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EMERGENCY RESPONSE PLAN

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Trans Northern Pipelines Inc.

45 Vogell Road, Richmond Hill, ON L4B 3P6

Company Responsible Party Contact

[redacted]

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*Redacted information contains private contact information. The removal of this information follows the requirements of The Personal Information and Electronic Documents Act (PIPEDA) (federal legislation). The information provided on a controlled basis to internal employees.

** Redacted information contains strategic communications plans and sensitive information.

*** Redacted information contains sensitive engineering data including GPS coordinates that are confidential for security purposes.

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1 Navigation and Summary

1.1 Manual Navigation Guide

This manual consists of 10 Sections and 12 Appendices, identified and described as follows:

IF YOU ARE ACCESSING THIS SECTION DURING AN EMERGENCY
Please refer to the appropriate Field Operations Guideline found in Appendix B and your Regional Specific Disk. All pertinent information to ensure safety and proper response process will be found there.

The rest of the plan contains resources and details which may be required during an emergency, as well as administrative and compliance information. A general outline of the plan Sections is found below:

Section 1 Summary
An Executive Summary of the plan.

Section 2 Introduction
An explanation of the plan rationale including the methodology behind all aspects of the plan's development. This Section also contains the TNPI Company philosophies and policies. These policies are inclusive of public safety, Occupational Health and Safety, the environment, and company image.

Section 3 Regulatory Framework
A listing of the relevant regulations TNPI has identified within the scope of the plan. This Section also identifies the roles and responsibilities of these regulators during an incident.

Section 4 Response Activation
A listing of appropriate sequences of phone contacts and associated actions, as a result of a report concerning a pipeline emergency, received by company personnel. All of the resources and contact information available to TNPI and a step-by-step approach to activation.

Section 5 Incident Command System
A description of the Incident Command System, hierarchy and roles within the Company, and how this will fit in with First Responders and response contractors.

Section 6 Response
Safety requirements and general considerations all personnel responding to a refined oil product spill emergency should know and understand. This Section also contains spill response tactics and a listing of contractor services and equipment for land and marine spills available in to TNPI during an event.

Section 7 Communications
A guide to personnel not familiar or experienced with media interaction and planning.

Section 8 Reporting
A listing of all required regulatory agencies who must be contacted in the event of a spill, as well as other stakeholder members within TNPI's due diligence program. This Section also outlines the who, when, and what, for reporting of verbal and formal information.

Section 9 Training
An outline of the training requirements for all TNPI personnel who are involved in the responding and administration of the emergency plan. This includes requirements and record management for the training matrix.

Section 10 Risk Methodology and Potential Incident Scenarios
An outline of the method in which the High Risk Regions and municipalities where determined and the ranking assigned. This Section includes the current scenarios identified that could affect facilities and pipeline regions.

Appendix A Risk Assessment Sheets
One page information sheets detailing the pertinent health and safety information for products transported by TNPI's pipeline.

Appendix B Field Operation Guidelines
Pertinent information for ICS positions, to ensure a safe and proper response process during a spill.

Appendix C Definitions
Relevant terms used in the plan are defined in this Section.

Appendix D Acronyms
Acronyms in the plan are defined in this Section.

Appendix E ICS Forms
Blank ICS forms used in the event of a spill are contained in this Section.

Appendix F TNPI Forms
Blank TNPI forms used in the event of a spill are contained in this Section.

Appendix G Emergency Response Trailer Contents
A listing of the contents of TNPI emergency response trailers.

Appendix H Resources and Regional Contact Telephone Numbers
All of the relevant contact numbers for TNPI personnel, External Assistance Resources, Agencies and Regional Specific.

Appendix I Regional Specific Plans
Regional specific plans are now available electronically. Information is contained on a single disk which allows users to quickly access control point information and pinpoint areas of concern. Instructions on use of disk are included and a full resource contact list is also included for all municipalities.

Appendix J Deterministic Modelling
In order to be prepared and able to communicate to receptors at two sensitive locations namely Burlington Canal and The Lake of Two Mountains, TNPI has undertaken to develop predictive spill trajectory for these locations under two seasonal scenarios and for two different products: gasoline and diesel. The full report is contained in this Appendix.

Appendix K Revisions

1.2 Summary

The Trans Northern Pipeline Inc. (TNPI) Emergency Response Plan is designed to meet all TNPI requirements for an emergency response manual. This plan addresses the emergency planning requirements of the acts, regulations, standards and directives pertaining to the operation of a refined products pipeline system in Ontario, Quebec and Alberta as outlined by:

- National Energy Board (NEB)
- Transportation Safety Board (TSB)
- Alberta Energy Regulator (AER) formerly ERCB
- Canadian Standards Association (CSA)
- Environment Canada
- Transport Canada
- Ontario Ministry of the Environment and Climate Change
- Quebec Environment
- Alberta Environment and Parks
-
- and other applicable stakeholders having authority

1.2.1 Operator Information

The pipeline is operated by Trans Northern Pipeline Inc. Additional information on the content of this plan, operations described in the plan or type of equipment to be used, will be provided upon request.

TNPI is committed and prepared to respond to, and recover from, an emergency situation through a comprehensive Emergency Management Program designed to protect people, the environment and property. The program emphasizes mitigation, preparedness, response, recovery and will be continually evaluated to ensure the company is thoroughly prepared for emergency situations.

