the team will likely have accurate information or visual sightings of the extent of the oil in the zone. Local geography, access roads, and other features may limit the team's ability to approach the impacted area from upwind. The team must evaluate its options and decide the 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 "worst case" 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 oil spill characterization is complete. The identification of physical, environmental, or other hazards will complete the assessment.

3.4 Vapor Monitoring Flowchart



Note: This flowchart should be used as a guideline only. If there are any questions about safe working vapor levels, consult the Safety Officer.

3.5 Spill Observation/Assessment/Estimation Factors

3.5.1 Spill Surveillance

The following guideline assists 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 spill's maximum spread.
- 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.
- Use surface vessels to confirm the presence of any suspected oil slicks (if safe to do so); consider directing the vessels and photographing the vessels from the air, the latter to show their position and size relative to the slick.
- Spill surveillance is best accomplished through the use of helicopters or small planes; helicopters are preferred due to their superior visibility and manoeuvrability.
- All observations should be documented in writing and with photographs and/ or videotapes.
- Describe the approximate dimensions of the oil slick based on available reference points (i.e. vessel, shoreline features and facilities); use the aircraft or vessel to traverse the length and width of the slick while timing each pass; calculate the approximate size and area of the slick by multiplying speed and time.
- Record aerial observations on detailed maps, such as topographic maps.
- In the event of reduced visibility, such as dense fog or cloud cover, boats may be used to patrol the area and document the location and movements of the spill, however, this method may not be safe if the spill involves a highly flammable product.
- Surveillance is required during spill response operations to gauge the effectiveness of response operations; to assist in locating skimmers; and assess the spill size, movement, and impact.

3.5.2 Estimating Spill Trajectories

Oil spill trajectories should be estimated in order to predict direction and speed of the slick movement. Trajectory calculations provide an estimate of where oil slicks may impact shorelines and other sensitive areas, and also provide an estimate of the most effective location in which to mobilize spill response resources for protection, containment and recovery.

Oil spill trajectories can be estimated using vector addition or with computer programs such as CAMEO. Hand calculations typically utilize the following assumptions:

- Oil moves at approximately the same direction and speed as the water currents, unless the winds are strong.
- Wind speed can be multiplied by 0.034 to determine the effect of winds on speed and direction of spill movement.
- The combined effects of winds and currents can be added to estimate spill movement speed and direction.

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Emergency Response Plan

More sophisticated predictions can be obtained from computer programs. Oil spill trajectory services can be obtained from:

- National Oceanic and Atmospheric Administration (NOAA) through the Federal On-Scene Commander (FOSC)
- Private Consulting Firms

3.5.3 Estimating River/Stream Velocity

Time Required for Stick/Floating Object to go 100 feet (seconds)	Stream Velocity (mph) ¹
136	0.5
68	1.0
45	1.5
34	2.0
27	2.5
23	3.0
19	3.5
17	4.0
15	4.5
14	5.0
11	6.0
10	7.0
9	8.0
8	9.0
7	10.0

Multiply mph x 1.6 to obtain current speed in kilometers per hour (km/ h)

To estimate the total time until recovery can start (in hours):

1. Estimate: the time since the spill occurred
2. Add: the time required to mobilize personnel and equipment to a control point
3. Add: the time to set up

To estimate the distance that the spill has advanced downstream:

1. Take: total time in hours (estimated above)
2. Multiple by: oil slick velocity in mile/ hour

To estimate the location of the front of the oil spill:

1. Determine: location (mile) on stream where spill occurred
2. Subtract: distance (estimate above)
3. To Get: location (mile) of the oil slick when the recovery team is ready

3.5.4 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. See below figured for estimating slick thickness.

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

Early in a spill response, estimation of spill volume is required in order to:

- Report to agencies
- Determine liquid recovery requirements
- Determine personnel and equipment requirements
- Estimate disposal and interim storage requirements.

Some rapid methods to estimate spill size are:

- 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 [bbl])
- 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

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)

Where safety allows, every effort should be made to limit the quantity of released product into adjacent waterways:

- Conduct site assessment (see Section 3.1)
- Act quickly and carefully
- (b) (7)(F)
- Stop all pumps
- Close all valves
- Block potential escape points using sorbent booms

4.1 Initial Containment Actions

Initial containment actions will focus on utilizing containment on site in the most effective manner to:

- Prevent the oil from impacting water, thereby reduce the surface area and shoreline to be cleaned
- Concentrate the oil (when safe to do so), making physical recovery more efficient
- Limit the environmental impact to the immediate spill area.

Selection of the appropriate location and 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

4.2 Spill Mitigation Procedures

Failure	Procedure
Failure of Transfer Equipment	<ul style="list-style-type: none"> • 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 vapor cloud ignition by shutting down all engines and motors.
Tank/ Cavern Overfill/ Failure	<ul style="list-style-type: none"> • 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 vapor cloud ignition by shutting down all engines and motors. • Ensure that dike 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)	<ul style="list-style-type: none"> • 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 vapor 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	<ul style="list-style-type: none"> • 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 vapor cloud ignition shutting down all engines and motors. • Control fire before taking steps to contain spill.
Manifold Failure	<ul style="list-style-type: none"> • 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 vapor cloud ignition by shutting down all engines and motors. • Drain fluids back into containment areas (if possible).

4.3 Spills to Land

The penetration of oil into soil depends on a number of factors, including:

- Oil viscosity
- Soil type, wetness, and permeability
- Ground temperature

Normally, the amount of oil in saturated soil will range from 0.1 to 0.3 gallons/ft³, however, the amount may exceed 0.4 gallons/ft³ in dry soils, i.e., beneath structures. Also, low viscosity oils will tend to penetrate deeply into coarse sediments. In homogenous soils, the deepest penetration will normally be located below pooled oil. In the event that oil reaches groundwater, the oil will typically move relatively slowly - typically 1.5 to 3 ft/day.

On impermeable ground, immediately block drain inlets, drain tiles, conduits, sewage systems, and pipe/cable ducts (limit the spread to waterways).

On permeable ground, pump out pooled oil as soon as possible to temporary storage and move contaminated soil to an impermeable surface (HDPE liner).

4.3.1 Interceptor/Trench

The construction of an interceptor/trench requires:

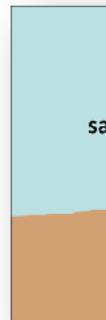
- Excavators/hand tools
- Wood planks (depending on soil type)
- Water pumps

Only use a trench if the water table is less than 10 ft. below ground. Dig the trench approximately 3 ft. below oil level, then reduce the water level in trench about 2 ft.



4.3.2 Trench/Berm

Berms can be built from sorbents, earth, or snow to block the spread of oil. Where time allows, an HDPE liner can be used to line a trench.



4.4 Open Water Containment

4.4.1 Open Water Booming

In cases where significant amounts of spilled oil enter a lake type environment, it might be necessary to attempt to contain free-floating oil in open water using the U, J or V-booming techniques. This activity will be conducted by MSRC.

4.4.2 U-Booming (Open Water Containment)

A single boom can be towed at a low speed (around 0.5 knots) allowing the oil to collect/concentrate in the apex of the boom. The collected oil can then be towed to a location where conditions allow the mechanical recovery of the oil.



4.4.3 J-Booming

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 the thickest patches of oil.



4.4.4 V-Booming

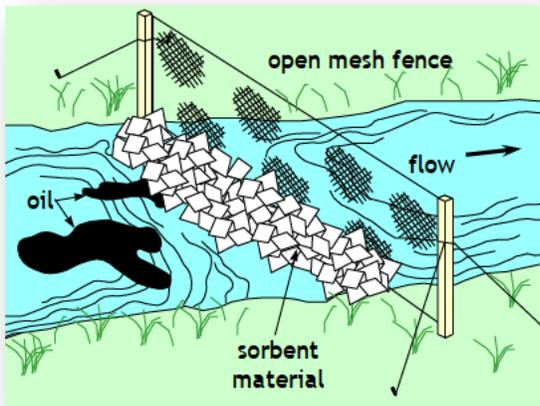
Two booms are towed at a low speed (around 1 knot) funneling the oil into the mouth of a skimming vessel.

Collected oil is then transferred to a barge or other floating oil storage device. The recovered product could then be transferred to slop oil tanks or to a vacuum truck.

4.5 Spills to Creeks and Rivers

4.5.1 Small Creeks

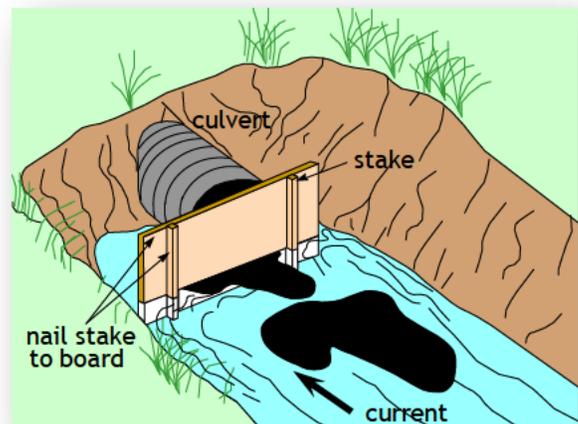
On spills to small (less than 0.5 ft/sec.) creeks, a board can be placed across the creek in order to block the surface flow. This technique will only work on very low velocity flow creeks.



Another option on slowly-flowing creeks and rivers (less than 0.5 ft/sec.) is a filter fence. Chicken wire, or open mesh fence material is placed across the waterway, and sorbent pads of booms are positioned against the fence. Sorbents should be monitored as once they water-wet, they will no longer absorb oil.

4.5.2 Ditches/Culverts

Spills into ditches can be blocked at culverts by placing a plywood board against the culvert opening. The plywood should be nailed to stakes to maintain its position. Also, care should be taken to ensure that the board does not block the water flow under the board into the culvert. The board can be repositioned vertically to reduce/increase the water flow under the board.



4.5.3 *Inverted Weir Dam*

On higher-flow creeks and rivers, angled pipes can be placed in sand bag or earthen dams to allow clean water to flow from the bottom (allowing floating oil to be blocked at the surface).



4.5.4 *Deflection Booms*

On fast-flowing rivers (exceeding 1 knot), booms should be angled in order to deflect floating oil towards shore. In some cases, it might be necessary to use multiple booms. When booming in rivers, take advantage of natural eddies and collection points.



4.5.5 *Boom Angles in High Currents*

CURRENT (MPH)	CURRENT (ft/second)	BOOM (Angle)
1.7	2.5	30° to 42°
2.0	2.9	25° to 35°
2.3	3.4	22° to 30°
2.6	3.8	19° to 26°
2.9	4.2	17° to 24°
3.2	4.6	16° to 21°
3.5	5.0	15° to 19°

4.6 Spills in Cold Weather

4.6.1 Oil Fate in Cold Weather

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 41°F is approximately 1/3 of what it is at 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.

4.6.2 Spill Response

Frozen conditions can actually 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. 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.

Snow and ice can be used to contain oil. Snow is also an effective sorbent. Equipment such as pumps and hoses must be thoroughly dried after use to minimize residual water that can freeze, causing damage or limiting use.

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.

4.6.3 Biological Issues in Cold Conditions

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.

4.6.4 Trenches and Berms

In cases where spilled oil has pooled on snow and ice, efforts should be made to block the spread of oil using trenches and/or berms.

Where possible, trenches should be lined using a HDPE liner or ice layer, using a water spray.

4.6.5 Oil on Ice



Oil that has pooled on top of ice should be removed as soon as possible using Vac trucks or transfer pumps.



The transfer of highly-viscous weathered oil may be difficult, especially in cold temperatures. In this case,

steam-injected screw auger pumps should be used to transfer oil to temporary storage.

4.6.6 Oil Under Ice

Courtesy BCO

The containment and recovery of oil under ice involves numerous safety and operational issues. The combination of pre-planning and safe practices will increase the likelihood of success.

Ice safety will be assessed immediately prior to flooding and if weather conditions change during the flooding where personnel are required to be deployed on ice.

4.6.7 Ice Augering

On spills under lake ice, or where oil is trapped and/or migrating slowly, ice augering can be used to create pathways for the oil to float to the surface for removal.

4.6.8 Ice Trenching/Slotting

Where safety allows, ice trenching/slotting can be employed in flowing rivers to provide a means of allowing under ice oil to float to the surface for recovery.



Trenches should be angled relative to the water flow to reduce losses due to entrainment. Note that specialized equipment is required to cut trenches and is available in the OSCAR units in Canada.

4.7 Response Tactics for Shorelines

Kinder Morgan and all contractors/consultants will conduct shoreline assessments and clean-up through the appropriate method on a site-specific basis using pre-existing mapping of shorelines and Geographic Response plans, the North West Area Contingency Plan, overflights and SCAT teams. Shoreline protection and clean-up resources are available via Kinder Morgan's contract with MSRC and per Appendix W of the approved PRC application. Additionally Kinder Morgan can meet the requirements of WAC 173-182-510(2) and WAC 173-182-520 by utilizing environmental consultants Polaris and URS. The following table is a summary of shoreline types and response tactics.

Type of Shoreline	Recommended Cleanup Activity
Developed or unforested Land	May require high pressure spraying: <ul style="list-style-type: none"> • To remove oil. • To prepare substrate for recolonization of barnacle and oyster communities. • For aesthetic reasons.
Freshwater Flat	<ul style="list-style-type: none"> • These areas require high priority for protection against oil contamination • Cleanup of freshwater flats is nearly impossible because of soft substrate • Cleanup is usually not even considered because of the likelihood of mixing oil deeper into the sediments during clean up effort • Passive efforts such as sorbent boom can be used to retain oil as it is naturally removed.
Fresh marsh	<ul style="list-style-type: none"> • Marshes require the highest priority for shoreline protection. • Natural recovery is recommended when: <ul style="list-style-type: none"> ○ 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. • Oil wrack and other debris may be removed by hand.
Swamp	<ul style="list-style-type: none"> • No cleanup recommended under light conditions. • Under moderate to heavy accumulations to prevent chronic oil 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.

4.8 Recovery

It is Kinder Morgan Canada's policy that, wherever possible, spilled oil be mechanically removed from the environment, using sorbents and/or oil skimmers.

4.8.1 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.

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.



4.8.2 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.



4.8.3 Cleanup Techniques – Removal

Technique	Description	Recommended Equipment	Applicability	Potential Environmental Impacts
Manual Removal	Hand tool (scrapers, wire brushes, shovels, cutting tools, wheel barrows, 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.	<u>Equipment</u> misc. hand tools <u>Personnel</u> 10-20 workers	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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.	<u>Equipment</u> motor grader, backhoe, dump truck elevating scrapers <u>Personnel</u> 2-4 workers plus equipment operators	<ul style="list-style-type: none"> • On land, wherever surface sediments are accessible to heavy equipment • Large amounts of oiled materials. 	<ul style="list-style-type: none"> • Removes upper 2 to 12 inches of sediments.
Sorbent Use	Sorbents are applied manually to oil accumulations, coatings, sheens, etc. to remove and recover the oil.	<u>Equipment</u> misc. hand tools misc. sorbents <u>Personnel</u> 2-10 workers	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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.	<u>Equipment</u> 1-2 50- to 100-bbl vacuum trucks w/ hoses 1-2 nozzle screens or skimmer heads <u>Personnel</u> 2-6 workers plus truck operators	<ul style="list-style-type: none"> • Can be used on all habitat types • Stranded oil on the substrate • Shoreline access points. 	<ul style="list-style-type: none"> • Typically does not remove all oil • Can remove some surface organisms, sediments, and vegetation.

4.8.4 Cleanup Techniques - Washing

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 1-5 100- to 200-gpm 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	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Can impact clean downgradient 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 50- to 100-gpm/100-psi pumping systems with manifold 1-4 100-ft hoses and nozzles per system 1-2 200-ft containment booms per system 1 oil recovery device per system Personnel 8-10 workers per system	<ul style="list-style-type: none"> Substrates, riprap, and solid man-made structures Oil stranded onshore Floating oil on shallow intertidal areas. 	<ul style="list-style-type: none"> Can impact clean downgradient 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 1-2 100-ft containment booms per unit 1 oil recovery device per unit Personnel 2-4 workers per unit	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Will remove most organisms if present Can damage surface being cleaned Can affect clean down gradient or nearby areas.

4.8.5 Cleanup Techniques – Dispersant

This checklist is intended to aid the Unified Commander (UC) in reaching a decision on whether the use of dispersants is the best course of action for potential or actual oil spill mitigation. It also provides a familiar listing of data to all Regional Response Team (RRT) members involved with the decision to allow the use of dispersants. The following sequence of events should normally be followed for an oil spill in which the UC wishes to use dispersants.

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 the UR should evaluate the potential use of dispersants. If the UC feels the potential for dispersant use exists, he/she should have their staff gather the information necessary to complete the dispersant checklist. He/she also should request RRT activation to prepare the RRT for review.

If upon completion of the dispersant checklist the UC decides the use of dispersants in the best course of action the checklist information should be passed to the RRT for final decision on its use.

The following steps should be utilized in deciding if the use of dispersants will be required. (An immediate threat to life which can be substantially lessened by the use of dispersants pre-empts the following matrix by the UC).

Dispersant applications in the region will be monitored as a general practice. The UC is responsible for designating monitors. The Pacific Strike Team may serve as monitors when available. There are two criteria suggested: required and desirable.

Compilation of Data	
(1) Spill data	
	(a) Circumstances (fire, grounding, collision, etc):
	(b) Time/Date of incident:
	(c) Type of oil product:
	(d) List bulk chemicals carried and their volumes:
	(e) Volume of product released:
	(f) Total potential of release:
	(g) Type of release (instantaneous, continuous, intermittent etc)
(2) Characteristics of the spilled oil	
	(a) Specific gravity:
	(b) Viscosity:
	(c) Pour point:
	(d) Volatility (flash point):
	(e) Relative toxicity:
(3) Weather and water condition/forecasts	
	(a) Air temperature, wind speed, direction:
	(b) Tide and current information:
	(c) Sea conditions:
	(d) Water temperature and salinity:
	(e) Water depth and depth of mixed layer:
(4) Trajectory information	
	(a) 48 hour oil trajectory forecast:
	1. Surface area slick:
	2. Expected areas of landfall:
	(b) 48-hour dispersed oil trajectory forecast:



Compilation of Data			
	1. Oil movement in water column:		
	2. Surface oil movement in water column:		
	3. Concentrate of dispersant/oil mixture in water column:		
(5) Characteristics of available dispersants			
	(a) Characteristics of available dispersants		
	Product 1	Product 2	Product 3
	1. Name		
	2. Manufacturer		
	3. When available		
	4. Location(s)		
	5. Amount available		
	6. Type of containers		
	7. Characteristics		
	a. Toxicity		
	b. Effectiveness		
	c. Reactions		
	d. Applicability to spilled oil		
	e. Other		
	8. Application methods		
	9. Miscellaneous		
	(b) Type of transportation and dispersing equipment:		
	Company 1	Company 2	Company 3
	1. Name		
	2. Location		
	3. Time to arrive		
	4. Equipment available		
	5. Other		
(6) Info about available dispersant and dispersing equipment			
	(a) Name of proposed dispersant on EPA and State acceptance lists:		
	(b) Type: (self-mix, concentrate, etc)		
	(c) Proposed application methods and rates:		
	(d) Efficiency under existing conditions: (% dispersed and volume dispersed)		
	(e) Location of the area to be treated:		
	(f) Surface area of slick treatable in scheduled time period:		
	(g) Estimated time interval between dispersant application and sensitive environments/resources:		
(7) Comparison of effectiveness of conventional cleanup methods vs. the use of dispersants:			
	(a) Containment at the source:		
	(b) Shoreline protection strategies:		
	(c) Shoreline cleanup strategies:		
	(d) Time necessary to execute response:		
(8) Habitats and resources at risk			
	(a) Shoreline habitat type and rea of impact:		
	Dispersant treated spill	Untreated spill	
	1.		
	2.		
	3.		



Dispersant Monitoring	
Required	
(1) Records	
	(a) Dispersant brand
	(b) Equipment and methods used in application
	(c) Dilution of dispersant prior to application, if any
	(d) Rate of application (gallons per acre, dispersant to oil ratio)
	(e) Times and area of application
	(f) Tracts of vessels or aircraft during application
	(g) Wind and wave conditions during application
Effectiveness: Visual and photographic documentation, by qualified observers of:	
	(a) Oil before and after dispersant application and
	(b) Re-surfacing of dispersed oil.
Environmental Impacts: Visual and photographic surveys of:	
	(a) The extent of shoreline impact by dispersed and undispersed oil
	(b) Mortality or abnormal behavior by fish, birds or mammals.
Desirable	
(1) Effectiveness: Sampling of the water beneath the oil slick and the oil and dispersant combination to determine the level of petroleum hydrocarbons in the water. This sampling could include "in-situ" measurements or sample collection for layer analysis.	
(2) Environmental impacts:	
	(a) Comparison of shoreline areas impacted by oil and oil and dispersant mixtures
	(b) Analysis of oil concentrations in sediments under dispersed oil
	(c) Investigation of water column organisms for signs of adverse impacts due to dispersed oil
	(d) Collection and analysis of birds affected by dispersants or dispersants and oil mixtures.

4.8.6 Cleanup Techniques – In-Situ Treatment

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	<ul style="list-style-type: none"> Any sedimentary substrate that can support heavy equipment Sand and gravel beaches with subsurface oil Where sediment is stained or lightly oiled Where oil is stranded above normal high waterline. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Oil may persist for significant periods of time Remobilized oil or sheens may impact other areas Higher probability of impacting wildlife.

4.8.7 Cleanup Techniques - 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 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.

The criteria for decanting are outlined below:

- All equipment intended for use in a decanting operation should be inspected to insure that it contains no harmful chemicals from prior use, and cleaned if necessary;
- All decanting should be done in a designated response area within a collection area, skimmer collection well, recovery belt, weir area, or directly in front of a recovery system
- Vessels or operations employing booms with skimmer in the apex of the boom should decant forward of the skimmer;
- All vessels, motor vehicles and other equipment not equipped with an oil/water separator should allow adequate retention time for oil held in internal or portable tanks before decanting commences
- A containment boom should be deployed around the collection area to minimize potential loss of decanted oil;
- Visual monitoring of the decanting area shall be maintained so that discharge of oil in the decanted water is detected promptly; and
- Records of volumes of oily water processes and oil recovered should be maintained

NOTE: Decanting requires regulatory approval.

4.9 Credit for Oil Recovery

If oil is spilled into Washington State waters Kinder Morgan may receive credit for oil that has been recovered. Please see the following pages with information on how to receive this credit and the process of applying for the credit.



Washington Oil Spill Compensation Schedule

Credit for Oil Recovery

From Ecology's Spill Prevention, Preparedness, and Response Program

If you spill oil into state waters, you can receive credit for any oil you recover, IF you follow these guidelines. The volume of oil you recover can directly and significantly affect the amount of the Resource Damage Assessment (RDA) claim made against you. Following these guidelines will make estimating the volume of oil recovered generally simple and cost effective, even for small spills.

- 1) Weighing is the easiest and least expensive method for determining the volume of oil recovered in absorbent material. Keep an accurate record of the size and number of each type of absorbent materials used because you must be able to determine how much the material weighed before it absorbed the oil. For recovery credit purposes, you do not need to extract the oil from the absorbent material by compression (squeezing) or washing.
- 2) Place oiled absorbent material in doubled plastic bags so the recovered oil does not leak out or evaporate. Keep absorbent material (pads, sweeps, booms, etc.) separate from other material (garbage, PPE, oiled debris, etc.).
- 3) Keep track of the length of time the absorbent materials are left in the water. This will help to estimate the amount of water absorbed.
- 4) Keep the water content as low as possible by allowing surface water to drain off absorbent material before placing it in the bags. Keep the bags closed as much as possible when working in the rain. Close lids on dumpsters to keep out rainwater.
- 5) In order to receive recovery credit, the oil must be recovered within 24 hours of the time oil first spills into state waters. Keep oil recovered within the first 24 hours separate from oil recovered after that time.
- 6) You cannot receive credit for oil recovered from areas other than water, such as soil, vegetation, road surfaces, ship decks, etc. Keep oil recovered from water separate from oil recovered from other areas.
- 7) Store primary and secondary recovery liquids separately. (See attached guidelines for definitions).
- 8) Do not collect or store recovered oil in tanks or vacuum trucks containing oil from other sources. Do not put oil from other sources into tanks or vacuum trucks containing recovered oil.
- 9) Oil collected in tanks or vacuum trucks must be allowed to physically separate from any water. The recovered oil volume must be derived using volumetric methods. You cannot use an estimate of the percent of oil in a tank or truck to derive recovery volume.

Washington Oil Spill Compensation Schedule Credit for Oil Recovery

RDA COMMITTEE RESOLUTION 96-1.1

Adopted May 8, 1996 (Revised May 12, 2004)

Intent: The RDA Committee recognizes that early containment and recovery of oil from the environment directly reduces the expected natural resource injuries caused by a spill. In order to acknowledge this fact in the compensation schedule, the RDA Committee developed the following credit provision. The credit reflects the direct avoidance of persistence effects, and likely reduction in mechanical effects, of each gallon of oil **recovered from the water within 24 hours of the time oil first spills into state waters**. The credit also recognizes that the acute impacts of oil in the water column begin immediately and are not sufficiently avoided even by rapid recovery efforts to warrant reduction under the compensation schedule.

Relationship to Other Resolutions: This resolution supersedes Resolution 95-1.

Credit Provision: Formula A shown below shall be used in compensation schedule applications to provide credit for the volume of spilled oil recovered from the water by responders within 24 hours, for any incident which meets the following criteria:

- 1) Recovered oil is stored and measured in accordance with the attached guidance document, and recorded on the attached data sheet;
- 2) Oil spilled to water is contained and recovered inside primary containment and within 1,000 feet of either the spill source or the point where the oil first enters state waters (Primary Recovery Liquids).

Formula A: Pursuant to the calculation of damages under WAC 173-183-830(3), WAC 173-183-840(2), WAC 173-183-850(2), and WAC 173-183-860(2), the mechanical injury and persistence components shall be multiplied by the difference between the spill-to-water volume and the total volume of oil recovered from the water by spill responders within 24 hours, such that:

$$\text{Damages}(\$) = \text{Scaling coefficient} * [(SVS_{at} * Oil_{at} * \text{Spill to water volume}) + (SVS_{mi} * Oil_{mi} * \{ \text{Spill to water volume} - \text{Total 24 hour recovery volume} \}) + (SVS_{per} * Oil_{per} * \{ \text{Spill to water volume} - \text{Total 24 hour recovery volume} \})]$$

If criterion 1 above is met but criterion 2 is not, Formula B shall be used to provide credit for the volume of spilled oil contained and recovered inside primary containment (Primary Recovery Liquids), which is applied to the Mechanical Injury portion of the calculation. The volume of any other oil recovered from the water within 24 hours (Secondary Recovery Liquids) is added to the Primary Recovery Liquids volume and credit for the total volume recovered from the water is applied to the Persistence portion of the calculation.

Formula B: Pursuant to the calculation of damages under WAC 173-183-830(3), WAC 173-183-840(2), WAC 173-183-850(2), and WAC 173-183-860(2), the mechanical injury component shall be multiplied by the difference between the spill to water volume and the Primary Recovery Liquids volume, and the persistence component shall be multiplied by the difference between the spill volume to water and the total volume of oil recovered by spill responders within 24 hours of the time oil first spills into state waters (Primary Recovery Liquids plus Secondary Recovery Liquids), such that:

$$\text{Damages}(\$) = \text{Scaling coefficient} * [(SVS_{at} * Oil_{at} * \text{Spill to water volume}) + (SVS_{mi} * Oil_{mi} * \{ \text{Spill to water volume} - \text{Primary Recovery Volume} \}) + (SVS_{per} * Oil_{per} * \{ \text{Spill to water volume} - \text{Total 24 hour recovery volume} \})]$$

This provision applies to all compensation schedule applications which occur after the adoption date of this resolution. Criterion 1 does not apply to spills for which the preassessment screening occurred before the adoption date of this resolution.

Washington Oil Spill Compensation Schedule Credit for Oil Recovery GUIDELINES

The following guidelines define how recovered oil must be handled, stored, and measured in order to receive credit under the Oil Spill Compensation Schedule. Given the scope of this credit, the guidelines focus on oil and oil-water mixtures recovered within 24 hours of the time oil first enters state waters. The state on-scene coordinator must confirm on the attached documentation form that these guidelines were met.

1. Definitions

- Primary recovery liquids: Oil and oil-water mixes recovered from the water inside the primary containment boom, and within 1,000 feet of either the spill source or the point where oil first spills into state waters, within 24 hours of the time oil first enters state waters.
- Secondary recovery liquids: Any other oil and oil-water mixes recovered from the water within 24 hours of the time oil first enters state waters.

2. General Guidelines

- The volume of primary recovery liquids and secondary recovery liquids shall be measured and recorded on the attached data form. Measurements must be reviewed and accepted by the state/federal OSC or their designee. Primary recovery liquids and secondary recovery liquids shall each be stored separately from each other and from all other materials collected during the spill response (such as oil recovered directly from the spill source) until such time that these measurements are completed.
- Primary and secondary recovery liquids should be stored in containers which have been verified as empty. If it is necessary to use a storage container which already contains water and/or petroleum products, the contents of that container must be identified and properly measured prior to the addition of primary or secondary recovery liquids.

3. Measurement Guidelines – Skimmers/Vacuum Trucks

- The volume of primary and secondary recovery liquids recovered by skimmers and vacuum trucks must be derived from volumetric methods rather than from estimates of removal performance.
- The percentage of oil contained in oil-water mixtures (including emulsions) recovered from the water shall not be measured until debris has been removed and the components have been allowed to physically separate.

4. Measurement Guidelines – Sorbents (boom, pads, etc.) and other oiled materials

- The volume of primary and secondary recovery liquids recovered from sorbents and other oiled materials must be derived from one of the following methods rather than from estimates of removal performance:
 1. **Volumetric:** Liquid shall be extracted from materials by compression or washing. The recovered oil-water mixture shall be measured as described above for skimmers/vacuum trucks.
 2. **Gravimetric:** Weighing of sorbents and other oiled materials shall take into account the pre-oiled weight of the material itself, any absorbed water, and accumulated debris. Density of the recovered oil shall be measured and used to convert the weight of the oil component into a volume.

Rather than measuring all applicable recovered sorbents and other oiled materials, representative sampling and statistical analysis may be used to estimate the volume of primary and secondary recovery liquids if that analysis meets the attached criteria.

Sampling and statistical analysis of recovered sorbents and other oiled materials

Measurement of each and every sorbent recovered during the first 24 hours is often infeasible for larger spills. In such cases, measuring a representative sample of oiled materials is the most effective way to estimate the total recovery. Unfortunately, many sampling and statistical analysis methods - some quite complex - could apply to this effort. Each requires assuming or knowing certain things about the total population of oiled materials from which representative samples are being drawn. For example, does the population follow a normal distribution? How much variance is expected? These attributes will largely be unknown and vary among spills. As a result, it is not practical to provide a “cookbook” approach to collecting and analyzing sample data for oil recovery. In fact, it is difficult to even prescribe acceptable margins of error. Therefore, the below guidelines simply set forth some basic sampling and analysis principles designed to control sampling error and avoid highly complex statistical analyses which would require extensive review. The responsible party must determine which sampling methods, sample sizes, and data analysis methods are most appropriate and provide written justification for those decisions. If a spill presents unusual or complex sampling issues, the responsible party is encouraged to seek approval of a sampling and analysis plan from Ecology staff before beginning to collect data.

Sampling

- Sample sets should be unbiased and representative of the total population. For example, sampling should be random without replacement and represent materials recovered during the entire first 24 hours of the spill event. The responsible party shall document in writing how they determined that the sample sets are unbiased representations of the total population.
- Sample sets should only be composed of like materials. For example, sorbent pad data should be collected and analyzed separately from sorbent boom data.

Two sample sets should be collected for each type of oiled material. The responsible party should determine the most appropriate test for determining sample size and justify that test in writing (e.g., citation of an equation from an acknowledged authority). At a minimum, the sample size for each set should be equal and large enough to be 80% certain (i.e., power $[1-\beta] = 0.80$) of detecting no greater than a 5% difference between the two sample means at the 5% level of significance (i.e., $\alpha = 0.05$). Most general statistics textbooks include equations for estimating required sample sizes, many using an iterative process and involving an estimation of expected variance. If an equation requires estimation of an expected variance or coefficient of variation, the estimate should be appropriate for the oil type, recovery material, and environmental conditions involved.

Analysis

- The total number of units in the population being sampled should be counted (an estimate may be acceptable under certain conditions if justified in writing).
- Once a sufficient sample size has been achieved, a mean volume of primary or secondary recovery liquids per unit of oiled material (e.g., # of gallons per sorbent pad) should be calculated for each sample set. The average of the two mean volumes should then be multiplied by the total number of units in the population in order to extrapolate the total recovery volume.
- Analysis of sampling data should result in an exact recovery volume as well as a range of volumes based on standard deviations from the mean.

5.0 PROTECTION OF SENSITIVE AREAS

Where safety allows, various techniques can be used to protect sensitive areas. Careful consideration of the oil and shoreline types must be given before decisions are made. This will be done through the Environmental Unit with oversight by Federal and/or State Regulatory Agencies. The following map identifies Department of Transportation sensitivities such as Municipal Water Intakes, Schools, Hospitals, Parks, Recreation Areas and First Nation Reserves.

1224000W 1223000W 1222000W 1221000W

(b) (7)(F)



5.1 Area Description

There are environmentally and economically important sites in the vicinity of this pipeline; however, there are no known culturally important sites.

The marine and estuarine waters within the San Juan Islands and Puget Sound are among the most biologically rich and sensitive areas of the State of Washington. A wide diversity of shoreline and marine habitats (estuaries, rocks, reefs and islands), abundant food resources and exceptional water quality all contribute to making this area especially valuable to wildlife.

This region contains a number of small to medium-sized seabird nesting colonies, a multitude of marine mammal breeding and resting sites, rearing and feeding habitat for marine fish and one of the most impressive arrays of marine invertebrates in the world. The region is also a temporary home to many species of marine birds and mammals that are seasonal residents or pass through the area during migration. Flight restriction zones exist in the area to protect sensitive wildlife species.

In addition to this manual there is a Field Handbook and Control Points Manual which identifies control points and access points to water bodies for equipment deployment to prevent migration of oil downstream. In Sections 9 and 10 there is additional information in regards to available equipment. Section 13 has additional information for Wildlife Operations.

5.1.1 Marine Mammals

Common species of whales and dolphins found within the area include gray whale, orca, dall's porpoise and harbor porpoise. In addition, the harbor seal is a permanent resident of the area. Three addition species occur as regular seasonal residents or migrants: the steller sea lion, california sea lion and the northern elephant seal. Although relatively few steller sea lions are found in this area, this species is of special concern because it is listed as a 'Threatened Species'. This region also supports a large population of river otters which are largely marine in their habits.

The islands, nearshore rocks and beaches of the region provide pupping and resting sites for harbor seals. The largest concentrations are found in the vicinity of Boundary Bay and Padilla Bay. Other smaller sites are scattered throughout the entire area. Nearshore waters are also used as feeding areas by seals, seal lions, gray whales, harbor porpoise and river otters.

5.1.2 Birds

Many species of marine birds and shorebirds are either residents or seasonal visitors with this area. Much of the seabird nesting is scattered throughout the region on offshore rocks, exposed rocky coasts or on pilings.

Bald eagles and peregrine falcons nest in the area and are closely associated with the marine ecosystem because of their feeding habits and choice of resting sites. These birds are either listed as threatened or endangered and are therefore of particular concern. This area hosts a large wintering population of bald eagles.

Marbled murrelets are unique among the area's seabirds because they nest inland in old-growth forests, yet spend much of their time feeding and resting on marine waters in the nearshore environment. This species is of special concern since it's been shown to be highly vulnerable to oil spills and gillnet entanglement and is listed as a threatened or endangered species.

In addition to supporting a wide variety of resident birds, Puget Sound is recognized as one of the most important waterfowl wintering areas on the Pacific Flyway for waterfowl. This area has been identified as a key component in the North American waterfowl plan.

5.1.3 Bird Colonies

Most of these species follow the coast during their southward movement, many species winter around these bays, while others stop briefly to rest and feed before continuing their migration to Southern California, Mexico, Central America or South America. During fall and spring migration, as well as winter, large populations of shorebirds and waterfowl inhabit nearshore areas. Consequently in the event of a spill, certain protective measures may be required to minimize the effect on waterbirds. For example, during a critical spill situation, initial efforts should attempt to repel birds from the site with equipment such as bird canons. Depending on the species involved, some repelling devices will successfully deter individuals from the affected area while others will be ineffective.

Subsequent efforts can be reorganized on the basis of these results. The degree of effectiveness decreases as birds become accustomed to the sound system, this process is referred to as habituation. Activities such as people, boats and machinery usually are the most effective deterrents.

5.1.4 Eelgrass

Eelgrass meadows in protected bays provide food source for variety of species within the marine food chain. Additionally, it provides habitat and protection and acts as a nursery for many marine species. In the event of an oil spill near eelgrass meadows, protective measures should be implemented to reduce the impact.

Measures such as booms may be effective when conditions permit deployment. If placed from shore, minimize trampling and dragging equipment over the habitat. Dispersants may be applied in deeper water where dilution will be rapid. If applied in shallow water, use only in areas with adequate flushing from tidal or wave action. If applied directly over seagrass beds, dispersed oil may impact seagrass and organisms associated with seagrass beds. Herding agents may be used between the oil and shoreline.

For cleanup, natural cleansing is still preferable to most cleanup methods. Manual removal results in the removal of sediments and organisms and should be used in the 'wade zone' only. Trampling and dragging of equipment over the habitat should be minimized.

Substrate removal may delay or prevent re-establishment of the original ecosystem and vacuum pumping may result in the removal of organisms and sediment. Both methods are not advisable. In intertidal area, low pressure flushing may be viable. Vegetation cropping should be avoided since it modifies the habitat and may kill important habitat plants.

5.1.5 Inlets, Intakes, Harbors and Marinas

Inlet, intakes, harbors and marinas are inhabited by a variety of fish, invertebrates and waterbirds that would be at risk if an oil spill occurs near any of these facilities. Marinas have a great potential for public exposure to hazards and damage claims and should be boomed to exclude oil. Intakes for commercial, industrial and municipal water usage areas are subject to impact due to safety hazards, loss of use and damage claims. Protective measures could include exclusionary booming to prevent or exclude oil from entering these areas. Many of the entrances or channels have tidal currents exceeding 1 knot in the opening. In these cases, booms should be deployed landward from the entrance in quiescent areas. Booms should be placed at an angle to the current to guide oil to an area where it can be recovered.

The deployment of a second boom behind the first may be desirable to contain any oil that escaped under the primary boom.

Diversion booming should be used where the water current in an area greater than 1 knot or if the areas are too large to boom with available supplies. Diversion booms are deployed at an angle from the shoreline closest to the leading edge of the approaching oil slick to deflect oil towards shore, where pickup of pooled oil is more effective.

Since the area is predominantly environmentally sensitive, recommended response strategies are to attempt to limit the extent of shoreline fouling and to limit the area covered by the slick to the maximum extent possible. Since oil is the primary product handled, containment booming operations will be initiated. In addition, shoreline protection boom may be utilized in an attempt to prevent fouling of shorelines.

It is also important to recognize that while certain immediate environment protection response strategies must be planned for in advance, the ongoing protection and cleanup during a major spill would involve professional input from the company's oil spill advisors and the Federal and State On-Scene Coordinators.

5.1.6 Recreational Areas

Publicly accessible recreation areas generally have good water/shoreline access for logistical purposes.

5.1.7 Salmon and other Spawning Streams

Numerous streams throughout the area have been identified as environmentally sensitive due to the presence of spawning areas for salmon and other species.

The following factors are detrimental to spawning fishes, their nests and eggs:

- Changes in water temperature
- Increased siltation or turbidity
- Increased amount of dissolved gases in the water column
- Physical destruction of habitat by personnel and/or equipment.

To reduce the impact of an oil spill and response activities to streams identified as spawning habitat, the following steps would be taken:

- Attempt to contain spilled product as far upstream of spawning areas as possible
- Minimize or eliminate the use of overflow dams
- 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 Spill Containment and Recovery

Containment and recovery refer to techniques that can be employed to contain and recover terrestrial and aquatic petroleum spills.

Terrestrial spills typically result from pipeline or tank leaks. The company is equipped with secondary containment systems for areas with no-pressurized breakout tanks. Spills occurring within the

secondary containment area or along the pipeline areas should be contained at or near their source to minimize the size of the cleanup area and quantity of soil affected.

Containment is most effective when conducted near the source of the spill, where the oil has not spread over a large area and the contained oil is of sufficient thickness to allow effective recovery and/or cleanup. The feasibility of effectively implementing containment and recovery techniques is generally dependent upon the size of the spill, available logistical resources, implementation time and environmental conditions or nature of the terrain in the spill area.

For terrestrial spills, trenches and earthen berms or other dams are most often used to contain oil migration on the ground service. Recovery of free oil is best achieved by using pumps, vacuum sources and/or sorbents.

Spills that reach water spread faster than those on land. They also have greater potential to contaminate water supplies, to affect wildlife and populated areas and to impact manmade structures and human activities. Responses on water should therefore emphasize stopping the spill, containing the oil near its source and protecting sensitive areas before they are impacted.

Sorbents are used to remove minor on water spills. For larger spills, booming is used to protect sensitive areas and to position oil so it can be removed with skimmers or vacuum trucks.

5.3 Booming Techniques

5.3.1 Exclusion Booming

Description

Boom is deployed across or around sensitive areas and anchored in place. Approaching oil is deflected or contained by boom.

Primary Uses

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.

Environmental Effects

Typically, effects are limited to minor disturbance to substrate at shoreline anchor points.



5.3.2 Deflection Booming



Description

Boom is deployed at an angle to the approaching slick. Oil is diverted away from the sensitive area to a less sensitive location for recovery.

Primary Uses

Angle 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). On straight

coastline areas to protect specific sites, where breaking waves are less than 1.5 ft (0.5 m).

Environmental Effects

Typically, 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.

5.3.3 Along-Shore Booming

Description

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.



Primary Uses

This technique can be used in quiet areas with breaking waves of less than 1 ft (0.3 m).

Environmental Effects

Typically, effects are limited to possible shoreline oil contamination down-wind and down-current.

5.3.4 Shore-Seal Booming

Description

Specially-designed, shore-sealing boom is positioned in the inter-tidal zone to deflect oil.

Primary Uses

This technique can be used in a wide range of substrates, but is most often used on mud and sand flats.

Environmental Effects

Typically, effects are limited to minor disturbance to substrate at shoreline anchor points.



5.3.5 Use of Passive Sorbents

Description

Sorbents are positioned in the swash zone to absorb incoming oil.

Primary Uses

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.



Environmental Effects

The environmental effects of passive sorbents are typically limited to the minor disturbance to the substrate.

5.4 Spill Movement Estimates

Watercourse	Normal Seasonal Minimum Flow Rate (miles/hour)	Normal Seasonal Maximum Flow Rate(miles/hour)	Maximum Velocity Above Normal (miles/hour)
Chuckanut Creek	0.5	1.7	2.3
Deer Creek	0.1	0.8	1.2
Friday Creek	0.8	2.1	2.69
Nooksack River	0.9	2.5	3.1
Samish River	0.4	1.3	1.8
Siler Creek	0.1	0.6	0.9
Squalicum Creek	0.4	1.2	1.6
Sumas River	0.4	1.2	1.8
Tenmile Creek	0.3	0.9	1.3
Tributary to Squalicum Creek	0.3	0.9	1.2
Whatcom Creek	1.0	3.6	3.9

5.5 Historical Climatic Data

	Jan-Feb	Mar-Apr	May-Jun	Jul-Aug	Sept-Oct	Nov-Dec
Max Wind Speed (mph)	S 51	SW 44	SW 32	SW 29	SW 38	S 66
Average Wind Speed (mph)	9.4	9.4	8.7	7.9	8.4	9.2
Min Temperature (F)	36	39	47	55	46	36
Maximum Temperature (F)	49	58	69	75	70	50
Average Temperature (F)	42	48	58	65	57	42
Average Precipitation (inches)	4.6	3.2	1.6	0.9	2.4	5.7
Average Daylight (hours)	8.7	12	15.5	15.4	11.8	8.5

6.0 MULTIPLE HAZARDS

The pipeline and facilities are exposed to multiple types of hazards, including:

- Fire and explosion
- Natural Disasters:
 - Tornadoes
 - Earthquakes
 - Floods
 - Avalanches
- Security Incidents:
 - Bomb Threat
 - Breach of Security

6.1 Fire and Explosion Checklist

- Notify Control Center/Field Personnel of possible emergency situation
 - If applicable, refer to the facility-specific Fire Prevention Plan
- Notify nearest fire department (call 911)
- Evacuate all non essential personnel and secure area
- Muster company response personnel at a safe location
- Shut off fuel source that is feeding fire, if safe to do so
- If fire is small, use of hand held dry chemical extinguisher may be sufficient to control and extinguish the fire. **Do not take chances**
- Coordinate response with fire and/or police departments
- Apply foam and water if available and as directed by Fire Department Personnel
- Administer medical attention to any injured persons
- Monitor site weather conditions (particularly wind direction)

6.1.1 Fire Prevention

All company personnel are responsible for monitoring the accumulation of flammable and combustible waste materials and residues that contribute to fires.

- Flammable substances are those liquids, solids or vapors that have flashpoints below 38° C (100° F). Some of the more common flammables are gasoline, natural gas, propane, methanol and certain paints, primers and thinners.
- Combustible substances are those liquids, solids or vapors that have flashpoints greater than 38° C (100° F). Some of the more common combustibles include grasses, paper, wood, paint, certain lubricating oils and greases.

Good housekeeping and equipment maintenance are essential to keep fire hazards to a minimum. Listed below are housekeeping and maintenance requirements for controlling the supply and accumulation of flammable and combustible substances:

- Flammable liquids shall be stored in original or approved containers.
- Larger quantities (95 liters/25 gallons or more) of flammable liquids or vapors shall be stored in an approved container outside of the building or inside the building in an approved fire-rated storage cabinet.
- Each flammable liquid container shall have a bonding and grounding cable attached between it and the receiving container while liquids are being transferred or dispensed.
- Oil-soaked rags shall be stored in UL-approved, covered metal containers.
- Scrap paper and wrapping or packing materials shall be removed from the work area immediately after unpacking. Waste receptacles shall be emptied daily and contents placed in the trash containers provided.
- Weeds and grasses will not be allowed to grow or accumulate around flammable liquid storage facilities (tanks), pumping stations, or manifold areas.
- Using gasoline or condensate for cleaning agents is strictly prohibited.
- Site personnel are responsible for visually inspecting heat-producing equipment and ensuring that good housekeeping and equipment maintenance are being performed to keep fire hazards to a minimum.

6.2 Natural Disaster – Tornado

Definitions

Tornado Watch	A tornado formation is likely in the area
Tornado Warning	A tornado has been sighted or seen on radar

Look For

- Rotary motion at the base of the thundercloud system.
- Rotating cloud of debris or dust near ground.

Listen For

- The roar which can be heard for several miles described as jet aircraft or trains.
- If a natural disaster threatens the Primary Control Center, transfer of operation to the Secondary Control Center shall be initiated.

6.2.1 Tornado Action Checklist**Before the Storm**

- If you see a tornado approaching location, call your Supervisor.
- Seek shelter, preferably in a cellar, culvert or strong building. Stay away from windows. Take cover under heavy furniture in the center part of building, keep some windows open
- In open country move away from tornado's path at a right angle. If you cannot escape, lie flat in nearest depression such as a ditch or ravine. If you have to crawl into culverts or under small bridges, beware of flooding, snakes and other animals seeking shelter.
- Keep listening to radio or television if possible. If you see a tornado, call the weather bureau.

After the Storm

- Give aid to injured.
- If damage has occurred to pipeline, follow the Emergency Response Plan found on page I-4, and report to supervisor.
- Watch for:
 - Downed power lines
 - Flooding
 - Debris

6.3 Earthquake Action Checklist

- Shutdown petroleum transfer and secure facilities:
 - Close isolation valves and tank valves
 - Close storm-water discharge valves
 - Shut off nonessential power supplies
- Monitor site for evidence of leaks from pipeline facilities.
- Notify the Control Center Operator of steps taken and obtain further instructions.
- Evacuate all nonessential personnel and third parties to a safe location.
- In the event of earthquake damage:
 - Follow the Emergency Response Philosophy found on page I-4
- Secure facility for aftershocks; exercise caution when entering damaged buildings
- Watch for:
 - Downed power lines
 - Flooding
 - Debris

6.4 Flood Action Checklist

A flash flood watch means that flooding is possible - watch out for it and be alert.

A flash flood warning means flooding has been reported - immediately take precautions to insure your safety.

- Shut down and isolate the section of the pipeline at risk
- Monitor the pipeline route for potential damage
- Buoy any above-ground facilities that could become submerged to prevent damage from craft operating in flooded areas
- Never try to walk, swim or drive through swift water
- Evacuate if necessary
- When flooding subsides, perform survey to determine if there is sufficient cover over pipeline
- Notify landowners of areas of reduced cover
- In the event of flood damage, follow the Emergency Response Plan found on page I-4
- Conduct an aerial overflight

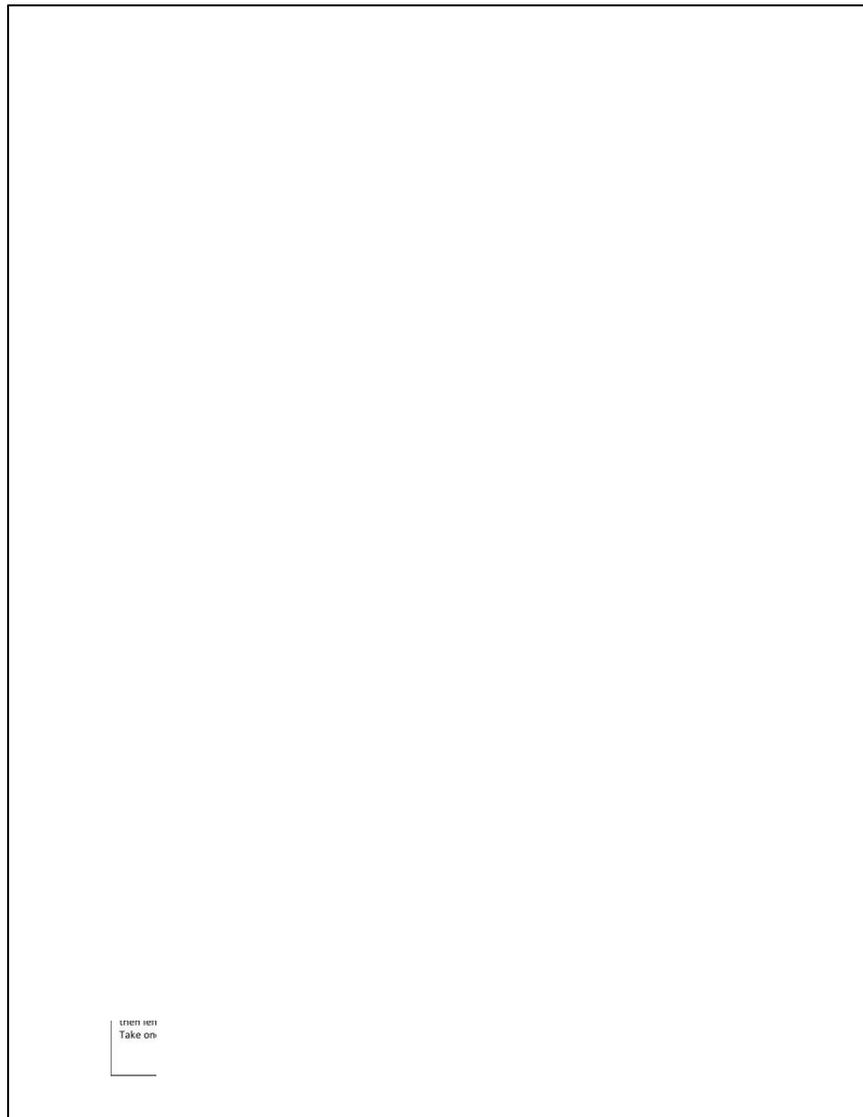
6.5 Avalanche Checklist

Response to an avalanche incident must be orderly and efficient, and keep the safety of rescuers uppermost at all times. A successful rescue depends on a rapid response by appropriately trained and equipped personnel.

- At the accident site, rescuers must be able to ensure their own safety while working as a team to accomplish the rescue as rapidly as possible.
- The initial response team may require additional resources to be deployed at the site as the rescue proceeds. In order to accomplish this, a plan has been developed to aid in conducting a rescue with the minimum of wasted time and effort.
- Rescue participants should be trained in and practice rescue techniques utilizing the avalanche rescue equipment available.

The full Avalanche Safety Plan is available by request or on KMonline EHS - Manuals

6.5.1 *Avalanche Rescue Card*





1-888-876-6711

Emergency Response Plan

6.5.2 *Avalanche – Preliminary Accident Details*

Initial Response

If you witness an avalanche, or an avalanche incident is reported to you:

- 1 **Retain Witness(es) and ensure safety of personnel**
- 2 **Note and Record Preliminary Accident Details**

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.	

- 3 Relay the above Preliminary Accident Details to

Base Control Centre at (Kinder Morgan Emergency 1-888-876-6711)

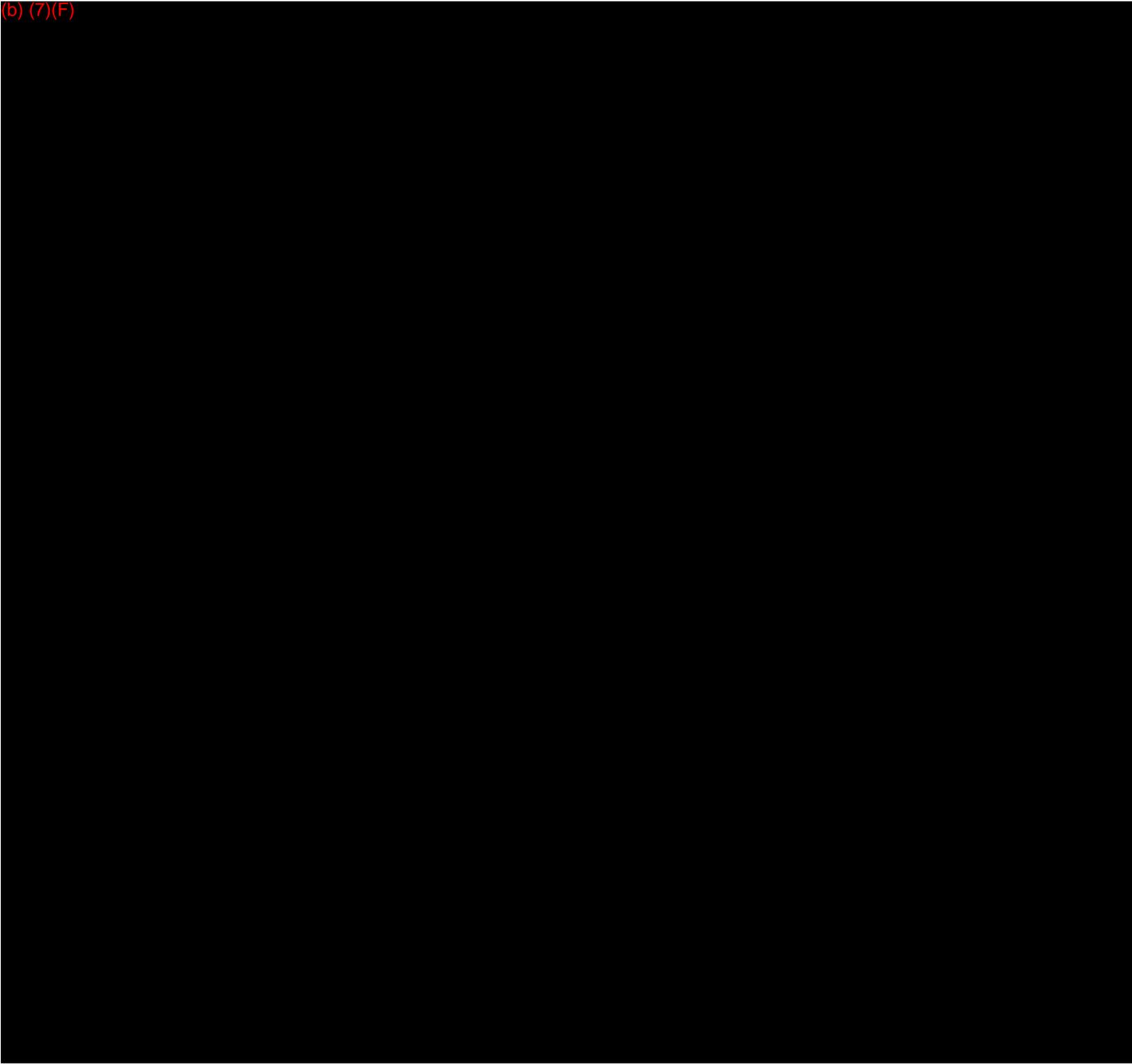
Initial Responder/Incident Commander **MAY BE PROMPTED FOR ADDITIONAL INFORMATION** by the Base Control Centre.

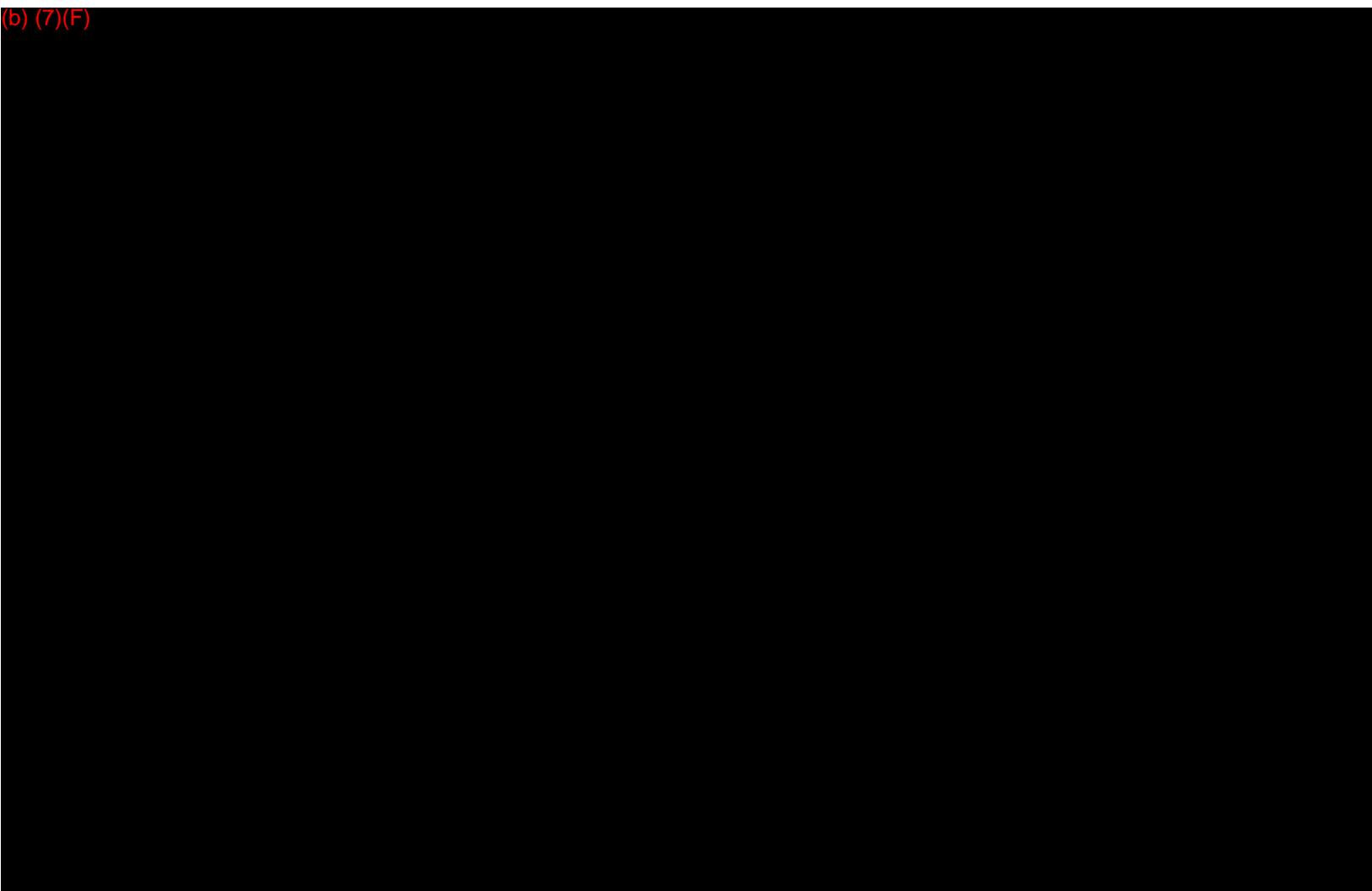


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Emergency Response Plan

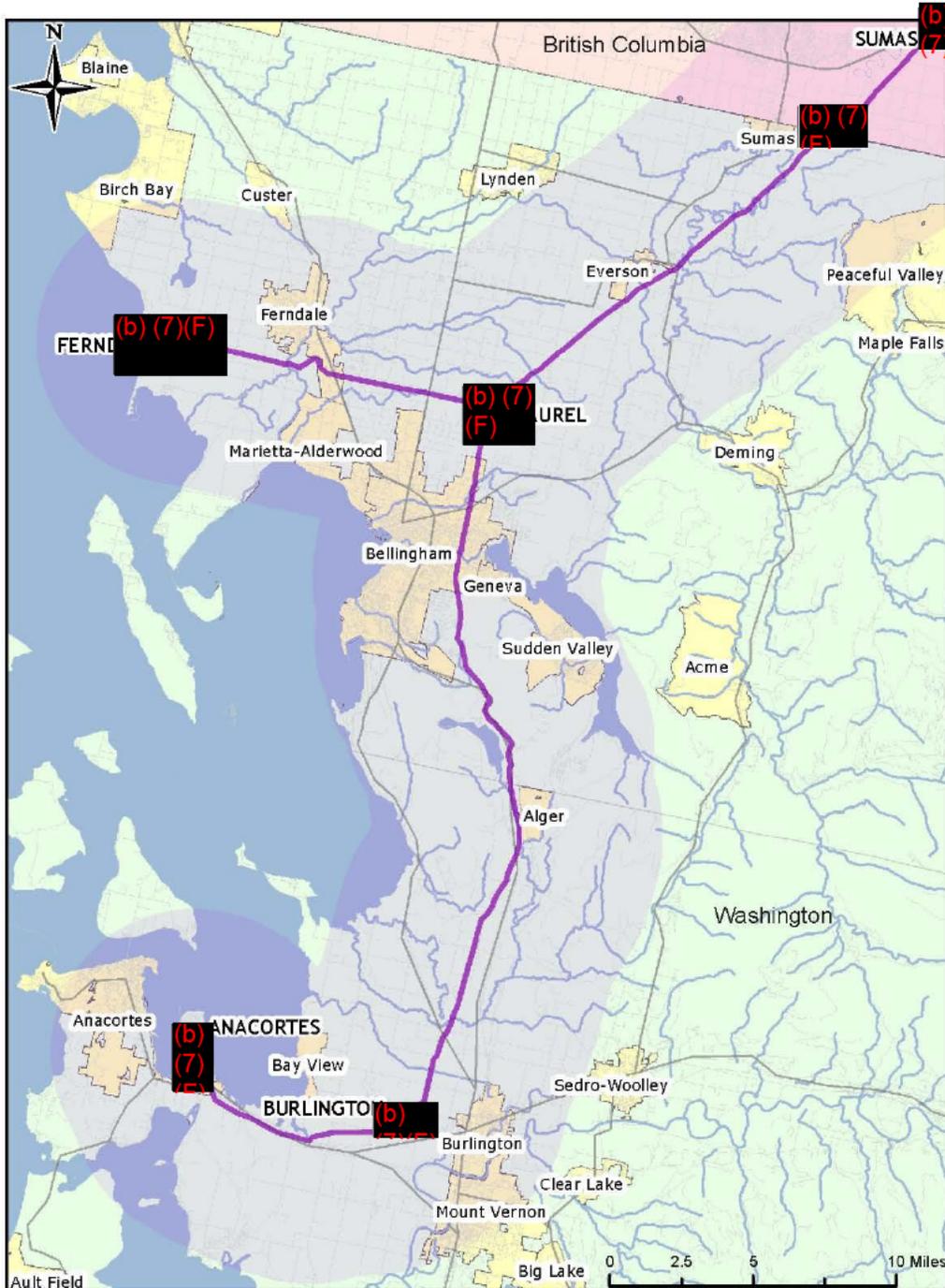
(b) (7)(F)





7.0 SITE INFORMATION

7.1 Pipeline Overview Map



**TRANS MOUNTAIN PIPELINE
PUGET SOUND**



— TMP - Puget Sound Pipeline

(b) (7)(F)

7.2 Puget Sound Area Description

The Trans Mountain mainline system from Edmonton to Burnaby transports crude petroleum, refined and semi-refined products together in the same line using a process called batching. The system goes through Kamloops Station which receives crude oil and refined products for shipment to the west coast. The Puget Sound Pipeline system connects with the Trans Mountain mainline system at Sumas, BC on the Canada/USA International Boundary. It delivers Canadian crude oil to four refineries at Ferndale and Anacortes on the west coast of Washington State. Laurel station has two breakout tanks that are used to temporarily store oil while awaiting delivery at refineries in Ferndale and Anacortes.

The geographic area covered by this Oil Spill Contingency Plan extends from the international boundary with Canada near Sumas to Ferndale and Anacortes in northwest Washington State. The land use around the pipeline varies between forested areas, urban areas and agricultural land use.

Spills entering water bodies, with the exception of the Sumas River, flow towards the sea between Lummi Bay and Padilla Bay, including Bellingham Bay, Samish Bay and shorelines in between these coastal areas. Offsite migration of land spills from the pipeline system that does not enter water bodies are likely to be confined to the pipeline right-of-way or immediately adjacent areas. Spills entering the Sumas River flow north into Canada, eventually entering the Fraser River.

The pipeline system facilities include:

- Laurel Station
- Ferndale Meter Station
- Burlington Scraper Trap
- Anacortes Meter Station
- NPS 20 (inch) pipeline from the Canada/ U.S. Border (Mile 5.5) approximately 3 miles east of Sumas, Washington to the Burlington Scraper Trap near Burlington (Mile 48).
- NPS 16 (inch) branch pipeline from the Laurel Station (Mile 20.6) approximately 12 miles to the Ferndale Meter Station adjacent to the ConocoPhillips refinery at Neptune Beach near Ferndale. There is also a connection to the refinery at Cherry Point via a delivery pipeline owned by BP.
- NPS 16 (inch) pipeline connected to the NPS 20 pipeline at the Burlington Scraper Trap, approximately 9 miles to the Anacortes Meter Station adjacent to the Shell and Tesoro Refineries on March Point near Anacortes, Washington.



1-888-876-6711

Emergency Response Plan

7.3 Owner/Operator Information

Owner	Trans Mountain Pipeline (Puget Sound) LLC #2700, 300-5th Avenue S.W. Calgary, AB T2P 5J2
Operator	Kinder Morgan Canada Inc. #2700, 300-5th Avenue S.W. Calgary, AB T2P 5J2
Zone Name	Puget Sound
Zone Mailing Address	1009 East Smith Road Bellingham, WA 98226
Zone Telephone/FAX	Phone: 360-398-1541 Fax: 360-398-7432
Qualified Individual	Patrick Davis (360) 398-1541 Office (360) 319-0800 Cell (b) (6)
Alternate Qualified Individual	Dale McClary (360) 398-1541 Office (360) 319-2794 Cell (b) (6)
Start of Operations	The Puget Sound Pipeline has been in operation since 1956.
Response Zones Consists of the Following Counties	Whatcom and Skagit (Washington)
Alignment Maps, etc.	Maintained at: Calgary Head Office, in the Drafting Department
Statement of Significant and Substantial Harm	The response zones in this system all contain pipelines greater than 6 5/8 inches and are longer than ten miles. At least one section of pipeline in each response zone crosses a major waterway or comes within five miles of a public drinking water intake. Therefore, in accordance with 49 CFR 194.103(c), each entire response zone described in this Plan will be treated as if expected to cause significant and substantial harm.
Worst case discharge	Varies based on response zone, see Section 7.5.
PHMSA #	587
Facilities	(b) (7)(F)
Border Scraper Trap	n/a
Laurel Station	(360) 398-1541
Ferndale Meter Station	(360) 380-1945
Burlington Scraper Trap	(360) 757-1384
Anacortes Meter Station	(360) 293-6323

7.4 Incident Command Post Locations

The following locations have been designated as Incident Command Posts.

Name	Meeting Rooms	Phone lines	Rooms	Business Services Available	Cooking Facilities	Nearest City & Distance
Laurel Station 1009 East Smith Road, Bellingham WA 98226 (b) (7)(F)	20' X 30' 40' X 48' Plus various smaller offices	2 5	None	Yes	Limited None	Bellingham 5 Miles
Samish Lake #1 Fire Hall 705 West Samish Lake Road (b) (7)(F)	40' X 60'	1	None	Yes	Full	Bellingham 8 Miles
Fredonia Grange 14245 McFarlane Road, Mount Vernon, WA (b) (7)(F)	65' X 36' 44' X 36'	1	None	Yes	Full	Anacortes 7 miles Mount Vernon 5 miles
Best Western Lakeway Inn and Conference Center 714 Lakeway Drive Bellingham, WA 96226	92' X 70' ballroom 40' X 70' Whatcom 53' X 35' Sehome or Fairhaven 17' X 48' San Juan 38' X 40' Mt. Baker 32' X 60' Board Room	3 1 1 1 1	132	Yes	Yes	
Skagit Valley Casino Resort 5984 N Darrk Lane, Bow, WA 98232	22X66 Courtyard 60X56 Pacific 67X49Northwest	3 6 8	102 rooms	Yes 24 hour business center	Yes	

These locations can accommodate the Incident Management Team, contractors, and agency personnel. Both locations have multiple telephone lines already installed, pre-defined setup for the ICS sections, and breakout rooms for Government agencies, Unified Command meetings, etc.



7.5 Response Zones

Zone	Pipeline Section	Diameter	Product	WCD (bbl)
1	Border Scraper Trap to Laurel Station	20"	Crude Oil Blends	(b) (7)(F)
2	Laurel Station to Ferndale Meter Station	16"	Crude Oil Blends	(b) (7)(F)
3	Laurel Station to Burlington Trap	20"	Crude Oil Blends	(b) (7)(F)
4	Burlington Trap to Anacortes Meter Station	16"	Crude Oil Blends	(b) (7)(F)
5	Laurel Station	n/a	Crude Oil Blends	(b) (7)(F)

7.6 Puget Sound Tank Data

Location	Description	Capacity (US Gallons)	Capacity (barrels)
Ferndale Relief Tank (130)	1x Relief Tank	(b) (7)(F)	(b) (7)(F)
Laurel Relief Tank (120)	1x Relief Tank	(b) (7)(F)	(b) (7)(F)
Laurel Tank 170	Breakout Tank	(b) (7)(F)	(b) (7)(F)
Laurel Tank 180	Breakout Tank	(b) (7)(F)	(b) (7)(F)

7.7 Trans Mountain Products Summary

Note: This list of oils identifies what is approved to ship on the Trans Mountain system, not all products ship to Puget Sound. The current product can only be determined by the Control Centre at the time of a spill.

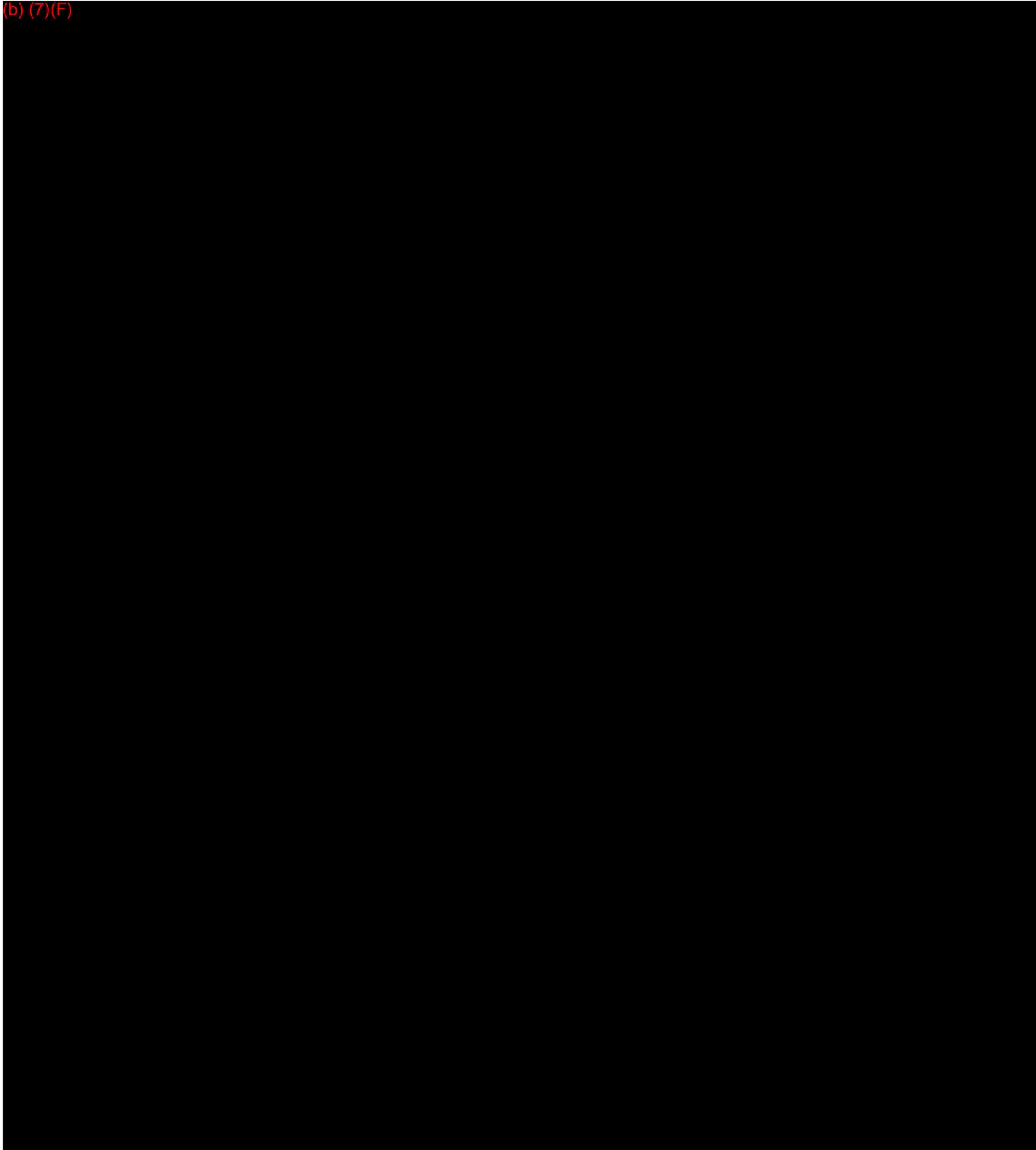
Product Name	Product Identifier	Vapor Density	Specific Gravity	API	Oil Group Number	Total Sulfur (wt%)
SUPER LIGHTS						
Caroline Condensate	CCA	>1	0.75	56.0	2	0.49
Fort Sask Condensate	FSC	>1	0.68	76.7	2	0.06
Rangeland Condensate	CRL	>1	0.74	59.9	2	0.35
Premium Gasoline	G91	>1	0.70	70.9	2	0.02
Pembina Condensate	CPM	>1	0.76	54.5	2	0.16
Peace River Condensate	PCON	>1	0.75	57.3	2	0.15
LIGHTS						
BC Light Crude	BCL	>1	0.83	39.8	2	0.60
Boundary Lake Crude	BLK	>1	0.84	36.1	2	0.83
Bonnie Glen Crude	BOG	>1	0.82	41.3	2	0.41
Bonnie Glen Sour Crude	BGS	>1	0.88	29.3	3	1.22
Horizon Synthetic	CNS	>1	0.85	34.4	3	0.08
Central Alberta KOC	KOC	>1	0.85	35.4	3	1.07
Light Sour Oil	LSO	>1	0.83	39.4	2	0.76
Suncor Synthetic A	OSA	>1	0.86	32.7	3	0.20
Suncor Synthetic C	OSC	>1	0.88	30.0	3	0.22
Premium Albian Synthetic	PAS	>1	0.86	33.1	3	0.10
Peace River Crude	PCR	>1	0.83	39.8	2	0.54
Peace River Sour	PCSR	>1	0.87	31.8	3	2.59



Product Name	Product Identifier	Vapor Density	Specific Gravity	API	Oil Group Number	Total Sulfur (wt%)
Pembina Crude	PEM	>1	0.83	38.9	2	0.43
Pembina North	PNC	>1	0.83	40.0	2	0.45
Premium Synthetic	PSC	>1	0.84	37.0	2	0.08
Rainbow Crude	RBW	>1	0.84	37.8	2	0.49
Mixed Sweet Blend	SW	>1	0.84	37.6	2	0.47
Shell Synthetic Light	SSX	>1	0.87	31.6	3	0.22
Syncrude	SYN	>1	0.86	32.4	3	0.18
MEDIUM						
Strathcona Special Stream	SSS	>1	0.90	26.0	3	1.08
HEAVY						
Suncor Synthetic PTCN	OSP	>1	0.91	23.8	3	3.26
Suncor Synthetic S	OSS	>1	0.91	24.0	3	2.83
SUPER HEAVY						
Albian Residual Blend	ARB	>1	0.93	20.5	3	2.70
Albian Heavy Synthetic	AHS	>1	0.94	19.6	3	2.47
Albian Muskeg Heavy	AMH	>1	0.93	20.7	3	3.95
Albian Vacuum Gas Oil	AVB	>1	0.92	22.3	3	3.16
Access Western Blend	AWB	>1	0.92	22.6	3	3.82
Borealis Heavy Blend	BHB	>1	0.92	22.0	3	3.60
Cold Lake Blend	CL	>1	0.93	21.4	3	3.72
Kearl	KRL	>1	0.91	23.7	3	3.29
McKay Heavy	MKH	>1	0.93	21.0	3	2.60
Oil Sands Q	OSQ	>1	0.92	22.3	3	3.90
Long Lake Heavy	PSH	>1	0.93	20.4	3	3.22
Peace Heavy	PH	>1	0.93	21.3	3	5.11
Seal Heavy	SH	>1	0.93	20.5	3	4.79
Statoil Cheecham Blend	SCB	>1	0.93	20.5	3	3.83
Statoil Cheecham Syn-Bit	SCS	>1	0.94	19.0	3	2.86
Statoil Cheecham Mixed Blend	SCM	>1	0.94	19.8	3	3.3
Suncor Synthetic H	OSH	>1	0.94	19.8	3	3.09
Surmont Heavy	SHB	>1	0.94	19.7	3	2.97
Wabasca Crude	WH	>1	0.93	21.2	3	4.02

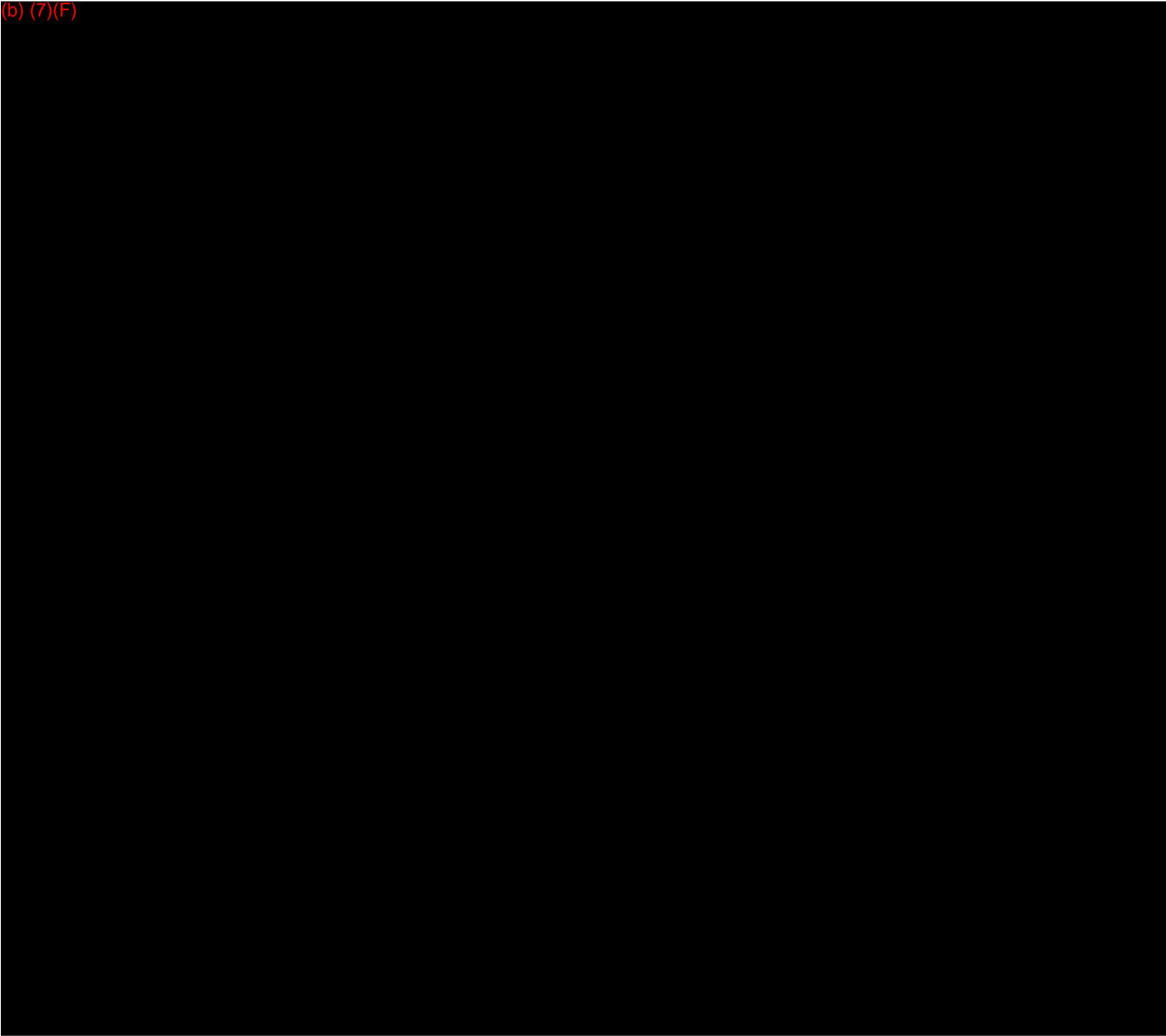


(b) (7)(F)





(b) (7)(F)



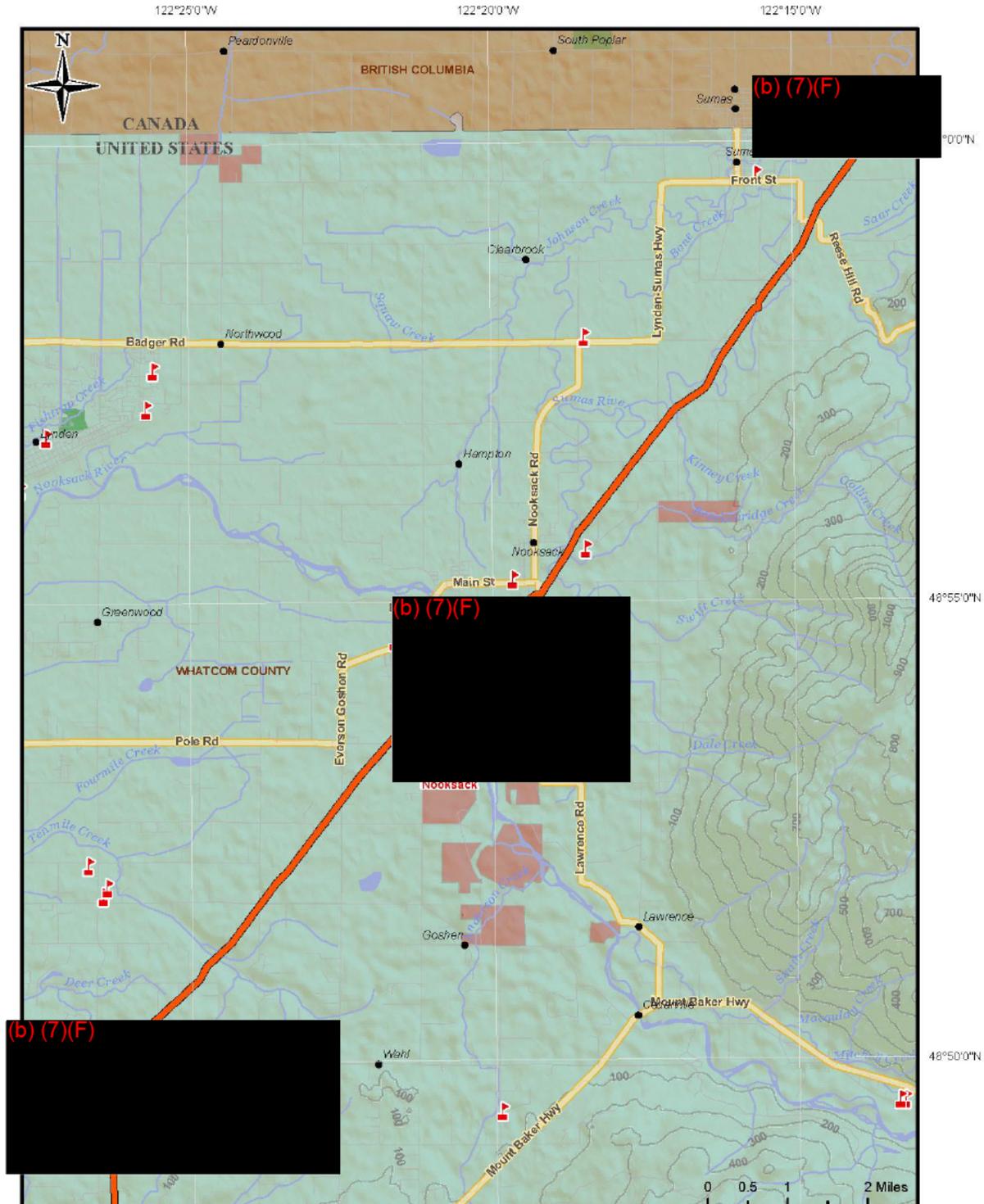
7.9 Response Zone Descriptions, Maps and Site Plans

7.9.1 Zone 1 -Border Scrapper Trap to Laurel Station

The Border Scrapper Trap is located on the Canadian side of the USA/Canada border. The surrounding topography is primarily flat agricultural land. This location has pig loading/unloading facilities. Water is controlled on-site via surface drainage and ditches. If a spill were to occur at the Border Scrapper Trap it would likely be very small in size and is not likely to leave the site. Using spill modeling and trajectory analysis any oil migrating off-site from the Border Scrapper Trap is most likely to remain on land in the immediate vicinity of the site, within Canada.

The pipeline segment from the Border Scrapper Trap to Laurel station is approximately 15.39 miles long and is a 20" diameter pipeline. The worst case spill volume for this segment of line is (b) (7)(F). The land surrounding the section of pipeline is mostly flat agricultural lands less than 100 ft above sea level. The segment of pipeline is within Whatcom County. There are two vales which can be closed remotely, one is north of the Nooksack River and the second is south of the Nooksack River. The 48 hour spill model indicates that the majority of this section will be contained to the pipeline right of way or immediately adjacent, however there are several stream crossings in this section of the pipeline. A spill into the Sumas River would be expected to cross the border into Canada within 48 hours, likewise a spill to the Nooksack River, Tennille Creek, Deer Creek and any of the tributaries/ditches that empty into those bodies of water would be expected to reach Bellingham Bay within 48 hours.

7.9.1.1 Response Zone 1 – Relief map



**TRANS MOUNTAIN PIPELINE - PUGET SOUND
RESPONSE ZONE 1**

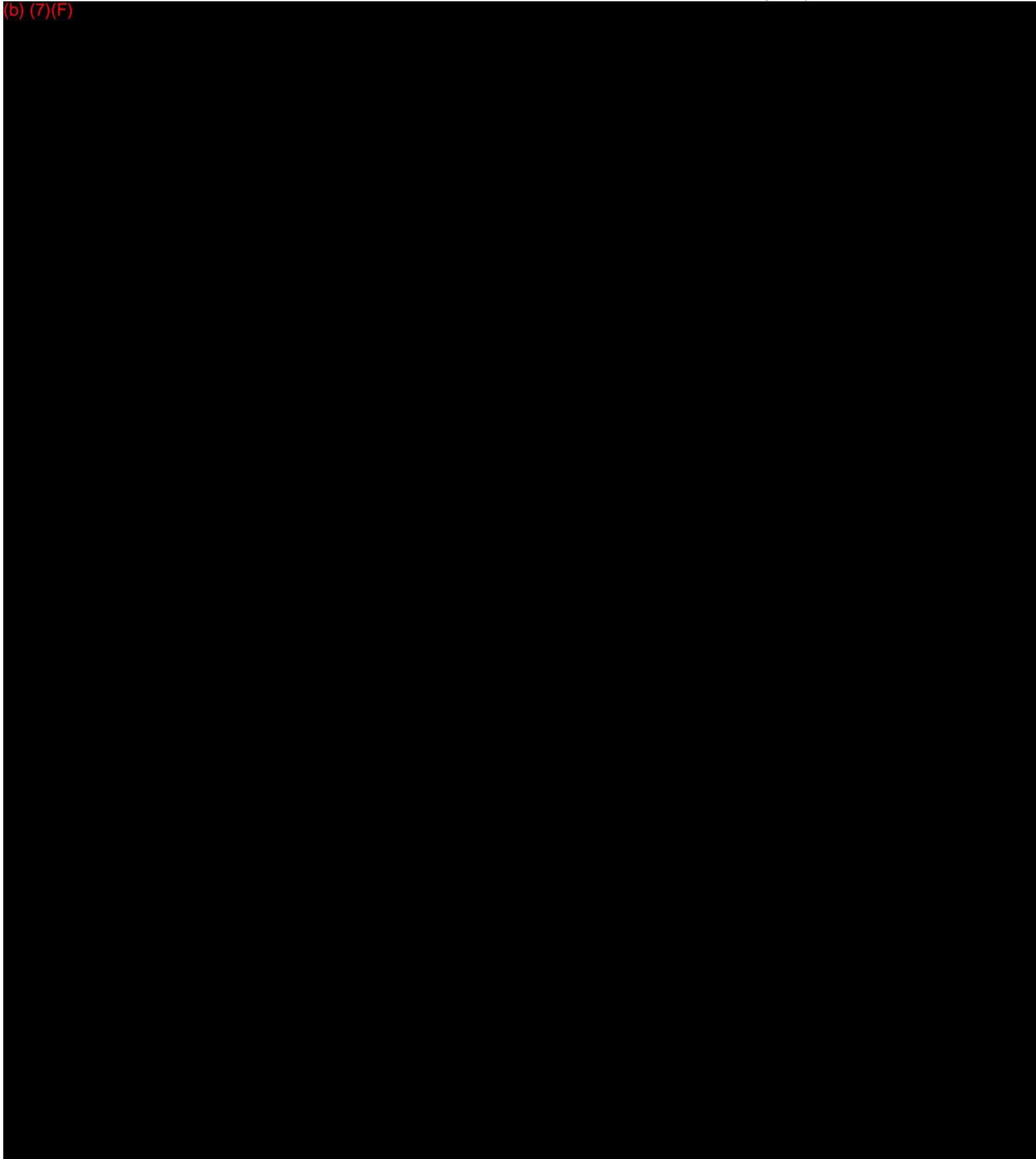




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Emergency Response Plan

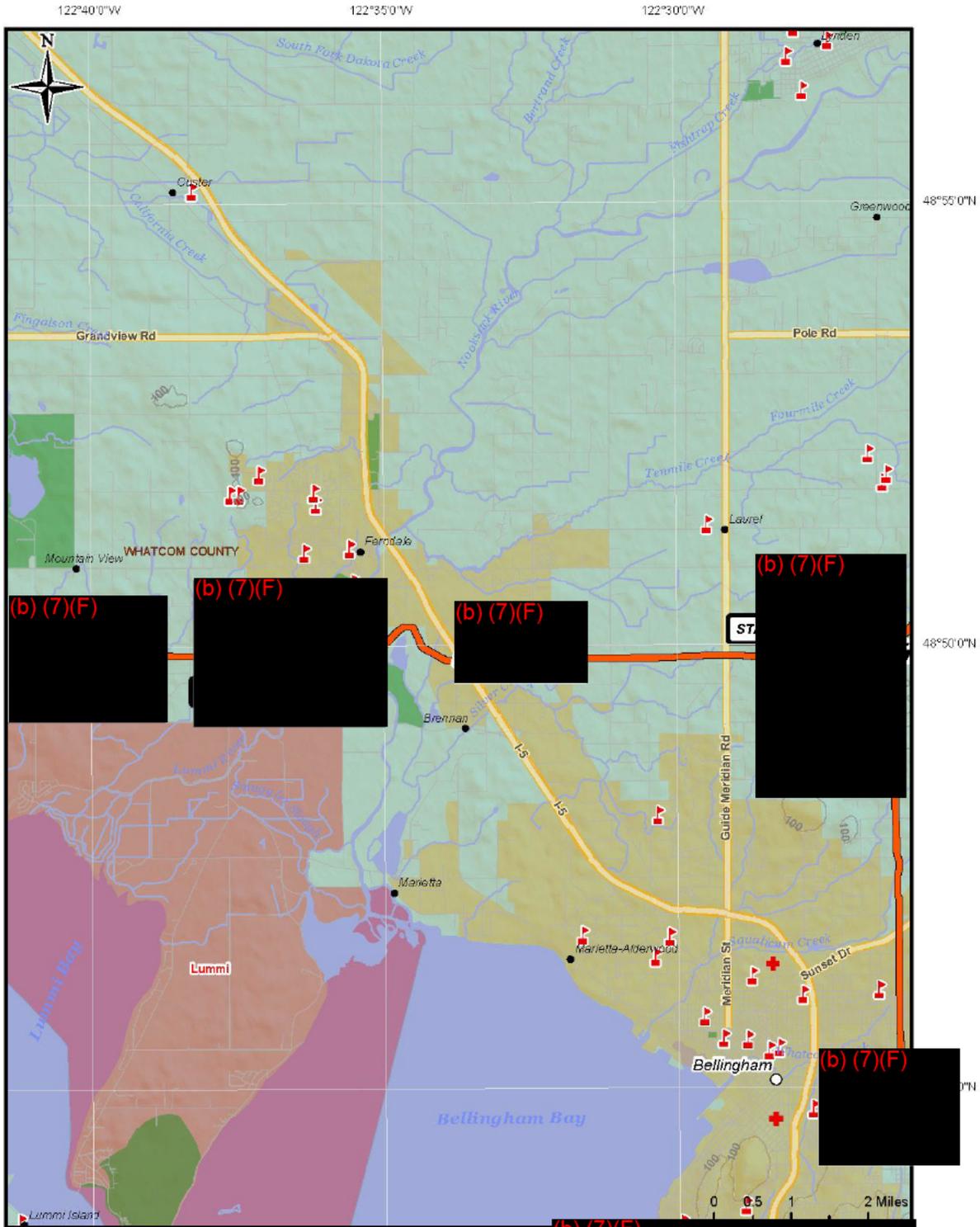
(b) (7)(F)



7.9.2 Zone 2 - Laurel Station to Ferndale Meter Station

The pipeline segment from Laurel Station to the Ferndale Meter Station is approximately 11.65 miles long and is a 16" diameter pipeline. (b) (7)(F) . The land surrounding the section of pipeline is mostly flat agricultural lands with higher populated areas around Ferndale and Bellingham. The Pipeline also passes through the Lummi Indian Reservation and is located in an area that is 100ft above sea level to the east and nearly at sea level in the west. There are (b) (7)(F) . The pipeline segment is located in Whatcom County. The 48 hour spill model indicates that the majority of this section will be contained to the pipeline right of way or immediately adjacent, however there are several stream crossings along this route and a spill into the Nooksack River or one of its tributaries or storm water system would be expected to enter Bellingham Bay within 48 hours. Additionally spills to the Lummi River or any of its tributaries or drainage ditches would result in a spill reaching Lummi Bay. The surface water flow direction for the Ferndale Meter Station can be viewed on the Ferndale Meter Station Site Plan

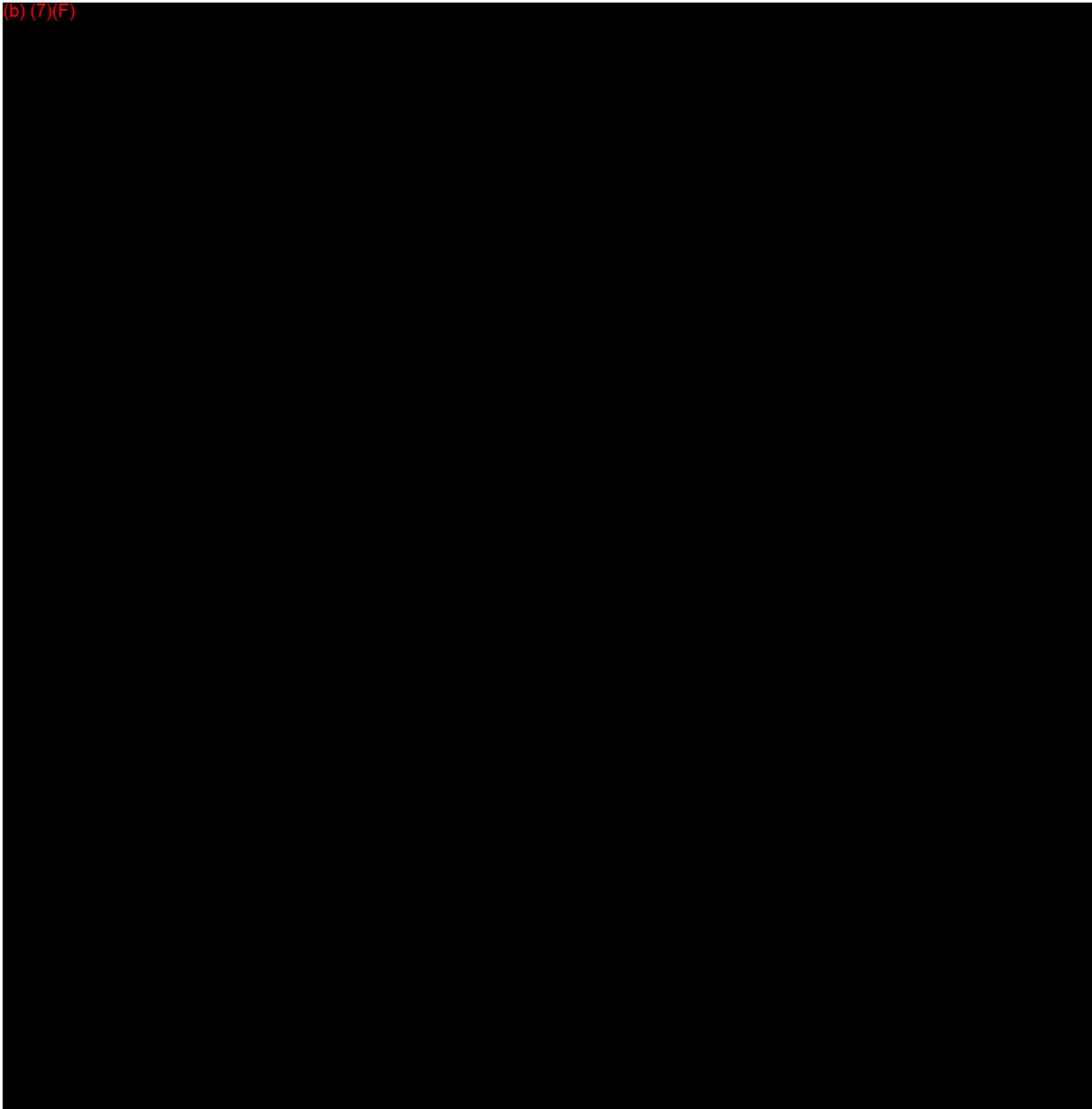
7.9.2.1 Response Zone 2 – Relief Map



**TRANS MOUNTAIN PIPELINE - PUGET SOUND
RESPONSE ZONE 2**



(b) (7)(F)

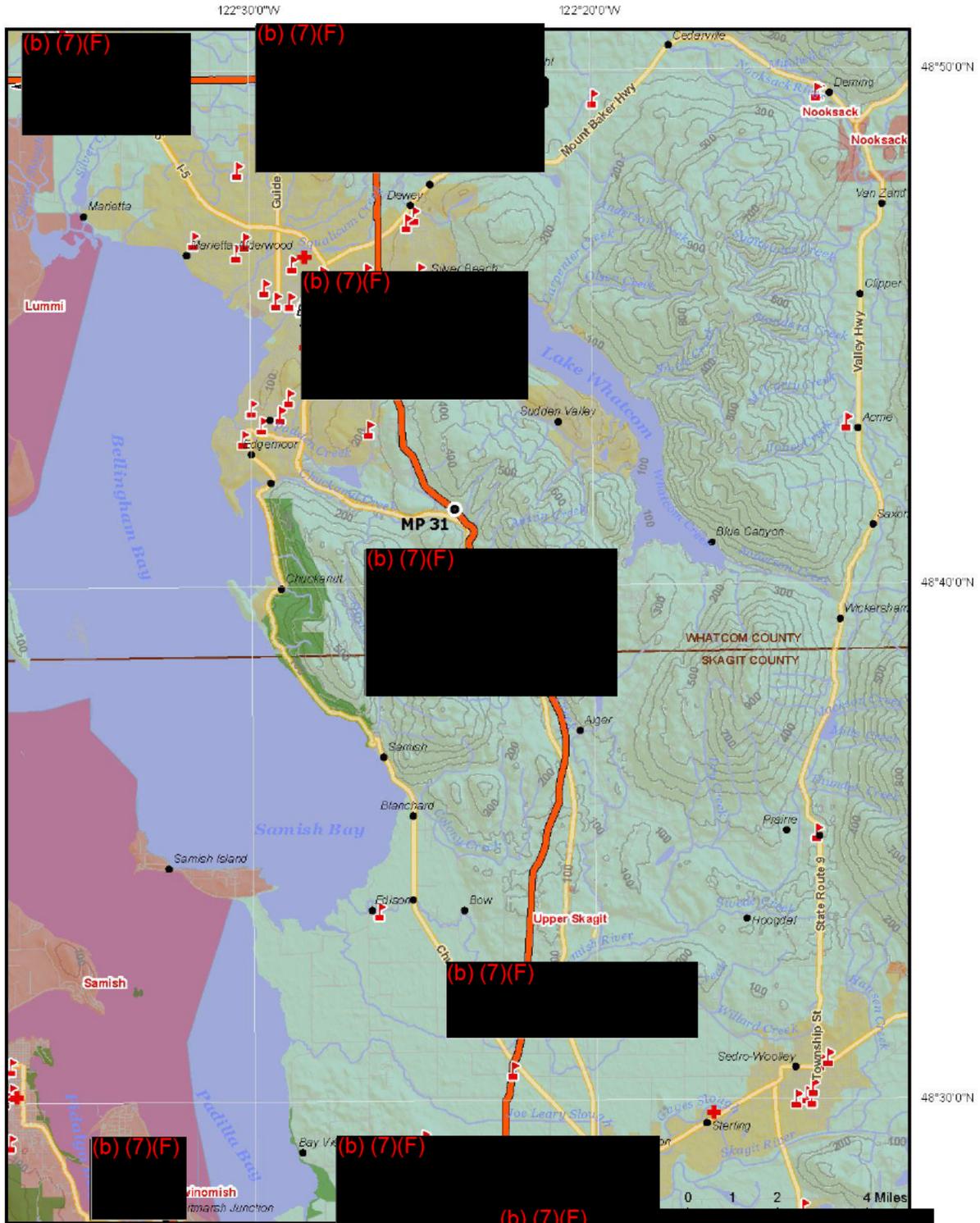


7.9.3 Zone 3 – Laurel Station to Burlington Scrapper Trap

The pipeline segment from Laurel Station to the Burlington Scrapper Trap is approximately 27.63 miles long and is a 20" diameter pipeline. The worst case spill volume for this segment of line is (b) (7)(F). The land surrounding the section of pipeline varies from flat agriculture near Laurel Station to steep hillsides from 100 to 300 ft above sea level back to flat agricultural use land and near sea level at the Burlington Scrap. The pipeline also passes through Bellingham, and densely populated rural areas, Whatcom County and Skagit County. (b) (7)(F)

(b) (7)(F) of pipe will be contained to the pipeline right of way or immediately adjacent, however there are several stream crossings along this route. A spill into Squalicum Creek, Whatcom Creek, or one of the many tributaries, ditches, and Bellingham storm water system would be expected to reach Bellingham Bay within 48 hours. Spills to Chuckanut Creek its tributaries, drainage ditches or storm water drains would be expected to reach Chuckanut Bay within 48 hours. (b) (7)(F) amish within 48 hours. Spills entering Friday Creek, Samish River, Joe Leary Slough, any of the tributaries, drainage ditches or storm water systems would also be expected to reach Samish Bay and/or Padilla Bay within 48 hours. The surface water flow direction for the Burlington Scrapper Trap can be viewed on the Burlington Scrapper Trap Site Plan

7.9.3.1 Response Zone 3 – Relief Map



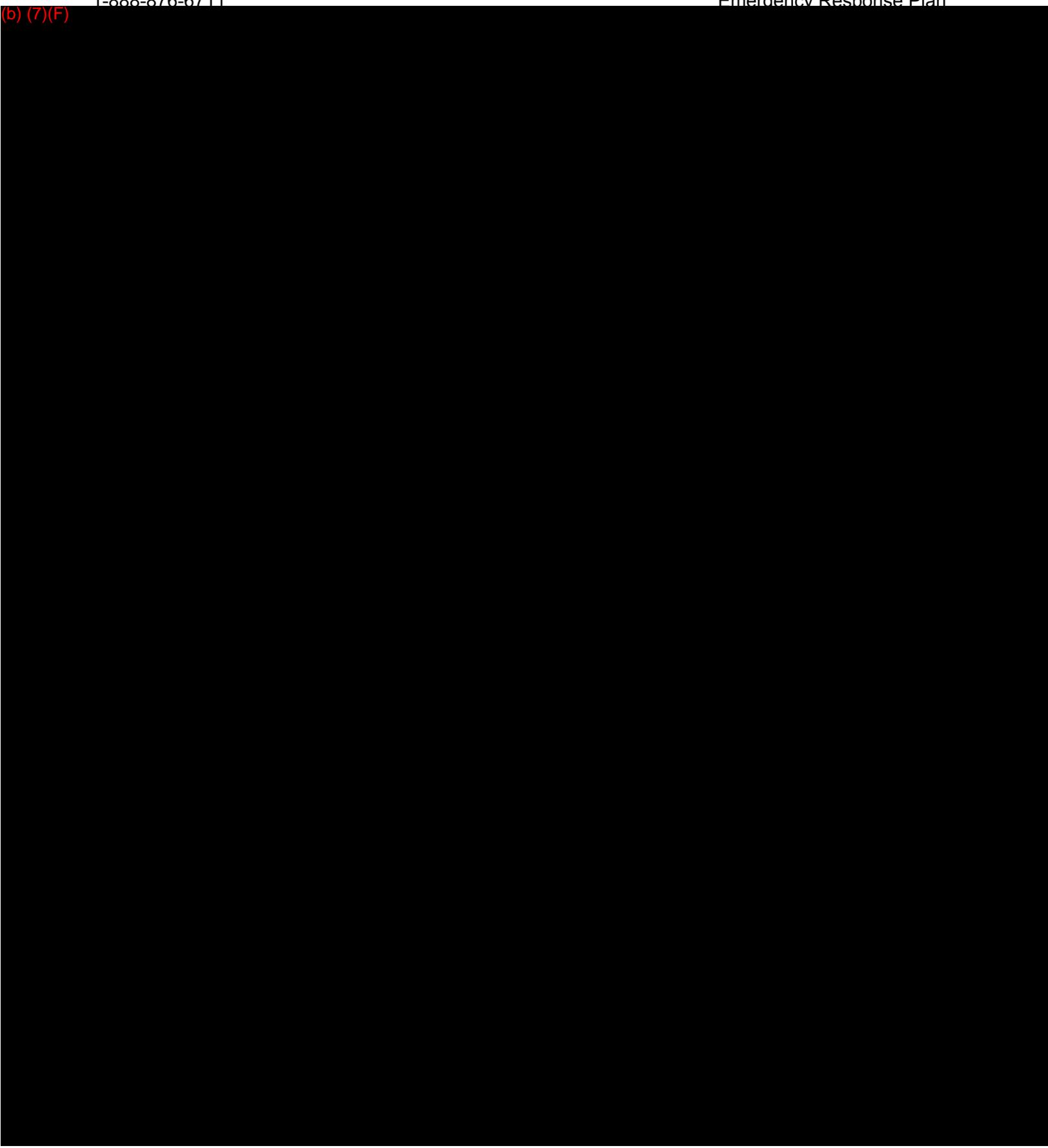
TRANS MOUNTAIN PIPELINE - PUGET SOUND RESPONSE ZONE 3





1-888-876-6711

Emergency Response Plan

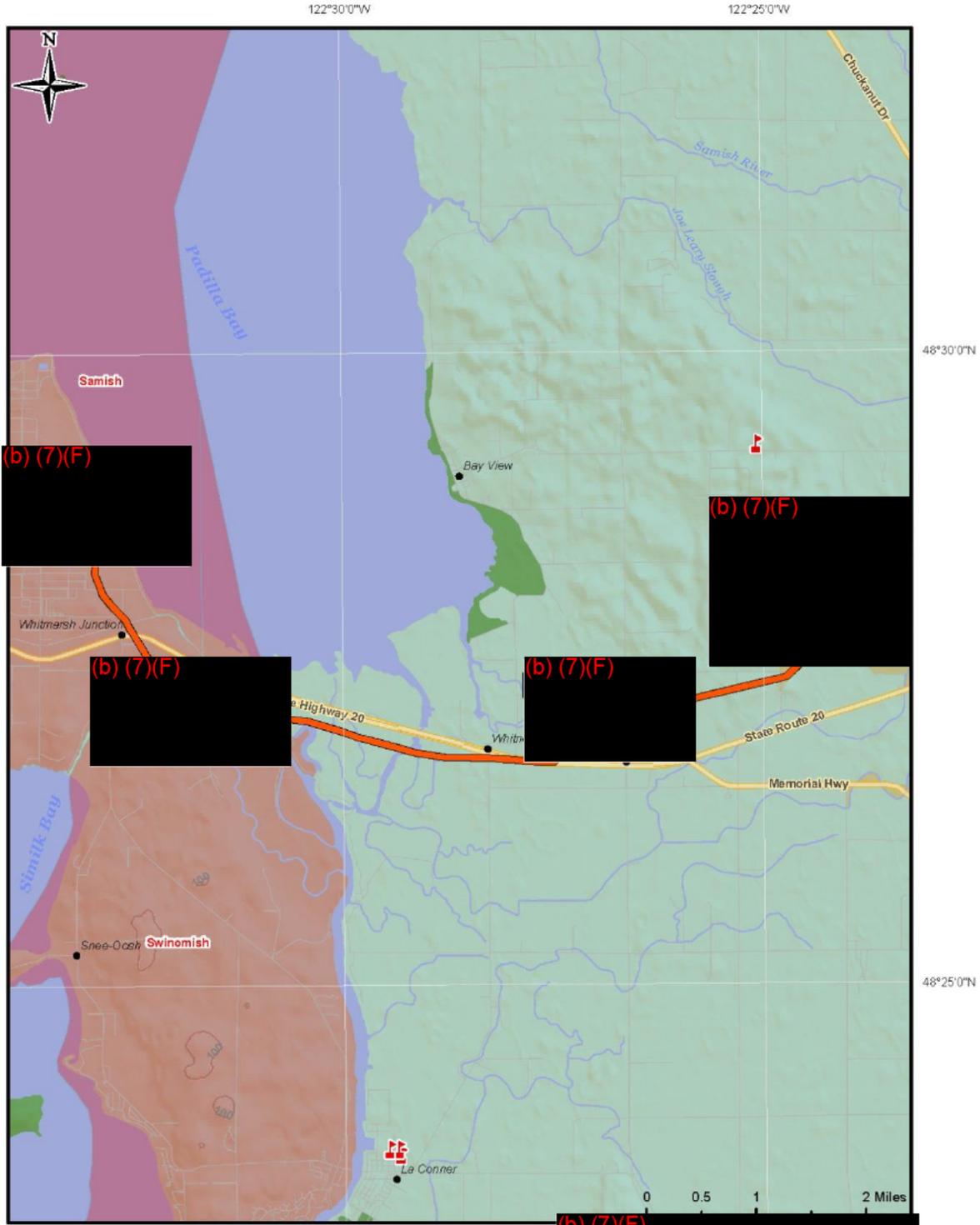


(b) (7)(F)

7.9.4 Zone 4 – Burlington Scraper Trap to Anacortes Meter Station

The pipeline segment from the Burlington Scraper Trap to the Anacortes Meter Station is approximately 9.09 miles long and is a 16" diameter pipeline. The worst case spill volume for this segment of line is (b) (7)(F). The land surrounding the section of pipeline is mostly flat agriculture with some steep hillsides less than 100 ft above sea level. This portion of pipeline is in Skagit County. (b) (7)(F). The 48 hour spill model indicates that a spill in several sections of pipe will be contained to the pipeline right of way or immediately adjacent, however there are several stream crossings along this route and a spill into any of the creeks, or one of the many tributaries or storm water ditches would be expected to reach Padilla Bay within 48 hours. Additionally if a spill were to occur between mile 4 and 7 it would likely enter the Swinomish Chanel, Skagit Bay and Padilla Bay within 48 hours. The surface water flow direction for the Anacortes Meter Station can be viewed on the Anacortes Meter Station Site Plan.

7.9.4.1 Response Zone 4 – Relief Map

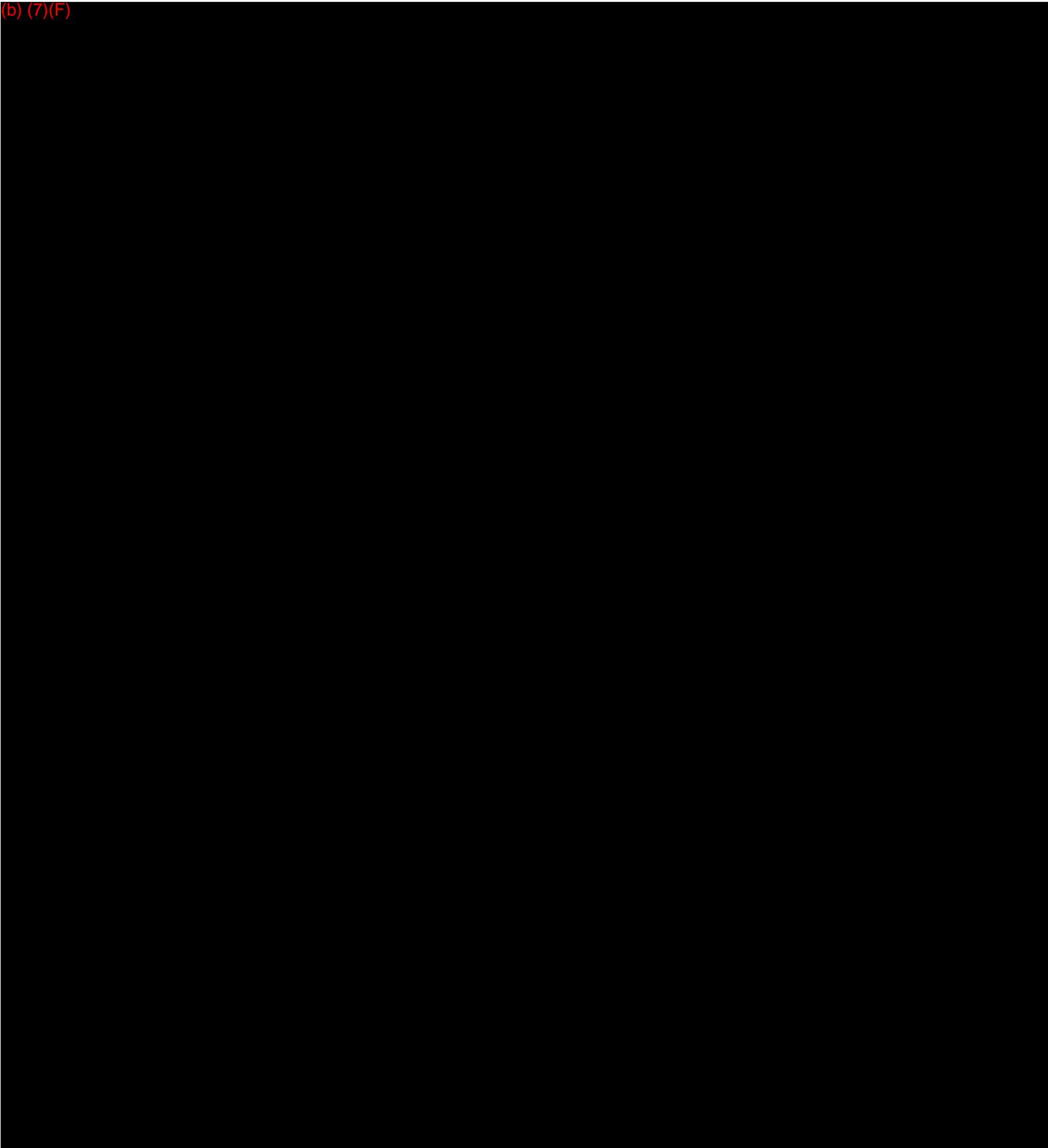


**TRANS MOUNTAIN PIPELINE - PUGET SOUND
RESPONSE ZONE 4**





(b) (7)(F)

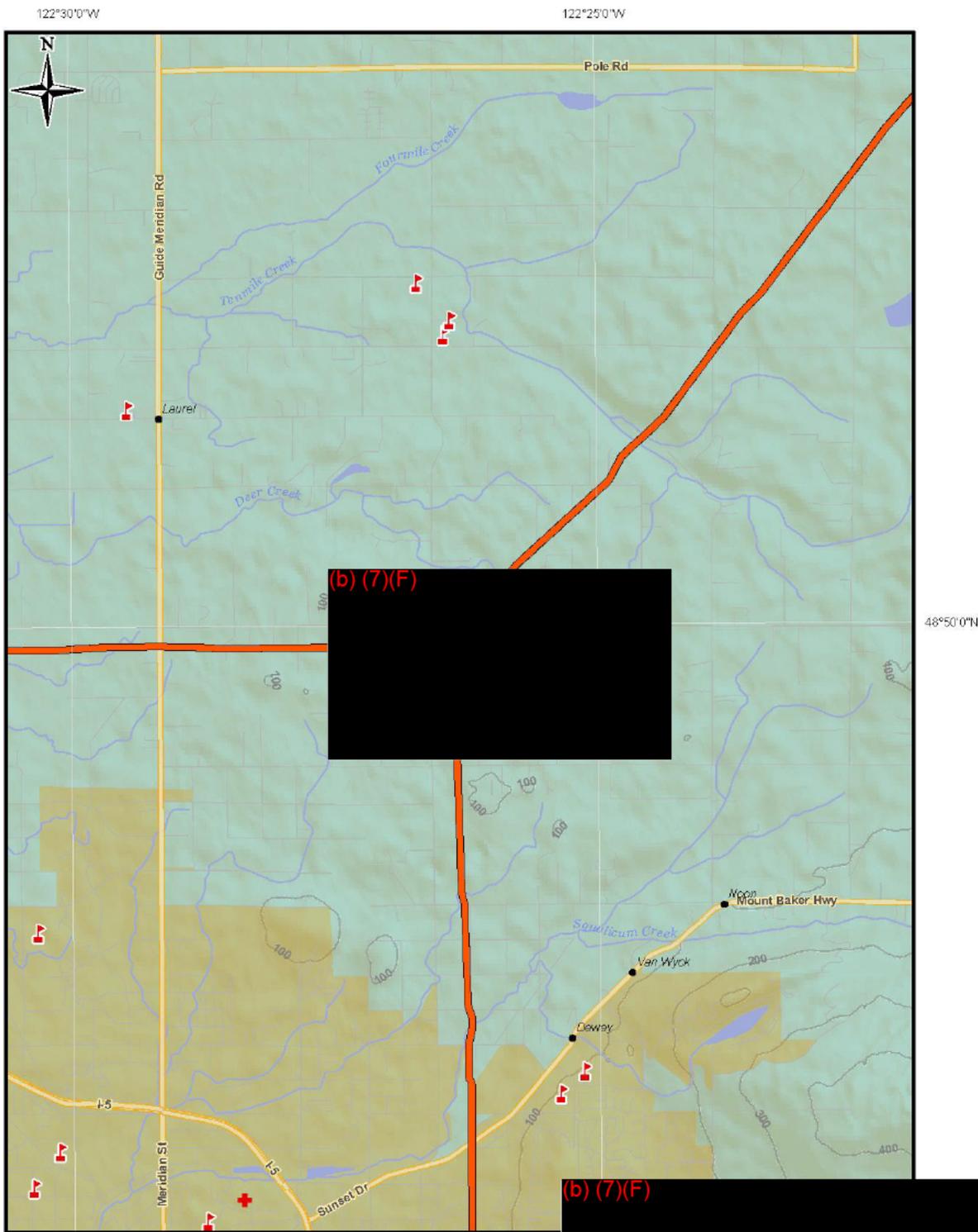


7.9.5 Zone 5 – Laurel Station

Laurel Station is a response zone. There are two (b) (7)(F) and one (b) (7)(F) tanks on site, with a working capacity of (b) (7)(F). The worst case spill volume for Laurel Station (b) (7)(F). The land surrounding Laurel Station is flat agricultural land less than 100 ft above sea level. Laurel Station is in Whatcom County. The tanks at Laurel Station are within containment which can hold 110% of the tank volume, as such a spill from the tanks is not expected to leave the site, or enter waters of the state³. Water is managed on-site through a system of ditches and sumps. All sumps are equipped with hydrocarbon alarms which sound if there is product mixed into the water. The water is tested to ensure when it leaves the site it falls within acceptable environmental guidelines. The combination of surface water runoff control and containment berms around the tanks means that a spill would not be expected to leave the Laurel Station site within 48 hours. The surface water flow direction for the Laurel Station can be viewed on the Laurel Station Site Plan.

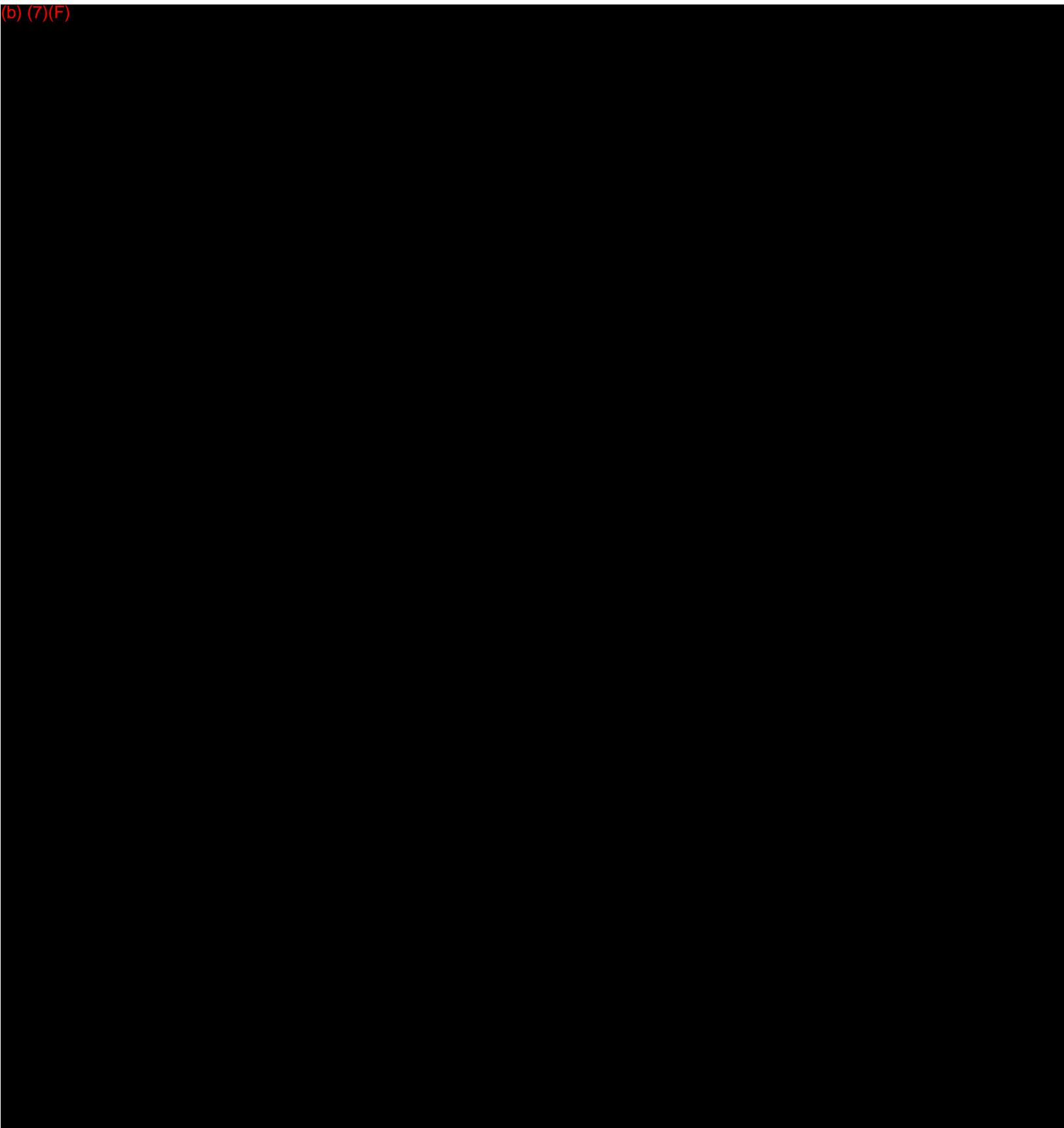
³ Waters of the State means all lakes, rivers, ponds, streams, inland waters, underground water, salt waters, estuaries, tidal flats, beaches and lands adjoining the seacoast of the state, sewers and all other surface waters and watercourse within the jurisdiction of the state of Washington.

7.9.5.1 Response Zone 5 – Relief Map



**TRANS MOUNTAIN PIPELINE - PUGET SOUND
RESPONSE ZONE 5**





(b) (7)(F)

8.0 INCIDENT MANAGEMENT

Kinder Morgan Canada 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, Kinder Morgan has a number of response operations components:

8.1 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.

8.2 Local Incident Management Team

The Local Incident Management Team (IMT), which is comprised of District 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

8.3 Kinder Morgan Incident Management Team

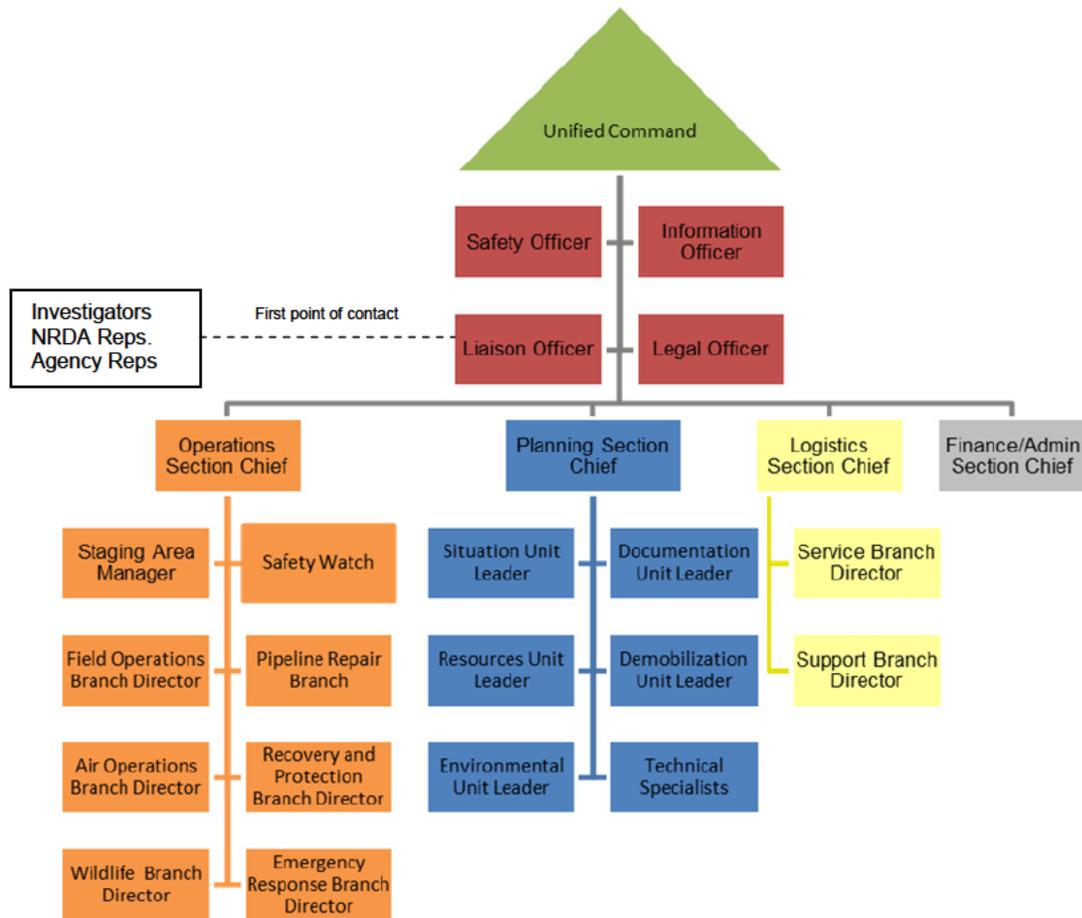
On larger spills, where the local IMT cannot manage a response without assistance, additional IMT personnel will be asked to attend from within Kinder-Morgan's company-wide support system.

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.

8.4 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 Kinder Morgan ICS Guide or the Northwest Area Contingency Plan.



8.5 Initial Response

The initial response will be carried out by local Kinder Morgan personnel.

These are employees who are present at or near the scene of a spill who are properly trained in emergency response, defensive fire-fighting, 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 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 Supervisor immediately to activate the response organization and resources
- Take appropriate action to mitigate the impacts to life safety, the environment, and property until the Qualified Individual arrives.

Initial responders will perform these tasks until relieved or replaced by a higher level of management within the response 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.

8.6 Transfer of Command

The Kinder Morgan Response Organization 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.

8.7 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 agency arrives 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 has ultimate decision making authority. The unified command may incorporate additional tribal 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);
- The State On Scene Coordinator (SOSC);
- The representative of the Responsible Party (RP); and
- The local and/or tribal On Scene Coordinators, as appropriate.

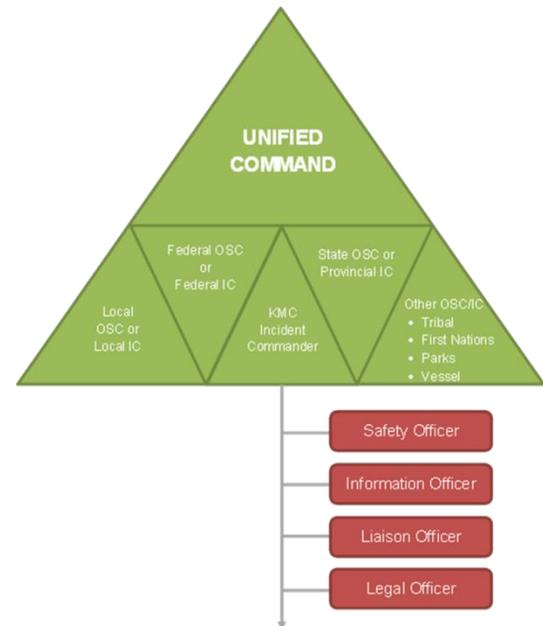
To be considered for inclusion as a UC member, the following criteria must be considered:

- 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.

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.



8.8 Qualified Individual

Response Plans for Onshore Oil Pipelines (49 CFR Part 194) defines Qualified Individual as "An English-speaking representative of an operator, located in the United States, available on a 24 hour basis, with full authority to: activate personnel and equipment maintained by the operator; act as liaison with the Incident Commander; and obligate any funds required to carry out all required or directed oil response activities".

The QI has the following responsibilities and authorities as required by the Oil Pollution Act of 1990 (OPA 90):

- Activate internal alarms and hazard communication systems to notify all appropriate personnel
- Notify all response personnel as needed
- Identify character, exact source, amount and extent of the release and other necessary items needed for notifications
- Notify and provide information to appropriate Federal, State and Local authorities
- Assess the interaction of the spilled substance with water and/or other substances stored at the Facility and notify on-scene response personnel of assessment
- Assess possible hazards to human health and the environment
- Coordinate rescue and response actions
- Assess and implement prompt removal actions
- Access company funds to initiate cleanup activities
- Direct cleanup activities until properly relieved of responsibility or incident is terminated
- Maintain contact with the OSC responsible for monitoring or directing the response actions via the Operations Section Chief.
- The QI may fill the role of Incident Commander, Deputy Incident Commander, as such the QI will be monitoring all response actions.

8.9 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 (Kinder Morgan Canada) 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 Kinder Morgan Canada, 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, volunteers, and auxiliary personnel.
- Authorize release of information to the news media.
- Order the demobilization of the incident when appropriate.

8.10 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.

8.11 Control Centre Operator (CCO) and SCCO (Supervisor)

The Control Centre Operator will:

- Initiate the 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

The Supervisor, Control Centre Operations (SCCO) will:

- Send an ERL/ERL + using the appropriate ERL list
- If the ERL system is unavailable, contact personnel as shown on the ECR by phone using E-Contacts, and notify Incident Commander of notification status within 30 minutes

- Call into 1 800-525-3752, 73005 to start the Initial Information Exchange
- Participate in conference calls as required
- Send additional ERL updates as needed or required
- Forward the completed ECR to the Manager, Technical Services and Control Centre, for approval

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 specific duties related to the Information Officer can be found in the ICS Guide including activation of the JIC.

8.13 Liaison Officer

The Liaison Officer is the contact point for agency representatives assigned to the incident by assisting or cooperating agencies. These are personnel other than those on direct tactical assignments or those involved in a Unified Command. The specific duties for the Liaison Officer can be found in the ICS Guide.

In General the Liaison Officer's responsibilities are to:

- Be a contact point for Agency representatives.
- Maintain a list of assisting and cooperating agencies and Agency Representatives.
- Assist in establishing and coordinating interagency contacts.
- Keep agencies supporting the incident aware of the incident status.
- Monitor incident operations to identify current or potential inter-organizational problems.
- Participate in Planning Meetings, providing current resource status, including limitations and capability of assisting agency resources.

8.14 Government Agency Representatives

Agency Representatives assigned to an incident from Federal, State 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.

8.14.1 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 Legal Officer

The Legal Officer is responsible for providing advice and direction on all matters that may have a legal impact on Kinder Morgan Canada. The specific duties for the Legal Officer can be found in the ICS Guide, in general the duties include:

- 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 other agencies for claims in the Calgary office.

8.16 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.

8.16.1 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> The Incident Briefing is facilitated by the Current (and often initial) Incident Commander.
Attendees	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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

8.17 Response Planning (Long-Term Events)

Kinder Morgan Canada follows the ICS model for incident response planning. The planning cycle and associated meetings can be found in the Kinder Morgan Canada Incident Command System Guide located on e:\manuals.

8.18 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 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 response activities. These agencies and involved parties include representatives from federal, state and/or municipal agencies with jurisdiction in the emergency.

Prior to terminating 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-spill condition before terminating operations
- Determine what documentation should be maintained, where, and for how long
- Contract personnel may be more susceptible to "suffering" injuries as they approach termination
- Some activities will continue after the cleanup ends; examples include incident debriefing, bioremediation, claims, and legal actions
- Consider expressing gratitude to the community, police department, fire department, and emergency crews for their work during the response.

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 Kinder Morgan Canada Incident Command System Guide on e:\manuals. 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

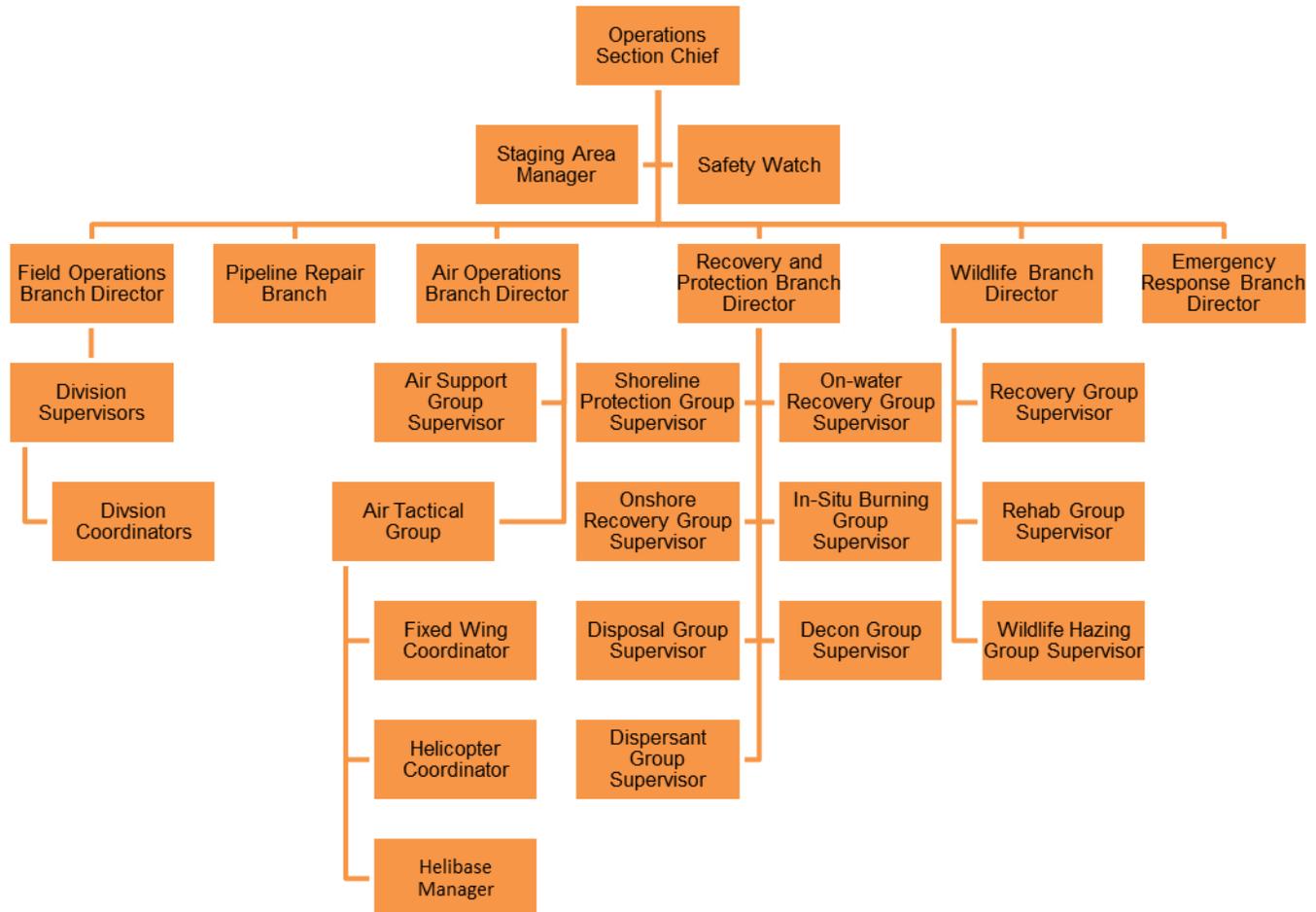
Once the safety of all personnel has been ensured, the source of discharge is secured, and initial notification has been activated, the overall tactical priorities covered are:

- 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 to be filled. Detailed descriptions of each position and its duties can be found in the Kinder Morgan ICS Guide (e:\manuals) and the Northwest Area Contingency Plan (<http://rrt10nwac.com/NWACP/Default.aspx>)



9.3 Operations Section Chief/Deputy 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 Safety and Health 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 Air Operations Branch

Surveillance and tracking is used to monitor spill movement in both near-shore and offshore areas using visual observations. Typically air surveillance from helicopters is used to track oil movement and to direct on-water booming and skimming operations. Air surveillance will be used at a minimum of

three ten hour operational periods during the initial seventy-two hours of the discharge. For information on aviation companies please see *Section 2.12 Additional Resources Suppliers*, or this service will be provided by one of the Primary Resource Contractors listed in *Section 2.10 Support Services - Primary Response Contractors (PRC)*.

9.5 Temporary Storage

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 premises should be totally contained and secure to prevent further leakage or migration of spilled product.

9.5.1 Temporary Storage Methods

Method of Containment	Product						Capacity
	OIL	Oily Water	Oily Soil	Oil/Debris (Small)	Oil/Debris (Medium)	Oil/Debris (Large)	
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	✓	✓					25 gal-1,500 gal

9.5.2 Initial Handling and Storage

Initial oil handling and storage needs may be overlooked in the emergency phase of a response, which could result in delays and interruptions of cleanup operations. Initially, waste management concerns should address:

- Equipment capacity
- Periodic recovery of contained oil
- Adequate supply of temporary storage capacity and materials.

The following action items should be conducted during a spill response:

- Development of a Site Health and Safety Plan (see Section 1)
- Development of a Disposal Plan in accordance with any federal, provincial, and/or local regulations
- Continuous tracking of oil disposition in order to better estimate amount of waste that could be generated over the short and long-term
- Organization of waste collection, segregation, storage, transportation, and proper disposal
- Minimization of risk of any additional pollution
- Regulatory review of applicable laws to ensure compliance and (if appropriate) obtain permits
- Documentation of all waste handling and disposal activities
- Disposal of all waste in a safe and approved manner.

Good hazardous waste management includes:

- Reusing materials when possible
- Recycling or reclaiming waste
- Treating waste to reduce hazards or reducing amount of waste generated.

The management of the wastes generated in cleanup and recovery activities must be conducted with the overall objective of ensuring:

- Worker safety
- Waste minimization
- Cost effectiveness
- Minimization of environmental impacts
- Proper disposal
- Minimization of present and future environmental liability.

Solid wastes such as sorbents, PPE, debris, and equipment will typically be transported from the collection site to a designated facility for:

- Storage
- Waste segregation
- Packaging
- Transportation

Once this process is complete, the waste will be shipped off-site to an approved facility for required disposal.

9.6 Waste Disposal

9.6.1 Types of Spill-Related Waste Materials

The most common types of waste likely to be generated from an oil spill are:

- Contaminated Liquids - Mixture of oil and water recovered from the surface of the water usually by skimmer
- Contaminated Debris - Twigs, leaves, vegetation/seaweed, dead animals or birds coated with pollutant
- Contaminated Sediment - Sand or gravel removed from the shoreline or spill site
- Clean-up Materials - Oily/contaminated rags, oiled sorbents, oil PPE and clothing worn by response team personnel

9.6.2 Waste Management Plan

Before any waste materials are transported off the site for disposal, a Waste Management Plan should be prepared in consultation with the provincial agencies. Responsibility for working with the state authorities to develop a proper 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 on e:\manuals. The Disposal Plan will be provided to WDOE on request. A copy of the generic Disposal Plan, which includes forms for tracking, can be found in e:\manuals or on:

http://kmonline/business_units/KMC/Pages/EHS_Emergency_Response.aspx

9.6.3 Waste Transport Procedures

Once a decision has been made to transport wastes off the site for final disposal, KMC, as the Consignor or generator of the waste, is responsible for:

- Ensuring that the person or company transporting the waste is qualified and licensed.
- Ensuring that the place where the waste is transported to is approved as a waste storage and/or disposal site.
- Completing all necessary documentation (e.g., transport manifest) and retaining records for two years.

9.7 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 Group Supervisor will work under the Recovery and Protection Branch Director. The Decontamination Group Supervisor is responsible for creating and implementing the Decontamination Plan. A copy of the Decontamination Plan form can be found in e:\manuals or on:

http://kmonline/business_units/KMC/Pages/EHS_Emergency_Response.aspx

9.8 Public Evacuation Plan

If the public is immediately threatened in the initial stages of the incident and evacuation is required before local response agencies arrive at the scene of the emergency, the Incident Commander must ensure public protection and may request available company personnel to initiate an evacuation. Evacuation duties should be turned over to local response agencies as soon as possible.

The Incident Commander and other company employees shall cooperate and work closely with responding emergency agencies. Appropriate information will be provided as required to enable community emergency operations to be conducted.

KM personnel, together with local authorities, i.e., police/fire, will prepare an initial plan of evacuation. This plan will take into consideration the following:

- Weather conditions
- Evacuation sites for receiving evacuees
- Ensuring that all residents of the area to be evacuated receive emergency instructions
- Time it will take for evacuation
- Method for evacuation
- Evacuation routes
- Capacity of the evacuation routes
- Awareness of the needs of "special needs" people
- Awareness of the needs of farm animals and pets
- Security of evacuated properties
- Notification for controlled re-entry into the area.

9.8.1 Post Evacuation Procedures

The Incident Commander, together with local emergency agencies and pertinent government agencies, will make the decision to return residents to the area. The company will notify the affected people and ensure that:

- Residences are ventilated and checked
- Return transportation to the homes is provided
- Follow up meetings are conducted with the evacuees to address any concerns they may have.

9.9 Spill Response Equipment

9.9.1 Puget Sound Spill Response Equipment

Kinder Morgan owns and maintains response equipment placed strategically for easy access and deployment during an incident. There are two response trailers located in the Puget Sound Region and other equipment available via MSRC and Kinder Morgan operations in Canada. There is 2000 ft of boom available for fast water deployment within 2 hours at any point on the pipeline per WAC 173-182-365 (2), stored at Laurel Station 1200ft and 800ft at Anacortes Station. In addition to available boom there is recovery and storage equipment available in the two OSCAR units. The equipment used to meet the planning standards for this ERP is outlined in Section 18.2 Planning Standards. For a full detailed list of the OSCAR contents please refer to the spreadsheet associated with this plan on e:\manuals.

9.9.2 Nearby Kinder Morgan Canada Spill Response Equipment

In addition to the OSCAR trailers in the Puget Sound Region there are trailers located at Sumas Station, Burnaby, Westridge, Kamloops in Canada. The estimated response time to Laurel Station from Sumas Station is about 2 hours, and up to 6 hours from Kamloops. The OSCAR units in each of these locations contain similar equipment to those at Laurel Station and Anacortes Meter Station. Additionally Kinder Morgan Canada has equipment in Blue River, BC, and the following Alberta locations; Jasper, and Edmonton which could be deployed if needed.

9.9.3 MSRC Spill Response Equipment

The Marine Spill Response Corporation (MSRC) is a not-for-profit, U.S. Coast Guard Classified Oil Spill Removal Organization (OSRO). MSRC was formed in 1990 to offer oil spill response services and mitigate damage to the environment. The Marine Preservation Association (MPA), a separate not-for-profit membership corporation, provides the funding required by MSRC for its ongoing operations and to meet its capital needs.

MSRC is recognized for its open-ocean and nearshore mechanical recovery capability which includes:

- 15 Responder Class Oil Spill Response Vessels (OSRVs)
- 19 Oil Spill Response Barges (OSRBs)
- 5 Contracted Platform Supply Vessels (PSVs) and Multi-Purpose Support Vessels (MPSVs) modified for dual service as OSRVs
- 25 X-Band radar and infrared systems
- 5 Fast Response Vessels (FRVs)
- 68 Shallow Water Barges
- 650,000 Feet of boom
- 293 Skimming systems

MSRC's inventory of resources also includes other tools for spill response or another emergency. These other capabilities include:

- In-situ burn
 - 22,500 Feet of fire boom
- Dispersants aircraft and inventory
 - 6 Dedicated dispersant spray/spotter aircraft
 - 104,000 Gallons of dispersant
- Emergency Communications Services
 - 7 Emergency Communications Packages (ECP)
 - Support for the Command Center environment
 - On board generator
 - Voice and Internet connectivity via Ku-band satellite
 - WiFi support
 - VHF/UHF Marine, land mobile, and aviation radio support
 - VHF/UHF Intrinsically safe land mobile hand held radios
 - 7 Small Satellite Systems
 - Support for the small office environment
 - Voice and Internet connectivity via Ku-band satellite
 - Air transportable for rapid deployment

MSRC's primary Operational Area includes all Captain of the Port (COTP) zones on the U.S. East, West, and Gulf Coasts, including the U.S. Caribbean and the Hawaiian Islands (a total of 28 COTP zones). In addition, they are capable of providing spill response services in other areas which are not within MSRC's primary Operational Area.

9.9.4 Western Response Resource List (WRRL)

The WRRL is a database that stores data on various types of oil spill response equipment in the Pacific Northwest. The advantage of the WRRL is that it provides a uniform system to describe and list equipment. Each piece of equipment that is entered in the database is given a unique "WRRL ID" that provides a standard way of tracking and listing equipment in the region. The database can be accessed via the internet and downloaded in a variety of formats. Once the information is downloaded the data can be used in a number of different ways. The WRRL can be used to locate and order response equipment during a drill or spill, provide an overall picture of the regions response resources, be used for developing and reviewing oil spill contingency plans, assist in cost accounting, or by an organization to track their own resources.

The WRRL list can be located at: <http://www.wrri.us>

9.9.5 Response Equipment Maintenance

KM response equipment is tested and inspected as noted below. The Manager of Operations is responsible for ensuring that the following response equipment and testing procedures are implemented, and records kept for a period of at least 5 years. These consist of:

- **Containment boom** - During boom deployment exercises, boom will be inspected for signs of structural deficiencies. If a tear in fabric or rotting is observed, boom will be repaired or replaced. In addition, end connectors will be inspected for evidence of corrosion. If severe corrosion is detected, equipment will be repaired or replaced.
- **Miscellaneous equipment** - Other response equipment identified in this Plan will be inventoried and tested on an annual basis to ensure that the stated quantities are in inventory and in proper working order. The equipment inspection and deployment exercises are recorded and maintained at the facility and retained for a period of five years.

9.9.6 Contractors, Contractor Equipment and Labor

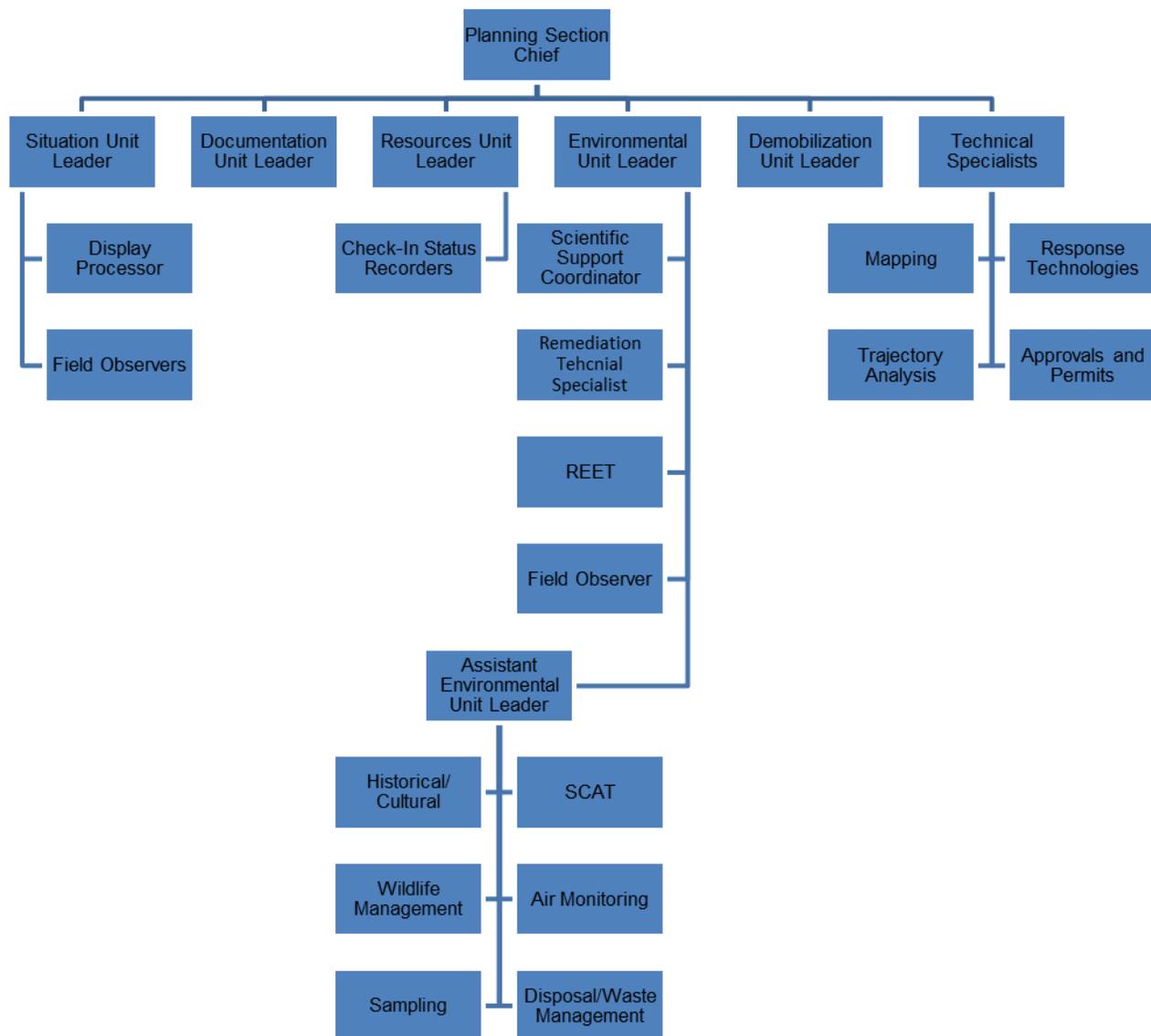
Kinder Morgan's primary response contractors' names and phone numbers, as well as other companies who can provide spill response services are provided in Section 2. Kinder Morgan has ensured by contract the availability of private personnel and equipment necessary to respond, to the maximum extent practicable, to the worst case discharge or the substantial threat of such discharge.

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 Kinder Morgan Canada Incident Command System Guide on e:\manuals. Technical Specialists, i.e., fire or oil spill specialists will also be assigned to the Planning Section.

10.1 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 Kinder Morgan ICS Guide (e:\manuals) and the Northwest Area Contingency Plan (<http://rrt10nwac.com/NWACP/Default.aspx>)



10.2 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.

10.3 Monitoring and Sampling

10.3.1 Spill Monitoring

Visual observations of spilled product will be reported using a standard format on a map. If weather allows, the best surveillance is done from helicopter overflights. Overflights should be planned at least twice per day; at first light and just prior to sunset to provide timely input to operations plans. Overflight observations should be annotated on maps or charts of the area, and preferably include photography or video recordings of the oiled and non-oiled areas.

10.3.2 Sampling

Oil samples will be collected from the source of the spill and from key concentrations of oil in the environment. Source samples should be collected as soon as possible after the incident to help characterize the spilled oil. Field samples should be collected to characterize the oil that has impacted shorelines or sensitive areas.

All samples for chemical analysis must be collected in chemically clean jars, sealed, labelled, and kept refrigerated until processed in the laboratory. **Chain-of-Custody** forms must be initiated by the person collecting the samples and maintained through delivery to the laboratory. Specific lab analyses to be performed will depend on the situation and needs to be established at the time of the incident. Accredited laboratories, to be recommended by Technical Advisors at the time of an incident, are to be used for all analyses.

10.4 Demobilization

KMC 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 on e:\manuals

10.4.1 Demobilization Procedures

- 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 Planning Section Resources

10.5 Planning Section Resources

10.5.1 Northwest Area Contingency Plan

This plan is intended for use as a guideline for coordination of spill response actions and to ensure consistency in response to spills. Federal and state rules require that a Responsible Party (RP), or spiller, must be able to manage spills with a pre-designated response management organization that accommodates a unified command structure in recognition of federal, state, tribal or local jurisdiction.

The plan will assist the Planning Section with area specific information and can be found at:

<http://rrt10nwac.com/NWACP/Default.aspx>

10.5.2 Washington State Geographic Spills Program

Geographic Response Plans (GRPs) are geographic-specific response plans for oil spills to water. They include response strategies tailored to a specific beach, shore, or waterway and meant to minimize impact on sensitive resources threatened by the spill. Each GRP has two main priorities:

- To identify sensitive natural, cultural or significant economic resources.
- To describe and prioritize response strategies in an effort to minimize injury to sensitive natural, cultural, and certain economic resources at risk from oil spills.

More information and the GRPs can be found at:

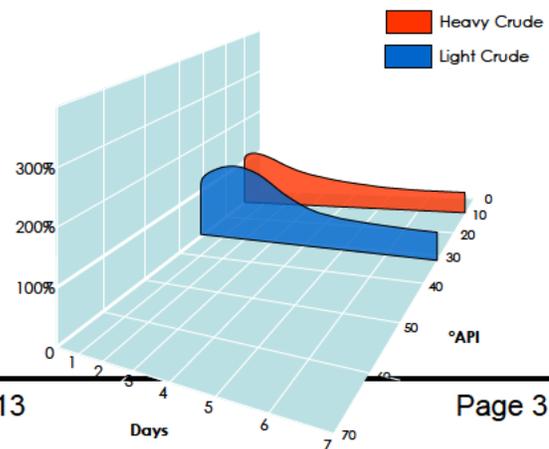
<http://www.ecy.wa.gov/programs/spills/preparedness/GRP/Introduction/introduction.htm>

10.5.3 Washington State Department of Ecology – Spills

The Spill Program's **vision** is to prevent, prepare for and respond aggressively to oil spills; to be our best for the State of Washington. Our goal is “zero spills”. The Spills Program's **mission** is to protect Washington's environment, public health, and safety through a comprehensive spill prevention, preparedness, and response program. The Spills Program was created by the Washington Legislature in 1997 to prevent, prepare for and respond to oil and hazardous material releases from regulated oil-handling facilities and vessels. The spills website has many links that may be useful, which is found at: <http://www.ecy.wa.gov/programs/spills/spills.html>

10.6 Fate of Spilled Oil

Different oil products behave very differently when spilled. The below chart provides an estimate of how each product would behave in a marine spill. In some cases, i.e., a Jet Fuel spill, emulsification can increase the volume of oily mixture to be recovered. With heavier products, such as Crude Oil, evaporation will reduce the volume of oil requiring recovery to a maximum of about 50%. In all cases, predictive



models, should be run in the event of a spill, based on specific spill conditions.

10.7 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*.

10.8 Air Monitoring Plans

KMC contractors will conduct air monitoring during an unplanned release event to obtain accurate and reliable data. The data collected may be used in an Acute Public Health Risk Assessment. The Air Monitoring Plans can be found at the back of this section for use during Spills and Fires

**Air Monitoring Plan for Unplanned Petroleum Release
Acute Public Health Risk Related to the Inhalation Pathway**

KINDER MORGAN CANADA

February 2013

**AIR MONITORING PLAN FOR UNPLANNED PETROLEUM RELEASE
ACUTE PUBLIC HEALTH RISK RELATED TO THE INHALATION PATHWAY**

Kinder Morgan Canada Inc.
Suite 2700 – 5th Avenue SW
Calgary, Alberta T2P 5J2

February 2013

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1.0 INTRODUCTION

KMC contractors will conduct air monitoring during an unplanned release event to obtain accurate and reliable data. The data collected may be used in an Acute Public Health Risk Assessment.

The objectives of the air monitoring are:

- Monitor air concentrations around mitigation activities and at step-out intervals from the source to obtain accurate and reliable air concentration data to screen against acute public exposure criteria, and to conduct an acute human health risk assessment if these criteria are exceeded.
- Monitor air concentrations of specific contaminants in close proximity of the spill and up-wind of the source at intervals to demonstrate background concentrations of contaminants (eg. related to other industry, traffic, etc. in urban areas and long range transport in remote areas).

The air monitoring plan was also designed to address acute public health emergencies such as evacuation planning due to the unplanned product release in conjunction with the Emergency Response Team according to the Kinder Morgan Emergency Response Plan (ERP).

The air monitoring plan outlines the procedure to follow to obtain accurate and reliable air concentration data for screening against acute public exposure criteria. If the acute public exposure criteria are exceeded then the data will be used for an acute human health risk assessment for the inhalation pathway.

Dermal and oral exposure pathways may need to be assessed for long term risks during the clean up phase following the initial release response. This work plan only addresses the acute phase of the unplanned release response when the predominant exposure pathway to the public is through inhalation.

2.0 AIR MONITORING AND SAMPLING METHODS

2.1 Real-Time Air Monitoring Method

Real-time air monitoring equipment was selected to provide immediate data on site and aid in the selection of valuable grab air sampling locations. Table 1 summarizes some of the real-time monitoring equipment which can provide air concentration data useful for the air sampling location selection, to assist in evacuation planning decision and to support an acute human health risk assessment.

Table 1
Real-Time Monitors

Instrument	Chemical Detected	Range (Resolution) ppm	Notes
UltraRAE 3000	VOC Benzene 1,3-Butadiene	0 to 99.99 (0.05) 100 to 999.9 (0.1) 1000 to 9999 (1) 0 to 200 (0.05) 0 to 200 (0.05)	<ul style="list-style-type: none"> • PID measurement, combines 9.8eV UV lamp and RAE-sep benzene tube • VOCs or Benzene-specific mode • Continuous datalogging and PC download; wireless download also available • Sampling pump: 450-550 cc/min
ppbRAE 3000	VOC	0.01 to 9.9 (0.001) 10 to 99 (0.01) 100 to 99 (0.1) 1000 to 9999 (1)	<ul style="list-style-type: none"> • ppb PID measurement uses a standard 10.6eV UV lamp • VOC specific • Continuous datalogging and PC download; wireless download also available • Sampling pump: 500 cc/min
ToxiRAE	Hydrogen sulphide Methyl mercaptan Sulfur dioxide	0 to 100 (0.1) 0 to 10 (0.1) 0 to 20 (0.1)	<ul style="list-style-type: none"> • Uses electrochemical sensors • Calibration data is stored so sensors can be switched in the field • Continuous datalogging and PC download; wireless download also available • Sampling method: Diffusion

Real-time monitoring instruments (e.g. RAE monitors) will be used to detect levels of benzene, 1,3-butadiene, methyl mercaptan, hydrogen sulphide and total volatile organic compounds (TVOC) at various locations to determine sampling locations for grab air sample collection. RAEs will provide air concentrations at numerous locations to reduce breakthrough when sampling with tubes (e.g. TD tubes), and will assist in choosing sampling locations on site.

The real-time monitoring data for these parameters will then be compared to criteria which depend both on the detection limit of the sampling media, the resolution level of the real-time monitor, and the lowest human health criteria. Grab sampling criteria of **0.05 ppm** for benzene, **0.1 ppm** for 1,3-butadiene, and **0.1 ppm** for hydrogen sulphide were selected as these values are at or above the resolution of the RAE monitors, above the canister or tube detection limits but below the lowest human health criteria (Table 2).

Table 2
Guidance Criteria for Real-Time Air Sampling

Real-Time Parameter	Detection Limit				Lowest Acute Air Monitoring Criteria (ppm)	Grab Sampling Criteria (ppm)
	RAE Monitor (ppm)	Summa Cannister (ppm)	Carbo Tube ($\mu\text{g}/\text{tube}$)	Prism TDT Tube ($\mu\text{g}/\text{vol}$)		
Benzene	0.05	0.00002	0.004	0.01	0.009	0.05
1,3-butadiene	0.05	0.00002	0.006	0.10	0.1	0.1
Methyl mercaptan	0.1	0.01	NA	NA	0.005 ¹	0.1
Hydrogen sulphide	0.1	0.01	NA	NA	0.07	0.1
Total VOCs	0.05 to 1	-	-	-	-	-
VHv	-	100 $\mu\text{g}/\text{m}^3$	3	-	1000	-

NA = Analysis not available

¹AEGL-1 is not Recommended due to insufficient data. Level of Odor Awareness is 1.9 ppb. See Table 9.

2.2 Longer Time Interval Air Sampling for Chemical Analyses

All of the nineteen compounds identified as COPCs in crude oil and gasoline can be measured in air at detection limits adequate for an acute human health risk assessment by ALS Environmental Laboratories and Prism Analytical Technologies. Table 3 presents grab sampling media and analytical methods. Cannister/tube samples will either consist of 1, 4, 8 or 24 hour collection times. The collection time will be based on monitoring objectives. For instance, a 4 or 8 hour collection time may be related to commercial worker monitoring or 24 hour sampling for evaluating the potential impacts in the community.

Table 3
Air Sampling Tube Specifications/Information

Sampling Media	Chemical Detected	Analytical Method	Notes
ALS Environmental			
Summa Cannister	<u>All COPCs</u>	EPA TO-15A or EPA TO-15-Modified	- All COPCs, except one, can be measured using one canister - Cannisters must be lab-calibrated for sampling rate - Analyses are conducted in Edmonton
TD Tube	<u>All COPC except:</u> Methanethiol Ethanethiol Sec-butyl mercaptan Ethanol Hydrogen sulfide	EPA TO-17 and/or BC MOE CSR	- Analyses conducted at the Burnaby lab - 13 of the 18 compounds can be analysed
Prism Analytical Technologies			
TDT Air Scan	<u>All COPCs except:</u> Hydrogen sulphide Methanethiol	TO-15 and TO-17	- Methyl mercaptan and hydrogen sulphide analyses are not available - Tubes can be kept on hand with air pumps and calibrators - 24 hour laboratory turn-around-time may be achievable - Analyses are conducted in Minnesota

3.0 EQUIPMENT

A list of air monitoring and sampling equipment required by the KMC or KMC contractor after an unplanned product release is provided in Table 4. This list should be refined for each facility and for pipeline segments crossing through each populated and unpopulated area.

**Table 4
Air Sampling Tube Specifications/Information**

General Equipment
Personal Protective Equipment (including ventilator) as determined by the HASP Camera (date and time stamp) GPS Weather station (Temperature, wind direction and speed, humidity, Measuring Tape Field notebook Aerial Maps and Site Plans
Monitoring
ToxiRAE Pro UltraRAE/ppbRAE 3000 Prism – TDT Kits
Sampling
Summa canisters TD tubes Benzene tubes TVOC tubes Vacuum gauge Tedlar bags Tubing Flagging tape Hand tools (wrenches, cutters)

4.0 AIR MONITORING PLAN – GENERAL REQUIREMENTS

Air monitoring and sampling requires site, spill and sampling information in order to accurately interpret the air chemistry data collected on site. Table 5 lists specific field reporting requirement for air monitoring and sampling.

**Table 5
Field Reporting Requirements for On-Site Monitoring and Sampling**

Spill Information	
Location of spill	Mark perimeter of exclusion zone or property boundary using GPS, reference to structures or natural features and on site plan or map.
Geography	Is the spill located in an area with restriction to air flow, such as a valley bottom?
Receptors	Are any members of the public in or immediately adjacent to the spill area?
Preferential pathways	Are any waterways, utilities (stormwater, power, water), or pipelines near the spill area?
Climate Information	
Wind	The prevailing wind direction and speed must be reported hourly.
Precipitation and Humidity	Record precipitation and humidity throughout the sampling period.
Barometric Pressure	Record barometric pressure throughout the sampling period
Temperature	Record temperature throughout the sampling period.
Monitoring and Sampling Information	
Location	All monitoring and sampling locations should be GPS-referenced, described with reference to permanent structure(s), and indicated on a site plan or map.
Elevation	The elevation of the sampling location with respect to the ground MUST be recorded.
Monitoring	Record specific GPS-referenced concentrations even if using a continuous data logger.
Sampling	Air pump speed and sampling length of time must be recorded along with the method (eg. TD tube, Summa Canister)
Data Quality and Management	
Sample Duplicates	10% of samples, or one per day if fewer than 10 samples per day
Lab Duplicates (Analysis Method)	10% of samples collected should also be sent to an additional laboratory to confirm concentrations measured by the primary analytical method
Field Blanks	10% of samples, or one per day if fewer than 10 samples per day

5.0 AIR MONITORING PLAN CONSIDERATIONS

5.1 Urban Air Monitoring Plan Considerations

From a human health risk assessment perspective, the urban scenario is complex and requires careful consideration. KMC infrastructure anticipated in urban settings include: terminals, pump stations and liquid petroleum pipelines.

After a product is released, each chemical component of the mixture will volatilize at different rates, changing the composition of the product over time. Dispersion and transport of the vapours is largely dependant on the wind speed and direction, humidity, and temperature. Geological features of the spill area, such as a valley bottom, or development features, such as large, densely built areas, may confine heavy vapours and reduce their dispersion.

Depending on the location of the spill, within the KMC property, along the KMC property line, or from a non-facility source, vapours may be transported to human receptors. In an urban setting, numerous human receptors are in relatively close proximity and sensitive receptors are ubiquitous. Hospitals, schools, and elderly care homes are facilities with concentrated populations of sensitive receptors and may possess a controlled air intake system. As a result, it may be necessary to take extra air samples at the boundary of private properties. When selecting step-out distances and monitoring locations, a 10-20 m rule-of-thumb may be used as a starting point, though this will likely need to be altered based on site-specific features.

Numerous potential preferential pathways are potentially present in urban environments, including waterways, pipelines, and numerous utilities such as stormwater, water, sewage, power and gas. These pathways may carry spilled product and/or vapours along a confined space resulting in exposure to receptors believed to be outside of the ambient air diffusion zone of the spill.

Shorter turnaround times for laboratory results are available in many urban areas due to ease of shipping. Monitoring and sampling supplies can be more rapidly received and air samples more rapidly shipped to laboratories.

5.2 Remote Air Monitoring Plan Considerations

A remote spill site is defined as a location with few homes or businesses in close proximity of the spill location, and thus no residential human receptors are known to be present within this area. Caution is warranted, however, in some remote locations where outdoor recreational activities (eg. hunting) or temporary residences (eg. cabins, campsites) may result in human presence in the remote area and these remote receptors should be considered when determining monitoring and sampling locations.

KMC facilities and infrastructure in remote areas are anticipated to be similar to those present in urban environments (ie. Terminals, pump stations, and liquid petroleum pipelines). In a remote setting, it is likely that pipelines and waterways would be the primary preferential pathways affecting product and vapour transport in the event of a spill. As described above, geological features such as valleys and mountains may affect heavy vapour dispersion.

By nature, few public receptors are anticipated to be present at a remote spill site. As a result, the air monitoring and sampling plan is focused on two main objectives: 1) Dispersion of vapour to the nearest or most likely receptor (ie. based on wind direction and speed), and 2) Protection

of the unknown human receptor. After KMC determines an exclusion zone, monitoring and sampling along its perimeter, and one step-out interval should be conducted. The shape and orientation of this step-out interval may be based on wind speed and direction in addition to real-time monitoring data as well as proximity of the nearest residential receptor.

Logistics for monitoring and sampling at remote spill sites are more complex and shipping of supplies and samples may be delayed. As a result, if deemed necessary given site conditions, real-time monitoring data may be used to model dispersion distances of some compounds (e.g. benzene concentrations using ALOHA air dispersion model) prior to receiving chemistry data results.

5.3 Special Considerations

The general air sampling plan proposed may require modification due to several special considerations based on the location of the event, weather conditions and the size and/or flow rate (and direction) of the unplanned release. Four special considerations which should be evaluated are discussed below.

1. Rain

- Significant rain events may limit the ability of the real-time air monitors to detect concentrations and the ability to use summa canisters for air sampling.
- ToxiRAE Pro and UltraRAE 3000 are designed for 0 to 95% humidity (non-condensing) and the ToxiRAE Pro has a dust and water ingress protection rating of IP-65.
- A sheltered area may need to be erected so water is not drawn into the air monitor intakes, Summa canisters or TD tube. For example, an open tent which does not create an area of stagnant air may be used.

2. Cold

- The ToxiRAE Pro and UltraRAE 3000 are only designed to operate to a low temperature of -20 °C (-4 °F). In an environment below -20°C, tedlar bag air samples may be required so real-time monitoring may be conducted in a warmer environment (eg. heated shelter or car).

3. Wind

- High winds will likely result in increased air mixing and vapour dispersion. As a result, receptors may be exposed to more dilute vapours, but the monitoring and sampling areas of concern may be expanded.
- The sampling area may need to be increased if winds are believed to have transported vapours to another area, specifically a more confined and inhabited area.

4. Spill Control Method

- Numerous spill control methods such as burning of product, vacuum truck, chemical dispersants and vapour suppressant foams may contribute to altered air quality in the vicinity of the spill.

6.0 AIR SAMPLING ANALYSES LIST

MSDS' for KMC Products should be obtained from the Incident Commander. Anticipated chemicals of potential concern are presented below for both crude oil and gasoline. The Prism TDT Scan will be used to measure the majority of compounds on this list for the first 72 hours. In addition, the MSDS of the released product should be consulted when determining what analyses should be conducted.

Table 6
Specific Chemical Analysis

Product Type: Crude Oil and Gasoline	
<ul style="list-style-type: none"> • Benzene • Toluene • Ethylbenzene • Xylenes • Naphthalene • 1,3-butadiene • 1,2,4-trimethylbenzene • 1,3,5-trimethylbenzene 	<ul style="list-style-type: none"> • Isopropylbenzene (cumene) • n-decane • n-hexane • Methylcyclohexane • Methanethiol • Ethanethiol • sec-butyl mercaptan • Hydrogen sulfide • VPHv (or F1, F2 and F3)
Product Type: Added to List for Only Gasoline	
<ul style="list-style-type: none"> • Ethanol 	
Product Type: List for Only Isooctane	
<ul style="list-style-type: none"> • Isooctane 	

7.0 AIR MONITORING CRITERIA

Two set of Acute Air Criteria are included in this plan:

- Air Monitoring criteria for public evacuation and shelter in place (Emergency Criteria)
- Acute risk assessment screening criteria

These criteria are expressed in ppm or mg/m³. Please note that the units, ppm and mg/m³, are **not** interchangeable and caution is advised when reviewing data and criteria to ensure the units are the same (see Table 7).

Table 7
Conversion Factors from ppm to mg/m³ (at STP)

Compound	Molecular Weight (g/mol)	Conversion Factor (ppm to mg/m ³)
BETX		
benzene	78.112	3.19
ethylbenzene	106.18	4.34
toluene	92.14	3.77
xylene	106.17	4.34
PAHs		
naphthalene	128.17	5.24
Alkanes/Alkenes		
n-decane,	142.282	5.82
n-hexane	86.18	3.52
methylcyclohexane	98.21	4.02
Mercaptans (Thiols)		
methanethiol	48.11	1.97
ethanethiol (ethyl mercaptan)	62.13	2.54
sec-Butyl Mercaptan	90.19	3.69
Other VOCs		
1,3,5-trimethylbenzene	120.19	4.92
1,3-butadiene	54.09	2.21
isopropylbenzene (cumene)	120.19	4.92
hydrogen sulfide	34.08	1.39
isooctane	114.26	4.67
ethanol	46.07	1.88

To convert concentrations in air (at 25 °C) from ppm to mg/m³: $mg/m^3 = (ppm) \times (\text{molecular weight of the compound}) / (24.45)$.

From mg/m³ to ppm: $ppm = (mg/m^3) \times (24.45) / (\text{molecular weight of the compound})$

To convert concentrations in air from µg/m³ to mg/m³: $mg/m^3 = (\mu g/m^3) \times (1 \text{ mg}/1,000 \mu g)$.

Can be adjusted to site specific conditions using equation below:

$mg/m^3 = ppm \times (\text{molecular weight}) / (24.45 \times (760 \text{ mm Hg}) \times T / (P \times 298 \text{ K}))$

$ppm = mg/m^3 \times (24.45 \times (760 \text{ mm Hg}) \times T / (P \times 298 \text{ K})) / (\text{molecular weight})$

STP = Standard temperature and pressure of 760 mmHg and 25 °C

P = the absolute pressure (in mm Hg) at actual conditions.

T = the absolute temperature (in °K) at actual conditions.

7.1 Air Monitoring Criteria for Public Evacuation and Shelter in Place

The emergency response criteria for the nineteen COPC are given in Table 8a in mg/m³ and Table 8b in ppm. There is no emergency response criterion for VPH.

ATTENTION: ENSURE THE CORRECT UNITS ARE BEING USED WHEN COMPARING FIELD DATA WITH CRITERIA IN TABLES 8A OR 8B.

**Table 8a
Emergency Response Criteria (mg/m³)**

Compound	CAS Number	AEGL-2 (mg/m ³)			Other Criteria (mg/m ³)	Other: ERPGs-2 TEEL-2
		1hr	4hr	8hr		
Product Type: Crude Oil and Gasoline						
benzene	71-43-2	2556	1278	639	--	--
toluene	108-88-3	4522	2977	2450	--	--
ethylbenzene	100-41-4	4777	2866	2519	--	--
xylene	1330-20-7	3995	2171	1737	--	--
naphthalene	91-20-3	--	--	--	79	TEEL-2
1,3-butadiene	106-99-0	11725	7522	5973	0.49	ATSDR
1,2,4-trimethylbenzene	95-63-6	1770	1131	737	--	--
1,3,5-trimethylbenzene	108-67-8	1770	1131	737	--	--
isopropylbenzene (cumene)	98-82-8	1475	934	639	--	--
n-decane,	124-18-5	--	--	--	120	TEEL-2
n-hexane	110-54-3	11632	11632	11632	--	--
methylcyclohexane	108-87-2	--	--	--	1607	TEEL-2
methanethiol (methyl mercaptan)	74-93-1	92	59	37	--	--
ethanethiol (ethyl mercaptan)	75-08-1	305	196	94	--	--
sec-Butyl Mercaptan	513-53-1	--	--	--	13.65	TEEL-2
hydrogen sulfide	7783-06-4	37.63	27.88	23.70	--	--
VPHv	--	--	--	--	--	--
Product Type: Added to List for Only Gasoline						
ethanol	64-17-5	--	--	--	6218	ERPGs-2
Product Type: List for Only Isooctane						
isooctane	540-84-1	--	--	--	1400	TEEL-2

ATTENTION: ENSURE THE CORRECT UNITS ARE BEING USED WHEN COMPARING FIELD DATA WITH CRITERIA IN TABLES 8A OR 8B.

**Table 8b
Emergency Response Criteria (ppm)**

Compound	CAS Number	AEGL-2 (ppm)			Other Criteria (ppm)	Other: ERPGs-2 TEEL-2
		1hr	4hr	8hr		
Product Type: Crude Oil and Gasoline						
benzene	71-43-2	800	400	200	--	--
toluene	108-88-3	1200	790	650	--	--
ethylbenzene	100-41-4	1100	660	580	--	--
xylene	1330-20-7	920*	500	400	--	--
naphthalene	91-20-3	--	--	--	15	TEEL-2
1,3-butadiene	106-99-0	5300*	3400*	2700*	0.1	ATSDR
1,2,4-trimethylbenzene	95-63-6	360	230	150	--	--
1,3,5-trimethylbenzene	108-67-8	360	230	150	--	--
isopropylbenzene (cumene)	98-82-8	300	190	130	--	--
n-decane,	124-18-5	--	--	--	20	TEEL-2
n-hexane	110-54-3	3300*	3300*	3300*	--	--
methylcyclohexane	108-87-2	--	--	--	400	TEEL-2
methanethiol (methyl mercaptan)	74-93-1	47	30	19	--	--
ethanethiol (ethyl mercaptan)	75-08-1	120	77	37	--	--
sec-Butyl Mercaptan	513-53-1	--	--	--	3.7	TEEL-2
hydrogen sulfide	7783-06-4	27	20	17	--	--
VPHv	--	--	--	--	--	--
Product Type: Added to List for Only Gasoline						
ethanol	64-17-5	--	--	--	3300	ERPGs-2
Product Type: List for Only Isooctane						
isooctane	540-84-1	--	--	--	300	TEEL-2

7.2 Acute Risk Assessment Screening Criteria

Chemicals for which air concentrations exceed the Acute Screening Criteria will be retained for further consideration in an acute human health risk assessment for the inhalation pathway. The air monitoring criteria for the nineteen COPCs are given in Table 9a in mg/m³ and Table 9b in ppm.

ATTENTION: ENSURE CORRECT UNITS ARE BEING USED WHEN COMPARING FIELD DATA WITH CRITERIA IN TABLES 9A OR 9B.

**Table 9a
Acute Air Monitoring Criteria (mg/m³)**

Compound	CAS Number	AEGL-1 (mg/m ³)			Other Criteria (mg/m ³)	OEHHA ³ ATSDR ³ BC CSR ³ ERPGs-1 TEEL-1
		1hr	4hr	8hr		
Product Type: Crude Oil and Gasoline						
benzene	71-43-2	166	58	29	1.3 0.03	OEHHA ATSDR
toluene	108-88-3	754	754	754	37 3.8	OEHHA ATSDR
ethylbenzene	100-41-4	143	143	143	21.7	ATSDR
xylene	1330-20-7	565	565	565	22 8.7	OEHHA ATSDR
naphthalene	91-20-3	--	--	--	79	TEEL-1
1,3-butadiene	106-99-0	1482	1482	1482	0.49	ATSDR
1,2,4-trimethylbenzene	95-63-6	688	442	221	--	--
1,3,5-trimethylbenzene	108-67-8	688	442	221	--	--
isopropylbenzene (cumene)	98-82-8	246	246	246	--	--
n-decane,	124-18-5	--	--	--	11	TEEL-1
n-hexane	110-54-3	11632 (AEGL-2)	11632 (AEGL-2)	11632 (AEGL-2)	1057	TEEL-1
methylcyclohexane	108-87-2	--	--	--	1607	TEEL-1
methanethiol (methyl mercaptan)	74-93-1	92 (AEGL-2) ¹	59 (AEGL-2) ¹	37 (AEGL-2) ¹	0.0098	ERPGs-1
ethanethiol (ethyl mercaptan)	75-08-1	2.5 ²	2.5 ²	2.5 ²	--	--
sec-Butyl Mercaptan	513-53-1	--	--	--	1.22	TEEL-1
hydrogen sulfide	7783-06-4	0.71	0.50	0.46	0.042 0.13	OEHHA ATSDR
VPHv	--	--	--	--	1	BC CSR ⁴
Product Type: Added to List for Only Gasoline						
ethanol	64-17-5	--	--	--	3392	ERPGs-1
Product Type: List for Only Isooctane						
isooctane	540-84-1	--	--	--	1400	TEEL-1

mg/m³ = milligrams per cubic meter

NR¹; AEGL-1 is not Recommended due to insufficient data. Level of Odor Awareness is 1.9 ppb

²; Level of Distinct Odor Awareness (LOA) = 0.0000087ppm

³ General Public Health Criteria

⁴ Not an acute criteria for public health, however selected as it is a standard vapour petroleum analysis in BC.

ATTENTION: ENSURE THE CORRECT UNITS ARE BEING USED WHEN COMPARING FIELD DATA WITH CRITERIA IN TABLES 8A OR 8B.

**Table 9b
Acute Air Monitoring Criteria (ppm)**

Compound	CAS Number	AEGL-1 (ppm)			Other Criteria (ppm)	OEHHA ³ ATSDR ³ BC CSR ³ ERPGs-1 TEEL-1
		1hr	4hr	8hr		
Product Type: Crude Oil and Gasoline						
benzene	71-43-2	52	18	9	0.407 0.009	OEHHA ATSDR
toluene	108-88-3	200	200	200	1 9.8	OEHHA ATSDR
ethylbenzene	100-41-4	33	33	33	5	ATSDR
xylene	1330-20-7	130	130	130	22 2	OEHHA ATSDR
naphthalene	91-20-3	--	--	--	15	TEEL-1
1,3-butadiene	106-99-0	670	670	670	0.1	ATSDR
1,2,4-trimethylbenzene	95-63-6	140	90	45	--	--
1,3,5-trimethylbenzene	108-67-8	140	90	45	--	--
isopropylbenzene (cumene)	98-82-8	50	50	50	--	--
n-decane,	124-18-5	--	--	--	1.9	TEEL-1
n-hexane	110-54-3	NR	NR	NR	300	TEEL-1
methylcyclohexane	108-87-2	3300	3300	3300	400	TEEL-1
methanethiol (methyl mercaptan)	74-93-1	--	--	--	0.005	ERPGs-1
ethanethiol (ethyl mercaptan)	75-08-1	NR ¹	NR ¹	NR ¹	--	--
sec-Butyl Mercaptan	513-53-1	47	30	19	0.33	TEEL-1
hydrogen sulfide	7783-06-4	1 ²	1 ²	1 ²	0.03 0.07	OEHHA ATSDR
VPHv	--	--	--	--	1 mg/m ³	BC CSR ⁴
Product Type: Added to List for Only Gasoline						
ethanol	64-17-5	--	--	--	1800	ERPGs-1
Product Type: List for Only Isooctane						
isooctane	540-84-1	--	--	--	300	TEEL-1

mg/m³ = milligrams per cubic meter

NR¹; AEGL-1 is not Recommended due to insufficient data. Level of Odor Awareness is 1.9 ppb

²; Level of Distinct Odor Awareness (LOA) = 0.0000087ppm

³ General Public Health Criteria

⁴ Not an acute criteria for public health, however selected as it is a standard vapour petroleum analysis in BC.

8.0 DECISION LOGIC TREE FOR AIR MONITORING AND SAMPLING

The decision tree logic for urban and remote is the same. The only difference would be the extent of sampling area and frequency of sampling as determined by site conditions.

8.1 Discussion of Decision Logic Tree

The external notification tree is given in Section 8.3. It is assumed that the basic information regarding the spill and site conditions will have been determined by first responders, as well as initial real-time air quality samples collection by the first responders. It is also assumed that the air monitoring project manager will be involved in the incident planning and review of ongoing information.

The following information and questions will flow into the air monitoring plan decision logic tree as illustrated in Section 8.2. Any changes responses during the spill response time may alter the air monitoring plan:

- **Type of product**
 - Crude Oil – Sour or Sweet
 - Gasoline
 - Isooctane
- **Volume of product released and/or rate of release**
- **Wind**
 - What are the prevailing wind directions at the spill site?
 - What is the current wind direction and speed?
- **Receptors**
 - Who are the nearest public receptors? (residences, public facilities, businesses)
 - Downwind
 - Upwind
 - How far away are these receptors?
 - Are there any sensitive receptors? (nursing home, daycare etc)
 - Are there non-resident receptors? [traplines, hunting operations, itinerant workers (loggers etc), hiking trails, fishers]
- **Preferential Pathways**
 - Are there any preferential pathways present such as:
 - Waterways
 - Utilities
 - All potential preferential pathways should be investigated to determine if the sampling area needs to be expanded
- **Diffusion Limits**
 - Are there any confining features to limit vapour diffusion such as:
 - Canyons
 - Valley bottoms
- **Special Considerations**
 - Is the product on fire?
 - Is the following being used in the spill response?
 - Dispersant
 - Controlled burning
 - Vapour suppressant foams
 - Flare
 - Vacuum truck
 - Additional monitoring equipment and sampling parameters may be required

8.2 Defined Zones During Response

Three zones are used by KMC to describe the work areas to spill assessment team members responding to a spill: Hot, Warm and Cold Zones. These KMC zones are defined as well as how the zones will relate to the public in Table 10.

Table 10
KMC Zones and Public Zones Definitions

Zone	KMC Zone	KMC Definition	Zone Defined by Air Monitoring Results in Public Areas	Public Response Definition
Hot Zone	Exclusion Zone	Area where contamination or product hazards are expected	Air concentrations greater than emergency response criteria.	Evacuation or shelter in place.
Warm Zone	Decontamination Zone	Transition area between hot and cold zones where decontamination of people and equipment is conducted.	Air concentration greater than air monitoring criteria but less than emergency response criteria.	Notification of public, depending on concentrations and conditions may require evacuation or shelter in place.
Cold Zone	Support Zone	Area adjacent to Warm zone and intended to remain safe and free of contamination	Air concentration less than air monitoring criteria.	Air monitoring during response.

According to the Spill/Site Assessment Vapour Monitoring Flowchart in the KMC Emergency Response Plan, the hot zone for response workers is the area where contamination is expected at levels that exceed safety criteria:

- LEL > 10%;
- 23% > O₂ < 19.5%;
- H₂S > 5 ppm; and
- Benzene > 5 ppm.

It is anticipated that there are three different spill locations and exclusion zones that may occur in relation to the selection of air sampling locations:

- **Exclusion zone is within KMC property.** The air monitoring locations will concentrate on the perimeter of the KMC property boundary with step out locations from the perimeter of the KMC property. No sampling will be conducted on the KMC property as the focus is on public health.
- **Exclusion zone is straddles the KMC property boundary onto public and private property.** The air monitoring locations will concentrate on the perimeter of the KMC property boundary and outside boundary of the exclusion zone. The step out locations will be from both from the KMC property boundary and the exclusion zone. No sampling will be conducted on the KMC property as the focus is on public health.

- **Exclusion zone is on public and private property.** The air monitoring locations will concentrate on the outside boundary of the exclusion zone. The step out locations will be from the exclusion zone.

8.3 Timeframe of Air Monitoring During Response

The timeframe for air monitoring will be based on the type of spill event (small or large), receptors, results of air concentrations, and clean up timeframe. In general, air concentrations less than air monitoring criteria along with stable or reducing vapour releases would enable air monitoring to be discontinued.

8.4 Documentation During Response

All of the above information will be documented in log books and daily reports to the Safety Officer. The air monitoring data will be inputted into spreadsheet, reviewed on a daily basis and communicated to the KMC Incident Commander.

8.5 Use of Emergency Response Criteria in Public Health Protection Strategy

Deciding whether evacuation and/or shelter in place are the appropriate protection decisions will depend on the accidental release scenario and site-specific information. For this reason, the public health protection strategy outlined in this section is not intended to be a step by step instruction applicable for each potential scenario but rather provides information on how the emergency response criteria should be used.

The use of emergency response criteria in the event of an emergency should include the main following steps:

- Notification to KMC when concentration of contaminant in air is at or above Level-1.
- KMC to communicate to regulatory agency and recommend that population can safely evacuate or shelter-in-place above Level-2 before the plume reaches Level-2 time and concentration exposures and shelter-in-place will prevent exposures to Level-2 effects.
- Avoid exposure to concentration of contaminant in air is at or above Level-3.

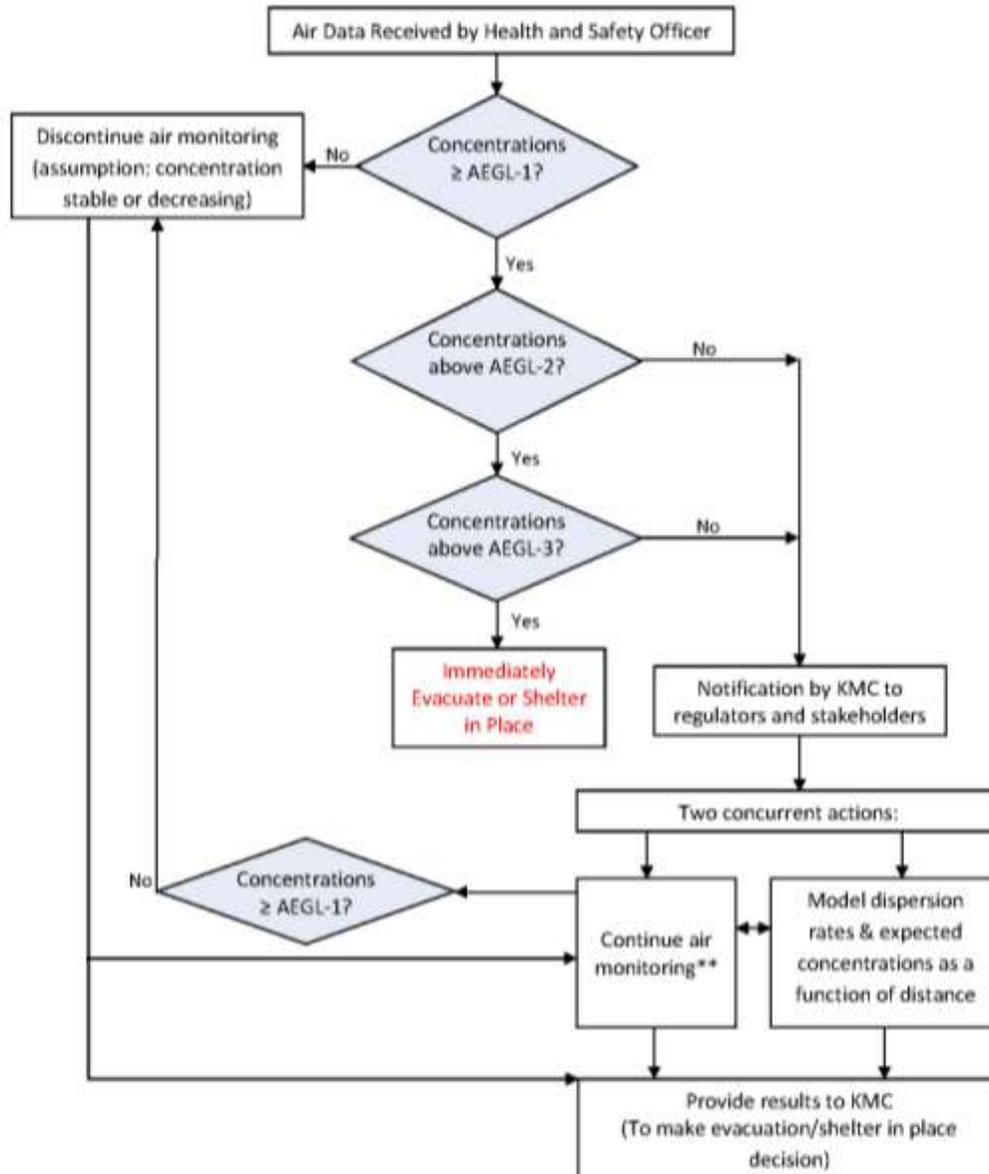
Modeling can be used as required to obtain information on concentrations and extent of the contaminated air plume and in situ monitoring is required to obtain real time data and validate the model results.

Modeling should provide at the minimum information on the maximum distances at which level-2 concentrations would be expected

DOE Emergency Management Guide (2007) provides information on determining whether air concentrations exceed the emergency response criteria. DOE reports that the highest time-weighted average (TWA) concentration predicted or measured for any 15-minute period (i.e., the maximum or peak 15-minute TWA concentration) should be compared to the 1 hour emergency response criteria; however, KMC will compare the concentrations to the more conservative 8 hour emergency response criteria.

8.6 Emergency Response Air Monitoring Plan Decision Tree

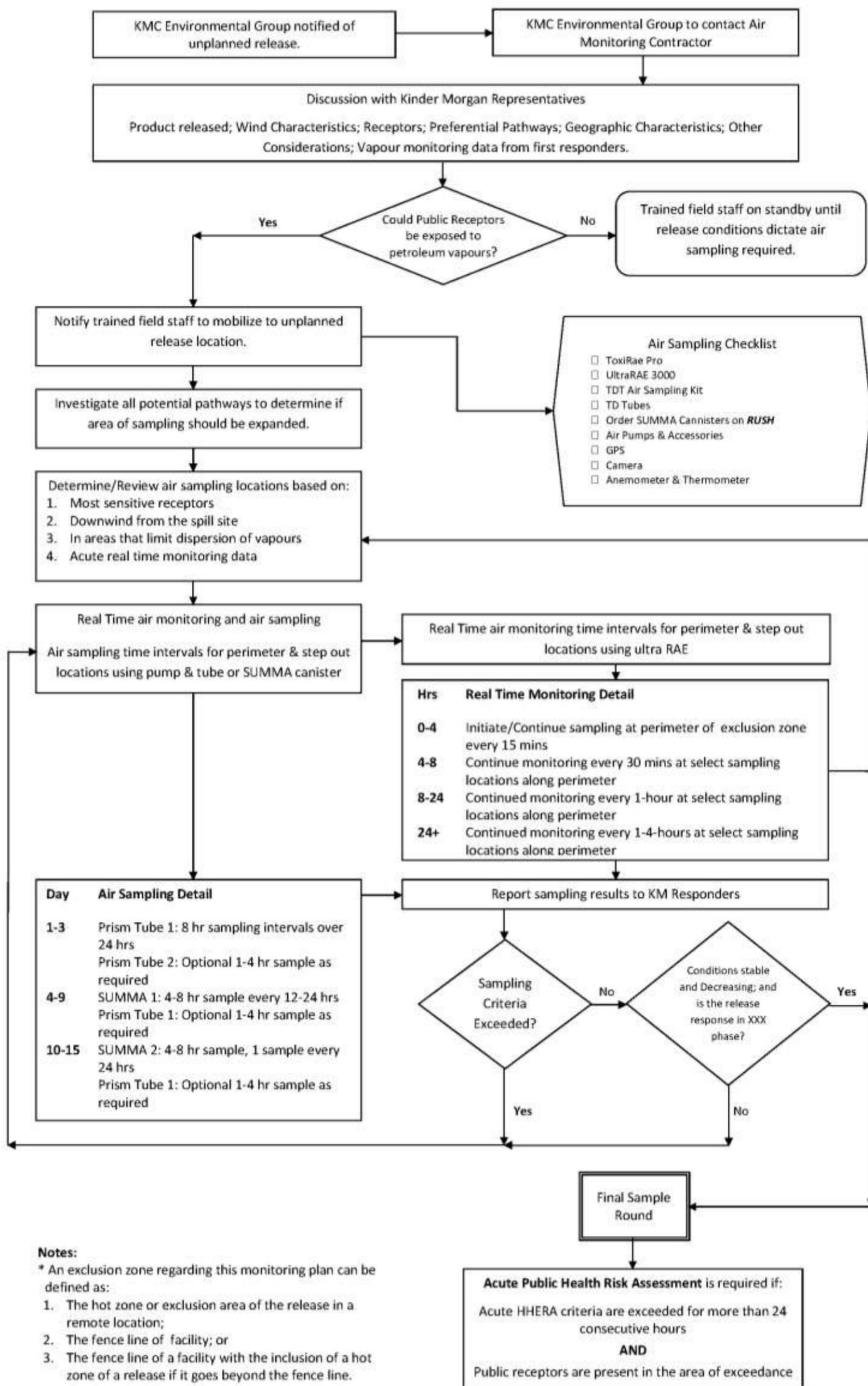
Public Evacuation Decision Logic Tree



** See Air Monitoring Plan for Unplanned Petroleum Releases

8.7 Air Monitoring Plan Decision Tree

AIR MONITORING PLAN FOR UNPLANNED PETROLEUM RELEASES
For Human Health Risk Assessment



**Air Monitoring Plan During a Fire
Acute Public Health Risks Related to the Inhalation Pathway**

KINDER MORGAN CANADA

April 2013

AIR MONITORING PLAN DURING A FIRE
ACUTE PUBLIC HEALTH RISKS RELATED TO THE INHALATION PATHWAY

Kinder Morgan Canada Inc.
Suite 2700 – 5th Avenue SW
Calgary, Alberta T2P 5J2

April 2013

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1.0 INTRODUCTION

Kinder Morgan Canada (KMC) contractors will conduct air monitoring during and after a fire event to obtain accurate, reliable, and quantifiable data. The fire air monitoring plan will be utilised to address acute public health emergencies such as evacuation planning in accordance with Kinder Morgan Emergency Response Plan (ERP) at the direction of the Emergency Response Team. Moreover, the data collected may also be used in an Acute Public Health Risk Assessment.

Industrial, commercial, residential or even natural fires result in the conversion of matter into gaseous combustion products, such as water, carbon dioxide, and a smaller percentage of other unburned or residual by-products, including soot and gases. Burned products are primarily converted to airborne residues (e.g., gases and large quantities of black smoke or soot) and burn residues (incomplete combustion by-products) (API, 2005). Ultimately both airborne and residue by-products have the potential to impact receptors (human and animal) and the natural environment as a result of inhalation and/or direct contact with the residues.

This air monitoring plan outlines the procedures to obtain accurate, reliable, and quantifiable air concentration data for screening against acute public exposure criteria. In instances where air concentrations exceed acute exposure criteria the data may be used to complete an acute human health risk assessment for the inhalation exposure pathway. Dermal and oral exposure pathways may need to be assessed for long term risks following the fire. This work plan only addresses the acute phase of exposure to fire by-products (e.g., residues).

1.1 Objectives

The objectives of the air monitoring program are:

- Monitor air concentrations around a fire event at step-out intervals both up-wind and down-wind from the source area to obtain air concentration/particulate matter data and screen against acute public exposure criteria; and
- Assist KMC Emergency Response Team members in determining evacuation needs.

2.0 PARAMETER LIST AND SELECTION

MSDS' for KMC Products at the site should be obtained from the Incident Commander. Anticipated chemicals to be monitored are presented in Table 2-1 for the petroleum liquids handled by KMC. In addition, the MSDS of other products at the site should be consulted when determining what additional analyses should be conducted.

Table 2-1. Specific Chemical Analysis

Real-time Sampling	
<ul style="list-style-type: none"> • Benzene • 1,3-Butadiene • Sulfur dioxide (SO₂) • Particulate Matter (PM_{2.5}, PM₁₀) • Ozone (O₃) 	<ul style="list-style-type: none"> • VOCs • Hydrogen sulfide • Nitrogen dioxide (NO₂) • Carbon monoxide (CO)
Grab/Passive Sampling	
<ul style="list-style-type: none"> • Benzene • Toluene • Ethylbenzene • Xylenes • 1,3-butadiene • 1,2,4-trimethylbenzene • 1,3,5-trimethylbenzene • Acenaphthene • Anthracene • Benzo(a)pyrene • Benzo(k)fluoranthene • Dibenz(a,h)anthracene • Fluorene • Naphthalene • Pyrene • 1-Methyl-7-(1-methylethyl)phenanthrene 	<ul style="list-style-type: none"> • Isopropylbenzene (cumene) • n-decane • n-hexane • Methylcyclohexane • 1,2-dibromoethane • 1,2-dichloroethane • sec-butyl mercaptan • isooctane • Acenaphthylene • Benz(a)anthracene • Benzo(g,h,i)perylene • Chrysene • Fluoranthene • Indeno(1,2,3-c,d)pyrene • Phenanthrene • Metals (lead, mercury)

Note that only two metals are listed in Table 2-1 but this list may need to be expanded depending on the site.

3.0 EQUIPMENT

The following is a list of appropriate equipment to be used during a fire.

3.1 Real-Time Air Monitoring Method

Real-time air monitoring equipment was selected to provide immediate data on site and aid in the selection of valuable grab air sampling locations. Table 3-1 summarizes some of the real-time monitoring equipment which can provide air concentration data useful for the air sampling location selection, to assist in evacuation planning decision and to support an acute human health risk assessment.

Table 3-1. Real-Time Monitors

Instrument	Chemical Detected	Range (Resolution) ppm	Notes
UltraRAE 3000	VOC	0 to 99.99 (0.05) 100 to 999.9 (0.1) 1000 to 9999 (1)	<ul style="list-style-type: none"> • PID measurement, combines 9.8eV UV lamp and RAE-sep benzene tube • VOCs or Benzene-specific mode • Continuous datalogging and PC download; wireless download also available • Sampling pump: 450-550 cc/min
	Benzene	0 to 200 (0.05)	
	1,3-Butadiene	0 to 200 (0.05)	
ppbRAE 3000	VOC	0.01 to 9.9 (0.001) 10 to 99 (0.01) 100 to 99 (0.1) 1000 to 9999 (1)	<ul style="list-style-type: none"> • ppb PID measurement uses a standard 10.6eV UV lamp • VOC specific • Continuous datalogging and PC download; wireless download also available • Sampling pump: 500 cc/min
ToxiRAE Pro	Hydrogen sulphide	0 to 100 (0.1)	<ul style="list-style-type: none"> • Uses electrochemical sensors • Calibration data is stored so sensors can be switched in the field • Continuous datalogging and PC download; wireless download also available • Sampling method: Diffusion
	CO	0 to 500 (1) 0 to 2000 (10)	
	Sulfur dioxide	0 to 20 (0.1)	
	Nitrogen dioxide	0 to 20 (0.1)	
Thermo DataRAM 4000	Particulate Matter	0.001 to 400.0 mg/m ³ (particle size 0.05 to 4 µm)	<ul style="list-style-type: none"> • Aerodynamic particle size separators measure specific size groups such as the thoracic, respirable, PM10, PM2.5, and PM1.0 fractions. • omnidirectional sampling inlet and an in-line mist and fog elimination heater are available for ambient air monitoring. • Continuous datalogging and PC download; wireless download also available • Fast, easy field calibration,

Real-time monitoring instruments (e.g. RAE monitors) will be used to detect levels of benzene, carbon monoxide, 1,3-butadiene, hydrogen sulphide, sulphur dioxide, nitrogen dioxide, and total volatile organic compounds (TVOC) at various locations to determine sampling locations for grab/passive air sample collection. RAEs will also provide assistance in reducing breakthrough

when sampling with tubes (e.g. TD tubes) by allowing the sampler to choose appropriate locations.

The real-time monitoring data for these parameters will then be compared to criteria which depend both on the detection limit of the sampling media, the resolution level of the real-time monitor, and the lowest human health criteria. Grab sampling criteria of **0.05 ppm** for benzene, **0.1 ppm** for 1,3-butadiene, and **0.1 ppm** for hydrogen sulphide were selected as these values are at or above the resolution of the RAE monitors, above the canister or tube detection limits but below the lowest human health criteria (Table 3-2).

Table 3-2. Guidance Criteria for Real-Time Air Sampling

Real-Time Parameter	Detection Limit					Lowest Acute Air Monitoring Criteria (ppm)	Grab Sampling Criteria (ppm)
	RAE Monitor (ppm)	Summa Cannister (ppm)	Carbo Tube ($\mu\text{g}/\text{tube}$)	Prism TDT Tube ($\mu\text{g}/\text{vol}$)	Passive/Filter Method		
Benzene	0.05	0.00002	0.004	0.01		0.009	0.05
1,3-butadiene	0.05	0.00002	0.006	0.10		0.1	0.1
Hydrogen sulphide	0.1	0.01	NA	NA	0.02 ppb	0.07	0.1
Total VOCs	0.05 to 1	-	-	-		-	-
SO ₂	0.1	-	-	-	0.02 ppb	0.2 (AEGL 1)	0.1
CO	1	-	-	-	-	27 (AEGL 2)	-
NO ₂	0.1	-	-	-	0.02 ppb	0.50 (AEGL 1)	0.1
PM ₁₀	0.05 μm				2 $\mu\text{g}/\text{m}^3$	50 $\mu\text{g}/\text{m}^3$ (24 hrs)	0.05 μm
PM _{2.5}	0.05 μm				2 $\mu\text{g}/\text{m}^3$	30 $\mu\text{g}/\text{m}^3$ (24 hrs)	0.05 μm

NA = Analysis not available

¹AEGL-1 is not Recommended due to insufficient data. Level of Odor Awareness is 1.9 ppb. See Table 9.

3.2 Longer Time Interval Air Sampling for Chemical Analyses

Table 3 presents grab sampling media and analytical methods. Canister/tube samples will either consist of 1, 4, 8 or 24 hour collection times. The collection time will be based on monitoring objectives. For instance, a 4 or 8 hour collection time may be related to commercial worker monitoring or 24 hour sampling for evaluating the potential impacts in the community.

The Prism TDT Scan will be used to measure the majority of compounds on this list for the first 72 hours.

Passive air samplers (e.g., PASS) can be used to sample parameters such as SO₂, NO₂, CO, O₃, and VOCs at detection limits as low as 2 ppb. Passive air sampling is a diffusive method which monitors gas or vapour pollutants from the atmosphere at a rate controlled by a physical

process, such as diffusion through a static air layer or infiltration through a membrane. Local meteorological parameters in addition to the number of days/hours of contact between the ambient air and the permeation membrane is important. Meteorological parameters used in the passive sampling calculations are air temperature, wind speed and relative humidity.

Table 3-3. Grab Air Sampling Specifications/Information

Sampling Media	Chemical Detected	Analytical Method	Notes
ALS Environmental			
Summa Cannister	<u>All COPCs except:</u> 1,2,4-trimethylbenzene 1,3,5-trimethylbenzene	EPA TO-15A or EPA TO-15-Modified	<ul style="list-style-type: none"> Majority of COPCs can be analysed Canisters must be lab-calibrated for sampling rate Analyses are conducted in Edmonton
TD Tube	<u>All COPC except:</u> Sec-butyl mercaptan Ethanol Hydrogen sulphide	EPA TO-17 and/or BC MOE CSR	<ul style="list-style-type: none"> Analyses conducted at the Burnaby lab 3 compounds cannot be analysed
Mixed Cellulose Ester (MCE) matchweight filters	Metals	NIOSH Method 7303 EPA Method 245.7 EPA Method 6010B	<ul style="list-style-type: none"> Analysis of metals can be complete in Burnaby Includes analysis of mercury. Can be used with personal air monitoring pumps
PAH Filter Method	PAHs		<ul style="list-style-type: none"> Analyses conducted at the Burnaby lab All PAH COPCs can be analysed
Pallflex TX40 filters	Particulate Matter: PM _{2.5} and PM ₁₀	BC MOE – 47 mm HiVol Teflon filter	<ul style="list-style-type: none"> Sample using a Partisol Model 2000 Air Sampler as per U.S. EPA Reference Method RFPS-0694-098, fitted with a PM10 inlet
Maxxam Environmental			
PASS	SO ₂ , NO _x , NO ₂ , O ₃ , VOCs		<ul style="list-style-type: none"> Analysis conducted in Edmonton Easy to deploy and set up
Prism Analytical Technologies			
TDT Air Scan	<u>All COPCs except:</u> Hydrogen sulphide Methanethiol	TO-15 and TO-17	<ul style="list-style-type: none"> Methyl mercaptan and hydrogen sulphide analyses are not available Tubes can be kept on hand with air pumps and calibrators 24 hour laboratory turn-around-time may be achievable Analyses are conducted in Minnesota

Note: COPC - chemicals of potential concern

3.3 Meteorological

Meteorological conditions at the site are required to assist in determining whether or not the smoke plume will reach and potentially impact nearby communities. Furthermore, it will assist the response to the fire and ensure that responders are safe. Meteorological data such as wind speed and direction, humidity, precipitation, barometric pressure, and temperature.

At a minimum one station should be set up in the vicinity of any nearby communities to monitor weather conditions. A weather station, such as Davis Instruments' Vantage Pro2, will provide real-time and also forecasted weather.

3.4 Equipment Considerations

The general air sampling plan proposed may require modification due to several special considerations based on the location of the event (e.g., pipeline fire vs. a storage facility; nearest community), weather conditions and the size and/or intensity of the fire. Special considerations which should be evaluated are discussed below.

1. Rain

- Significant rain events may limit the ability of the real-time air monitors to detect concentrations and the ability to use summa canisters for air sampling.
- ToxiRAE Pro and UltraRAE 3000 are designed for 0 to 95% humidity (non-condensing) and the ToxiRAE Pro has a dust and water ingress protection rating of IP-65.
- A sheltered area may need to be erected so water is not drawn into the air monitor intakes, Summa canisters, passive samplers, or TD tube. For example, an open tent which does not create an area of stagnant air may be used.

2. Cold

- The ToxiRAE Pro and UltraRAE 3000 are only designed to operate to a low temperature of -20 °C (-4 °F). In an environment below -20°C, tedlar bags or passive air samples may be required so real-time monitoring may be conducted in a warmer environment.

3. Wind

- High winds will likely result in increased air mixing and particulate/gas dispersion and deposition. As a result, the monitoring and sampling areas of concern may need to be expanded or changed based on prevailing winds.
- The sampling area may need to be increased if winds are believed to have transported particulates to another area, specifically a more confined and inhabited area.

3.5 Equipment Checklist

A list of air monitoring and sampling equipment required by the KMC or KMC contractor during and after the fire has been extinguished is provided in Table 4. This list should be refined for each location especially those near populated areas.

Table 3-4. Air Sampling Equipment Checklist

General Equipment
Personal Protective Equipment (including ventilator) as determined by the HASP
Camera (date and time stamp)
GPS
Weather station (e.g., Vantage Pro2 or similar with tripod)
Measuring Tape
Field notebook
Aerial Maps and Site Plans
Monitoring
ToxiRAE Pro
UltraRAE/ppbRAE 3000
Prism – TDT Kits
Thermo DataRAM 4000
Sampling
Summa canisters
TD tubes
Benzene tubes
TVOC tubes
Vacuum gauge
Tedlar bags
PASS (Passive Air samplers), tripod stand, and weather cover.
Pallflex TX40 filters
PAH Filters
MCE matchweight filters
Sampling pumps for tubes
Tubing
Flagging tape
Hand tools (wrenches, cutters)

4.0 NEARBY COMMUNITIES AND METEOROLOGICAL CONDITIONS

4.1 Nearby Communities

Identification of the proximity of the fire to nearby communities is important in determining whether or not potentially harmful smoke particulates and/or gases will affect human health. Furthermore, obtaining information regarding current or historic air quality conditions in the community/urban setting that may be affected by the fire will provide important background air quality information that will be useful in assessing risk to human health. As noted by Environment Canada, the following conditions are important to consider and note in urban areas as they can affect air quality:

- Wind speed plays a role in diluting pollutants, with stronger winds dispersing potential pollutants; whereas, light winds can lead to stagnant conditions allowing for the build up of potential pollutants.
- Inversion or 'stagnant' conditions are commonly associated with major air pollution episodes. Under normal conditions, the air near the surface is warmer and rises to mix with the above cooler air. Inversions can develop when a warmer, less dense air mass, moves over a cooler, denser air mass, creating a temperature inversion trapping the cooler air closer to the surface. Resulting in trapping potentially polluted air near the ground surface.
- Similar to inversion topography can also create conditions that allow the trapping of air near the surface. For example, at night, cold air tends to settle in low-lying basins and valleys; thus the cool air settles and accumulates in these low-lying basins, trapping air pollutants.

4.2 Meteorological Conditions

The collection of meteorological information will need to be collected in order to determine if the fire will affect nearby human receptors or valued ecological components. Real-time meteorological data will allow responders to sample areas at the leading edge of the smoke plume to ensure adequate coverage of downwind exposure to smoke particulates and gas pollutants. Real time data will provide data that can be used along with forecasted meteorological data to model particulate transport and dispersion. The modelled information along with real time data will help responders set up appropriate sampling stations that will provide valuable information in regards to assessing risk to receptors. For larger fires that may persist for days real time and forecasted data will be extremely important to ensure the smoke plume model is as accurate as possible.

Real time data that will be required includes:

- Wind speed and direction;
- Temperature;
- Barometric Pressure;
- Humidity; and
- Precipitation.

Forecasted data from satellite as well as historical data will be needed for input into the selected model(s).

5.0 SAMPLING LOCATIONS

5.1 Identification of Sample Locations and Study Boundaries

Determining sampling locations at the outset of a fire will be based on the observations of the smoke plume. If the smoke plume is being carried toward urban communities sampling stations should be set up at the leading edge of the community; within the community; and at the trailing edge of the community. This set up will allow for the collection of appropriate data to determine potential risk to human health.

5.1.1 Air Monitoring Plan considerations

5.1.1.1 Urban Air Monitoring Plan Considerations

From a human health risk assessment perspective, the urban scenario is complex and requires careful consideration. KMC infrastructure anticipated in urban settings may include: terminals, pump stations, storage facilities and liquid petroleum pipelines.

Dispersion and transport of the smoke particulates and gases is largely dependent on the wind speed and direction, humidity, and temperature. Proximity to urban areas will be important to determine potential exposure effects on human health.

Depending on the location of the fire, within the KMC property, along the KMC property line, or from a non-facility source, smoke and gases may be transported to human receptors. In an urban setting, numerous human receptors are in relatively close proximity and sensitive receptors are ubiquitous. Hospitals, schools, and elderly care homes are facilities with concentrated populations of sensitive receptors and may possess a controlled air intake system. As a result, it may be necessary to take extra air samples at the leading edge of private properties. When selecting step-out distances and monitoring locations, a 10-20 m rule-of-thumb may be used as a starting point, though this will likely need to be altered based on site-specific features.

Shorter turnaround times for laboratory results are available in many urban areas due to ease of shipping. Monitoring and sampling supplies can be more rapidly received and air samples more rapidly shipped to laboratories.

5.1.1.2 Remote Air Monitoring Plan Considerations

A remote fire site is defined as a location with few homes or businesses in close proximity of the fire location, and thus no residential human receptors are known to be present within this area. Caution is warranted, however, in some remote locations where outdoor recreational activities (e.g. hunting) or temporary residences (e.g. cabins, campsites) may result in human presence in the remote area and these remote receptors should be considered when determining monitoring and sampling locations.

By nature, few public receptors are anticipated to be present at a remote site. As a result, the air monitoring and sampling plan is focused on two main objectives: 1) Dispersion of smoke particulate and gases to the nearest or most likely receptor (i.e. based on wind direction and speed); 2) Protection of the unknown human receptor. After KMC determines an appropriate exclusion zone, monitoring and sampling along its perimeter, and at step-out intervals should be conducted. The shape and orientation of this step-out interval may be based on wind speed

and direction, as well consideration will be given to real-time monitoring data and proximity of the nearest human receptor or valued ecological component.

Logistics for monitoring and sampling at remote sites are more complex and shipping of supplies and samples may be delayed. As a result, if deemed necessary given site conditions, real-time monitoring data may be used to model dispersion distances of some compounds (e.g. particulate air dispersion models) prior to receiving chemistry data results.

5.1.2 Complaint Assessment

In the event of a complaint, real time monitoring could be conducted in areas where complaints are originating from. If real time monitoring limits are exceeded, long term sampling stations should be set up to collect additional samples to assess risk to human health. Note that all complaints and related information should be logged in a complaint register to ensure follow-up with the stakeholder and air potential monitoring/sampling.

5.2 Identification of Exclusions Zones

Defining exclusion zones for fires based on the smoke plume can be difficult as shifting winds will change the direction of the plume or temperature can change the height of a plume. Other factors will also need to be considered such as the intensity of the fire, the potential contaminants at the site where the fire is located, and the proximity to urban communities. Exclusion zones can be established according to KMC's spill assessment protocols whereby three zones define the work areas for the spill assessment team members responding to a spill: Hot, Warm and Cold Zones. KMC zones are defined as well as how the zones will relate to the public in Table 5-1.

More importantly exclusion or safety zones need to be established in order to protect response personnel. These should be established in conjunction with the Fire Chief or the KMC Incident Commander but should follow the general guidelines in Table 5-2. A responder to a fire will have greater potential for exposure the airborne residues the closer there are to the fire. Table 5-2 presents what Buist *et al.* (1994)¹ calculated as the safe distance for oil fires without the use of personal safety equipment (i.e., respirators). These safe distances can be utilised to refine KMC Zones to ensure public safety. For example, a fire with a diameter of 10m, would have the following safe approach zones:

- 20 m (i.e., fire diameter of 2) from the edge of the fire, with 5 minutes of safe exposure time;
- 30 m (i.e., fire diameter of 3) from the edge of the fire, with approximately 30 minutes of safe exposure time;
- 40 m - 50 m (i.e., fire diameter of 4 & 5) from edge of fire, with no anticipated adverse health effects.

¹ Buist, I.A., S.L. Ross, B.K. Trudel, E. Taylor, T.G. Campbell, P.A. Westphal, M.R. Myers, G.S. Ronzio, A.A. Allen, and A. B. Nordvik. 1994. *The Science, Technology and Effects of Controlled Burning of Oil Spills at Sea*. Marine Spill Response Corporation, Washington, DC. MSRC Technical Report Series 94-013. 388 pp.

Table 5-1. KMC Zones and Public Zones Definitions

Zone	KMC Zone	KMC Definition	Zone Defined by Air Monitoring Results in Public Areas	Public Response Definition
Hot Zone	Exclusion Zone	Area where contamination or product hazards are expected – i.e., perimeter established by Fire Chief	Air concentrations greater than emergency response criteria.	Evacuation or shelter in place.
Warm Zone	Decontamination Zone	Transition area between hot and cold zones where decontamination of people and equipment is conducted.	Air concentration less than air monitoring criteria but less than emergency response criteria.	Notification of public, depending on concentrations and conditions may require evacuation or shelter in place.
Cold Zone	Support Zone	Area adjacent to Warm zone and intended to remain safe and free of contamination / harmful particulates	Air concentration less than air monitoring criteria.	Air monitoring during response.

Table 5-2. Fire Safety Zones for Response Personnel

Exposure Time (minutes)	Safe Approach for Personnel (Fire Diameter)
5 minutes	2
30 minutes	3
Infinite	4
Infinite	5

Similar to spill response air monitoring, different exclusion zones for a fire incident may occur in relation to the selection of air sampling locations:

- **Exclusion zone is within KMC property.** The air monitoring locations will concentrate on the perimeter of the KMC property boundary with step out locations from the perimeter of the KMC property. No sampling will be conducted on the KMC property as the focus is on public health.
- **Exclusion zone straddles the KMC property boundary onto public and private property (e.g., fire diameter of 4 straddles KMC property boundary and public/private property).** The air monitoring locations will concentrate on the perimeter of the KMC property boundary and outside boundary of the exclusion zone, on nearest public/private property. The step out locations will be from both from the KMC property boundary and the exclusion zone. No sampling will be conducted on the KMC property as the focus is on public health.
- **Exclusion zone is on public and private property.** The air monitoring locations will concentrate on the outside boundary of the exclusion zone. The step out locations will be from the exclusion zone.

A fire diameter of 4 can conservatively be considered similar to the KMCs Decontamination Zone. A fire diameter of 5 or more with air quality less than applicable monitoring criteria values can be considered the support zone where impacts to human health are not anticipated. These zones may also change depending on changes in the weather e.g., temperature inversion resulting in smoke being trapped along ground surface.

6.0 AIR MONITORING CRITERIA

Two set of Acute Air Criteria are included in this plan:

- Air Monitoring criteria for public evacuation and shelter in place (Emergency Criteria)
- Acute risk assessment screening criteria

These criteria are expressed in ppm or mg/m³. **Please note that the units, ppm and mg/m³, are not interchangeable** and caution is advised when reviewing data and criteria to ensure the units are the same (see Table 6.1).

Table 6-1. Conversion Factors from ppm to mg/m³ (at STP)

Compound	Molecular Weight (g/mol)	Conversion Factor (ppm to mg/m ³)
BETX		
benzene	78.112	3.19
ethylbenzene	106.18	4.34
toluene	92.14	3.77
xylene	106.17	4.34
PAHs		
naphthalene	128.17	5.24
Alkanes/Alkenes		
n-decane,	142.282	5.82
n-hexane	86.18	3.52
methylcyclohexane	98.21	4.02
Other VOCs		
1,3,5-trimethylbenzene	120.19	4.92
1,3-butadiene	54.09	2.21
isopropylbenzene (cumene)	120.19	4.92
hydrogen sulfide	34.08	1.39
carbon monoxide	28.0	1.15
nitrogen dioxide	46.0	1.88
sulfur dioxide	64.1	2.62
Isooctane	114.26	4.67
Physical Parameters		
PM _{2.5}	NA	NA
PM ₁₀	NA	NA

To convert concentrations in air (at 25 °C) from ppm to mg/m³: $mg/m^3 = (ppm) \times (\text{molecular weight of the compound}) / (24.45)$.

From mg/m³ to ppm: $ppm = (mg/m^3) \times (24.45) / (\text{molecular weight of the compound})$

To convert concentrations in air from µg/m³ to mg/m³: $mg/m^3 = (\mu g/m^3) \times (1 \text{ mg}/1,000 \mu g)$.

Can be adjusted to site specific conditions using equation below:

$$mg/m^3 = ppm \times (\text{molecular weight}) / (24.45 \times (760 \text{ mm Hg}) \times T / (P \times 298 \text{ K}))$$

$$ppm = mg/m^3 \times (24.45 \times (760 \text{ mm Hg}) \times T / (P \times 298 \text{ K})) / (\text{molecular weight})$$

STP = Standard temperature and pressure of 760 mmHg and 25 °C

P = the absolute pressure (in mm Hg) at actual conditions.

T = the absolute temperature (in °K) at actual conditions.

6.1 Air Monitoring Criteria for Public Evacuation and Shelter in Place

The emergency response criteria for constituents are given in Table 8a in mg/m³ and Table 8b in ppm. Note that AEGL-3 criteria have been added in Appendix A. If AEGL 3 criteria are exceeded they pose a potential life threatening health risk or may cause death.

ATTENTION: ENSURE THE CORRECT UNITS ARE BEING USED WHEN COMPARING FIELD DATA WITH CRITERIA IN TABLES 6-2 OR 6-3.

Table 6-2. Emergency Response Criteria (mg/m³)

Compound	CAS Number	AEGL-2 (mg/m ³)			Other Criteria (mg/m ³)	Other: ERPGs-2 TEEL-2
		1hr	4hr	8hr		
benzene	71-43-2	2556	1278	639	--	--
toluene	108-88-3	4522	2977	2450	--	--
ethylbenzene	100-41-4	4777	2866	2519	--	--
xylene	1330-20-7	3995	2171	1737	--	--
naphthalene	91-20-3	--	--	--	79	TEEL-2
n-decane,	124-18-5	--	--	--	120	TEEL-2
n-hexane	110-54-3	11632	11632	11632	--	--
methylcyclohexane	108-87-2	--	--	--	1607	TEEL-2
1,3,5-trimethylbenzene	108-67-8	1770	1131	737	--	--
1,3-butadiene	106-99-0	11725	7522	5973		
isopropylbenzene (cumene)	98-82-8	1475	934	639	--	--
hydrogen sulfide	74-93-1	92	59	37	--	--
carbon monoxide	630-08-0	95.4	38.0	31.1	--	--
nitrogen dioxide	10102-44-0	22.6	15.4	12.6	--	--
sulfur dioxide	7446-09-5	1.96	1.96	1.96	--	--
isooctane	540-84-1	--	--	--	1400	TEEL-2
PM _{2.5}	--	--	--	--	0.075*	WHO
PM ₁₀	--	--	--	--	0.15*	WHO

*- 24-hr average. CCME's 24-hr average is based on 98th percentile ambient measurement annually, averaged over 3 consecutive years. WHO's 24-hr average calculated as the 99th percentile for 3 days/year.

ATTENTION: ENSURE THE CORRECT UNITS ARE BEING USED WHEN COMPARING FIELD DATA WITH CRITERIA IN TABLES 6-2 OR 6-3.

Table 6-3. Emergency Response Criteria (ppm)

Compound	CAS Number	AEGL-2 (ppm)			Other Criteria (ppm)	Other: ERPGs-2 TEEL-2
		1hr	4hr	8hr		
benzene	71-43-2	800	400	200	--	--
toluene	108-88-3	1200	790	650	--	--
ethylbenzene	100-41-4	1100	660	580	--	--
xylene	1330-20-7	920*	500	400	--	--
naphthalene	91-20-3	--	--	--	15	TEEL-2
n-decane,	124-18-5	--	--	--	20	TEEL-2
n-hexane	110-54-3	3300*	3300*	3300*	--	--
methylcyclohexane	108-87-2	--	--	--	400	TEEL-2
1,3,5-trimethylbenzene	108-67-8	360	230	150	--	--
1,3-butadiene	106-99-0	5300*	3400*	2700*		
isopropylbenzene (cumene)	98-82-8	300	190	130	--	--
hydrogen sulfide	7783-06-4	27	20	17	--	--
carbon monoxide	630-08-0	83	33	27		
nitrogen dioxide	10102-44-0	12	8.2	6.7		
sulfur dioxide	7446-09-5	0.75	0.75	0.75	--	--
isooctane	540-84-1	--	--	--	300	TEEL-2
PM _{2.5}	--	--	--	--	Table 6-2	--
PM ₁₀	--	--	--	--	Table 6-2	--

6.2 Acute Risk Assessment Screening Criteria

Chemicals for which air concentrations exceed the Acute Screening Criteria will be retained for further consideration in an acute human health risk assessment for the inhalation pathway. The air monitoring criteria for the constituents are given in Table 9a in mg/m³ and Table 9b in ppm.

ATTENTION: ENSURE CORRECT UNITS ARE BEING USED WHEN COMPARING FIELD DATA WITH CRITERIA IN TABLES 6-4 OR 6-5.

Table 6-4. Acute Air Monitoring Criteria (mg/m³)

Compound	CAS Number	AEGL-1 (mg/m ³)			Other Criteria (mg/m ³)	OEHHA ³ ATSDR ³ BC CSR ³ ERPGs-1 TEEL-1
		1hr	4hr	8hr		
benzene	71-43-2	166	58	29	1.3	OEHHA
toluene	108-88-3	754	754	754	37	OEHHA
ethylbenzene	100-41-4	143	143	143		
xylene	1330-20-7	565	565	565	22	OEHHA
naphthalene	91-20-3	--	--	--	79	TEEL-1
n-decane,	124-18-5	--	--	--	11	TEEL-1
n-hexane	110-54-3	11632 (AEGL-2)	11632 (AEGL-2)	11632 (AEGL-2)	1057	TEEL-1
methylcyclohexane	108-87-2	--	--	--	1607	TEEL-1
1,3,5-trimethylbenzene	108-67-8	688	442	221	--	--
1,3-butadiene	106-99-0	1482	1482	1482		
isopropylbenzene (cumene)	98-82-8	246	246	246	--	--
hydrogen sulfide	7783-06-4	0.71	0.50	0.46	0.042	OEHHA
carbon monoxide	630-08-0	NR	NR	NR		
nitrogen dioxide	10102-44-0	0.94	0.94	0.94	--	--
sulfur dioxide	7446-09-5	0.52	0.52	0.52	--	--
isooctane	540-84-1	--	--	--	1400	TEEL-1
PM _{2.5}	--	--	--	--	0.03*	CCME
PM ₁₀	--	--	--	--	0.05*	CCME

mg/m³ = milligrams per cubic meter

NR¹; AEGL-1 is not Recommended due to insufficient data. Level of Odor Awareness is 1.9 ppb

²; Level of Distinct Odor Awareness (LOA) = 0.0000087ppm

³ General Public Health Criteria

⁴ Not an acute criteria for public health, however selected as it is a standard vapour petroleum analysis in BC.

*- 24-hr average. CCME's 24-hr average is based on 98th percentile ambient measurement annually, averaged over 3 consecutive years. WHO Guidelines are 0.025 mg/m³ and 0.05 mg/m³, for PM_{2.5} and PM₁₀ respectively. WHO's 24-hr average calculated as the 99th percentile for 3 days/year.

ATTENTION: ENSURE THE CORRECT UNITS ARE BEING USED WHEN COMPARING FIELD DATA WITH CRITERIA IN TABLES 6-4 OR 6-5.

Table 6-5: Acute Air Monitoring Criteria (ppm)

Compound	CAS Number	AEGL-1 (ppm)			Other Criteria (ppm)	OEHHA ³ ATSDR ³ BC CSR ³ ERPGs-1 TEEL-1
		1hr	4hr	8hr		
benzene	71-43-2	52	18	9	0.407	OEHHA
toluene	108-88-3	200	200	200	1	OEHHA
ethylbenzene	100-41-4	33	33	33		
xylene	1330-20-7	130	130	130	22	OEHHA
naphthalene	91-20-3	--	--	--	15	TEEL-1
n-decane,	124-18-5	--	--	--	1.9	TEEL-1
n-hexane	110-54-3	NR	NR	NR	300	TEEL-1
methylcyclohexane	108-87-2	3300	3300	3300	400	TEEL-1
1,3,5-trimethylbenzene	108-67-8	140	90	45	--	--
1,3-butadiene	106-99-0	670	670	670		
isopropylbenzene (cumene)	98-82-8	50	50	50	--	--
hydrogen sulfide	7783-06-4	1 ²	1 ²	1 ²	0.03	OEHHA
carbon monoxide	630-08-0	NR	NR	NR		
nitrogen dioxide	10102-44-0	0.5	0.5	0.5	--	--
sulfur dioxide	7446-09-5	0.2	0.2	0.2	--	--
isooctane	540-84-1	--	--	--	300	TEEL-1
PM _{2.5}	--	--	--	--	Table 6-4	
PM ₁₀	--	--	--	--	Table 6-2	

mg/m³ = milligrams per cubic meter

NR¹; AEGL-1 is not Recommended due to insufficient data. Level of Odor Awareness is 1.9 ppb

²; Level of Distinct Odor Awareness (LOA) = 0.0000087ppm

³ General Public Health Criteria

⁴ Not an acute criteria for public health, however selected as it is a standard vapour petroleum analysis in BC.

7.0 MONITORING DURATION

The timeframe for air monitoring will be based on the intensity and duration of the fire, receptors, results of air concentrations, and clean up timeframe. In general, air concentrations less than air monitoring criteria along with stable or dissipation of smoke plume would enable air monitoring to be discontinued.

8.0 DECISION LOGIC TREE FOR AIR MONITORING AND SAMPLING

The decision tree logic for urban and remote is the same. The only difference would be the extent of sampling area and frequency of sampling as determined by site conditions.

8.1 Discussion of Decision Logic Tree

The external notification tree is provided in Section 8.3. It is assumed that the basic information regarding the fire and site conditions will have been determined by first responders, as well as initial real-time air quality samples collected by the first responders. It is also assumed that the air monitoring project manager will be involved in the incident planning and review of ongoing information.

The following information and questions will flow into the air monitoring plan decision logic tree as illustrated in Section 8.2:

- **Type of Products on Fire**
 - Facility and Products on-site
 - Storage location and Products on-site
 - Pipeline and product transported
- **Intensity and size of fire**
- **Quantity of fuel feeding the fire.**
- **Wind**
 - What are the prevailing wind directions at the site?
 - What is the current wind direction and speed?
- **Receptors**
 - Who are the nearest public receptors? (residences, public facilities, businesses)
 - Downwind
 - Upwind
 - How far away are these receptors?
 - Are there any sensitive receptors? (nursing home, daycare etc)
 - Are there non-resident receptors? (traplines, hunting operations, itinerant workers (loggers etc), hiking trails, fishers)
- **Effects on Dispersion**
 - Are there any confining features to smoke or gas dispersion/diffusion such as:
 - Canyons
 - Valley bottoms
- **Special Considerations**
 - Time of day (i.e., at night vs. during the day)? Can affect dispersion of smoke.
 - Location to nearest drinking water source?
 - Location to nearest valued ecological habitat?
 - Is the following being used in the spill response?
 - Additional Controlled burning
 - Chemical suppressant foams
 - Additional monitoring equipment and sampling parameters may be required

8.2 Use of Emergency Response Criteria in Public Health Protection Strategy

Deciding whether evacuation and/or shelter in place are the appropriate protection decisions will depend on the fire and site-specific information. For this reason, the public health protection strategy outlined in this section is not intended to be a step by step instruction applicable for each potential scenario but rather provides information on how the emergency response criteria should be used.

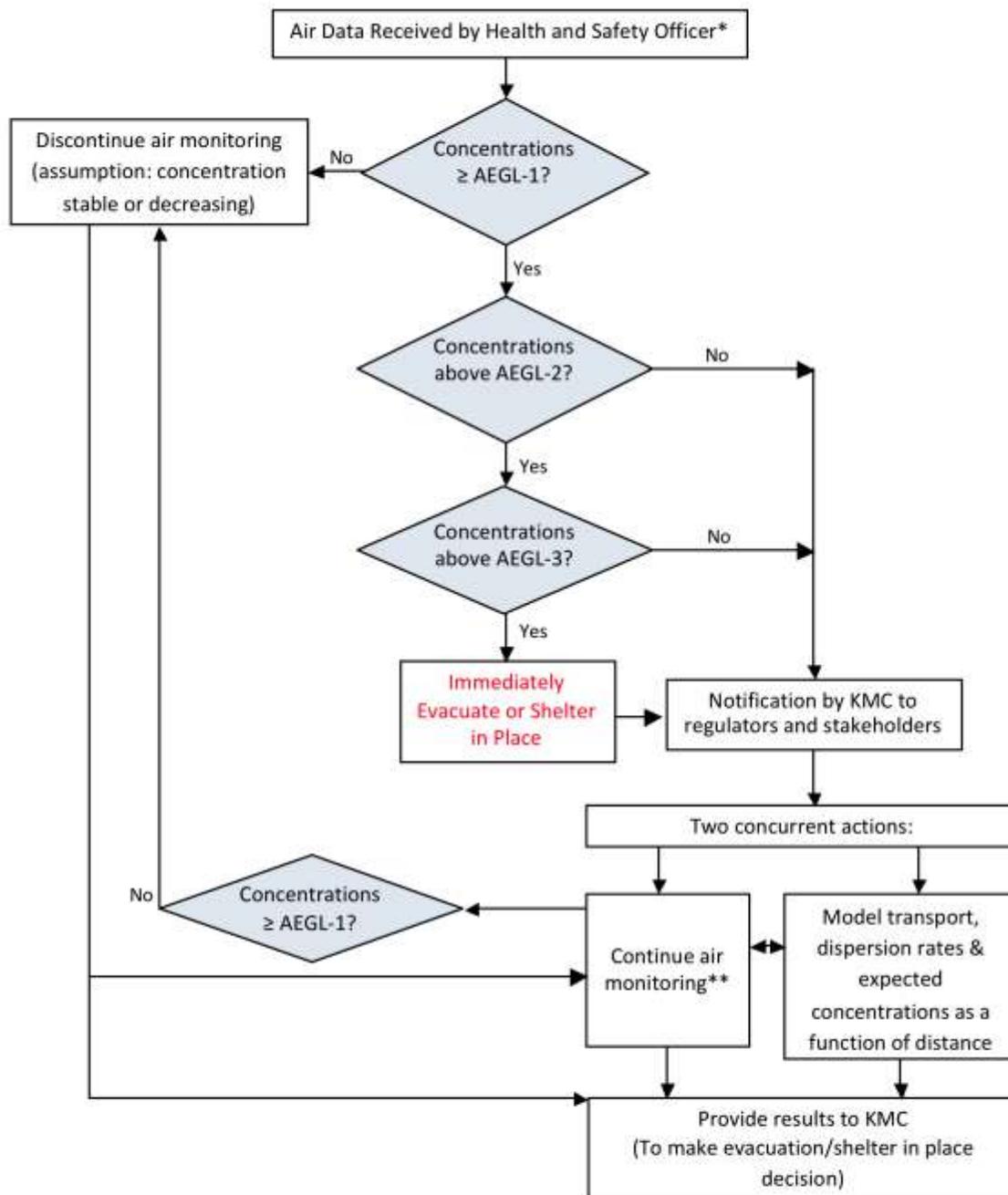
The use of emergency response criteria in the event of an emergency should include the main following steps:

- Notification to KMC when concentration of contaminant in air is at or above Level-1.
- KMC to communicate to regulatory agency and recommend that population can safely evacuate or shelter-in-place above Level-2 before the plume reaches Level-2 time and concentration exposures and shelter-in-place will prevent exposures to Level-2 effects.
- Avoid exposure to concentration of contaminant in air is at or above Level-3.

For chemicals such as BETX, DOE Emergency Management Guide (2007) provides information on determining whether air concentrations exceed the emergency response criteria. DOE reports that the highest time-weighted average (TWA) concentration predicted or measured for any 15-minute period (i.e., the maximum or peak 15-minute TWA concentration) should be compared to the 1 hour emergency response criteria; however, KMC will compare the concentrations to the more conservative 8-hour emergency response criteria.

8.3 Emergency Response Air Monitoring Plan Decision Tree

Public Evacuation Decision Logic Tree



*Fire intensity and proximity to urban communities will dictate evacuation

** See Air Monitoring Plan for Unplanned Petroleum Releases

8.4 Air Monitoring Plan Decision Tree



9.0 REPORTING

Air monitoring and sampling requires site and sampling information in order to accurately interpret the air chemistry data collected on site. Table 9-1 lists specific field reporting requirement for air monitoring and sampling.

Table 9-1. Field Reporting Requirements for On-Site Monitoring and Sampling

Spill Information	
Location of fire	Mark perimeter of exclusion zone(s) or property boundary using GPS, reference to structures or natural features and on site plan or map.
Geography	Is the fire located in an area with restriction to air flow, such as a valley bottom?
Receptors	Are any members of the public in or immediately adjacent to the fire?
Climate Information	
Wind	The prevailing wind direction and speed must be reported hourly.
Precipitation and Humidity	Record precipitation and humidity throughout the sampling period.
Barometric Pressure	Record barometric pressure throughout the sampling period
Temperature	Record temperature throughout the sampling period.
Monitoring and Sampling Information	
Location	All monitoring and sampling locations should be GPS-referenced, described with reference to permanent structure(s), and indicated on a site plan or map.
Elevation	The elevation of the sampling location with respect to the ground MUST be recorded.
Monitoring	Record specific GPS-referenced concentrations even if using a continuous data logger.
Sampling	Air pump speed and sampling length of time must be recorded along with the method (eg. TD tube, Summa Canister, Filters)
Data Quality and Management	
Sample Duplicates	10% of samples, or one per day if fewer than 10 samples per day
Lab Duplicates (Analysis Method)	10% of samples collected should also be sent to an additional laboratory to confirm concentrations measured by the primary analytical method
Field Blanks	10% of samples, or one per day if fewer than 10 samples per day

All of the above information will be documented in log books and daily reports to the Safety Officer. The air monitoring data will be inputted into spreadsheets, reviewed on a daily basis and communicated to the KMC Incident Commander.

10.0 DATA QUALITY AND MANAGEMENT

Real-time measurements will be submitted to the KMC Contractor/Project Manager at 8-hour intervals during the first three days of a fire event, and every 24 hours thereafter. Once the fire is extinguished sampling will continue for at least 30 minutes or longer at the direction of the KMC Contractor/Project Manager. Post-fire sampling will be reported to the KMC Contractor/Project Manager every 30 for the first hour and hourly thereafter.

Longer interval air samples will be sent either to PRISM laboratory in Michigan, ALS in Burnaby or Edmonton, and Maxxam in Edmonton (PASS Passive air samplers). Preliminary results will be provided to KMC or any other designated representative within one to two days of receipt by the laboratory. Analytical results will be flagged in instances where the contaminant is also detected in the laboratory blanks.

Duplicates analysis will be reviewed for Quality Assurance and trip blanks may be conducted if deemed necessary for Quality Assurance.

APPENDIX A

AEGL 3 – Concentrations Pose Life-Threatening Health Risk or Death

Table 101. Conversion Factors from ppm to mg/m³ (at STP)

Compound	Molecular Weight (g/mol)	Conversion Factor (ppm to mg/m ³)
BETX		
benzene	78.112	3.19
ethylbenzene	106.18	4.34
toluene	92.14	3.77
xylene	106.17	4.34
PAHs		
naphthalene	128.17	5.24
Alkanes/Alkenes		
n-decane,	142.282	5.82
n-hexane	86.18	3.52
methylcyclohexane	98.21	4.02
Other VOCs		
1,3,5-trimethylbenzene	120.19	4.92
1,3-butadiene	54.09	2.21
isopropylbenzene (cumene)	120.19	4.92
hydrogen sulfide	34.08	1.39
carbon monoxide	28.0	1.15
nitrogen dioxide	46.0	1.88
sulfur dioxide	64.1	2.62
isooctane	114.26	4.67
Physical Parameters		
PM _{2.5}	NA	NA
PM ₁₀	NA	NA

To convert concentrations in air (at 25 °C) from ppm to mg/m³: $mg/m^3 = (ppm) \times (\text{molecular weight of the compound}) / (24.45)$.

From mg/m³ to ppm: $ppm = (mg/m^3) \times (24.45) / (\text{molecular weight of the compound})$

To convert concentrations in air from µg/m³ to mg/m³: $mg/m^3 = (\mu g/m^3) \times (1 \text{ mg}/1,000 \mu g)$.

Can be adjusted to site specific conditions using equation below:

$mg/m^3 = ppm \times (\text{molecular weight}) / (24.45 \times (760 \text{ mm Hg}) \times T / (P \times 298 \text{ K}))$

$ppm = mg/m^3 \times (24.45 \times (760 \text{ mm Hg}) \times T / (P \times 298 \text{ K})) / (\text{molecular weight})$

STP = Standard temperature and pressure of 760 mmHg and 25 °C

P = the absolute pressure (in mm Hg) at actual conditions.

T = the absolute temperature (in °K) at actual conditions.

ATTENTION: ENSURE THE CORRECT UNITS ARE BEING USED WHEN COMPARING FIELD DATA WITH CRITERIA IN TABLES A2 OR A3.

Table 102. AEGL 3 Concentrations Pose Life-Threatening Health Risk or Death (mg/m³)

Compound	CAS Number	AEGL-3 (mg/m ³)			Other Criteria (mg/m ³)	Other: ERPGs-2 TEEL-2
		1hr	4hr	8hr		
benzene	71-43-2	12760	6380	3158	--	--
toluene	108-88-3	16965	11310	9425	--	--
ethylbenzene	100-41-4	7812	4340	3959	--	--
xylene	1330-20-7	10875	5642	4340	--	--
naphthalene	91-20-3	--	--	--	2600	TEEL-3
n-decane,	124-18-5	--	--	--	2500	TEEL-3
n-hexane	110-54-3	30272	30272	30272	--	--
methylcyclohexane	108-87-2	--	--	--	40000	TEEL-3
1,3,5-trimethylbenzene	108-67-8	NR	NR	NR	--	--
1,3-butadiene	106-99-0	48620	30940	15028		
isopropylbenzene (cumene)	98-82-8	3592	2263	1476	--	--
hydrogen sulfide	74-93-1	69.5	51.4	43.1	--	--
carbon monoxide	630-08-0	380	172	150	--	--
nitrogen dioxide	10102-44-0	37.6	26.3	20.7	--	--
sulfur dioxide	7446-09-5	78.6	49.8	25.2	--	--
isooctane	540-84-1	--	--	--	23000	TEEL-3
PM _{2.5}	--	--	--	--	0.075*	WHO
PM ₁₀	--	--	--	--	0.15*	WHO

*- 24-hr average. CCME's 24-hr average is based on 98th percentile ambient measurement annually, averaged over 3 consecutive years. WHO's 24-hr average calculated as the 99th percentile for 3 days/year.

NR – Not recommended due to insufficient data

ATTENTION: ENSURE THE CORRECT UNITS ARE BEING USED WHEN COMPARING FIELD DATA WITH CRITERIA IN TABLES A2 OR A3.

Table 103. AEGL 3 Concentrations Pose Life-Threatening Health Risk or Death (ppm)

Compound	CAS Number	AEGL-3 (ppm)			Other Criteria (ppm)	Other: ERPGs-2 TEEL-2
		1hr	4hr	8hr		
benzene	71-43-2	4000*	2000*	990	--	--
toluene	108-88-3	4500*	3000*	2500*	--	--
ethylbenzene	100-41-4	1800	1000	910	--	--
xylene	1330-20-7	2500*	1300*	1000*	--	--
naphthalene	91-20-3	--	--	--	500	TEEL-3
n-decane,	124-18-5	--	--	--	440	TEEL-3
n-hexane	110-54-3	8600**	8600**	8600**	--	--
methylcyclohexane	108-87-2	--	--	--	10000	TEEL-3
1,3,5-trimethylbenzene	108-67-8	NR	NR	NR	--	--
1,3-butadiene	106-99-0	22000***	14000**	6800***		
isopropylbenzene (cumene)	98-82-8	730	460	300	--	--
hydrogen sulfide	7783-06-4	50	37	31	--	--
carbon monoxide	630-08-0	330	150	130		
nitrogen dioxide	10102-44-0	20	14	11		
sulfur dioxide	7446-09-5	30	19	9.6	--	--
isooctane	540-84-1	--	--	--	5000	TEEL-3
PM _{2.5}	--	--	--	--	Table 6-2	--
PM ₁₀	--	--	--	--	Table 6-2	--

*- ≥ 10% LEL (toluene LEL = 14,000 ppm; xylene LEL = 9000 ppm)

** - ≥ 50% LEL (n-hexane LEL = 11,000 ppm; 1,3-butadiene LEL = 20,000 ppm)

*** - ≥ 100% LEL (1,3-butadiene LEL = 20,000 ppm)

NR – Not recommended due to insufficient data

9.0 DATA QUALITY AND MANAGEMENT

Real-time measurements will be submitted to the KMC Contractor/Project Manager at 8-hour intervals during the first three days of the unplanned release event, and every 24 hours thereafter.

Longer interval air samples will be sent either to PRISM laboratory in Michigan or ALS in Burnaby or Edmonton. Preliminary results will be provided to KMC or any other designated representative within one to two days of receipt by the laboratory. Analytical results will be flagged in instances where the contaminant is also detected in the laboratory blanks.

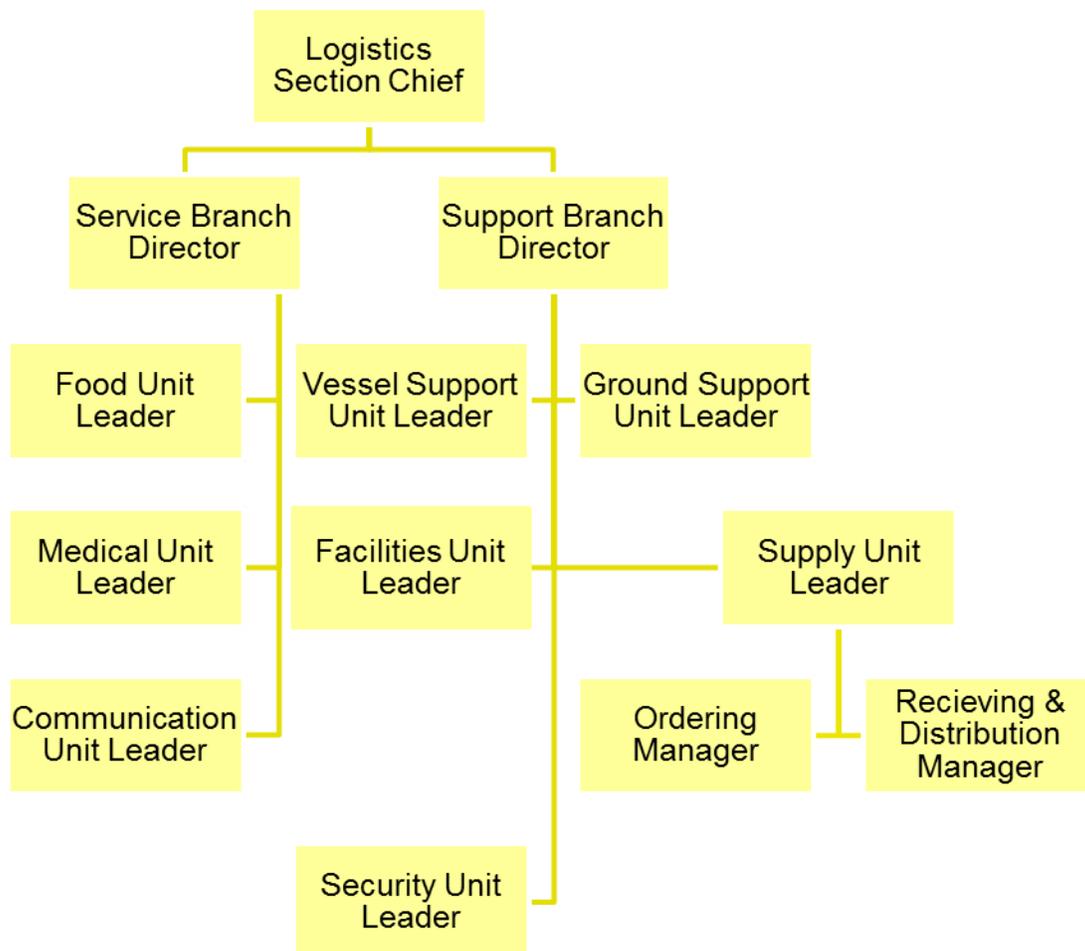
Duplicates analysis will be reviewed for Quality Assurance and trip blanks may be conducted if deemed necessary for Quality Assurance.

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 both personnel and equipment, accommodations, food and supplies. Detailed duties and responsibilities for individuals in the Logistics Section can be found in the Kinder Morgan Canada Incident Command System Guide on e:\manuals.

11.1 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 Kinder Morgan ICS Guide (e:\manuals) and the Northwest Area Contingency Plan (<http://rrt10nwac.com/NWACP/Default.aspx>)



11.2 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.

11.3 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.

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.

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 spill response, communications will take place through one of the following modes:

- Landline and/or cellular telephones
- Radio System
- Satellite Communication

This section describes the overall communications plan and procedures followed in the event of an oil spill or other emergency.

11.4.2 Telephone Communications

Regular or cellular telephones will be the primary mode of communications between team members to whom cellular or car 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 Section 2.

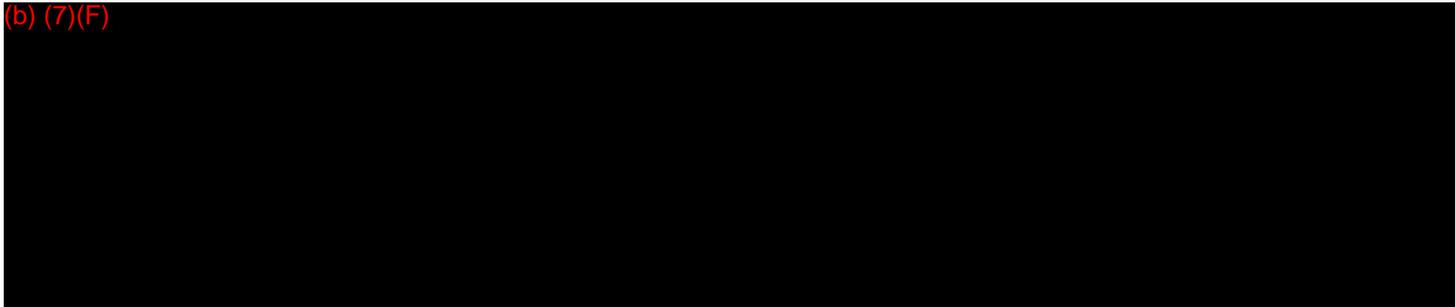
11.4.3 Radio Communications

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 Kinder Morgan and contract personnel, radios may be shared during an incident. During an incident, all radio frequencies used will be tracked using the ICS 205.

11.4.4 Additional Resource Suppliers

Suppliers and contact information is provide for a range of resources that might be required in the event of a spill in Section 2.

(b) (7)(F)



12.0 FINANCE AND ADMINISTRATION SECTION

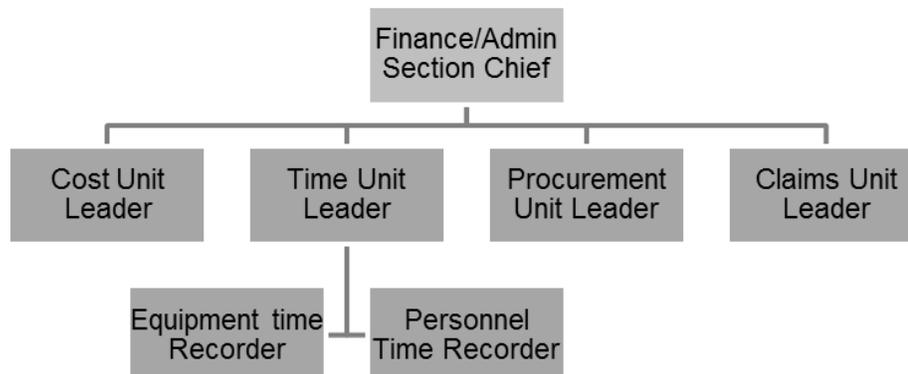
The Finance and Administration Section is responsible for all financial aspects of the response, including assisting in establishing contracts with suppliers, and setting up systems to monitor time and costs. Detailed duties and responsibilities for individuals in the Finance Section can be found in the Kinder Morgan Canada Incident Command System Guide on e:\manuals.

12.1 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 Kinder Morgan ICS Guide (e:\manuals) and the Northwest Area Contingency Plan (<http://rrt10nwac.com/NWACP/Default.aspx>)

12.2 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. In the absence of a Claims Unit Leader the Finance/Administration Section Chief will begin the claims process.



12.3 Managing Spill Liability Claims –Claims Unit Leader

The Insurance/Risk Management Department will do the following things while managing spill liability claims. The Claims unit leader will work closely with the Kinder Morgan Insurance Risk Management Department, or the Insurance/Risk Management Department will deploy specific personnel to the ICP. There is a formal and informal claims process, whenever possible KMC will use the informal process as a means of directly and immediately compensating individuals impacted by the incident.

- Participation in the initial ERL+ 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 the Risk Management group
- Establish contact with liability adjuster and instruct them to proceed immediately to the incident site. Adjuster(s) can 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 KM 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.
- 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, and advertised with public information communications and on the website.
- 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 KM is sued or third party has legal representation.
- Claims will be processed in the order they are received.
- Each claim will be given a unique tracking number and claimants will be able to track the progress of their claim with this number.
- If incomplete, claimants will be provided a thorough explanation of the deficiencies and a timeframe to submit the necessary information to continue processing the documents.
- Once processed, will a release need to be signed by claimant before payment.

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 done up 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 in Section 12.5 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 7.2 Oil Spill Claims Management

Management of oil spill claims will be provided by the Claims Unit Leader and the KM Insurance/Risk Management Department representatives in cooperation with the Incident Commander (Refer to Section 2 for contact information). Outside contractors will support claims processing during all events.

12.5.3 Insurance

KMC is insured in excess of the oil spill liability requirements for onshore facilities outlined in the Oil Pollution Act of 1990.

12.5.4 Oil Spill Claims Handling Process

After an oil spill occurs, KMC will advertise for claims following the information provided in Section 12.5.5. Oil spill claims information and forms will be made available through local claims centers, if established, or via the internet. Sample claims forms and internal claim check and tracking forms are presented in Section 12.5.11. Examples of documentation needed for various types of claims can be found in Section 12.5.10. Section 12.5.9 explains the KMC claims adjudication process and provides related timeframes. Depending on the anticipated number of claims related to the spill, KMC will establish local claim centers. Oil spill claims will be accepted by KMC up to 3-years from the date that KMC began advertising for claims or 3-years from the date that the injury or damage being claimed was reasonably discovered – whichever date is earlier. Natural Resources Damage Assessment (NRDA) claims are handled separately from other claims, and may be accepted by KMC in a manner and timeframe agreed to by the company and the lead federal and/or state trustee agency.

12.5.5 Oil Spill Claims Advertisements

KMC 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 for an oil spill by the Federal On-Scene Coordinator (FOSC) or the USCG National Pollution Funds Center (NPFC). 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 FOSC or the NPFC. A sample claims advertisement is presented in Section 12.5.11.4.

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 KMC is presented in Section 12.5.11.1. A sample Claims Tracking Form is presented in Section 12.5.11.2. Other forms may be used if they provide an equivalent level of information as that found in Section 12.5.11.1. Information entered in the 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 presented in Section 12.5.11.2 is used in the claims adjudication process to track the status of claims received and Claim Check Sheet presented in Section 12.5.11.3 is used to record the type of documentation provided with each claim.

12.5.9 Oil Spill Claims Adjudication and Timeframe

KMC 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. KMC 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, KMC 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 KMC 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 be 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 KMC 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 KMC will be paid in the order that accepted offers (with signed releases) are received. Claims are usually paid with 30-days from the date KMC receives the claimant’s signed release.

12.5.10 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 KMC. 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.

12.5.10.1 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

12.5.10.2 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

12.5.10.3 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

12.5.10.4 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

12.5.10.5 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

12.5.10.6 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



1-888-876-6711

Emergency Response Plan

12.5.11 Oil Spill Claims Forms

12.5.11.1 ACORD General Liability Notice of Occurrence/Claim - SAMPLE

		GENERAL LIABILITY NOTICE OF OCCURRENCE / CLAIM		DATE (MM/DD/YYYY)	
AGENCY		INSURED LOCATION CODE	DATE OF LOSS AND TIME		AM PM
		CARRIER	NAIC CODE		
		POLICY NUMBER			
CONTACT NAME:					
PHONE (A/C, No, Ext):					
FAX (A/C, No):					
E-MAIL ADDRESS:					
CODE:		SUBCODE:			
AGENCY CUSTOMER ID:					
INSURED					
NAME OF INSURED (First, Middle, Last)			INSURED'S MAILING ADDRESS		
DATE OF BIRTH	FEIN (if applicable)				
PRIMARY PHONE # <input type="checkbox"/> HOME <input type="checkbox"/> BUS <input type="checkbox"/> CELL	SECONDARY PHONE # <input type="checkbox"/> HOME <input type="checkbox"/> BUS <input type="checkbox"/> CELL		PRIMARY E-MAIL ADDRESS:		
		SECONDARY E-MAIL ADDRESS:			
CONTACT					
CONTACT INSURED					
NAME OF CONTACT (First, Middle, Last)			CONTACT'S MAILING ADDRESS		
PRIMARY PHONE # <input type="checkbox"/> HOME <input type="checkbox"/> BUS <input type="checkbox"/> CELL	SECONDARY PHONE # <input type="checkbox"/> HOME <input type="checkbox"/> BUS <input type="checkbox"/> CELL				
WHEN TO CONTACT			PRIMARY E-MAIL ADDRESS:		
		SECONDARY E-MAIL ADDRESS:			
OCCURRENCE					
LOCATION OF OCCURRENCE			POLICE OR FIRE DEPARTMENT CONTACTED		
STREET:					
CITY, STATE, ZIP:			REPORT NUMBER		
COUNTRY:					
DESCRIBE LOCATION OF OCCURRENCE IF NOT AT SPECIFIC STREET ADDRESS:					
DESCRIPTION OF OCCURRENCE (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)					
TYPE OF LIABILITY					
PREMISES: INSURED IS <input type="checkbox"/> OWNER <input type="checkbox"/> TENANT <input type="checkbox"/>		TYPE OF PREMISES			
OWNER'S NAME & ADDRESS (if not insured)		PRIMARY PHONE # <input type="checkbox"/> HOME <input type="checkbox"/> BUS <input type="checkbox"/> CELL		SECONDARY PHONE # <input type="checkbox"/> HOME <input type="checkbox"/> BUS <input type="checkbox"/> CELL	
		PRIMARY E-MAIL ADDRESS:			
		SECONDARY E-MAIL ADDRESS:			
PRODUCTS: INSURED IS <input type="checkbox"/> MANUFACTURER <input type="checkbox"/> VENDOR <input type="checkbox"/>		TYPE OF PRODUCT			
MANUFACTURER'S NAME & ADDRESS (if not insured)		PRIMARY PHONE # <input type="checkbox"/> HOME <input type="checkbox"/> BUS <input type="checkbox"/> CELL		SECONDARY PHONE # <input type="checkbox"/> HOME <input type="checkbox"/> BUS <input type="checkbox"/> CELL	
		PRIMARY E-MAIL ADDRESS:			
		SECONDARY E-MAIL ADDRESS:			
WHERE CAN PRODUCT BE SEEN?					



INJURED / PROPERTY DAMAGED

AGENCY CUSTOMER ID: _____

NAME & ADDRESS (Injured/Owner)			EMPLOYER'S NAME & ADDRESS		
PRIMARY PHONE #	<input type="checkbox"/> HOME <input type="checkbox"/> BUS <input type="checkbox"/> CELL	SECONDARY PHONE #	<input type="checkbox"/> HOME <input type="checkbox"/> BUS <input type="checkbox"/> CELL	PRIMARY PHONE #	<input type="checkbox"/> HOME <input type="checkbox"/> BUS <input type="checkbox"/> CELL
PRIMARY E-MAIL ADDRESS:			PRIMARY E-MAIL ADDRESS:		
SECONDARY E-MAIL ADDRESS:			SECONDARY E-MAIL ADDRESS:		
AGE	SEX	OCCUPATION			
WHERE TAKEN			WHAT WAS INJURED DOING?		
DESCRIBE PROPERTY (Type, model, etc.)			ESTIMATE AMOUNT	WHERE CAN PROPERTY BE SEEN?	

WITNESSES

NAME AND ADDRESS	PRIMARY PHONE # <input type="checkbox"/> HOME <input type="checkbox"/> BUS <input type="checkbox"/> CELL	SECONDARY PHONE # <input type="checkbox"/> HOME <input type="checkbox"/> BUS <input type="checkbox"/> CELL
PRIMARY E-MAIL ADDRESS:		
SECONDARY E-MAIL ADDRESS:		
NAME AND ADDRESS	PRIMARY PHONE # <input type="checkbox"/> HOME <input type="checkbox"/> BUS <input type="checkbox"/> CELL	SECONDARY PHONE # <input type="checkbox"/> HOME <input type="checkbox"/> BUS <input type="checkbox"/> CELL
PRIMARY E-MAIL ADDRESS:		
SECONDARY E-MAIL ADDRESS:		
NAME AND ADDRESS	PRIMARY PHONE # <input type="checkbox"/> HOME <input type="checkbox"/> BUS <input type="checkbox"/> CELL	SECONDARY PHONE # <input type="checkbox"/> HOME <input type="checkbox"/> BUS <input type="checkbox"/> CELL
PRIMARY E-MAIL ADDRESS:		
SECONDARY E-MAIL ADDRESS:		

REMARKS (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

REPORTED BY	REPORTED TO
-------------	-------------



AGENCY CUSTOMER ID: _____

APPLICABLE IN ALABAMA

Any person who knowingly presents a false or fraudulent claim for payment of a loss or benefit or who knowingly presents false information in an application for insurance is guilty of a crime and may be subject to restitution fines or confinement in prison, or any combination thereof.

APPLICABLE IN ALASKA

A person who knowingly and with intent to injure, defraud, or deceive an insurance company files a claim containing false, incomplete, or misleading information may be prosecuted under state law.

APPLICABLE IN ARIZONA

For your protection, Arizona law requires the following statement to appear on this form. Any person who knowingly presents a false or fraudulent claim for payment of a loss is subject to criminal and civil penalties.

**APPLICABLE IN ARKANSAS, DELAWARE, KENTUCKY, LOUISIANA, MAINE, MICHIGAN, NEW JERSEY,
NEW MEXICO, NEW YORK, NORTH DAKOTA, PENNSYLVANIA, RHODE ISLAND, SOUTH DAKOTA,
TENNESSEE, TEXAS, VIRGINIA, AND WEST VIRGINIA**

Any person who knowingly and with intent to defraud any insurance company or another person, files a statement of claim containing any materially false information, or conceals for the purpose of misleading, information concerning any fact, material thereto, commits a fraudulent insurance act, which is a crime, subject to criminal prosecution and [NY: substantial] civil penalties. In LA, ME, TN, and VA, insurance benefits may also be denied.

APPLICABLE IN CALIFORNIA

For your protection, California law requires the following to appear on this form: Any person who knowingly presents a false or fraudulent claim for payment of a loss is guilty of a crime and may be subject to fines and confinement in state prison.

APPLICABLE IN COLORADO

It is unlawful to knowingly provide false, incomplete, or misleading facts or information to an insurance company for the purpose of defrauding or attempting to defraud the company. Penalties may include imprisonment, fines, denial of insurance, and civil damages. Any insurance company or agent of an insurance company who knowingly provides false, incomplete, or misleading facts or information to a policy holder or claimant for the purpose of defrauding or attempting to defraud the policy holder or claimant with regard to a settlement or award payable from insurance proceeds shall be reported to the Colorado Division of Insurance within the Department of Regulatory Agencies.

APPLICABLE IN THE DISTRICT OF COLUMBIA

Warning: It is a crime to provide false or misleading information to an insurer for the purpose of defrauding the insurer or any other person. Penalties include imprisonment and/or fines. In addition, an insurer may deny insurance benefits, if false information materially related to a claim was provided by the applicant.

APPLICABLE IN FLORIDA

Pursuant to S. 817.234, Florida Statutes, any person who, with the intent to injure, defraud, or deceive any insurer or insured, prepares, presents, or causes to be presented a proof of loss or estimate of cost or repair of damaged property in support of a claim under an insurance policy knowing that the proof of loss or estimate of claim or repairs contains any false, incomplete, or misleading information concerning any fact or thing material to the claim commits a felony of the third degree, punishable as provided in S. 775.082, S. 775.083, or S. 775.084, Florida Statutes.

APPLICABLE IN HAWAII

For your protection, Hawaii law requires you to be informed that presenting a fraudulent claim for payment of a loss or benefit is a crime punishable by fines or imprisonment, or both.

APPLICABLE IN IDAHO

Any person who knowingly and with the intent to injure, defraud, or deceive any insurance company files a statement of claim containing any false, incomplete or misleading information is guilty of a felony.

APPLICABLE IN INDIANA

A person who knowingly and with intent to defraud an insurer files a statement of claim containing any false, incomplete, or misleading information commits a felony.



AGENCY CUSTOMER ID: _____

APPLICABLE IN KANSAS

Any person who, knowingly and with intent to defraud, presents, causes to be presented or prepares with knowledge or belief that it will be presented to or by an insurer, purported insurer, broker or any agent thereof, any written statement as part of, or in support of, an application for the issuance of, or the rating of an insurance policy for personal or commercial insurance, or a claim for payment or other benefit pursuant to an insurance policy for commercial or personal insurance which such person knows to contain materially false information concerning any fact material thereto; or conceals, for the purpose of misleading, information concerning any fact material thereto commits a fraudulent insurance act.

APPLICABLE IN MARYLAND

Any person who knowingly or willfully presents a false or fraudulent claim for payment of a loss or benefit or who knowingly or willfully presents false information in an application for insurance is guilty of a crime and may be subject to fines and confinement in prison.

APPLICABLE IN MINNESOTA

A person who files a claim with intent to defraud or helps commit a fraud against an insurer is guilty of a crime.

APPLICABLE IN NEVADA

Pursuant to NRS 686A.291, any person who knowingly and willfully files a statement of claim that contains any false, incomplete or misleading information concerning a material fact is guilty of a felony.

APPLICABLE IN NEW HAMPSHIRE

Any person who, with purpose to injure, defraud or deceive any insurance company, files a statement of claim containing any false, incomplete or misleading information is subject to prosecution and punishment for insurance fraud, as provided in RSA 638:20.

APPLICABLE IN OHIO

Any person who, with intent to defraud or knowing that he/she is facilitating a fraud against an insurer, submits an application or files a claim containing a false or deceptive statement is guilty of insurance fraud.

APPLICABLE IN OKLAHOMA

WARNING: Any person who knowingly and with intent to injure, defraud or deceive any insurer, makes any claim for the proceeds of an insurance policy containing any false, incomplete or misleading information is guilty of a felony.

APPLICABLE IN WASHINGTON

It is a crime to knowingly provide false, incomplete, or misleading information to an insurance company for the purpose of defrauding the company. Penalties include imprisonment, fines and denial of insurance benefits.



1-888-876-6711

Emergency Response Plan

12.5.11.2 Claims Tracking Sheet- SAMPLE

Claims Number _____

Claimant's Name _____

Claimant's Address _____

Claimant's Contact Phone# _____

Claimant's Email _____

Claim Type _____

Amount Claimed (\$) _____

Date Claim Received _____

Name of Adjudicator (Lead) _____

Adjudicator Phone# _____

Adjudicator Email _____

Date Follow-Up _____

Information Requested (N/A if Not Applicable) _____

Claim Determination Date (Sent) _____

Claim Determination Amount (\$) _____

Date Release Received (N/A if Not Applicable) _____

Date Rejection Received (N/A if Not Applicable) _____

Date Payment Approved (N/A if Not Applicable) _____

Date Claim Closed _____



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Emergency Response Plan

12.5.11.3 Claims Check Sheet - SAMPLE

Claims Number _____

Claimant's Name _____

Date Claim Received _____

Documents Provided		
1	Claim Form - Signed (Accord, GL Notice of Occurrence or Equivalent)	
2	Affidavit from employer on the impact on work or income due to the spill and if the company will be filing a claim for lost profits	
3	Analysis of spill substance	
4	Any expenses or money lost while the property was unavailable because of spill damage	
5	Beach closures or fishing advisories	
6	Booking records for three years prior to spill and year of spill	
7	Certification that rates used reflected actual costs incurred and did not include punitive damages or fees	
8	Copies of any job-hunting expenses (e.g., travel costs)	
9	Copies of any logs relating to boating activities for the year prior to and the year of the spill	
10	Copies of bills paid for repair of damage or two estimates showing activities and costs to repair the damage	
11	Copies of letters of business cancellations caused by the spill damage	
12	Copies of pay stubs and other documentation showing income Claimant received before, during, and after the spill and oil spill response	
13	Copies of pay stubs, etc., from alternative employment during time of spill	
14	Copies of pay stubs, receipts, etc., from before, during, and after the spill	
15	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	
16	Copy of title, deed, lease, or license to property in Claimant's name	



Documents Provided		
17	Daily records of equipment costs including description and use	
18	Daily records of personnel costs including details on labor rates, hours, travel, and transportation	
19	Daily reports on the activities of the government personnel and equipment involved	
20	Dates on which work was performed	
21	Describe any compensation available to Claimant for the subsistence loss Claimant suffered	
22	Describe each alternative source or means of subsistence available to Claimant during the period of time for which Claimant claim a loss of subsistence	
23	Describe each effort Claimant made to mitigate Claimant's subsistence use loss	
24	Describe 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	
25	Describe the actual subsistence use Claimant make of each specific natural resource Claimant identify	
26	Description and documentation of business losses due to spill	
27	Description of business losses caused by the spill	
28	Description of efforts to reduce Claimant's loss, including job search	
29	Description of what revenues were impacted and how the spill caused a loss of revenues	
30	Detailed description of actions	
31	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	
32	Details and explanation of net loss of revenue	



Documents Provided		
33	Details of any expenses not paid out by government during the period being claimed	
34	Details of employment expenses not paid during period being claimed (e.g., commuting costs)	
35	Details on efforts to mitigate losses or why no efforts were taken	
36	Details on expenses not paid out during period being claimed (e.g., wages)	
37	Evidence connecting the depressed selling price of a property to the oil spill rather than to other economic or real property factors	
38	Evidence that vessel(s) were in the area impacted by the spill and were unable to carry on their business due to the spill	
39	Explanation as to whether rates are fully loaded or not and formulas used; states should provide rates under OMB Circular A-87	
40	Financial statements for at least two years prior to spill and from the year of the spill	
41	For hotels, daily and monthly occupancy information for two years prior to spill and the year of the spill	
42	FOSC report	
43	FOSC, natural resource trustee and newspaper reports describing the oil spill and response, and the resulting injury, destruction or loss of natural resources	
44	Government financial reports showing total assessment or revenue collected for comparable periods, typically covering two years	
45	Government Labor and Equipment Rates	
46	How rates were determined and any comparison of rates	
47	Identify each specific natural resource for which compensation for loss of subsistence use is being claimed	
48	Information in EPA or USCG notifications, and claims advertising	
49	Information on EPA or USCG notification	



Documents Provided		
50	Lease or rental agreement of any substitute property used	
51	List of charter rates, including any services the business specializes in (e.g., sport fishing)	
52	Map of area	
53	Maps or descriptions of the area showing business location within spill area	
54	Maps or descriptions of the area showing the business location and the spill impact area	
55	Maps or legal documents showing the location of the property within the spill area	
56	Maps	
57	Newspaper reports describing the spill	
58	Payroll verification of hourly rate at the time of spill	
59	Payroll verification of the government hourly rate at the time	
60	Personnel records from Claimant's employer before, during, and after the spill, showing employment	
61	Photographs and videos	
62	Photos of damaged property (before and after the spill)	
63	Pictures of area, damage, and spill	
64	Pictures or videotape of property and/or damage	
65	Professional property appraisals for the value of the property prior to and after the spill	
66	Published accounts, witness statements and other written records documenting Claimant's use of natural resources for subsistence purposes before, during, and after the spill and oil spill response	
67	Receipts, invoices, or similar records with description of work	
68	Records showing compensation Claimant received for Claimant's loss	



Documents Provided		
69	Records showing the expenses Claimant avoided during the time Claimant were not able to carry out Claimant's subsistence use of the affected natural resource	
70	Registration documents for the vessel(s), copies of business license, vessel license, fishing license, captain's license	
71	Reports showing the increased public services were required and if the services were due to fire, health, or safety hazards	
72	Signed and dated records of the spill including hourly rates for labor and equipment	
73	Signed copies of income tax returns and schedules for at least three years prior to spill	
74	Signed copies of income tax returns and schedules for at least two years prior to spill	
75	Signed disposal manifests and proof of payment for disposal	
76	Statement from Claimant or witnesses on how the spill caused the loss of income; explain any earnings anomalies	
77	Statement from Claimant or witnesses on how the spill led to loss of income or earning capacity; explain any earnings anomalies	
78	Statement on how the spill caused a loss in income	
79	Store and barter receipts showing the replacement costs Claimant claim;	
80	Verification of standard equipment rates for equipment used	
81	Verification of the standard government equipment rates for any equipment claimed	
82	Witness statements and documents showing the alternative sources of subsistence available to Claimant, and Claimant's efforts to reduce the damages resulting from Claimant's loss of subsistence use, including receipts from job-hunting expenses (e.g., travel costs)	
83	Witness statement(s)	



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Emergency Response Plan

Documents Provided		
84	Other	
85	Other	
86	Other	

12.5.11.4 Claims Advertisement - SAMPLE**Advertisement for Oil Spill Claims****CompanyX**

Oil Spill - January 24, 2010
4300 Gallons Heavy Oil
Budd Inlet (Olympia, WA)
South Puget Sound

The U.S. Coast Guard National Pollution Funds Center has designated CompanyX as the Responsible Party for an oil spill that occurred around 7:00AM (PST) on January 24, 2010, impacting the waters of Budd Inlet and South Puget Sound. An estimated 4,300 gallons of heavy fuel oil was released from our facility on Boston Harbor Road (in Olympia) into Budd Inlet and South Puget Sound.

CompanyX is receiving claims related to this incident. Information about claims and the claims process is available on-line at the CompanyX website (see link below). You can also call, email, or mail us if you need additional assistance or information.

Website: www.companyx.com/claims.htm

Email: claims@companyx.com

Phone: **(360) 407-0007** (Mon-Sat, 8am to 5pm PST)

Mail: CompanyX – Oil Spill Claims
PO Box 4912876, Olympia, WA 98503

13.0 WILDLIFE CARE

The key objective of wildlife response is to minimize animal suffering. Prompt initiation of oiled wildlife response operations will help achieve this objective by facilitating greater efficiency throughout the wildlife operations.

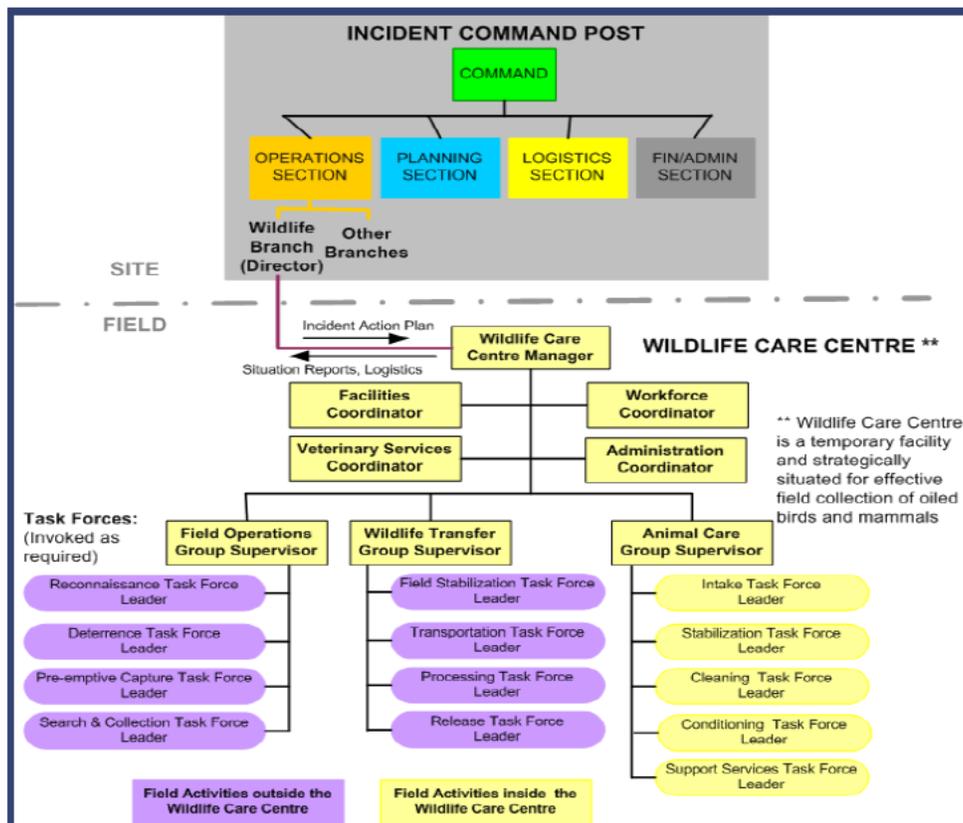
There are, however, other objectives to consider, including the provision of an organized, transparent, stakeholder-inclusive and fair process. Application of proven incident management and wildlife care protocols are fundamental in achieving these objectives.

Kinder Morgan Canada recognizes that a Wildlife Response Plan is essential in order to have systems and procedures in place with adequate resources to promote an effective response; thus reducing wildlife suffering.

When an oil spill occurs, wildlife can become a primary focus of the media and the general public and may be perceived as the highest priority for response attention. Birds are often the most visual of impacted and at-risk wildlife; however other groups of animals, including invertebrates, fish, reptiles and mammals can also be affected.

13.1 Wildlife Operations

The organizational structure of wildlife branch operations within the Incident Command System is depicted below. In addition to the full development of the Wildlife Branch within the Operations Section, wildlife might also have specialists in the Planning and Logistics sections of the ICS to ensure the unique needs of the wildlife response are met.



13.2 Wildlife Response Strategies

Proactive wildlife response strategies are the key to mounting a wildlife response that minimizes wildlife impacts. Immediate appraisal and monitoring of the spill in relation to wildlife resources allows for timely, efficient and effective activities. Generally, the best response strategy is to prevent wildlife from being impacted by the product via an effective monitoring, reconnaissance and hazing program. If wildlife impacts are unavoidable, proactive search and collection to quickly retrieve contaminated animals is imperative. The sooner an animal is brought into care for treatment, the healthier it is, and the faster it will progress through the wildlife care centre and return to the wild.

13.3 Operational Aspects

When live animals are impacted or potentially impacted by an oil spill, time is of the essence. There is also the matter of public attention, which can be greatly exaggerated by media interest. A number of operational aspects that require careful planning follow:

13.3.1 Mobilization

An initial wildlife impact assessment should be performed as soon as safely possible following the spill event. This initial assessment will provide information and opportunity for proactive deterrence activities to prevent wildlife impacts, while also providing invaluable information regarding the scale of potential response activities. If wildlife impact occurs, depending on the rate of recovery from the field, response will either occur while the organizational structure is being established, or after the response organization has had an opportunity to create the wildlife plan.

13.3.2 Coordination

The Wildlife Care Centre (WCC) is the place from where all oiled wildlife response activities are monitored and directed. It is a space where principal officers meet and where they can be contacted. The WCC is ideally integrated with the Incident Command Post in some way. The WCC is typically a temporary facility, developed at the time of a wildlife response to accommodate the particular needs of the spill.

Those managing the WCC need to be aware of, and have access to, every level of the wider response organization. In turn, each key player in the response organization needs to know how the WCC can be contacted. For the WCC to be an effective coordinating unit, communication and reporting protocols must be established. All response units must report in accordance with protocols to allow for efficient data processing.

13.3.3 Facilities

There are very specific and well-documented facility requirements for the successful care of oiled wildlife. These requirements must be incorporated into the development of the Wildlife Care Centre to ensure a successful response effort.

13.3.4 Phasing

Upon activation, responders and equipment must be mobilized and facilities developed. This is the emergency response phase of the wildlife response. At this point, decisions are guided by pre-defined priorities which will facilitate wildlife response managers to efficiently perform their duties.

The next phase of the response will arise gradually, incident-dependent. Once the operational structure is developed and effective, the main influx of wildlife will normally have peaked. Ongoing, but smaller,

intake peaks might occur according to weather, animal movements, fate and effects of the product, spill cleanup progress and degree of search and collection activities. At this stage, the WCC can begin to transition from emergency response to project management, including demobilization.

13.3.5 Workforce

Volunteer manpower is often required to ensure adequate operations of the time and energy intensive requirements of successful oiled wildlife response. For liability reasons, those interested and qualified to assist response operations volunteer to be 'hired' as workforce personnel. As such, these personnel receive a nominal fee in exchange for their participation in response operations. This group of people is referred to as workforce personnel.

13.3.6 Health and Safety

Oiled wildlife response presents many unique concerns regarding personnel health and safety. Along with general issues pertaining to product exposure, there are additional issues relating to exposure to wild animals. Considerations for zoonotic disease factors, personal protective equipment, safety protocols should be addressed in pre-determined guidelines for wildlife response personnel.

Cleanup personnel should also be made aware of health and safety concerns pertaining to wildlife in case they are exposed to them in the field. All field personnel should understand the reporting line to ensure that impacted wildlife discovered in the field is dealt with safely, efficiently and in accordance with the wildlife plan.

13.4 Wildlife Assistance

13.4.1 US Fish and Wildlife Contact

The Trans Mountain Pipeline runs through USFW Region 1

Region 1 - Pacific Region
 Chief, Division of Endangered Species
 U.S. Fish and Wildlife Service
 911 NE 11th Ave
 Portland, Oregon 97232
 (503) 231-6120
<http://www.fws.gov/pacific/>

13.4.2 Wildlife Contractors

- Focus Wildlife 1-800-578-3048
- Tri-State Bird Rescue 1-302-737-9543

13.5 Washington Department of Fish and Wildlife

13.5.1 Priority Habitats and Species List

The Washington Department of Fish and Wildlife publishes a Priority Habitats and Species (PHS) list. The PHS List is a catalog of habitats and species considered to be priorities for conservation and management.

Priority species require protective measures for their survival due to their population status, sensitivity to habitat alteration, and/or recreational, commercial, or tribal importance. Priority species include State Endangered, Threatened, Sensitive, and Candidate species; animal aggregations (e.g., heron colonies, bat colonies) considered vulnerable; and species of recreational, commercial, or tribal importance that are vulnerable.

Priority habitats are habitat types or elements with unique or significant value to a diverse assemblage of species. A priority habitat may consist of a unique vegetation type (e.g., shrub-steppe) or dominant plant species (e.g., juniper savannah), a described succession stage (e.g., old-growth forest), or a specific habitat feature (e.g., cliffs).

There are 20 habitat types, 152 vertebrate species, 41 invertebrate species, and 10 species groups currently in the PHS List. These constitute about 17% of Washington's approximately 1000 vertebrate species and a fraction of the state's invertebrate fauna.

Numerous individuals and groups use the PHS List as well as associated PHS products (e.g., PHS Data) to inform conservation-related activities. Typical users include cities and counties that use PHS to fulfill planning requirements under the Growth Management Act and Shoreline Management Act, non-profit organizations such as land trusts that use PHS information to prioritize habitat protection, community groups working on local biodiversity planning initiatives, as well as other state and federal government agencies.

You can access the current list and online mapping at: <http://wdfw.wa.gov/conservation/phs/list/>

13.5.2 Species of Concern

The following list includes those species listed as State Endangered (SE), State Threatened (ST), State Sensitive (SS), or State Candidate (SC), as well as species listed or proposed for listing by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service (Federal Endangered (FE), Federal Threatened (FT), Federal Candidate (FC), or Federal Species of Concern (FCo)). This list is current as of October 2012, the most current information can be obtained from the following website: <http://wdfw.wa.gov/conservation/endangered/All/>

Common Name	Scientific Name	Type	Species Status	
			State	Federal
American white pelican	<i>Pelecanus erythrorhynchos</i>	Bird	SE	none
Bald eagle	<i>Haliaeetus leucocephalus</i>	Bird	SS	FCo
Beller's ground beetle	<i>Agonum belleri</i>	Other Insect	SC	FCo
Black rockfish	<i>Sebastes melanops</i>	Fish	SC	none
Black-backed woodpecker	<i>Picoides arcticus</i>	Bird	SC	none
Black-tailed jackrabbit	<i>Lepus californicus</i>	Mammal	SC	none
Blue whale	<i>Baleonoptera musculus</i>	Mammal	SE	FE

			Species Status	
Common Name	Scientific Name	Type	State	Federal
Bluegray Taildropper	<i>Prophysaon coeruleum</i>	Mollusk	SC	none
Bocaccio rockfish	<i>Sebastes paucispinis</i>	Fish	SC	FE
Bog idol leaf beetle	<i>Donacia idola</i>	Other Insect	SC	none
Brandt's cormorant	<i>Phalacrocorax penicillatus</i>	Bird	SC	none
Brown pelican	<i>Pelecanus occidentalis</i>	Bird	SE	FCo
Brown rockfish	<i>Sebastes auriculatus</i>	Fish	SC	FCo
Bull trout	<i>Salvelinus confluentus</i>	Fish	SC	FT
Burrowing owl	<i>Athene cunicularia</i>	Bird	SC	FCo
California floater	<i>Anodonta californiensis</i>	Mollusk	SC	FCo
California mountain kingsnake	<i>Lampropeltis zonata</i>	Reptile	SC	none
Canary rockfish	<i>Sebastes pinniger</i>	Fish	SC	FT
Cascade red fox	<i>Vulpes vulpes cascadenis</i>	Mammal	SC	none
Cascade torrent salamander	<i>Rhyacotriton cascadae</i>	Amphibian	SC	none
Cassin's auklet	<i>Ptychoramphus aleuticus</i>	Bird	SC	FCo
China rockfish	<i>Sebastes nebulosus</i>	Fish	SC	none
Chinook salmon (Lower Columbia)	<i>Oncorhynchus tshawytscha</i>	Fish	SC	FT
Chinook salmon (Puget Sound)	<i>Oncorhynchus tshawytscha</i>	Fish	SC	FT
Chinook salmon (Snake R. Fall)	<i>Oncorhynchus tshawytscha</i>	Fish	SC	FT
Chinook salmon (Snake R. Sp/Su)	<i>Oncorhynchus tshawytscha</i>	Fish	SC	FT
Chinook salmon (Upper Columbia Sp)	<i>Oncorhynchus tshawytscha</i>	Fish	SC	FE
Chinquapin hairstreak	<i>Habrodais grunus herri</i>	Butterfly or Moth	SC	none
Chum salmon (Hood Canal Su)	<i>Oncorhynchus keta</i>	Fish	SC	FT
Chum salmon (Lower Columbia)	<i>Oncorhynchus keta</i>	Fish	SC	FT
Clark's grebe	<i>Aechmophorus clarkii</i>	Bird	SC	none
Coho salmon (Lower Columbia/SW WA)	<i>Oncorhynchus kisutch</i>	Fish	none	FT
Columbia clubtail (dragonfly)	<i>Gomphus lynnae</i>	Other Insect	SC	FCo
Columbia oregonian	<i>Cryptomastix hendersoni</i>	Mollusk	SC	none
Columbia pebblesnail	<i>Fluminicola columbiana</i>	Mollusk	SC	FCo
Columbia River tiger beetle	<i>Cicindela columbica</i>	Other Insect	SC	none
Columbia spotted frog	<i>Rana luteiventris</i>	Amphibian	SC	none
Columbian Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	Bird	ST	FCo
Columbian white-tailed deer	<i>Odocoileus virginianus leucurus</i>	Mammal	SE	FE
Common loon	<i>Gavia immer</i>	Bird	SS	none
Common murre	<i>Uria aalge</i>	Bird	SC	none
Copper rockfish	<i>Sebastes caurinus</i>	Fish	SC	FCo

			Species Status	
Common Name	Scientific Name	Type	State	Federal
Dalle's Sideband	<i>Monadenia fidelis minor</i>	Mollusk	SC	none
Dunn's salamander	<i>Plethodon dunni</i>	Amphibian	SC	none
Eulachon	<i>Thaleichthys pacificus</i>	Fish	SC	FT
Ferruginous hawk	<i>Buteo regalis</i>	Bird	ST	FCo
Fin whale	<i>Baleoptera physalus</i>	Mammal	SE	FE
Fisher	<i>Martes pennanti</i>	Mammal	SE	FC
Flammulated owl	<i>Otus flammeolus</i>	Bird	SC	none
Giant Columbia River limpet	<i>Fisherola nuttalli</i>	Mollusk	SC	none
Giant Palouse earthworm	<i>Driloleirus americanus</i>	Annelid	SC	none
Golden eagle	<i>Aquila chrysaetos</i>	Bird	SC	none
Gray whale	<i>Eschrichtius robustus</i>	Mammal	SS	none
Gray wolf	<i>Canis lupus</i>	Mammal	SE	FE
Gray-tailed vole	<i>Microtus canicaudus</i>	Mammal	SC	none
Great arctic	<i>Oeneis nevadensis gigas</i>	Butterfly or Moth	SC	FCo
Greater Sage-grouse	<i>Centrocercus urophasianus</i>	Bird	ST	FC
Green sea turtle	<i>Chelonia mydas</i>	Reptile	ST	FT
Green sturgeon	<i>Acipenser medirostris</i>	Fish	none	FT
Greenstriped rockfish	<i>Sebastes elongatus</i>	Fish	SC	none
Grizzly bear	<i>Ursus arctos</i>	Mammal	SE	FT
Hatch's click beetle	<i>Eanus hatchi</i>	Other Insect	SC	FCo
Humpback whale	<i>Megaptera novaeangliae</i>	Mammal	SE	FE
Island Marble	<i>Euchloe ausonides</i>	Other Insect	SC	FCo
Johnson's hairstreak	<i>Mitoura johnsoni</i>	Butterfly or Moth	SC	none
Juniper hairstreak	<i>Mitoura grynea barryi</i>	Butterfly or Moth	SC	none
Keen's myotis	<i>Myotis keenii</i>	Mammal	SC	none
Killer whale	<i>Orcinus orca</i>	Mammal	SE	FE
Kokanee (Lk Sammamish)	<i>Oncorhynchus nerka</i>	Fish	none	FC
Lake chub	<i>Couesius plumbeus</i>	Fish	SC	none
Larch Mountain salamander	<i>Plethodon larselli</i>	Amphibian	SS	FCo
Leatherback sea turtle	<i>Dermochelys coriacea</i>	Reptile	SE	FE
Leopard dace	<i>Rhinichthys falcatus</i>	Fish	SC	none
Leschi's Millipede	<i>Leschius mcallisteri</i>	Arthropod	SC	none
Lewis' woodpecker	<i>Melanerpes lewis</i>	Bird	SC	none
Loggerhead sea turtle	<i>Caretta caretta</i>	Reptile	ST	FE
Loggerhead shrike	<i>Lanius ludovicianus</i>	Bird	SC	FCo

			Species Status	
Common Name	Scientific Name	Type	State	Federal
Lynx	<i>Lynx canadensis</i>	Mammal	ST	FT
Makah copper	<i>Lycaena mariposa charlottensis</i>	Butterfly or Moth	SC	FCo
Mann's Mollusk-eating Ground Beetle	<i>Scaphinotus manni</i>	Other Insect	SC	none
Marbled murrelet	<i>Brachyramphus marmoratus</i>	Bird	ST	FT
Mardon skipper	<i>Polites mardon</i>	Butterfly or Moth	SE	FC
Margined sculpin	<i>Cottus marginatus</i>	Fish	SS	FCo
Mazama (Western) pocket gopher	<i>Thomomys mazama</i>	Mammal	ST	FC
Merriam's shrew	<i>Sorex merriami</i>	Mammal	SC	none
Mountain sucker	<i>Catostomus platyrhynchus</i>	Fish	SC	none
North Pacific Right Whale	<i>Eubalaena japonica</i>	Mammal	SE	FE
Northern abalone	<i>Haliotis kamtschatkana</i>	Mollusk	SC	FCo
Northern goshawk	<i>Accipiter gentilis</i>	Bird	SC	FCo
Northern leopard frog	<i>Rana pipiens</i>	Amphibian	SE	FCo
Northern Spotted Owl	<i>Strix occidentalis</i>	Bird	SE	FT
Olympia oyster	<i>Ostrea lurida</i>	Mollusk	SC	none
Olympic marmot	<i>Marmota olympus</i>	Mammal	SC	none
Olympic mudminnow	<i>Novumbra hubbsi</i>	Fish	SS	none
Oregon silverspot butterfly	<i>Speyeria zerene hippolyta</i>	Butterfly or Moth	SE	FT
Oregon spotted frog	<i>Rana pretiosa</i>	Amphibian	SE	FC
Oregon vesper sparrow	<i>Poocetes gramineus affinis</i>	Bird	SC	FCo
Pacific clubtail	<i>Gomphus kurilis</i>	Other Insect	SC	none
Pacific cod (S&C Puget Sound)	<i>Gadus macrocephalus</i>	Fish	SC	FCo
Pacific hake (Pacific-Georgia Basin DPS)	<i>Merluccius productus</i>	Fish	SC	FCo
Pacific harbor porpoise	<i>Phocoena phocoena</i>	Mammal	SC	none
Pacific herring	<i>Clupea pallasii</i>	Fish	SC	FCo
Peregrine falcon	<i>Falco peregrinus</i>	Bird	SS	FCo
Pileated woodpecker	<i>Dryocopus pileatus</i>	Bird	SC	none
Poplar oregonian	<i>Cryptomastix populi</i>	Mollusk	SC	none
Preble's shrew	<i>Sorex preblei</i>	Mammal	SC	FCo
Puget blue	<i>Plebejus icarioides blackmorei</i>	Butterfly or Moth	SC	none
Purple martin	<i>Progne subis</i>	Bird	SC	none
Pygmy rabbit	<i>Brachylagus idahoensis</i>	Mammal	SE	FE
Pygmy whitefish	<i>Prosopium coulteri</i>	Fish	SS	FCo

			Species Status	
Common Name	Scientific Name	Type	State	Federal
Quillback rockfish	<i>Sebastes maliger</i>	Fish	SC	FCo
Redstripe rockfish	<i>Sebastes proriger</i>	Fish	SC	none
River lamprey	<i>Lampetra ayresi</i>	Fish	SC	FCo
Rocky Mountain Tailed Frog	<i>Ascaphus montanus</i>	Amphibian	SC	FCo
Sage sparrow	<i>Amphispiza belli</i>	Bird	SC	none
Sage thrasher	<i>Oreoscoptes montanus</i>	Bird	SC	none
Sagebrush lizard	<i>Sceloporus graciosus</i>	Reptile	SC	FCo
Sand-verbena moth	<i>Copablepharon fuscum</i>	Butterfly or Moth	SC	none
Sandhill crane	<i>Grus canadensis</i>	Bird	SE	none
Sea otter	<i>Enhydra lutris</i>	Mammal	SE	FCo
Sei whale	<i>Baleonoptera borealis</i>	Mammal	SE	FE
Sharptail snake	<i>Contia tenuis</i>	Reptile	SC	FCo
Shepard's parnassian	<i>Parnassius clodius shepardi</i>	Butterfly or Moth	SC	none
Short-tailed albatross	<i>Diomedea albatrus</i>	Bird	SC	FE
Silver-bordered fritillary	<i>Boloria selene atrocostalis</i>	Other Insect	SC	none
Slender-billed white-breasted nuthatch	<i>Sitta carolinensis aculeata</i>	Bird	SC	FCo
Snowy plover	<i>Charadrius nivosus</i>	Bird	SE	FT
Sockeye salmon (Ozette Lake)	<i>Oncorhynchus nerka</i>	Fish	SC	FT
Sockeye salmon (Snake R.)	<i>Oncorhynchus nerka</i>	Fish	SC	FE
Sperm whale	<i>Physeter macrocephalus</i>	Mammal	SE	FE
Steelhead (Lower Columbia)	<i>Oncorhynchus mykiss</i>	Fish	SC	FT
Steelhead (Middle Columbia)	<i>Oncorhynchus mykiss</i>	Fish	SC	FT
Steelhead (Puget Sound)	<i>Oncorhynchus mykiss</i>	Fish	none	FT
Steelhead (Snake River)	<i>Oncorhynchus mykiss</i>	Fish	SC	FT
Steelhead (Upper Columbia)	<i>Oncorhynchus mykiss</i>	Fish	SC	FT
Steller sea lion	<i>Eumetopias jubatus</i>	Mammal	ST	FT
Streaked horned lark	<i>Eremophila alpestris strigata</i>	Bird	SE	FC
Striped whipsnake	<i>Masticophis taeniatus</i>	Reptile	SC	none
Tacoma pocket gopher - Mazama	<i>Thomomys mazama tacomensis</i>	Mammal	none	FC
Taylor's checkerspot	<i>Euphydryas editha taylori</i>	Butterfly or Moth	SE	FC
Tiger rockfish	<i>Sebastes nigrocinctus</i>	Fish	SC	none
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	Mammal	SC	FCo
Townsend's ground squirrel	<i>Urocitellus townsendii townsendii</i>	Mammal	SC	FCo

Common Name	Scientific Name	Type	Species Status	
			State	Federal
Tufted puffin	<i>Fratercula cirrhata</i>	Bird	SC	FCo
Umatilla dace	<i>Rhinichthys umatilla</i>	Fish	SC	none
Upland sandpiper	<i>Bartramia longicauda</i>	Bird	SE	none
Valley silverspot	<i>Speyeria zerene bremnerii</i>	Butterfly or Moth	SC	FCo
Van Dyke's salamander	<i>Plethodon vandykei</i>	Amphibian	SC	FCo
Vaux's swift	<i>Chaetura vauxi</i>	Bird	SC	none
Walleye pollock (So. Puget Sound)	<i>Theragra chalcogramma</i>	Fish	SC	FCo
Washington ground squirrel	<i>Urocitellus washingtoni</i>	Mammal	SC	FC
Western gray squirrel	<i>Sciurus griseus</i>	Mammal	ST	FCo
Western grebe	<i>Aechmophorus occidentalis</i>	Bird	SC	none
Western pond turtle	<i>Actinemys marmorata</i>	Reptile	SE	FCo
Western toad	<i>Anaxyrus boreas</i>	Amphibian	SC	FCo
White-headed woodpecker	<i>Picoides albolarvatus</i>	Bird	SC	none
White-tailed jackrabbit	<i>Lepus townsendii</i>	Mammal	SC	none
Widow rockfish	<i>Sebastes entomelas</i>	Fish	SC	none
Wolverine	<i>Gulo gulo</i>	Mammal	SC	FC
Woodland caribou	<i>Rangifer tarandus</i>	Mammal	SE	FE
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	Bird	SC	FC
Yelloweye rockfish	<i>Sebastes ruberrimus</i>	Fish	SC	FT
Yellowtail rockfish	<i>Sebastes flavidus</i>	Fish	SC	none
Yuma skipper	<i>Ochlodes yuma</i>	Butterfly or Moth	SC	none

13.6 Wildlife Protection and Rehab

In the event of a spill, wildlife may come into contact with oil – especially on the surface of water or along shorelines. The numbers and types of animals affected will depend on factors such as: the size and distribution of the spill; the weather; wind and current conditions; the habitats affected by the oil; and the time of year that the spill occurs. Birds have historically been the most likely wildlife to be affected during on-water spills in Washington, but both aquatic and marine mammals may also come into contact with the oil. In addition to direct oiling, birds and mammals may become indirectly impacted if they feed on oiled animals.

All spill response personnel should refer to the Northwest Wildlife Response Plan and Policy, as found in Chapters 3000 and 9970 of the Northwest Area Contingency Plan (NWACP), regarding wildlife response operations, which are incorporated into this plan by reference.

13.6.1 Notifications

Report any observation of oiled wildlife to the Washington Emergency Management Division (800-258-5990) if an ICS has not been established. The Washington Emergency Management Division will forward any reports of oiled wildlife to the Washington State Department of Fish and Wildlife (WDFW).

Once an ICS has been established, all observations of oiled wildlife will be reported to the Wildlife Branch Director (or their designee) within the Operations Section.

Contact the United States Fish and Wildlife Service (USFWS) Response Coordinator to initiate the process of obtaining spill-specific authorizations related to oiled wildlife (see Migratory Bird Treaty Act below) prior to initiating any oiled wildlife activities other than reconnaissance.

Contact private oiled wildlife care contractors according to the number and type of species affected. These contractors have varying abilities to provide service and personnel during response activities and will be engaged as needed by the Wildlife Branch.

13.6.2 Permits

All wildlife collection and rehabilitation activities carried out during a spill response will be done in accordance with established NWACP procedures and all applicable federal and state laws. This section identifies the state and federal permits that are required and generally describes their purpose.

13.6.3 Migratory Bird Treaty Act (Federal)

The Migratory Bird Permit Act makes it illegal for anyone to 'take' or possess any migratory bird except under the terms of a valid Migratory Bird Permit. The USFWS is responsible for issuing Federal Migratory Bird Rehabilitation permits to qualified applicants for the recovery, temporary possession, transportation and rehabilitation of migratory birds.

In addition to the Federal Migratory Bird Rehabilitation permit, a rehabilitator must also secure a separate *spill-specific* authorization from the USFWS at the time of the spill for the recovery of both live and dead oiled bird. In Washington State, this authorization must be requested from the USFWS Response Coordinator in Lacey.

13.6.4 Endangered Species Act (Federal)

Listed species that become oiled are subject to Endangered Species Act requirements. For migratory birds, the Migratory Bird Rehabilitation Permit and the spill-specific authorization (see above) authorizes the recovery, temporary possession, transport and rehabilitation of *threatened and endangered* species of migratory birds that have become oiled with no additional ESA permits required. For marine mammals, all response actions will be coordinated by the Wildlife Branch Director and appropriate federal agencies.

13.7 Marine Mammal Protection Act (Federal)

Federal, state and local government officials, or designees of the relevant Secretaries of the Departments of the Interior and Commerce may 'take' marine mammals during the course of the official response duties under certain conditions. Contractors may also receive authorization to take marine mammals under special circumstances (see NWACP 9970). All marine mammal response actions will be coordinated by the Wildlife Branch Director and appropriate federal agencies.

13.7.1 Washington State Rehabilitation Permit (Washington State)

Washington State law makes it illegal for any person to possess wildlife for the purpose of rehabilitation unless they have a valid wildlife rehabilitation permit or they are working under the supervision of a person who has a valid wildlife rehabilitation permit. This rule (WAC 232-12-175) also required that any facilities used for oiled bird rehabilitation must meet certain infrastructure requirements.

As of this writing, the organizations listed below possess all permits needed to conduct oiled bird rehabilitation operations in Washington State. Note that the USFWS Spill specific authorizations will also be required:

- Focus Wildlife
- The International Bird Rescue Research Center (IBRRC)
- The Progressive Animal Welfare Society (PAWS)

13.7.2 Wildlife Branch

The Wildlife Branch functions within the Operations Section of the ICS and is more fully described in the NWACP. The Wildlife Branch Director is responsible for overseeing all activities related to oiled wildlife recovery and rehabilitation during a response. It is the policy of the Northwest Area Committee (NWAC) that representatives of the USFWS will assume the position of Director and Deputy Director of the Wildlife Branch.

Unless otherwise indicated, USFWS will delegate the Wildlife Branch Director and Deputy Branch Director positions to WDFW for spills that occur within Washington State. Appointment of other parties (including representatives of Responsible Parties) to one or both of these positions may be made by a USFWS representative or their designee at any time during an accident and for such periods of time as may be deemed appropriate.

The Wildlife Branch typically uses wildlife contractors to provide care of affected wildlife. All persons who serve as part of rehabilitation or field crews must be trained in accordance with the site safety plan established for the incident and should be familiar with generally accepted published guidelines for collecting, cleaning and rehabilitating oiled birds.

13.8 Oiled Wildlife Care Procedures

Federal (USFWS) policy requires that rehabilitation activities involving oiled birds comply with the care standards as described in *'Best Practices of Migratory Bird Care during Oil Spill Response'* (US Fish and Wildlife Service. 2002). This document is incorporated by reference as part of the NWACP. Additional animal care and husbandry information may also be obtained in the Oiled Wildlife Care Network manual *'Protocols for the Care of Oil Affected Birds'* (UC Davis.2000).

13.8.1 Oiled Wildlife Facilities, Equipment and Personnel

The equipment and personnel needed for oiled wildlife operations will be deployed through the ICS as needed during a spill response. The NWACP establishes four response levels for oiled bird operations: level 4 (up to 15 birds), level 3 (up to 100 birds), level 2 (up to 500 birds) and level 1 (more than 500 birds). Note: *The number of birds refers only to birds in captivity.*

13.8.2 Facilities

An oiled-wildlife mobile rehabilitation unit (MRU), capable of providing the equipment and infrastructure necessary to support a level 3 response has been jointly developed by the Clean Rivers Cooperative and the Marine Spill Response Corporation. When needed, this equipment will be deployed within 24 hours of spill awareness to a location approved by the Wildlife Branch Director. This equipment is included within the online Western Regional Response List (WRRRL) and is available via the ICS or Primary Response Contractors. (http://www.wrrl.us/fmi/wp_auth.html)

Wastewater generated by the wildlife cleaning and rehabilitation operations contaminants that may include surfactants, oil and biological waste and must be appropriately treated prior to discharge. All

wastewater produced by oiled wildlife operations will be stored using temporary storage tanks delivered to the site. Based upon the results of sampling and analysis, the wastewater will be treated and disposed of on-site or transported to an off-site facility. This determination will be made by the Disposal Group Supervisor and approved by the Washington Department of Ecology.

13.8.3 Equipment

The MRU described above is equipped with sufficient supplies and equipment to Support the initial few days of an oiled wildlife response. Replacement supplies and equipment will be obtained as needed using the established channel within the ICS.

Additional mobile wildlife equipment may be also available at the time of a spill incident from the Washington Department of Fish and Wildlife Oil Spill Team and National Response Corporation Environmental Services.

13.8.4 Personnel

The personnel requirements described in the NWACP will be met through the use of the oiled wildlife care contractors listed in the Oiled Wildlife contact information table (above). Personnel support space will be provided using existing buildings or mobile structures brought to the site for this purpose.

14.0 MATERIAL SAFETY DATA SHEETS

MSDSs for products shipped thru the Trans Mountain Pipeline are available at

- http://kmonline/business_units/kmc/pages/ehs_home.aspx or
- <https://www.whmis.com/msds/home.do?user=Kinder&pass=GHva8Gu765mp4TfG>

15.0 ENVIRONMENT, HEALTH AND SAFETY POLICY



Environment, Health and Safety Policy

Every employee is expected to share Kinder Morgan's commitment to pursue the goal of not harming people, protecting the environment, using material and energy efficiently and promoting best practices, thereby earning the confidence of customers, security holders and society at large, being a good neighbor and contributing to sustainable development. Kinder Morgan's policy is to comply with all health, safety, security and environmental 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. Kinder Morgan has systems in place that prepare for emergencies and procedures that coordinate our response plans with emergency response organizations in the communities where we operate. Kinder Morgan has a systematic approach to health, safety, security and environmental management designed to ensure compliance with the law, to train employees to be aware of and meet their responsibility for protection of health, safety and the environment, and to achieve continuous performance improvement. In addition to the Kinder Morgan commitment, contractors are required and joint ventures under Kinder Morgan's operational control are expected to apply this policy. Employees, supervisors or operational managers who knowingly engage in or condone environmental health or safety violations are subject to disciplinary action including suspension or termination.



Ian D. Anderson
 President
 Kinder Morgan Canada
 A Member of the Kinder Morgan Group of Companies



November 2012

16.0 REGULATORY BACKGROUND

16.1 Federal

This Plan is intended to satisfy the requirements of the Oil Pollution Act of 1990 (OPA 90), and has been prepared in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and applicable Area Contingency Plans (ACP), EPA Region I Regional Contingency Plan. Specifically, this Plan is intended to satisfy:

- PHMSA, U.S. Department of Transportation requirements for a Facility Response Plan (FRP).

16.1.1 Statement of Significant and Substantial Harm

The response zones in this system all contain pipelines greater than 6 5/8 inches and are longer than ten miles. At least one section of pipeline in each response zone crosses a major waterway or comes within five miles of a public drinking water intake. Therefore, in accordance with 49 CFR 194.103(c), each entire response zone described in this Plan will be treated as if expected to cause significant and substantial harm.

16.1.2 DOT/PHMSA Cross Reference

OPA 90 REQUIREMENTS (49 CFR 194)	LOCATION
• Name and address of operator	Section 7.3
• For each Response Area which contains one or more line sections that meet the criteria for determining significant and substantial harm (194.103), listing and description of Response Areas, including county(s) and state(s)	Section 7.9
• Information summary for core plan	Section 7.2
• QI names and telephone numbers, available on 24-hr basis	Section 7.3
• Description of Response Area, including county(s) and state(s) in which a worst case discharge could cause substantial harm to the environment	Section 7.3
• List of line sections contained in Response Area, identified by milepost or survey station or other operator designation	Section 7.5
• Basis for operator's determination of significant and substantial harm	Section 7.3
• The type of oil and volume of the worst case discharge	Section 7.5
• Certification that the operator has obtained, through contract or other approved means, the necessary private personnel and equipment to respond, to the maximum extent practicable, to a worst case discharge or threat of such discharge	Section 19
Notification Procedures	
• Notification requirements that apply in each area of operation of pipelines covered by the plan, including applicable state or local requirements	Section 2.8
• Checklist of notifications the operator or Qualified Individual is required to make under the response plan, listed in the order of priority	Section 2.8.4

<ul style="list-style-type: none"> Name of persons (individuals or organizations) to be notified of discharge, indicating whether notification is to be performed by operating personnel or other personnel 	Section 2.8.4
<ul style="list-style-type: none"> Procedures for notifying Qualified Individuals 	Section 2.3
<ul style="list-style-type: none"> Primary and secondary communication methods by which notifications can be made 	Sections 2.4, 2.6, and 2.7
<ul style="list-style-type: none"> Information to be provided in the initial and each follow-up notification, including the following: <ul style="list-style-type: none"> name of pipeline time of discharge location of discharge name of oil recovered reason for discharge (e.g. material failure, excavation damage, corrosion) estimated volume of oil discharged weather conditions on scene actions taken or planned by persons on scene 	Section 2.3.1
Spill Detection and On-Scene Spill Mitigation Procedures	
<ul style="list-style-type: none"> Methods of initial discharge detection 	Section 2.1
<ul style="list-style-type: none"> Procedures, listed in order of priority, that personnel are required to follow in responding to a pipeline emergency to mitigate or prevent any discharge from the pipeline 	Introduction (Page 1 – Initial Response Actions)
<ul style="list-style-type: none"> List of equipment that may be needed in response activities based on land and navigable waters including: <ul style="list-style-type: none"> portable pumps and ancillary equipment transfer hoses and pumps facilities available to transport and receive oil from a leaking pipeline 	Section 9.8
Identification of the availability, location, and contact phone numbers to obtain equipment for response activities on a 24-hour basis	Section 9.4 and 2.0
Identification of personnel and their location, telephone numbers, and responsibilities for use of equipment in response activities on a 24-hour basis	Sections 2.10 and 2.12
Response Activities	
<ul style="list-style-type: none"> Responsibilities of, and actions to be taken by, operating personnel to initiate and supervise response actions pending the arrival of the Qualified Individual or other response resources identified in the response plan 	Introduction (Page 1 – Initial Response actions)
<ul style="list-style-type: none"> Qualified Individual's responsibilities and authority, including notification of the response resources identified in the response plan 	Section 8.8
<ul style="list-style-type: none"> Procedures for coordinating the actions of the operator or Qualified Individual with the action of the OSC responsible for monitoring or directing those actions 	Section 8.8

<ul style="list-style-type: none"> Oil spill response organizations (OSRO) available through contract or other approved means, to respond to a worst case discharge to the maximum extent practicable 	Section 2.10
<ul style="list-style-type: none"> For each organization identified under paragraph (d), a listing of: <ul style="list-style-type: none"> equipment and supplies available trained personnel necessary to continue operation of the equipment and staff the oil spill removal organization for the first seven days of the response 	Section 2.10
List of Contacts	
<ul style="list-style-type: none"> List of persons the Plan requires the operator to contact 	Sections 2.8, 2.9, 2.10, 2.11, and 2.12
<ul style="list-style-type: none"> Qualified individuals for the operator's areas of operation 	Section 2.7, and 7.3
<ul style="list-style-type: none"> Applicable insurance representatives or surveyors for the operator's areas of operation 	
<ul style="list-style-type: none"> Persons or organizations to notify for activation of response resources 	Section 2.10 and 2.12
Training Procedures	
<ul style="list-style-type: none"> Description of training procedures and programs of the operations 	Section 17.2.2
Drill Procedures	
<ul style="list-style-type: none"> Announced and unannounced drills 	Section 17.2
<ul style="list-style-type: none"> Types of drills and their frequencies; for example: <ul style="list-style-type: none"> manned pipeline emergency procedures and qualified individual notification drills conducted quarterly drills involving emergency actions by assigned operating or maintenance personnel and notification of qualified individual on pipeline facilities which are normally unmanned, conducted quarterly shore-based Emergency Response Team (ERT) tabletop drills conducted yearly oil spill removal organization field equipment deployment drills conducted yearly a drill that exercises entire response plan for each Response Area, would be conducted at least once every three years 	Section 17.2.2
Response Plan Review and Update Procedures	
<ul style="list-style-type: none"> Procedures to meet 194.121 	Preface (Plan Maintenance)
<ul style="list-style-type: none"> Procedures to review plan after a worst case discharge and to evaluate and record the plan's effectiveness 	Preface (Plan Maintenance)

Response Area Appendices	
Each response area appendix would provide the following information:	
• Name and telephone number of the qualified individual	Section 7.3
• Notification procedures	Section 2.0
• Spill detection and mitigation procedures	Section 2.1
• Name, address, and telephone number of oil spill response organization	Section 2.10
• Response activities and response resources including: <ul style="list-style-type: none"> ○ equipment and supplies necessary to meet 194.115 ○ trained personnel necessary to sustain operation of the equipment and to staff the oil spill response organization and spill management team for the first seven days of the response 	Section 2.0
• Names and telephone numbers of federal, state, and local agencies which the operator expects to assume pollution response responsibilities	Sections 2.8, and 2.9
• Worst case discharge volume	Section 18.0
• Method used to determine the worst case discharge volume, with calculations	Section 18.1
• A map that clearly shows: <ul style="list-style-type: none"> ○ location of worst case discharge ○ distance between each line section in the Response Area: <ul style="list-style-type: none"> ▪ each potentially affected public drinking water intake, lake, river, and stream within a radius of five miles of the line section ▪ each potentially affected environmentally sensitive area within a radius of one mile of the line section 	Section 18.2 and 18.3
• Piping diagram and plan-profile drawing of each line section; may be kept separate from the response plan if the location is identified	Section 18.2
• For every oil transported by each pipeline in the response area, emergency response data that: <ul style="list-style-type: none"> ○ include name, description, physical and chemical characteristics, health and safety hazards, and initial spill-handling and firefighting methods ○ meet 29 CFR 1910.1200 or 49 CFR 172.602 	Sections 14.0 and 7.7

16.2 Washington State Regulations

This Plan is intended to satisfy the requirements of the Washington Administrative Code 173-182. The plan is also intended to work in conjunction with the Northwest Area Contingency Plan and the Washington State Geographic Spill Program. Specifically, this Plan is intended to satisfy the following criteria from WAC 173-182.

Washington Administrative Code	Comments
110 (3)(a)	The ERP is being submitted by KMC as the owner/operator of the Trans Mountain Pipeline (Puget Sound) system.
120 (3)	The ERP is being submitted as part of the five year cycle for review and approval.
130 (1), (2)(a)(b)(c)and (d)	The ERP is being submitted to comply with these sections, and will be addressed individually further in this cross check sheet
130 (2)(e-g),(3), (4) and (5)	Not Applicable
140 (1) and (2)	The ERP covers this in the Preface on page viii under “Plan Maintenance” “Responsibility” in point # 2.
142 (1-6)	This section is described in the Preface on page ix “Changes in Operating Condition” all portions of this chapter are described except 142(2)(f)(ii) as this is not applicable to KMC.
145	The situations for implementation of this ERP is described in the Introduction on page 2 under “Plan Implementation”
150	The post spill and review and documentation commitment is outlined in the Preface on page ix under “Revisions After Release or Exercise”
210	KMC is happy with the format of this ERP it contains checklist, reference materials, has detailed table of contents, is divided into chapters and sections and is formatted to allow for easy replacement of individual pages.
220	The binding agreement is included in the ERP in <i>Section 19.2 Kinder Morgan Certification – Binding Agreement</i>
230 (1) and (2)	The ERP has been written to be fully compliant with all applicable sections of WAC 173-182 and in accordance and with reference to the NWACP. The NWACP is referred to in various sections but specifically in <i>Section 10.5.1 Planning Section Resources Northwest Area Contingency Plan</i>
230 (3) (a)	The federal and state regulations covered by this plan are outlined in <i>Section 16</i> but specifically it has been designed to meet WAC 173-182 and OPA 90 Requirements (49 CFR 194). And is stated in the Introduction in “Regulatory Scope of the Plan” on page 2.
230 (3) (b) (i)	The WCD has been divided up into 5 response zones and is calculated and described in <i>Section 18.1 Worst Case Discharge Calculations</i>
230 (3) (b) (ii) and (iii)	Not Applicable, this ERP is not for a vessel nor is it an umbrella plan.
230 (3) (c)	The Control Sheet is located in the Preface on page xi including a description of the information to be included on the sheet during an amendment.
230 (3) (d)	This cross-reference table is required by this chapter. <i>Section 16.2 Washington State Regulations</i>

Washington Administrative Code	Comments
230 (3) (e) (i) and (ii)	The Primary Response Contractors contact information is contained in <i>Section 2.10 Support Services - Primary Response Contractors (PRC)</i> the letters of intent or letters of contract are included in <i>Section 19.5 PRC – Contracts/Letters of Intent</i> .
230 (3) (e) (iii)	KMC does not rely on mutual aid agreements to meet the planning standards.
230 (3) (e) (iv) and (v)	KMC does not rely on a PRC to staff ICS positions, however an agreement is in place with Witt-O'Brien's to provide ICS staff when required and is specified in the contract letter available in <i>Section 19.5 PRC – Contracts/Letters of Intent</i> .
230 (3) (f)	The procedure to track and account for the entire volume of oil recovered and oily waste generated and disposed of during a spill including the commitment to provide to Ecology upon request is in <i>Section 9.6.2 Waste Management Plan</i> . Additional procedures are available in <i>Section 4.9 Credit for Oil Recovery</i> .
230 (4) (a)	<i>Section 7.3 Owner/Operator Information</i>
230 (4) (b)	<i>Section 7.3 Owner/Operator Information</i>
230 (4) (c) (i)	<i>Section 7.2 Puget Sound Area Description</i>
230 (4) (c) (ii)	<i>Section 7.6 Puget Sound Tank Data</i>
230 (4) (c) (iii)	<i>Section 7.7 Trans Mountain Products Summary</i>
230 (4) (c) (iv) and (v)	<i>Section 7.9 Response Zone Descriptions, Maps and Site Plans</i> or more specifically <i>Sections 7.9.1 Zone 1 -Border Scraper Trap to Laurel Station, 7.9.2 Zone 2 - Laurel Station to Ferndale Meter Station, 7.9.3 Zone 3 – Laurel Station to Burlington Scraper Trap, 7.9.4 Zone 4 – Burlington Scraper Trap to Anacortes Meter Station, and 7.9.5 Zone 5 – Laurel Station</i>
230 (5) and (6)	Not Applicable
230 (7)	<i>Section 0 Managing Spill Liability Claims</i>
232	Not Applicable
240	The field document for this ERP contains Sections 1-6 of this document plus more detailed maps and control point locations and information about those locations.
242	Not Applicable
250 (1)	The Initial Response Actions are described in the Introduction on Page 1 in the paragraph titled "Initial Response Actions"
250 (2), (3) and (4)	<i>Section 1</i> describes the method for health and safety plans. <i>Section 3</i> describes how to conduct spill assessment for all conditions and includes the types of equipment for recording the results. Spill Detection and Verification Procedures are located in <i>Section 2.1 Incident Verification</i>
260 (1)	Immediate notification and who is responsible for implementing the notification process is covered in <i>Section 2.8.4 Initial Notification Requirements – Confirmed Emergency Condition</i>
260 (2)	The Internal Call-down listing for Emergency Response Line is located in <i>Section 2.6 Emergency Response Line (ERL/ERL+) Initial Contacts</i> . The Internal Call-down listing for Emergency Response Personnel is located in <i>Section 2.7 Kinder Morgan IMT Contacts</i> . Government Agency Contact

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	Listings are located in <i>Section 2.8.4 Initial Notification Requirements – Confirmed Emergency Condition</i> , and <i>Section 2.9 Additional Government Contacts</i> , Primary Response Contractors are located in <i>Section 2.10 Support Services - Primary Response Contractors (PRC)</i> , connecting facility contacts are located in <i>Section 2.11 Oil Company Contacts</i> , and other resources are located in <i>Section 2.12 Additional Resources Suppliers</i> .
260 (3)	Order of priority is established for immediate notification in <i>Section 2.8.4 Initial Notification Requirements – Confirmed Emergency Condition</i>
262	Not Applicable
264 (1)	The requirement to report spills that may impact waters of the state is outlined in the table located in <i>Section 2.8.4 Initial Notification Requirements – Confirmed Emergency Condition</i>
264 (2)	The requirement to report spills that are either unconfirmed or of an unknown size are covered by <i>Section 2.8.4 Initial Notification Requirements – Confirmed Emergency Condition AND 2.8.2 External Notification – Potential Emergency Condition</i>
270 (1) and (2)	The maintenance and record keeping of response equipment is outlined in <i>Section 9.9.5 Response Equipment Maintenance</i>
280 (1) (a)	The organizational diagram for chain of command for the Incident Management Team (Spill Management Team) is depicted in <i>Section 8.4 Response Team Organization</i> The different Incident Management Teams are described in <i>Sections 8.1 Initial Response Team, 8.2 Local Incident Management Team, and 8.3 Kinder Morgan Incident Management Team</i> . Further breakdown of the sections is contained in <i>Sections 9.2 Operations Section Organization Chart, 10.1 Planning Section Organization Chart, 11.1 Logistics Section Organization Chart, and 12.1 Finance Section Organization Chart</i> .
280 (1) (b)	The personnel expected to fill the ICS roles and their alternates are listed in <i>Section 2.7 Kinder Morgan IMT Contacts</i>
280 (1) (c-d)	Kinder Morgan uses the ICS structure to manage incidents it is consistent with the NWACP except in the duties related to the Information Officer and Liaison Officer. The duties of the Information Officer (<i>Section 8.12 Information Officer</i>) and Liaison officer (<i>Section 8.13 Liaison Officer</i>) are outlined and have been altered to match those of the remainder of KMC's operations and the training the staff have received. The major difference is that the Information Office is responsible for public communications and the Liaison Officer is only tasked with agency liaison. The ICS Guide has the Liaison Officer assigning the Community Relations Coordinator to the JIC for consistent messaging; the duties these people perform are consistent with the NWACP, the reporting structure changes slightly. The ICS Sections are outlined in brief in this document (<i>Section 8.0</i> describes the Incident Management including the Planning Cycle, <i>Section 9.0</i> outlines general duties and function of the Operations Section, and provides additional background information. <i>Section 10.0</i> outlines the general duties and functions of the Planning Section and provides additional background information and planning information. <i>Section 11.0</i> describes the Logistics Section and <i>Section 12.0</i> describes the finance and administration section). Additionally, KMC has developed an ICS

Washington Administrative Code	Comments
	Guidebook that is available by request, which gives further checklists for every position in the ICS structure that KMC expects to utilize with reference to the NWACP and is consistent with the NWACP.
280 (2)	<i>Section 17.1 Training</i> outlines the basic training by each group of responders.
280 (3) and (5)	Not Applicable
280 (4)	<i>Section 8.6 Transfer of Command</i> outlines clear procedures on transferring command.
310 (1) and (2)	A short description of this section of the WAC has been provided in Section 18.2 Planning Standards for background.
315, 317	Not Applicable
320	<i>Section 9.4 Air Operations Branch</i> outlines the air surveillance requirements and how KMC intends to achieve them.
321, 324, 325, 330	Not Applicable
335	<i>Section 18.2</i>
345	<i>Section 18.2</i>
348	<i>Section 18.2</i>
349	Not Applicable
350	<i>Section 18.2</i>
355	Not Applicable
365	<i>Section 18.2</i>
375	<i>Section 18.2</i>
370, 380, 385, 390, 395, 400, 405, 410, 415, 420, 430, and 450	Not Applicable
510	<i>Section 4.0 Spill Containment and Recovery, and 5.0 Protection of Sensitive Areas, and reference to NWACP and GRP's and Section 7.4 Incident Command Post Locations</i>
520	<i>Section 18.2</i>
522	Not Applicable
530	<i>Section 2.1.7 Detection of Spills to Groundwater</i>
540	KMC relies on MSRC to comply with wildlife rescue standards. Description of equipment and operations is found in <i>Section 13.0 Wildlife Care</i>
Section E	Not Applicable - Outlines plan evaluation and is informational for KMC.
700	<i>Section 17.2 Exercises</i> outlines the commitments to exercising
710	<i>Section 17.2.2 Type and Frequency of Exercises</i>
720	<i>Sections 17.2.3 Exercise Program Evaluation Criteria and 17.2.5 Exercise Component Checklist</i>
730	<i>Section 17.2.4 Alternative Drill Credit</i>
740	Informational, has not been included as an option as it is not the intent of KMC to request waivers for exercises.
Part IV	Not Applicable – specific to Primary Response Contractor Applications
Part V	Not Applicable – outlines record keeping and compliance information

17.0 TRAINING AND EXERCISES

17.1 Training

Training Element	Qualified Individual (QI)	Incident Management Team (IMT)	Initial Response Team
Review of Emergency Response Plan at least annually and includes: <ul style="list-style-type: none"> • ICS Overview • NWACP policies • Use and location of GRP's • Contents of ERP, Field Guide and ICS Guide 	x	x	x
ICS 100 Level Certification	x	x	x
HAZWOPER Certification	x	Command Staff, Operations Section, Planning Section Chief, and Environment Unit	x

17.1.1 Employee Training Records

A training record shall be maintained for each employee that has been trained in accordance with requirements in 29 CFR 1910.120 and 49 CFR 194.117. The Training Department is responsible for maintaining training records for all Company employees, related to safety and emergency related training functions. Training records are maintained as long as the employment with Kinder Morgan continues.

In accordance with 49 CFR 195.403, and at intervals not exceeding 15 months but at least once each calendar year, the Emergency Response and Security Group will;

- Review with personnel their performance in meeting the objectives of the emergency response training program,
- Make appropriate changes to the emergency response training program, and
- Require and verify that supervisors maintain a thorough knowledge of the emergency response procedures for which they are responsible.

17.1.2 Contractors Training Records

The Kinder Morgan emergency response contractors are responsible for maintaining all training records for their employees. Periodic audits shall be conducted of contractor training records to ensure that they comply with the emergency training and exercise requirements. Audit documentation shall be retained in the KM emergency training and exercise files.

17.1.3 Instructors

HAZWOPER instructors and training organizations shall be required to provide a current record of instructor certification to the operator's headquarters prior to undertaking any training. These records shall be maintained at the Kinder Morgan Canada office located in Calgary, AB, as long as the instructor undertakes training, as required by 29 CFR 1910.120.

17.2 Exercises

17.2.1 Company Policy

Kinder Morgan participates in the National Preparedness for Response Exercise Program (PREP). During each triennial cycle, all components of the Plan will be exercised at least once. KMC will provide WDOE and any other stakeholder the opportunity to help design and evaluate all tabletop and deployment drills, which KMC is looking for credit. Objectives not successfully met at an exercise will be tested again within the triennial cycle with the exception of significant failures will be retested within 30 days. WDOE will provide a written evaluation of the exercise to KMC and will outline any objectives successfully met. If changes to the ERP or training program are identified or required KMC will request an informal review with WDOE within 30 days of receipt of a report requiring/suggesting such changes to determine an action plan for making the changes.

17.2.2 Type and Frequency of Exercises

The following drills will be conducted during the triennial cycle. These will be either evaluated by WDOE or self evaluated. In either case of evaluation the WDOE matrix will be used. The following table indicates the type of drill and frequency of the drill along with description and any additional scheduling information.

Drill Type	Frequency in Triennial Cycle	Definition	Scheduling Instruction
Tabletop Drill	2	Is intended to demonstrate the capability to manage a spill using the incident command system. Role playing may be required in the drill and all tabletop drills will included a master list of equipment and personnel identified to fill both command post and field operations roles. The master resources list will include; WRRL identification umbers for all resources, and personnel names, affiliation home base and command post or field role.	Must be scheduled at least 60 days in advance on the Drill Calendar https://fortress.wa.gov/ecy/naces/
Worst Case Tabletop Drill	1	Once in the triennial cycle the IMT as identified in this plan will be mobilized in state for a drill.	Must be scheduled at least 90 days in advance on the Drill Calendar https://fortress.wa.gov/ecy/naces/
Ecology Unannounced Drills	As Needed	Will be conducted on an as needed basis determined by WDOE. Immediately prior to the start of the drill KMC will be notified in writing of the objectives, expectation and	

		scenario. KMC may request to be excused if conducting the drill poses unreasonable safety or environmental risk, or significant economic hardship. More information around unannounced drills can be found in WAC 173-182-710 (9)	
KMC Unannounced Drills	3		Will not be scheduled, is a test of the ERL notification system. One call to occur annually, in the event a real call takes place, the drill will not be conducted during that calendar year.
Wildlife Deployment Drill	1	Once every three years regional mobile wildlife rehabilitation equipment and personnel necessary to set up the wildlife rehabilitation system found in the plan. This is an additional deployment drill or may be combined with a larger multi objective deployment drill.	Scheduled at least 30 days in advance, and entered on the Drill Calendar https://fortress.wa.gov/ecy/naces/
Deployment Drills	6	Deployment drills will be used to demonstrate the actions KMC would take in a spill including Notifications, safety actions, environmental assessment and response equipment deployment. The drills will include a combination of KMC owned assets, contracted PRC assets and non-dedicated assets, and vessels of opportunity (if appropriate, and applicable). Equipment dedicated in the plan and personnel responsible for operating the equipment will be tested during the triennial cycle, drills will be designed to demonstrate the ability to meet the planning standards, including recovery systems and system compatibility and the suitability of the system for the	Scheduled at least 30 days in advance on the Drill Calendar https://fortress.wa.gov/ecy/naces/

		operating environment. The drills will be conducted in all operating environments that could be impacted by a spill. At least twice in the triennial cycle a GRP will be deployed.	
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Notes: KMC may receive credit for a PRC drill and count as one of the above drills if the PRC is listed in this plan KMC operates in the area of the drill, it is scheduled on the drill calendar, and KMC participates in or observes the drill in person.

17.2.3 Exercise Program Evaluation Criteria

The following table outlines the 15 core components of the PREP. These core components also align with the Washington Administrative Code 173-182-720 Evaluation Criteria, which will be used to evaluate all exercises conducted in the triennial cycle.

Core components	Description
Notifications	Test the notifications procedures identified in the Area Contingency Plan (ACP) and the Spill Response Plan.
Staff mobilization	Demonstrate the ability to assemble the spill response organization identified in the ACP and the Spill Response Plan.
Ability to operate within the response management system described in the Plan: <ul style="list-style-type: none"> Unified Command Response management system 	Demonstrate the ability of the spill response organization to work within a unified command. Demonstrate the ability of the response organization to operate within the framework of the response management system identified in their respective plans.
Source Control	Demonstrate the ability of the spill response organization to control and stop the discharge at the source.
Assessment	Demonstrate the ability of the spill response organization to provide initial assessment of the discharge and provide continuing assessments of the effectiveness of the tactical operations.
Containment	Demonstrate the ability of the spill response organization to contain the discharge at the source or in various locations for recovery operations.
Recovery	Demonstrate the ability of the spill response organization to recover the discharged product.
Protection	Demonstrate the ability of the spill response organization to protect the environmentally and economically sensitive areas identified in the ACP and the respective industry response plan.
Disposal	Demonstrate the ability of the spill response organization to dispose of the recovered material and contaminated debris.
Communications	Demonstrate the ability to establish an effective communications system for the spill response organization.



Transportation	Demonstrate the ability to establish multi-mode transportation both for execution of the discharge and support functions.
Personnel Support	Demonstrate the ability to provide the necessary support of all personnel associated with response.
Equipment maintenance and support	Demonstrate the ability to maintain and support all equipment associated with the response.
Procurement	Demonstrate the ability to establish an effective procurement system.
Documentation	Demonstrate the ability of the spill response organization to document all operational and support aspects of the response and provide detailed records of decisions and actions taken.

17.2.4 Alternative Drill Credit

KMC may request drill credit for a response to an actual spill, provided that WDOE has an opportunity to participate and evaluate the spill response. Credit from spills will not alleviate the necessity to drill as per WAC 173-182-730. In the event of an actual spill being used for credit KMC will refer to WAC 173-182-730 to understand the criteria and timeline of reporting to be used. Additionally KMC may request drill credit for drills held out of state if all of the requirements are met in WAC 173-182-730 (2).

17.2.5 Exercise Component Checklist

The following checklist is provided by WDOE and will be used for evaluation purposes. Each component must be checked off at least once in a three year period. The active/historical check sheets can be obtained from the Emergency Response and Security Group on request.

Plan Components – Table Top Drills
1. Notifications
1.1 - Internal spill response team notified (initial first responders)
1.2 - Entire spill response organization notified including PRC
1.3 - Timely government notifications made
2. Staff Mobilization
2.1 - Local/internal on site appropriate for scope of drill
2.2 - Away team in state in last 3 years
3. Initial Response Actions
3.1 - Checklist(s) and field document used
3.2 - Initial Site Safety addressed following plan procedures
3.3 - Initial assessment of spill status performed
3.4 - Population Protection
3.5 - Water Intakes Protection
3.6 - Documented early actions on ICS 201 form
3.7 - SMT transition through Initial Incident Briefing
4. Response Management (Cumulative A-J must be checked)
A. Overall Staffing and Coordination:



Plan Components – Table Top Drills
4.A1 - Expanded team plan task assignments followed
4.A2 - Coordination between ICS Sections
B. Unified Command and Command Staff
4.B1 - UC identified and Incident Briefing conducted
4.B2 - UC meet and discuss key issues
4.B3 - Operational Period established
4.B4 - UC established objectives & assessed planned actions
4.B5 - UC prepared and participates in Press Conference
4.B6 - Dedicated historian/scribe assigned to UC
4.B7 - UC approved news releases through Information Officer
C. Information Officer/JIC
4.C1 - Information Officer designated
4.C2 - JIC established
4.C3 - News releases
4.C4 - Preparation for press conference
4.C5 - Ensured appropriate representation at news briefings
4.C6 - Information Officer attended meetings as appropriate
D. Liaison Officer
4.D1 - Liaison Officer designated
4.D2 - Liaison Officer established contact w/stakeholders as appr.
4.D3 - Liaison Officer planned/conducted Local Officials Briefing
4.D4 - Liaison Officer provided information to citizens
4.D5 - Liaison Officer attended meetings as appropriate
E. Safety Officer
4.E1 - Safety Officer Designated
4.E2 - Safety plan developed in a timely manner
4.E3 - Site Safety Plan approved & communicated to field staff
4.E4 - Safety Officer attended meetings as appropriate
F. Operations Section
4.F1 - Operations Section established
4.F2 - Tactical assignments made
4.F3 - Ops section developed plan to provide aircraft support
4.F4 - Coordinated with Planning
4.F5 - Ops Section coordinated on resource orders & tracking
4.F6 - Ops Section worked with Planning on situation status
4.F7 - Ops Section worked with Planning on disposal
4.F8 - Ops Section Chief attended meetings as appropriate
4.F9 - Coordinated with agencies (If applicable)



Plan Components – Table Top Drills
4.F10- Wildlife Branch Leader designated
4.F11- Plan Holder assisted Wildlife Branch Leader w/activities
G. Planning Section
4.G1 - Planning Section established
4.G2 - Planning Section (PS) used appropriate tools
4.G3 - Planning Section Chief (PSC) established meeting schedule
4.G4 - PSC ensured attendance/participation at meetings
4.G5 - PS prepared meeting room displays or handouts
4.G6 - PS prepared and maintained situation displays
4.G7 - Master resource list developed, maintained, & posted
4.G8 - PS documented the spill response effort
H. Environmental Unit
4.H1 - Environmental Unit Leader was designated
4.H2 - Plan holder assisted EUL with unit activities
I. Logistics Section
4.I1 - Logistics Section established
4.I2 - Resource ordering process established
4.I3 - Managed Communication Plan/prepared Radio Plan
4.I4 - Developed Medical Plan for all areas of response
4.I5 - Plan for food/water/sanitary facilities for the response
4.I6 - Plan to provide personnel for response
4.I7 - Established command post
4.I8 - Identified and planned for staging & other areas as needed
4.I9 - Developed ground support/traffic plan
4.I10 - Developed response vessel support plan
4.I11 - Logistics Section Chief attended meetings as appropriate
J. Finance Section
4.J1 - Finance Section established
4.J2 - Finance Section is able to provide a cost estimate
4.J3 - Compensation and claims numbers established

Plan Components - Deployments
1. Notifications
1.1 - Internal spill response team notified (initial first responders)
1.2 - Entire spill response organization notified including PRC
1.3 - Timely government notifications made
5. Response Operations (Cumulative A-C must be checked)



Plan Components - Deployments
A. Initial Response Operations
5.A1 - Initial safety equip deployed & Safety Officer designated
5.A2 - Local/internal response team mobilized and on-site
5.A3 - Number of personnel appropriate
5.A4 - Emergency Shut Down Procedures conducted
5.A5 - Field tested plan holders communication equipment
5.A6 - PH & PRC field tested compatibility of communication equipment
B. Containment and Recovery
5.B1 - Drills conducted in all operating environments per plan
5.B2 - Initial deployment of plan holder owned equipment on-site
5.B3 - Deployed initial mechanical recovery resources
5.B4 - Set up and demonstrated skimmer to storage transfer ability
5.B5 - Demonstrated and described containment of a land spill
5.B6 - Demonstrated and described damage control procedures
C. Protection
5.C1 - Plan holder deployed GRP strategies
D. Wildlife Rehabilitation Equipment
5.D1 - All wildlife equipment deployed in various areas (triennially)

18.0 WORST CASE DISCHARGE

In order to calculate worst case discharge for the Puget Sound Pipeline system and associated breakout tanks the area has been divided up into 5 response zones. The response zones each have a different WCD calculation based on DOT 49 CFR 194.105(b) and Washington Administrative Code 173-182-030 (67)(d). In the event that either calculation results in a differential of WCD volume the higher of the two is used for this emergency response plan and to determine the planning standards applied to each response zone as identified by WAC173-182-365.

The five response zones are as follows:

- Zone 1 – Border Scraper Trap to Laurel Station
- Zone 2 – Laurel Station to Ferndale Metre Station
- Zone 3 – Laurel Station to Burlington Trap
- Zone 4 – Burlington Trap to Anacortes Metre Station
- Zone 5 – Laurel Station

Zones 1-4 are pipeline response zones, and have been broken down by the ability to be remotely controlled by the Control Centre located in Edmonton, Alberta Canada, which does not rely on a field response to shut down.

Zone 5 is the Laurel Station location which contains two breakout storage tanks. These tanks are in operation for temporary storage of oil awaiting delivery to refineries in Anacortes and Ferndale. These tanks are both available for recovered liquid storage and can receive liquid from vacuum trucks directly.

The worst case discharge (WCD) as defined in 49 CFR 194.105(b), as the largest volume of the following:

- The pipeline's maximum shut-down response time in hours (based on historic discharge data or in the absence of such data, the operators best estimate), multiplied by the maximum flow rate expressed in barrels per hour (based on the maximum daily capacity of the pipeline), plus the largest drainage volume after shutdown of the line section(s) in the response zone expressed in barrels; or
- The largest foreseeable discharge for the line section(s) within a response zone, expressed in barrels (cubic meters), based on the maximum historic discharge, if one exists, adjusted for any subsequent corrective or preventative action taken; or
- If the response zone contains one or more breakout tanks, the capacity of the single largest tank or battery of tanks within a single secondary containment system, adjusted for the capacity or size of the secondary containment system, expressed in barrels.



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Emergency Response Plan

Under PHMSA's current policy, operators are allowed to reduce the worst case discharge volume derived from 49 CFR 194.105(b)(3) by no more than 75% if an operator is taking certain spill prevention measures for their breakout tanks and presents supporting information in the response plan. An operator can reduce the worst case discharge volume based on breakout tanks in the response zones as follows:

Spill Prevention Measures	Percent Reduction Allowed
Secondary containment capacity greater than 100% capacity of tank and designed according to NFPA 30	50%
Tank built, rebuilt, and repaired according to API Std 620/650/653	10%
Automatic high-level alarms/shutdowns designed according to NFPA/API RP 2350	5%
Testing/cathodic protection designed according to API Std 650/651/653	5%
Tertiary containment/drainage/treatment per NFPA 30	5%*
Maximum allowable credit or reduction	75%

The worst case discharge (WCD) as defined by WDOE in WAC 173-182-030 (67)(d) as; For pipelines, the size of the worst case spill is dependent on the location of pump stations, key block valves, geographic considerations, or volume of the largest breakout tank. The largest volume determined from three different methods, complicated by adverse weather conditions:

- The pipeline's 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; and
- The largest single breakout tank or battery of breakout tanks without a single secondary containment system.

Each operator shall determine the worst case discharge and provide the methodology, including calculations used to arrive at the volume. The following section describes each calculation method and the final result for each response zone.

18.1 Worst Case Discharge Calculations

18.1.1 Pipeline Calculation

The worst case discharge volume is calculated based on the highest volume for each response zone using the highest volume for each of the 3 criteria in 49 CFR 194.105(b), and WAC 173-182-030 (67)(d) listed in the previous section.

The worst-case scenario (full mainline rupture with 100% potential rupture volume out) is used for calculating the potential spill volume in the event of rupture. Pipeline total spill volumes are comprised of two components:

- the shutdown volume or initial spill volume
- the drain-down volume or stabilization spill volume

The shutdown volume, also termed the initial spill volume, is the fluid that is pumped out after pipe failure and before the leak detection software detects the release, pumps are shut down and mainline automated valves are closed. At a given point along the pipeline, the initial loss is the amount of product that can be released before the rupture site is isolated, namely:

- Initial spill volume = time to isolate the rupture point × maximum flow rate

(b) (7)(F) for the Puget Sound Pipeline assuming a time delay of 15 minutes to recognize a leak and shut down as indicated in the list below

- Release prior to leak detection 4 minutes
- Operator/system reaction time 2 minutes
- System shutdown 4 minutes
- Valve closure time 5 minutes
- Total release time 15 minutes

Note: Time for evaluation and shut-down during bad weather has not been included as it has been determined that the weather will not impact the shut-down time due to the automation in the system.

The drain-down volume, also termed the stabilization spill volume, is the potential amount of product that can be released after isolation of the rupture point. The magnitude of the drain-down volume is related to the following factors,

- the pipeline elevation profile
- (b) (7)(F)
- the expected emergency response time to the leak-related manual valves
- Pipeline diameter and wall thickness
- The fluid properties such as viscosity, density and vapor pressure

For a given leaking point in the pipeline, its maximum drain-down volume is calculated using the following steps:

- (b) (7)(F)
- The manual valves are left open

- The maximum possible drain-down volume from the isolated leaking point is calculated using a spill volume calculation software.

When emergency crews arrive on site within the emergency response time, they can reduce the cumulative flow by closing the leak-related manual valves. Manual valve closure will reduce the drain-down volume obtained. The maximum drain-down volumes, without the manual valves being automated or closed by emergency crews, is used for evaluation of the spill size potential in WCD calculations.

The liquid pipeline spill volume software was developed by an engineering firm to conservatively quantify liquid spill volume that would be released after a catastrophic failure of the pipeline. The worst case scenario spill volume in the event of a full mainline rupture is calculated. Essentially, the maximum drain-down volume is determined and added to the shutdown volume.

Input data for the software includes distance, elevation and valve type and location data. Both input and output data are in a specific spreadsheet format. Each and every location that has elevation data is considered as an isolated spill or leak location. The elevation profile is then tested both upstream and downstream of the selected spill location. Each segment of the pipeline is tested to determine how much fluid could leak from the line. The volume of leaked fluid is determined by the occurrence of locations at a higher elevation than the leak point within the segment.

The Puget Sound pipeline extends for about 57.46 miles (92.48 km) from the US Border trap to the Anacortes delivery terminal and about 11.64 miles (18.74 km) from Laurel station to Ferndale terminal. The pipeline size is NPS 20 from US Border trap to Burlington station while it is NPS 16 from Burlington station to Anacortes terminal and from Laurel station to Ferndale terminal. The pipeline has a maximum flow rate of about 226,560 bpd (1501 m³/h). KMC has identified all the HCAs in this pipeline system. Based on the HCAs, the pipeline was divided into 3 sections to simplify the spill volume calculations and analysis, however calculation section 1 will be divided into Response Zone 1 and Response Zone 2 for WCD in the respective response zones. To further simplify the calculations for the response zones, the highest potential spill volume in a given response zone will be used for the WCD for that response zone. The pipeline sections are below:

- Section 1 – US Border to Burlington 48.379 Miles. Zone 1 US Border to Laurel Station, and Zone 3 Laurel Station to Burlington.
- Section 2 – Burlington to Anacortes 9.085 miles. Zone 4
- Section 3 – Laurel to Ferndale 11.644 miles. Zone 2

The results of the spill volume calculations are as follows for the response zones. Each section is further outlined in the following sections.

Response Zone	WCD	Mile Post
1	(b) (7)(F)	
2		
3		
4		

18.1.1.1 Section 1 – Response Zone 1 and 3

Section one of the NPS 20 Puget Sound pipeline is approximately 48.38 miles (77.86 km) long from the US Border trap to Burlington MU 48 with a minimum wall thickness of 0.25 inch (6.35 mm). The below table presents the locations of existing mainline block valves (automatic and manual), and check valves in this section.

Response Zone	Valve Description	Valve Type	Chainage (miles)
1	(b) (7)(F)		
1			
1			
1			
1			
3			
3			
3			
3			

The spill volume profile for pipeline section one from US Border to Burlington is presented below. In this figure, the green line, labeled "Spill Volume (No EFRD)", represents the calculated total spill volume profile based on the existing mainline valves assuming that all manual valves are open. An overall peak volume of (b) (7)(F) in Response Zone 3. The peak volume in Response Zone 1 is (b) (7)(F).

(b) (7)(F)

18.1.1.2 Section 2 – Response Zone 4

Section two of the Puget Sound pipeline is approximately 9.085 miles (14.62 km) long from Burlington MU 48 to Anacortes 16G with NPS 16 size and a minimum wall thickness of 0.25 inch (6.35 mm). The table below presents the locations of existing mainline block valves (automatic and manual), and check valves in this section.

Response Zone	Valve Description	Valve Type	Chainage (miles)
4	(b) (7)(F)		
4			
4			
4			
4			

The spill volume profile for pipeline section two from Burlington to Anacortes is presented below. In this figure, the green line, labeled “Spill Volume (No EFRD)”, represents the calculated total spill volume profile based on the existing mainline valves assuming that all manual valves are open. An overall peak volume of (b) (7)(F) in Response Zone 4.

(b) (7)(F)

18.1.1.3 Section 3 – Response Zone 2

Section three of the Puget Sound pipeline is approximately 11.644 miles (18.739 km) long from Laurel Station 16N to Ferndale 16G with NPS 16 size and a minimum wall thickness of 0.25 inch (6.35 mm). The table below presents the locations of existing mainline block valves (automatic and manual), and check valves in this section.

Response Zone	Valve Description	Valve Type	Chainage (miles)
2	(b) (7)(F)		
2			
2			
2			
2			

The spill volume profile for pipeline section two from Laurel to Ferndale is presented below. In this figure, the green line, labeled “Spill Volume (No EFRD)”, represents the calculated total spill volume profile based on the existing mainline valves assuming that all manual valves are open. An overall peak volume of (b) (7)(F) in Response Zone 2.

(b) (7)(F)

18.1.2 Tank Calculation

The worst case discharges for breakout tanks have two sets of criteria under the two legislations. In Washington state under WAC 173-182-030 (67)(d) the WCD is the volume of the largest tank on site which amounts to (b) (7)(F). The WCD calculation under DOT regulation 49 CFR 194.105(b)(3) accounts for a reduction of 70% of the tank volume equalling (b) (7)(F). The WCD of Zone 5 is (b) (7) bbl, because it is the largest worst case discharge volume of the two calculations.

18.1.3 Historic Releases

The WCD calculation under DOT regulation 49 CFR 194.105(b)(2) and WDOE regulation WAC 173-182-030 (67)(d) requires a look at historic spills. A spill in Zone 2 on January 10, 1973 equaled (b) (7) which is larger than the calculated WCD of (b) (7)(F) 1, and 3-5 do not have larger historic spills than the calculated WCD volumes. The following table outlines the historic spills for the Puget Sound Pipeline, and Laurel Station Response Zones:

Date	Response Zone	Material Released	Volume Released (bbl)
30-Jul-12	5	Crude	0.003
12-Apr-09	2	Crude	0.006
4-Jun-08	5	Crude	0.1
26-Oct-00	5	Crude	645
25-Nov-95	5	Crude	0.5
7-Mar-92	5	Crude	50
11-Dec-91	5	Crude	84
15-Jan-91	5	Condensate	75
1-Jun-88	5	Crude	0.1
7-Feb-83	3	Crude	1
1-Feb-79	5	Condensate	1149
3-Dec-75	5	Crude	0.1
23-Apr-74	2	Crude	100
10-Jan-73	2	Crude	10500
11-Aug-72	3	Crude	10
12-Jul-71	5	Crude	6300
15-Oct-56	5	Crude	1
5-Mar-55	2	Crude	10

18.1.4 Response Zone Worst Case Discharge Volumes

The following table outlines the WCD volume for each response zone based on the above calculations, and will be used to determine the planning standards under WAC 173-182-365:

Zone	
1	(b) (7)(F)
2	
3	
4	
5	



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18.2 Planning Standards

Washington State applies a planning standard that will be verified during drills. Should an actual spill event occur KMC understands that the initial response to the event is guided by safety considerations, and that KMC is responsible for addressing the entire volume of the spill regardless of the planning standard, also that the planning standards do not constitute cleanup standards that are to be met. In the event of an actual spill the failure to remove the discharge within the time periods set out in the plan will not constitute failure to comply with the ERP for the purposes of the planning standards or for the purpose of imposing administrative, civil, or criminal penalties under any other law. WAC 173-182-310.

18.2.1 Planning Spreadsheets

The following sections outlines the planning spreadsheets provided by WDOE to demonstrate how the planning standards are being met for each of the five response zones. These spreadsheets are also available electronically from the Emergency Response and Security Department.

18.2.1.1 Zone 1 – Bellingham Bay

Plan Holder: Kinder Morgan Canada (Trans Mountain Pipeline) Zone 1 Bellingham Bay

Planning Standard Summary Analysis: WAC 173-182-365 Transmission pipelines and pipeline tank farms

The summary analysis spreadsheet is based on a conceptual model of equipment that would be available based on the guidelines set forth in WAC 173-182 for; planning standards, determining effectiveness of recovery systems, documenting compliance with planning standards, and plan evaluation criteria. Actual times and performance in spills will depend on the conditions of the day. An electronic version of the equipment detail spreadsheet which lists all equipment can be made available by Ecollogy upon request. The planning standard summary analysis indicates total access to boom, storage and recovery resources required to meet the planning standard. Equipment access is based on information listed on the WRRL and information provided through the plan holder contingency plan and Primary Response Contractor applications as of **2/19/2013**. This information is subject to change as additional equipment is acquired and/or relocated. Substantive changes will result in an update of the spreadsheets.

PRC(s): MSRC

Plan Holder owned equipment: YES

Worst Case Spill Volume (bbls): (b) (7)

Oil Products Handled by Group (Group 1-5): Groups 2 and 3

Mutual Aid/Letters Of Intent: This is described in Section 19.5 of the plan.

Analysis point description: Where the Nooksack River enters Bellingham Bay

Marine 50% or Freshwater 65% shore side storage credit: YES.


Alternative Planning Standard: No.

	On-water Storage (bbls)	Shore side Storage (bbls)	Total Storage (bbls)	Calm Water (EDRC)	Protected Water (EDRC)	Open Water (EDRC)	Total Recovery (EDRC)	B1 Boom (ft)	B2 Boom (ft)	B3 Boom (ft)	Total Boom (ft)	Personnel (12 hour shift)
2 hr available	323	381	704	13,369	3,931	6,000	23,300	0	8,500	2,000	10,500	33
2 hr required			0				0				2,000	
meets standard			Yes				Yes				Yes	

6 hr available	29,687	444	30,131	13,369	28,051	22,567	63,987	16,520	61,930	4,600	83,050	153
6 hr required			666				666				7,000	
meets standard			Yes				Yes				Yes	

12 hr available	93,804	451	94,254	13,479	54,475	57,478	125,432	25,800	82,370	8,600	116,770	218
12 hr required			1,997				998				27,000	
meets standard			Yes				Yes				Yes	

24 hr available	129,957	451	130,407	13,479	65,239	91,256	169,974	31,080	83,430	8,600	123,110	235
24 hr required			3,994				1,331				27,000	
meets standard			Yes				Yes				Yes	

48 hr available	169,957	451	170,407	13,479	65,239	91,256	169,974	31,080	83,430	8,600	123,110	236
48 hr required			3,994				1,664				27,000	
meets standard			Yes				Yes				Yes	



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18.2.1.2 Zone 1 – Nooksack River**Plan Holder: Kinder Morgan Canada (Trans Mountain Pipeline)****Planning Standard Summary Analysis: WAC 173-182-365 Transmission pipelines and pipeline tank farms**

The summary analysis spreadsheet is based on a conceptual model of equipment that would be available based on the guidelines set forth in WAC 173-182 for; planning standards, determining effectiveness of recovery systems, documenting compliance with planning standards, and plan evaluation criteria. Actual times and performance in spills will depend on the conditions of the day. An electronic version of the equipment detail spreadsheet which lists all equipment can be made available by Ecology upon request. The planning standard summary analysis indicates total access to boom, storage and recovery resources required to meet the planning standard. Equipment access is based on information listed on the WRRL and information provided through the plan holder contingency plan and Primary Response Contractor applications as of **DATE**. This information is subject to change as additional equipment is acquired and/or relocated. Substantive changes will result in an update of the spreadsheets.

PRC(s): MSRC**Plan Holder owned equipment:** YES**Worst Case Spill Volume (bbls):** (b)**Oil Products Handled by Group (Group 1-5):** Groups 2 and 3.**Mutual Aid/Letters Of Intent:** PRC Letters of Intent are found in Section 19.5 of the plan.**Analysis point description:** Zone 1 Nooksack River Crossing**Marine 50% or Freshwater 65% shore side storage credit:** YES, Kinder Morgan plans to utilize thier breakout tanks at Laurel for recovered oil. This is discussed in the plan in Section 18.2.2.**Alternative Planning Standard:**No.

	On-water Storage (bbls)	Shore side Storage (bbls)	Total Storage (bbls)	Calm Water (EDRC)	Protected Water (EDRC)	Open Water (EDRC)	Total Recovery (EDRC)	B1 Boom (ft)	B2 Boom (ft)	B3 Boom (ft)	Total Boom (ft)	Personnel (12 hour shift)
2 hr available	0	381	381	13,369	137	0	13,506	0	0	2,000	2,000	19
2 hr required			0				0				2,000	
meets standard			Yes				Yes				Yes	

6 hr available	3,083	444	3,527	13,369	7,313	0	20,682	11,240	44,030	4,600	59,870	109
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6 hr required			666				666				7,000	
meets standard			Yes				Yes				Yes	

12 hr available	4,336	451	4,787	13,369	18,077	1,371	32,817	19,200	59,970	8,600	87,770	159
12 hr required			1,997				998				27,000	
meets standard			Yes				Yes				Yes	

24 hr available	4,736	451	5,187	13,479	18,077	2,742	34,298	19,200	60,030	8,600	87,830	165
24 hr required			3,994				1,331				27,000	
meets standard			Yes				Yes				Yes	

48 hr available	4,736	451	5,187	13,479	18,077	2,742	34,298	19,200	60,030	8,600	87,830	165
48 hr required			3,994				1,664				27,000	
meets standard			Yes				Yes				Yes	

18.2.1.3 Zone 2 – Bellingham Bay

Plan Holder: Kinder Morgan Canada (Trans Mountain Pipeline) Zone 2 Bellingham Bay

Planning Standard Summary Analysis: WAC 173-182-365 Transmission pipelines and pipeline tank farms

The summary analysis spreadsheet is based on a conceptual model of equipment that would be available based on the guidelines set forth in WAC 173-182 for; planning standards, determining effectiveness of recovery systems, documenting compliance with planning standards, and plan evaluation criteria. Actual times and performance in spills will depend on the conditions of the day. An electronic version of the equipment detail spreadsheet which lists all equipment can be made available by Ecology upon request. The planning standard summary analysis indicates total access to boom, storage and recovery resources required to meet the planning standard. Equipment access is based on information listed on the WRRL and information provided through the plan holder contingency plan and Primary Response Contractor applications as of **2/19/2013**. This information is subject to change as additional equipment is acquired and/or relocated. Substantive changes will result in an update of the spreadsheets.

PRC(s): MSRC

Plan Holder owned equipment: YES



Worst Case Spill Volume (bbls): (b) (7)

Oil Products Handled by Group (Group 1-5): Groups 2 and 3.

Mutual Aid/Letters Of Intent: PRC Letters of Intent are found in Section 19.5 of the plan

Analysis point description: Where the Nooksack River enters Bellingham Bay

Marine 50% or Freshwater 65% shore side storage credit: YES, Kinder Morgan plans to utilize thier breakout tanks at Laurel for recovered oil. This is discussed in the plan in Section 18.2.2.

Alternative Planning Standard: No.

	On-water Storage (bbls)	Shore side Storage (bbls)	Total Storage (bbls)	Calm Water (EDRC)	Protected Water (EDRC)	Open Water (EDRC)	Total Recovery (EDRC)	B1 Boom (ft)	B2 Boom (ft)	B3 Boom (ft)	Total Boom (ft)	Personnel (12 hour shift)
2 hr available	323	381	704	13,369	3,931	6,000	23,300	0	8,500	2,000	10,500	33
2 hr required			0				0				2,000	
meets standard			Yes				Yes				Yes	

6 hr available	29,687	444	30,131	13,369	28,051	22,567	63,987	16,520	61,930	4,600	83,050	153
6 hr required			1,050				1,050				7,000	
meets standard			Yes				Yes				Yes	

12 hr available	93,804	451	94,254	13,479	54,475	57,478	125,432	25,800	82,370	8,600	116,770	218
12 hr required			3,150				1,575				27,000	
meets standard			Yes				Yes				Yes	

24 hr available	129,957	451	130,407	13,479	65,239	91,256	169,974	31,080	83,430	8,600	123,110	235
24 hr required			6,300				2,100				27,000	
meets standard			Yes				Yes				Yes	

48 hr	169,9	451	170,4	13,479	65,239	91,25	169,9	31,0	83,4	8,6	123,11	236
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Emergency Response Plan

available	57		07			6	74	80	30	00	0	
48 hr required			6,300				2,625				27,000	
meets standard			Yes				Yes				Yes	

18.2.1.4 Zone 2 – Nooksack River

Plan Holder: Kinder Morgan Canada (Trans Mountain Pipeline) Zone 2 Nooksack

Planning Standard Summary Analysis: WAC 173-182-365 Transmission pipelines and pipeline tank farms

The summary analysis spreadsheet is based on a conceptual model of equipment that would be available based on the guidelines set forth in WAC 173-182 for; planning standards, determining effectiveness of recovery systems, documenting compliance with planning standards, and plan evaluation criteria. Actual times and performance in spills will depend on the conditions of the day. An electronic version of the equipment detail spreadsheet which lists all equipment can be made available by Ecology upon request. The planning standard summary analysis indicates total access to boom, storage and recovery resources required to meet the planning standard. Equipment access is based on information listed on the WRRL and information provided through the plan holder contingency plan and Primary Response Contractor applications as of **2/19/2013**. This information is subject to change as additional equipment is acquired and/or relocated. Substantive changes will result in an update of the spreadsheets.

PRC(s): MSRC

Plan Holder owned equipment: Yes

Worst Case Spill Volume (bbls): (b) (7)

Oil Products Handled by Group (Group 1-5): Group 2 and 3.

Mutual Aid/Letters Of Intent: PRC Letters of Intent are found in Section 19.5 of the plan.

Analysis point description: Zone 2 Nooksack River Crossing

Marine 50% or Freshwater 65% shore side storage credit: YES, Kinder Morgan plans to utilize thier breakout tanks at Laurel for recovered oil. This is discussed in the plan in Section 18.2.2.

Alternative Planning Standard: No.

	On-water Storage (bbls)	Shore side Storage (bbls)	Total Storage (bbls)	Calm Water (EDRC)	Protected Water (EDRC)	Open Water (EDRC)	Total Recovery (EDRC)	B1 Boom (ft)	B2 Boom (ft)	B3 Boom (ft)	Total Boom (ft)	Personnel (12 hour shift)
2 hr available	0	381	381	13,369	137	0	13,506	0	0	2,000	2,000	19



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2 hr required			0				0				2,000	
meets standard			Yes				Yes				Yes	

6 hr available	3,083	444	3,527	13,369	7,313	0	20,682	11,240	44,030	4,600	59,870	109
6 hr required			368				1,050				7,000	
meets standard			Yes				Yes				Yes	

12 hr available	4,336	451	4,787	13,479	18,077	1,371	32,927	19,200	59,970	8,600	87,770	161
12 hr required			1,103				1,575				27,000	
meets standard			Yes				Yes				Yes	

24 hr available	4,736	451	5,187	13,479	18,077	2,742	34,298	19,200	60,030	8,600	87,830	165
24 hr required			2,205				2,100				27,000	
meets standard			Yes				Yes				Yes	

48 hr available	4,736	451	5,187	13,479	18,077	2,742	34,298	19,200	60,030	8,600	87,830	165
48 hr required			2,205				2,625				27,000	
meets standard			Yes				Yes				Yes	



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Emergency Response Plan

18.2.1.5 Zone 3 – Bellingham Bay
Plan Holder: Kinder Morgan Canada (Trans Mountain Pipeline) Zone 3 Bellingham Bay
Planning Standard Summary Analysis: WAC 173-182-365 Transmission pipelines and pipeline tank farms

The summary analysis spreadsheet is based on a conceptual model of equipment that would be available based on the guidelines set forth in WAC 173-182 for; planning standards, determining effectiveness of recovery systems, documenting compliance with planning standards, and plan evaluation criteria. Actual times and performance in spills will depend on the conditions of the day. An electronic version of the equipment detail spreadsheet which lists all equipment can be made available by Ecology upon request. The planning standard summary analysis indicates total access to boom, storage and recovery resources required to meet the planning standard. Equipment access is based on information listed on the WRRL and information provided through the plan holder contingency plan and Primary Response Contractor applications as of **2/19/2013**. This information is subject to change as additional equipment is acquired and/or relocated. Substantive changes will result in an update of the spreadsheets.

PRC(s): MSRC
Plan Holder owned equipment: YES
Worst Case Spill Volume (bbls): (b)
Oil Products Handled by Group (Group 1-5): Group 2 and 3.
Mutual Aid/Letters Of Intent: PRC Letters of Intent are found in Section 19.5 of the plan.
Analysis point description: Zone 3, where Whatcom Creek discharges into Bellingham Bay
Marine 50% or Freshwater 65% shore side storage credit: YES, Kinder Morgan plans to utilize their breakout tanks at Laurel for recovered oil. This is discussed in the plan on page ???.
Alternative Planning Standard: No.

	On-water Storage (bbls)	Shore side Storage (bbls)	Total Storage (bbls)	Calm Water (EDRC)	Protected Water (EDRC)	Open Water (EDRC)	Total Recovery (EDRC)	B1 Boom (ft)	B2 Boom (ft)	B3 Boom (ft)	Total Boom (ft)	Personnel (12 hour shift)
2 hr available	323	381	704	13,369	3,931	6,000	23,300	0	5,500	2,000	7,500	32
2 hr required			0				0				2,000	
meets standard			Yes				Yes				Yes	
6 hr	29,68	444	30,13	13,369	28,051	22,56	63,98	16,5	61,9	4,6	83,050	153



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Emergency Response Plan

available	7		1			7	7	20	30	00		
6 hr required			700				700					7,000
meets standard			Yes				Yes					Yes

12 hr available	93,804	451	94,254	13,479	54,475	57,478	125,432	25,800	82,370	8,600	116,770	218
12 hr required			2,100				1,050					27,000
meets standard			Yes				Yes					Yes

24 hr available	129,957	451	130,407	13,479	65,239	91,256	169,974	31,080	83,430	8,600	123,110	235
24 hr required			4,200				1,400					27,000
meets standard			Yes				Yes					Yes

48 hr available	169,957	451	170,407	13,479	65,239	91,256	169,974	31,080	83,430	8,600	123,110	236
48 hr required			4,200				1,750					27,000
meets standard			Yes				Yes					Yes

18.2.1.6 Zone 3 – Samish Bay

Plan Holder: Kinder Morgan Canada (Trans Mountain Pipeline) Zone 3 Samish Bay

Planning Standard Summary Analysis: WAC 173-182-365 Transmission pipelines and pipeline tank farms

The summary analysis spreadsheet is based on a conceptual model of equipment that would be available based on the guidelines set forth in WAC 173-182 for; planning standards, determining effectiveness of recovery systems, documenting compliance with planning standards, and plan evaluation criteria. Actual times and performance in spills will depend on the conditions of the day. An electronic version of the equipment detail spreadsheet which lists all equipment can be made available by Ecology upon request. The planning standard summary analysis indicates total access to boom, storage and recovery resources required to meet the planning standard. Equipment access is based on information listed on the WRRL and information provided through the plan holder contingency plan and Primary Response Contractor applications as of **2/19/2013**. This information is subject to change as additional equipment is acquired and/or relocated. Substantive changes will result in an update of the spreadsheets.

PRC(s): MSRC



Plan Holder owned equipment: Yes
10405
Oil Products Handled by Group (Group 1-5): Group 2 and 3.
Mutual Aid/Letters Of Intent: PRC Letters of Intent are found in Section 19.5 of the plan.
Analysis point description: Zone 3, where the Samish River discharges into Samish Bay.
Marine 50% or Freshwater 65% shore side storage credit: YES, Kinder Morgan plans to utilize their breakout tanks at Laurel for recovered oil. This is discussed in the plan in Section 18.2.2
Alternative Planning Standard: No.

	On-water Storage (bbls)	Shore side Storage (bbls)	Total Storage (bbls)	Calm Water (EDRC)	Protected Water (EDRC)	Open Water (EDRC)	Total Recovery (EDRC)	B1 Boom (ft)	B2 Boom (ft)	B3 Boom (ft)	Total Boom (ft)	Personnel (12 hour shift)
2 hr available	380	381	761	13,369	14,695	6,000	34,064	0	8,500	2,000	10,500	35
2 hr required			0				0				2,000	
meets standard			Yes				Yes				Yes	

6 hr available	30,087	451	30,538	13,369	28,051	22,567	63,987	16,520	65,990	8,600	91,110	164
6 hr required			1,041				1,041				7,000	
meets standard			Yes				Yes				Yes	

12 hr available	94,147	451	94,597	13,479	65,239	79,318	158,036	25,800	82,370	8,600	116,770	221
12 hr required			3,122				1,561				27,000	
meets standard			Yes				Yes				Yes	

24 hr available	129,957	451	130,407	13,479	65,239	91,256	169,974	31,080	83,430	8,600	123,110	235
24 hr required			6,243				2,081				27,000	
meets standard			Yes				Yes				Yes	



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48 hr available	169,957	451	170,407	13,479	65,239	91,256	169,974	31,080	83,430	8,600	123,110	236
48 hr required			6,243				2,601				27,000	
meets standard			Yes				Yes				Yes	

18.2.1.7 Zone 3 – Samish River

Plan Holder: Kinder Morgan Canada (Trans Mountain Pipeline) Zone 3 Samish River

Planning Standard Summary Analysis: WAC 173-182-365 Transmission pipelines and pipeline tank farms

The summary analysis spreadsheet is based on a conceptual model of equipment that would be available based on the guidelines set forth in WAC 173-182 for; planning standards, determining effectiveness of recovery systems, documenting compliance with planning standards, and plan evaluation criteria. Actual times and performance in spills will depend on the conditions of the day. An electronic version of the equipment detail spreadsheet which lists all equipment can be made available by Ecology upon request. The planning standard summary analysis indicates total access to boom, storage and recovery resources required to meet the planning standard. Equipment access is based on information listed on the WRRL and information provided through the plan holder contingency plan and Primary Response Contractor applications as of **2/19/2013**. This information is subject to change as additional equipment is acquired and/or relocated. Substantive changes will result in an update of the spreadsheets.

PRC(s): MSRC

Plan Holder owned equipment: Yes

Worst Case Spill Volume (bbls): (b) (7)

Oil Products Handled by Group (Group 1-5): Group 2 and 3.

Mutual Aid/Letters Of Intent: PRC Letters of Intent are found in Section 19.5 of the plan.

Analysis point description: Zone 3 where the pipeline crosses the Samish River.

Marine 50% or Freshwater 65% shore side storage credit: YES, Kinder Morgan plans to utilize their breakout tanks at Laurel for recovered oil. This is discussed in the plan in Section 18.2.2

Alternative Planning Standard: No.

	On-water Storage (bbls)	Shore side Storage (bbls)	Total Storage (bbls)	Calm Water (EDRC)	Protected Water (EDRC)	Open Water (EDRC)	Total Recovery (EDRC)	B1 Boom (ft)	B2 Boom (ft)	B3 Boom (ft)	Total Boom (ft)	Personnel (12 hour shift)
2 hr	0	381	381	13,369	137	0	13,50	0	0	2,0	2,000	20



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Emergency Response Plan

available							6			00		
2 hr required			0				0				2,000	
meets standard			Yes				Yes				Yes	

6 hr available	3,483	451	3,934	13,369	7,313	0	20,682	11,240	48,090	8,600	67,930	122
6 hr required			364				1,041				7,000	
meets standard			Yes				Yes				Yes	

12 hr available	4,336	451	4,787	13,479	18,077	1,371	32,927	19,200	59,970	8,600	87,770	161
12 hr required			1,093				1,561				27,000	
meets standard			Yes				Yes				Yes	

24 hr available	4,736	451	5,187	13,479	18,077	2,742	34,298	19,200	60,030	8,600	87,830	165
24 hr required			2,185				2,081				27,000	
meets standard			Yes				Yes				Yes	

48 hr available	4,736	451	5,187	13,479	18,077	2,742	34,298	19,200	60,030	8,600	87,830	165
48 hr required			2,185				2,601				27,000	
meets standard			Yes				Yes				Yes	

18.2.1.8 Zone 3 – Whatcom Creek
**Plan Holder: Kinder Morgan Canada (Trans Mountain Pipeline) Zone 3
Whatcom Creek**
Planning Standard Summary Analysis: WAC 173-182-365 Transmission pipelines and pipeline tank farms

The summary analysis spreadsheet is based on a conceptual model of equipment that would be available based on the guidelines set forth in WAC 173-182 for; planning standards, determining effectiveness of recovery systems, documenting compliance with planning standards, and plan evaluation criteria. Actual times and performance in spills will depend on the conditions of the day. An electronic version of the equipment detail spreadsheet which lists all equipment can be made available by Ecology upon request. The planning standard summary analysis indicates total access to boom, storage and recovery resources required to meet the planning standard. Equipment access is based on information listed on the WRRL and information provided through the plan holder contingency plan and Primary Response Contractor applications as of **2/19/2013**. This information is subject to change as additional equipment is acquired and/or relocated. Substantive changes will result in an update of the spreadsheets.

PRC(s): MSRC
Plan Holder owned equipment: YES
Worst Case Spill Volume (bbls): (b)
Oil Products Handled by Group (Group 1-5): Group 2 and 3
Mutual Aid/Letters Of Intent: PRC Letters of Intent are found in Section 19.5 of the plan.
Analysis point description: Zone 3, where the pipeline crosses Whatcom Creek
Marine 50% or Freshwater 65% shore side storage credit: YES, Kinder Morgan plans to utilize their breakout tanks at Laurel for recovered oil. This is discussed in the plan in Section 18.2.2.
Alternative Planning Standard: No.

	On-water Storage (bbls)	Shore side Storage (bbls)	Total Storage (bbls)	Calm Water (EDRC)	Protected Water (EDRC)	Open Water (EDRC)	Total Recovery (EDRC)	B1 Boom (ft)	B2 Boom (ft)	B3 Boom (ft)	Total Boom (ft)	Personnel (12 hour shift)
2 hr available	0	381	381	13,369	137	0	13,506	0	0	2,000	2,000	19
2 hr required			0				0				2,000	
meets standard			Yes				Yes				Yes	
6 hr	3,083	444	3,527	13,369	7,313	0	20,68	11,2	44,0	4,6	59,870	111



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Emergency Response Plan

available							2	40	30	00		
6 hr required			700				700				7,000	
meets standard			Yes				Yes				Yes	

12 hr available	4,336	451	4,787	13,479	18,077	1,371	32,927	19,200	59,970	8,600	87,770	161
12 hr required			2,100				1,050				27,000	
meets standard			Yes				Yes				Yes	

24 hr available	4,736	451	5,187	13,479	18,077	2,742	34,298	19,200	60,030	8,600	87,830	165
24 hr required			4,200				1,400				27,000	
meets standard			Yes				Yes				Yes	

48 hr available	4,736	451	5,187	13,479	18,077	2,742	34,298	19,200	60,030	8,600	87,830	165
48 hr required			4,200				1,750				27,000	
meets standard			Yes				Yes				Yes	

18.2.1.9 Zone 4 – Padilla Bay

Plan Holder: Kinder Morgan Canada (Trans Mountain Pipeline) Zone 4 Padilla Bay

Planning Standard Summary Analysis: WAC 173-182-365 Transmission pipelines and pipeline tank farms

The summary analysis spreadsheet is based on a conceptual model of equipment that would be available based on the guidelines set forth in WAC 173-182 for; planning standards, determining effectiveness of recovery systems, documenting compliance with planning standards, and plan evaluation criteria. Actual times and performance in spills will depend on the conditions of the day. An electronic version of the equipment detail spreadsheet which lists all equipment can be made available by Ecology upon request. The planning standard summary analysis indicates total access to boom, storage and recovery resources required to meet the planning standard. Equipment access is based on information listed on the WRRL and information provided through the plan holder contingency plan and Primary Response Contractor applications as of **2/19/2013**. This information is subject to change as additional equipment is acquired and/or relocated. Substantive changes will result in an update of the spreadsheets.

PRC(s): MSRC



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Emergency Response Plan

Plan Holder owned equipment: YES
Worst Case Spill Volume (bbls): (b)
Oil Products Handled by Group (Group 1-5): Group 2 and 3.
Mutual Aid/Letters Of Intent: PRC Letters of Intent are found in Section 19.5 of the plan.
Analysis point description: Zone 4, Padilla Bay.
Marine 50% or Freshwater 65% shore side storage credit: YES, Kinder Morgan plans to utilize their breakout tanks at Laurel for recovered oil. This is discussed in the plan on page ???
Alternative Planning Standard: No.

	On-water Storage (bbls)	Shore side Storage (bbls)	Total Storage (bbls)	Calm Water (EDRC)	Protected Water (EDRC)	Open Water (EDRC)	Total Recovery (EDRC)	B1 Boom (ft)	B2 Boom (ft)	B3 Boom (ft)	Total Boom (ft)	Personnel (12 hour shift)
2 hr available	373	381	754	13,369	14,489	6,000	33,858	0	5,100	2,000	7,100	29
2 hr required			0				0				2,000	
meets standard			Yes				Yes				Yes	

6 hr available	31,449	451	31,900	13,369	28,051	34,567	75,987	16,520	66,790	8,600	91,910	168
6 hr required			420				420				7,000	
meets standard			Yes				Yes				Yes	

12 hr available	94,147	451	94,597	13,479	65,239	79,318	158,036	25,800	82,370	8,600	116,770	221
12 hr required			1,260				630				27,000	
meets standard			Yes				Yes				Yes	

24 hr available	129,957	451	130,407	13,479	65,239	91,256	169,974	31,080	83,430	8,600	123,110	235
24 hr required			2,520				840				27,000	
meets standard			Yes				Yes				Yes	



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Emergency Response Plan

48 hr available	169,957	451	170,407	13,479	65,239	91,256	169,974	31,080	83,430	8,600	123,110	236
48 hr required			2,520				1,050				27,000	
meets standard			Yes				Yes				Yes	

18.2.1.10 Zone 5 – Laurel Station

To be inserted after revised spreadsheet is received.

18.2.1.11 Zone 5 – Bellingham Bay

Plan Holder: Kinder Morgan Canada (Trans Mountain Pipeline) Zone 5 Bellingham Bay

Planning Standard Summary Analysis: WAC 173-182-365 Transmission pipelines and pipeline tank farms

The summary analysis spreadsheet is based on a conceptual model of equipment that would be available based on the guidelines set forth in WAC 173-182 for; planning standards, determining effectiveness of recovery systems, documenting compliance with planning standards, and plan evaluation criteria. Actual times and performance in spills will depend on the conditions of the day. An electronic version of the equipment detail spreadsheet which lists all equipment can be made available by Ecology upon request. The planning standard summary analysis indicates total access to boom, storage and recovery resources required to meet the planning standard. Equipment access is based on information listed on the WRRL and information provided through the plan holder contingency plan and Primary Response Contractor applications as of **2/19/2013**. This information is subject to change as additional equipment is acquired and/or relocated. Substantive changes will result in an update of the spreadsheets.

PRC(s): MSRC

Plan Holder owned equipment: YES

Worst Case Spill Volume (bbls): (b) (7)

Oil Products Handled by Group (Group 1-5): Group 2 and 3.

Mutual Aid/Letters Of Intent: PRC Letters of Intent are found in Section 19.5 of the plan.

Analysis point description: Zone 5, where the Nooksack River enters Bellingham Bay

Marine 50% or Freshwater 65% shore side storage credit: YES, Kinder Morgan plans to utilize their break out tanks at Laurel for recovered oil. This is discussed in the plan in Section 18.2.2.

Alternative Planning Standard: No.



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Emergency Response Plan

	On-water Storage (bbls)	Shore side Storage (bbls)	Total Storage (bbls)	Calm Water (EDRC)	Protected Water (EDRC)	Open Water (EDRC)	Total Recovery (EDRC)	B1 Boom (ft)	B2 Boom (ft)	B3 Boom (ft)	Total Boom (ft)	Personnel (12 hour shift)
2 hr available	323	381	704	13,369	3,931	6,000	23,300	0	8,500	2,000	10,500	33
2 hr required			0				0				2,000	
meets standard			Yes				Yes				Yes	

6 hr available	29,687	444	30,131	13,369	28,051	22,567	63,987	16,520	61,930	4,600	83,050	153
6 hr required			8,946				8,946				7,000	
meets standard			Yes				Yes				Yes	

12 hr available	93,804	451	94,254	13,479	54,475	57,478	125,432	25,800	82,370	8,600	116,770	218
12 hr required			26,837				13,418				27,000	
meets standard			Yes				Yes				Yes	

24 hr available	129,957	451	130,407	13,479	65,239	91,256	169,974	31,080	83,430	8,600	123,110	235
24 hr required			53,673				17,891				27,000	
meets standard			Yes				Yes				Yes	

48 hr available	169,957	451	170,407	13,479	65,239	91,256	169,974	31,080	83,430	8,600	123,110	236
48 hr required			53,673				22,364				27,000	
meets standard			Yes				Yes				Yes	

18.2.2 Vac Truck to Storage Tank Off-loading of Recovered Oil

- Vac truck driver will enter facility and check in at Control building, and sign in on visitor log sheet.
- Day operator will confirm the driver is current with his year required KMC safety orientation.
- The day operator will fill out , and issue a safe work permit for the unloading of product into tankage.
- Vac truck driver will fill out a KMC “Vacuum and Tank Truck Pre-Job Checklist “ and review it with the day operator and obtain his signature.
- Day operator will attach checklist to the daily safe work permit and post prior to work commencing.
- Day operator will accompany the vac truck to the appropriate tank, and will gas check the entire area prior to allowing truck into the tank bay area.
- Day operator will guide vac truck in to tank bay, and act as a spotter while truck backs in to the appropriate location.
- The vac truck will be grounded to tank, and hoses run to the appropriate tank valve.
- The vac truck will build tank pressure prior to discharging into selected tank. Once pressure is reached, the day operator will open the tank valve to facilitate the off-loading.
- Once vac truck has transferred all product to the tank, the day operator will close and secure tank valve , and escort truck out of the tank bay.
- The vac truck driver will work under the same safe work permit for his entire shift, and sign out on the stations visitor log when leaving the site for the last time.
- A new safe work permit and “Vacuum and Tank Truck Pre- Job Checklist “ are required to be filled out and posted for each shift.

18.2.3 Oil Recovery Rate

OSCAR Unit	Nameplate Capacity (USGPM)	Efficiency Factor (%)	USGPD	Barrels per Day
Laurel OSCAR				
4' Pedco weir Skimmer with 2x3" pumps	338	20	194,688	4,635
2' Pedco Wier Skimmer with 1x3" pump	338	20	97,344	2,317
Canadyne Multiskimmer	(brush) 88	20	25,344	603
	(drum) 52	20	14,976	356
Anacortes OSCAR				
4' Peco Weir Skimmer with 2x3" pumps	338	20	194,688	4,635
2' Pedco Wier Skimmer with 1x2" pump	172	20	49,536	1,179
Morris M1-11/24 Disc Skimmer	20	20	5,760	137
Total 24 Hour Adjusted Rate w/ Brush			561,600	13,369
Total 24 Hour Adjusted Rate w/ Drum			551,232	13,122
Total 24 Hour Adjusted Rate w/ Disk			542,016	12,903

18.2.4 KMC Owned Recovered Liquid Storage

Kinder Morgan has several storage options available for use during an emergency these are listed below:

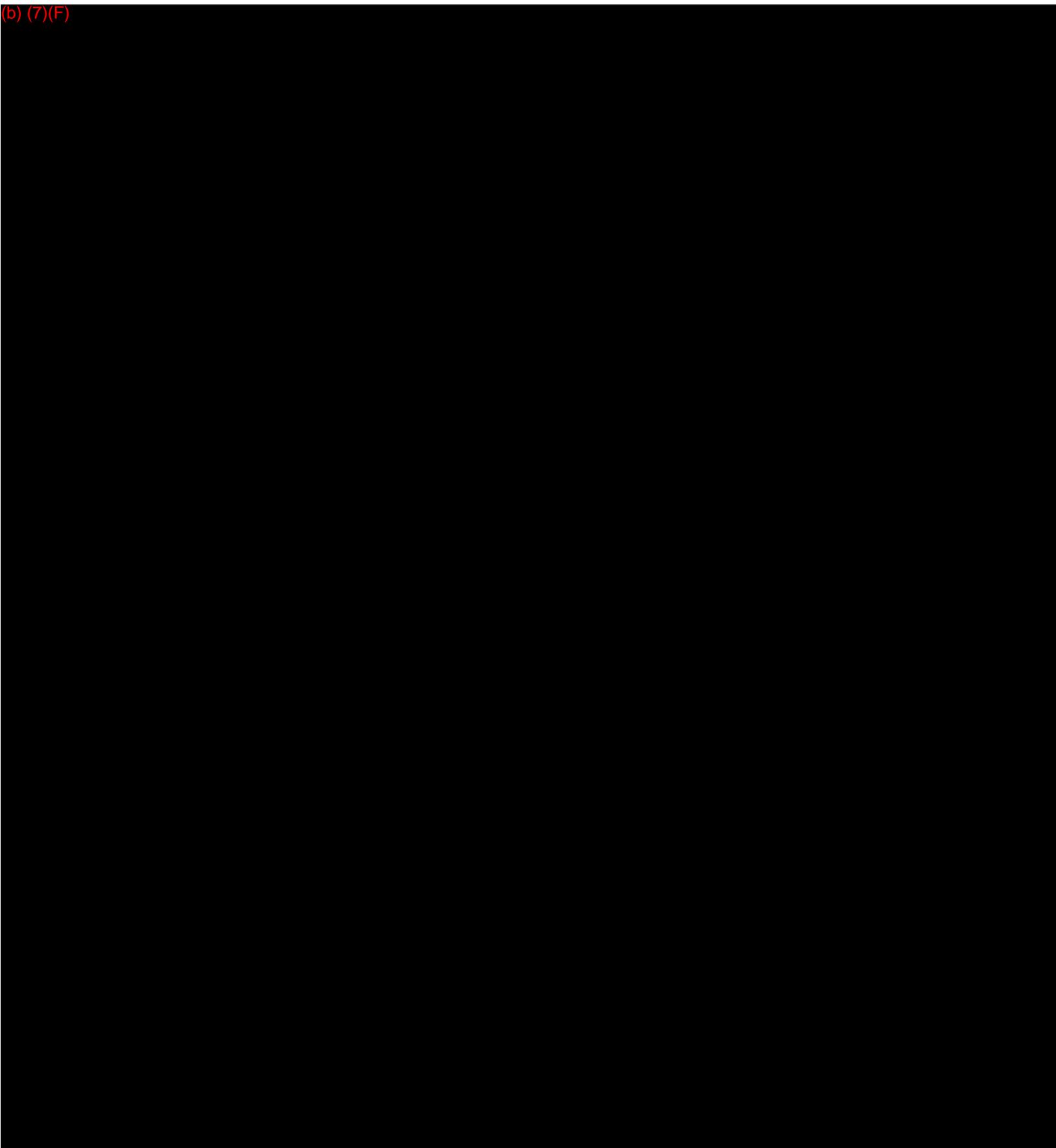
Location	Description	Capacity (US Gallons)	Capacity (barrels)
Laurel (OSCAR)	1x Portatank	1,000	23
	2x Pillow tanks	6,000	142
	1x Buoywall	1,500	35
Anacortes (OSCAR)	1x Bouywall	1,500	35
	2x Pillow Tanks	6,000	142
Ferndale Relief Tank (130)	1x Relief Tank	126,000	3000
Laurel Relief Tank (120)	1x Relief Tank	126,000	3000
Laurel Tank 170	Breakout Tank	3,757,110	89,455
Laurel Tank 180	Breakout Tank	3,716,244	85,482
Total Permanent Storage		7,725,354	183,937
Total Temporary Site Storage		16,000	380

18.2.5 KMC Owned Boom

Under WAC 173-182-365 (2) KMC maintains 2000 ft of boom in Washington State all of which is available anywhere along the pipeline within 2 hours. After the two hour window KMC relies upon our PRC's to provide additional boom capability for the 6, 12, 24, and 48 hour requirements.



(b) (7)(F)



19.0 CERTIFICATIONS

19.1 Kinder Morgan Certification

Emergency Response Plan Certification

For the Trans Mountain Pipeline (Puget Sound) LLC from the Canada/U.S. Border to Laurel Station (Bellingham, WA), and from Laurel Station to Anacortes Meter Station (Anacortes, WA) and from Laurel Station to Ferndale Meter Station (Ferndale, WA), Kinder Morgan Canada Inc., as the operator certifies that:

- A spill response plan ("Plan") has been prepared that will be implemented in the event of a worst case discharge of oil
- The Plan is in effect for this pipeline and that Operator personnel are trained in the implementation of this Plan
- The availability of private personnel and equipment necessary to respond, to the maximum extent practicable, to a worst case discharge or a substantial threat of a discharge is ensured by contract or other approved means
- This Plan meets the applicable requirements of Research and Special Programs Administration, U.S. Department of Transportation (49 CFR 194).

Acceptance Verification: This verifies acceptance of this Spill Response Plan for Trans Mountain Pipeline (Puget Sound) LLC. This Plan will be used by facility personnel when responding to an oil spill. This Plan will be used in conjunction with the Emergency Response Field Guide, the Control Point Manual, and the Incident Command System Manual when necessary. The Supervisor, Puget Sound or designee has the authority to make appropriate expenditures in order to execute the provisions of this Plan. The Supervisor, Puget Sound or designee will be considered the "Qualified Individual."



Dan O'Rourke,
Director, Environmental, Health and Safety Department
July 8, 2013



1-888-876-6711

Emergency Response Plan

19.2 Kinder Morgan Certification – Binding Agreement

Washington State Department of Ecology
 Spill Prevention, Preparedness and Response Program
 P.O. Box 47600, Olympia, WA 98504-7600
 For information, please contact SPPR Program at 360-407-7455.

Plan Holder/Company Name:

WAC 173-182-220: Binding Agreement
Each plan shall contain a written statement binding the plan holder to its use. The binding agreement shall be signed by the owner or operator, or a designee with authority to bind the owners and operators of the facility or vessel covered by the plan. The agreement is submitted with the plan.

Submitting Party Information

Company Name: Kinder Morgan Canada – Trans Mountain Pipeline (Puget Sound) LLC	
Contact Name: Dan O'Rourke	
Address: 2700, 300 -5 Avenue SW, Calgary, AB T2P 5J2	
Phone Number: 403-514-6641	Fax #: 403-514-6401
Email: Dan_O'Rourke@kindermorgan.com	Website: kindermorgan.com

Binding Agreement

I certify that I reviewed and am familiar with the information submitted in this Plan. I verify acceptance of the plan and commit to (a) a safe and immediate response to spills and to substantial threats of spills that occur in, or could impact Washington waters or Washington's natural, cultural and economic resources; (b) having an incident commander in the state within six hours after notification of a spill; (c) the implementation and use of the plan during a spill and substantial threat of a spill, and to the training of personnel to implement the plan; (d) the authority and capability to make the necessary and appropriate expenditures in order to implement plan provisions; (e) working in unified command within the incident command system to ensure that all personnel and equipment resources necessary to the response will be called out to clean up the spill safely and to the maximum extent practicable.

 Authorized Signature

July 8, 2013

 Date

Dan O'Rourke

 Print Name

Director, Environmental, Health and Safety Department

 Title



1-888-876-6711

Emergency Response Plan

19.3 United States Department of Transportation

Approval letter will be inserted upon receipt



1-888-876-6711

Emergency Response Plan

19.4 Washington State Department of Ecology

Approval certificate will be inserted here upon receipt of approval

19.5 PRC – Contracts/Letters of Intent

Letters of intent and/or letter of contract for each PRC are included in this section on the next several pages, where available as identified in Section 2.10 Support Services - Primary Response Contractors (PRC). The actual contract, where a contract exists is available to Washington State Department of Ecology for inspection upon request.



Judith A. Roos
Vice President
Marketing, Customer Services, & Corporate Relations
(703) 326-5617

December 7, 2012

Ms. Kelly Malinoski
Emergency Response & Security Advisor
KinderMorgan Canada
Suite 2700, 300-5th Ave SW
Calgary, AB
Canada T2P 5J2

Re: Letter of Intent

Dear Ms. Malinoski:

This letter certifies that TransMountain Pipeline (Puget Sound) LLC has entered into an Agreement with the Marine Spill Response Corporation (MSRC). Pursuant to this Agreement, TransMountain Pipeline (Puget Sound) LLC and its accompanying facilities are (1) entitled by contract to MSRC response services, and (2) have the right to cite the capability of MSRC in its Facility Response Plan, in accordance with the terms and conditions of the Standard Form MSRC Service Agreement.

The enclosed Execution Instrument to the MSRC Service Agreement dated February 3, 2009 between TransMountain Pipeline (Puget Sound) LLC and MSRC is proof that such a contract exists. In addition, MSRC's contract is an evergreen contract and continues automatically until such time that TransMountain Pipeline (Puget Sound) LLC ceases to be a member of the Marine Preservation Association (MPA).

Please let me know if I may provide further assistance to you in the future.

Sincerely,

A handwritten signature in black ink, appearing to read "Judith A. Roos", is written over a horizontal line.

Enclosure



December 7, 2012

Attn: Kelly Malinoski
Emergency Response & Security Advisor
Kinder Morgan
2700, 300-5 Ave SW
Calgary, AB T2P 5J2

Re: Environmental Response under OPA-90

Work Scope and Performance:

Thank you for your inquiry into Global Diving & Salvage, Inc.'s response capabilities. You have our permission to list Global among the response resources in your facility/vessel contingency plans. It does not guarantee a performance standard or obligate Global to respond. Any response would be subject to the availability of our personnel and equipment. This authorization extends only to pollution services. Global's personnel, equipment, and materials will be billed out in accordance with our most current tariff rates.

Period of Performance:

This listing is valid from January 01, 2012 through January 31, 2013.

For your records, Global Diving & Salvage, Inc. is currently registered as a Washington State Department of Ecology Primary Response Contractor. Please contact Global directly should you require a copy of this certification. A current Certificate of Insurance is also available upon request.

Respectfully Submitted,

Aaron Harrington
Environmental Manager
Global Diving & Salvage, Inc.

Encl: Current Environmental Division Tariff
Current Dive Division Tariff



December 11, 2012

O'Brien's Response Management
2929 East Imperial Highway
Suite 290
Brea, California 92821

RESPONSE CERTIFICATION

This letter confirms that O'Brien's Response Management has a Response Resources Agreement with Kinder Morgan Canada. Pursuant to the terms of this Agreement, O'Brien's Response Management commits to provide resources to meet requirements the of **WAC 173-182-280** spill management teams.

To support **Kinder Morgan's** spill Management Team regulatory requirement for "one primary and one alternate person to lead each ICS spill management position down to the section chief and command staff level as depicted in the NWACP standard ICS organizational chart," O'Brien's can supply, at a minimum:

- Incident Commander
- Deputy Incident Commander
- Safety Officer
- Public Information Officer/Assistant
- Liaison Officer/Assistant
- Operations Section Chief or Deputy
- Planning Section Chief or Deputy
- Logistics Section Chief or Deputy
- Financial Section Chief or Deputy

O'Brien's Response Management is capable of beginning mobilization of initial response efforts within 30 minutes of spill notification.

If you have any questions, or need further assistance, please contact me either by phone at 206-679-3658 or by e-mail at jim.morris@obriensrm.com. In the event of an emergency, contact the O'Brien's Response Management 24-Hour Command Post at **985-781-0804**.

Signed,

A handwritten signature in black ink, appearing to read "Jim Morris", is written over a large, stylized signature graphic that includes a large loop and a long horizontal stroke.

James R. Morris
Manager, Consulting & Response Services (Northwest)

12345 Lake City Way NE, #419, Seattle, WA 98125
Telephone: 206-679-3658
24-Hour Tel: 985-781-0804 • E-Mail: Jim.Morris@obriensrm.com



US Office | PO Box 944/1408 19th St Anacortes WA 98221 • CA Office | 4555 Stonehaven Ave, Vancouver BC V7G 1E7

Ms. Kelly Malinoski
Emergency Response & Security Advisor
Kinder Morgan
2700, 300 – 5 Avenue SW
Calgary, AB T2P 5J2

Re: Focus Wildlife Emergency Response Services

Ms. Malinoski,

Focus Wildlife International is pleased to provide Kinder Morgan with emergency wildlife spill response in the Puget Sound area, and throughout Washington State, the United States and Canada. Focus Wildlife has provided emergency oiled wildlife response for Kinder Morgan since 2007. Focus Wildlife also provides consultation services such as wildlife contingency planning and drill and exercise support for Kinder Morgan.

Focus Wildlife has specific expertise in the area of oiled wildlife response. Incorporated in Washington State, Focus Wildlife maintains an emergency response team and mobile emergency response equipment that can be immediately deployed in the event of an emergency.

In an emergency please contact the following personnel:

Chris Battaglia, Director 800-578-3048 or 310-386-5965

Jenny Schlieps, Program Manager 360-391-7777


Best regards,

Chris Battaglia
Director
Focus Wildlife
chris@focuswildlife.org
310-386-5965
www.focuswildlife.net



12525 131st Ct. N.E. Kirkland, Washington 98034 (425) 823-4841 fax (425) 823-3805

Ms. Kelly Malinoski
Emergency Response & Security Advisor
Kinder Morgan
2700, 300 – 5 Avenue SW
Calgary, AB T2P 5J2

Re: Polaris Applied Sciences Scientific Support to Spill Response

Ms. Malinoski.

Polaris Applied Sciences, Inc. (Polaris) is pleased to provide Kinder Morgan Canada with scientific support for spill response in Canada and the United States. As you are aware, we are involved in spill planning with Kinder Morgan for their proposed expansion of their Westridge facility in Burnaby, B.C. and provided Shoreline Cleanup Assessment Technique (SCAT) for the Westridge Delivery Line release in 2007. We also routinely provide drill and exercise support for Kinder Morgan Canada. Our staff is on call 24 hours a day to render assistance. We have been the Shoreline Cleanup Assessment Technique Coordinators for the Deepwater Horizon oil spill in the Gulf of Mexico for nearly 3 years and can handle a worst case scenario for Kinder Morgan in the unlikely event it may occur.

In an emergency please contact any of the following personnel:

Greg Challenger, Principal Marine Scientist	206-369-5686
Gary Mauseth, Principal Marina Scientists	206 954-9648
Elliott Taylor, Prinicipal Marine Scientist	206 660-5753
Andy Graham, Marine Scientist	206-419-1745

Best regards,

Greg E. Challenger, M.S.
Principal Marine Scientist
Polaris Applied Sciences, Inc.
www.polarisappliedsciences.com



December 7, 2012

Kelly Malinoski
Kinder Morgan Canada
2700, 300 – 5 Avenue SW
Calgary, AB T2P 5J2

RE: Commitment to Respond

Dear Ms. Malinoski,

Center for Toxicology and Environmental Health, L.L.C. (CTEH®) has extended at a level of authority to commit the necessary resources to aid Kinder Morgan Canada (KMC) in the event of an incident necessitating external support. CTEH®'s experienced team of professionals is on call 24/7 to provide air monitoring, air modeling, environmental sampling, data management and toxicology consulting services during incidents. CTEH® maintains a well staffed/equipped office in the greater Seattle area and additionally owns a KingAir 200 airplane available for emergencies. Our flight time to Seattle from our corporate office in Little Rock, AR using the KingAir is approximately 6 hours, with our goal to be wheels up in 2 hours from the initial phone call for mobilization.

If you have any questions regarding this matter, please don't hesitate to call me at (317) 473-0688.

Regards,

Center for Toxicology and Environmental Health, L.L.C.

A handwritten signature in blue ink that reads "James A. McCormack".

James A. McCormack
Director, Environmental Services
Center for Toxicology and Environmental Health, L.L.C.



December 11, 2012

Ms. Kelly Malinoski
Kinder Morgan
300 5th Avenue SW, Suite 2700
Calgary, Alberta
Canada, T2P 5JZ

RE: Commitment to Emergency Response

Dear Ms. Malinoski:

As discussed with Mike Droppo over the last several months, URS Corporation (URS) will assist Kinder Morgan Canada as consultant of choice during emergency response incidents related to Kinder Morgan Canada facilities and operations located in Washington State. The core team will be located in our Seattle office with support, as needed, from other URS offices located in the Northwest. We will serve in the Environmental Unit providing consultation and personnel for environmental related issues including:

- Direct assistance to Kinder Morgan environmental unit lead
- Plan development
- Field sampling/support,
- Data management
- Waste management
- Regulatory support
- Tracking/Reporting

We currently are working at the Laurel Station site to complete a Remedial Investigation/Feasibility Study related to historical releases and have been assisting Kinder Morgan with work related to repairs/maintenance of pipeline over water bodies in Washington.

URS has participated in several of the spill drills for the Laurel Station facility located in Bellingham, Washington in the last 10 years. Typically, we provided services associated with waste management. In October 2012, at Mr. Droppo's request to act as primary consultant to Kinder Morgan in the environmental unit, we served in a broader capacity for emergency response during a worst case release scenario at the Laurel Station facility. This followed the

Kinder Morgan
December 11, 2012
Page 2

ICS training that Kinder Morgan provided to the core URS contact team assembled to serve as our emergency response team. Members of that contact team will also serve as project or task managers in office or in the field and be guiding other URS staff in the event an incident occurs. As work directives are provided by Kinder Morgan Canada referenced to URS' contract with Kinder Morgan effective June 2010, we will continue to augment resources, develop template plans, continue training with Kinder Morgan, and periodically assess that our contacts/resources are up-to-date and in place for use.

If you need additional information, please do not hesitate to contact me (206-438-2234) or Tom Abbott (206-438-2101) in our Seattle office.

Sincerely,
URS CORPORATION



Karen L. Mixon
Project Manager



Katy Chaney
Vice President

cc: Mike Droppo, Kinder Morgan Canada



June 26, 2013

Kinder Morgan Pipelines
1009 East Smith Road
Bellingham, WA 98226

Subject: BAI Environmental Services Letter of Intent

Patrick,

As per your request, please accept the following as BAI Environmental Services' commitment to Kinder Morgan to supply needed equipment and trained and experienced supervision and labor for your routine maintenance projects, and unforeseen emergency response needs.

Projects that BAI Environmental Services performs are as follows:

- Industrial cleaning with wet-mode and dry-mode vacuum trucks
- Vacuum / Excavation work and Line locating with Guzzler trucks
- Hydrocarbon/Pipeline vacuum services
- Hazardous material handling with DOT 412 vacuum trucks
- 10K, 15K and 20K p.s.i. hydroblasting
- Sewer line jetting
- Self-priming diesel pumps for sewer by-pass work or water transfer
- Industrial Maintenance
- Waste handling
- Street sweeping
- Confined space entry
- Spill response
- Steam cleaning and pressure washing
- Fresh air capabilities
- Operating dewatering presses (plate/frame and belt) and centrifuge
- Pond sediment cleaning
- Heavy equipment operation
- Wetland maintenance and mitigation
- Ditch and landscape maintenance
- Vegetation control
- Tree sawing and chipping
- Landfill maintenance
- Hydro seeding
- Straw blowing
- Excavation work

BAI Environmental Services
752 Loomis Trail Road, Lynden, WA 98264
Phone: 360-354-1134, Fax: 360-354-0593
www.bai-environmental.com



BAI is a member of the ISNetworld and safety on the jobsite is of prime importance to BAI during work performance.

BAI Environmental Services appreciates the opportunity to be of services to Kinder Morgan Canada. Please be assured that all work will be performed in a safe and professional manner and done to your satisfaction.

Thank you again, if you have any questions or concerns on this Letter of Intent or need any further information, please call me at (360) 815-0274.

Sincerely,

Ken Smith



July 15, 2013

Mr. Patrick Davis
Kinder Morgan
1009 E. Smith Road
Bellingham, WA 98226

Re: **Non-Binding Intent to Respond**

Dear Mr. Davis:

BakerCorp is pleased to offer our full range of liquid and solid containers for rent to Kinder Morgan in the event of a release of materials both hazardous and non-hazardous, to land or navigational waters.

BakerCorp has a full array of spill response equipment at its Everett, WA branch including over 300 tanks ranging in sizes from 550 gallon stainless steel totes up to 21,000 gallon carbon steel tanks. BakerCorp tank sizes include:

- 550 gallon stainless steel tanks
- 630 gallon poly tanks
- 4000 gallon trailer mounted poly tanks
- 4000 gallon poly tanks
- 6500 gallon poly tanks
- 19600 gallon tanks with epoxy coated lining
- 18000 gallon double wall tanks
- 21000 gallon tanks, some with heating coils
- 20 yard roll off containers for soils or other solids
- 7200 gallon secondary containment for our poly tanks
- 10 x 50 safe guard berms for larger tanks or to use as a deacon station for boom etc.

We also carry a full line of pumps, pipe and hose in various sizes that are capable of moving up to 6,300 GPM and several miles of 4, 6, 8 and 12' quick connect pipe and hose.

BakerCorp is a 24-hour emergency response company with key personnel on call at all times. We will utilize best efforts to respond to the first call within 1 hour. Our 24 hour contact number is 800-BAKER-12.

Baker will strive to deliver eight, 21,000 gallon tanks within 12 hours for a total of 168,000 gallons of capacity. In an extreme emergency situation we have the capability to have tanks delivered from BakerCorp branches in the U.S., utilizing common carriers bringing tanks

from both Seattle, WA and Portland, OR branches. If needed we can reach BakerCorp branches in San Francisco, Salt Lake City, and Los Angeles for additional manpower as well as more equipment.

With the combination of these branches and the full range of our equipment; BakerCorp can provide 25,000 BBL'S of temporary storage in the form of 50+ steel tanks. Transportation times will vary but this capacity can be brought to bear quickly and on short notice.

This letter is not intended as a binding offer to rent equipment to Kinder Morgan, but rather to provide an overview of BakerCorp's ability to provide resources in the event of an incident necessitating external support. All equipment, materials, labor, and transportation rates and costs are offered on an "as available" basis only and are subject to the terms and conditions of BakerCorp's standard rental agreement. Unless and until a validly executed rental agreement is entered into between the parties, neither BakerCorp nor Kinder Morgan shall owe any legally binding obligation to the other.

If you have additional questions about BakerCorp or require its services please contact Searl LaChausse or Colin Linn at our Everett, WA office (425-347-8811)

Very truly yours,

BakerCorp Everett, WA