1.3 Plan Administration

This document meets the requirements of TNPI's document control procedure. All printed copies of the ERP Manual shall be numbered and deemed to be controlled. The EH&S Manager shall maintain a master list of all controlled copy holders and proof of receipt by controlled document holder. Any revisions to the plan will be documented on the Revision Log in this Section. The document will reside in TNPI's electronic document control system. See Table 125 - Revisions in Appendix K .

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2 Introduction

2.1 Plan Scope

2.1.1 General

This plan governs the preparedness, preplanning and execution of emergency response activities for all Trans-Northern Pipeline Inc. (TNPI) facilities, infrastructure and operations in Canada. This Emergency Response plan governs all emergency situations and operational incidents. In addition, there are references to Regional Specific Plans and Facility Specific Plans. Appendix H Resources and Regional Contacts, includes the Regional Contact information.

2.1.2 Coverage of Operations

The Emergency Plan will be used to guide Emergency Operations in Ontario, Quebec and Alberta - the areas shown in Figure 1 and Figure 2. Municipalities the pipeline crosses have individual plans used to supplement this Emergency Response Plan and are contained in the relevant Regional Site Specific Plan. Facility Specific Plans are available for the Farran's Point Facility (Intelex Doc # 2388), Toronto Airport Terminal (Intelex Doc # 4394) and Calgary Airport Terminal. These are large TNPI operated sites along the pipeline which have their own specific plan. Appendix I in conjunction with the -ESRI of control point maps (provided with all hardcopy manuals) covers the Region Specific Plans.

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A map of the Ontario/ Quebec Section of the pipeline is shown in Figure 1.

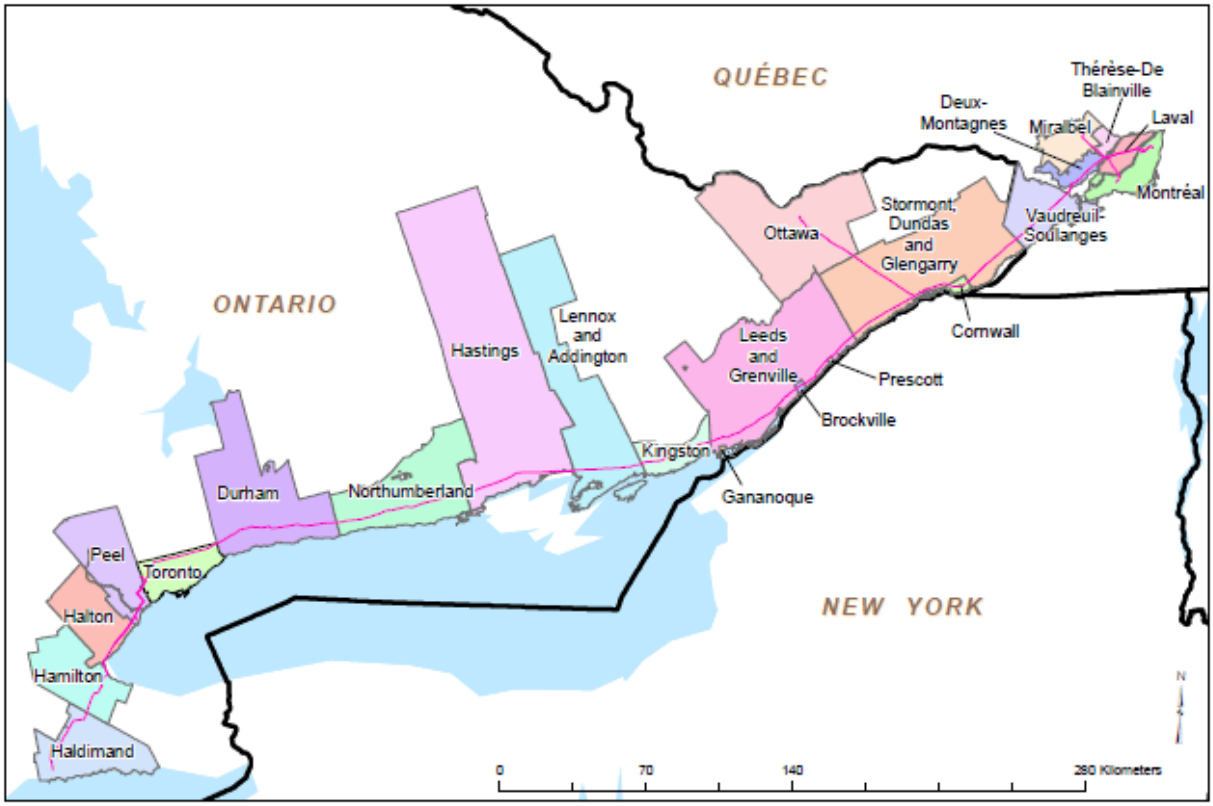


Figure 1 - TNPI Ontario / Quebec Map

The response areas are broken down into 22 Regions, (e.g. Haldimand, Hamilton, Halton, Peel). Specific contact information for the Region is contained in Appendix H of this manual and detailed receptor maps and stream control points are available online within the TNPI Intelex system. Within each of these regions, information is broken down by municipalities. A graphical representation of the plans for each region are contained electronically and provide detailed receptor information, overland flow and stream tracing models and associated control points with photos for each Region.

A map of the Alberta Products Pipeline is shown in Figure 2.

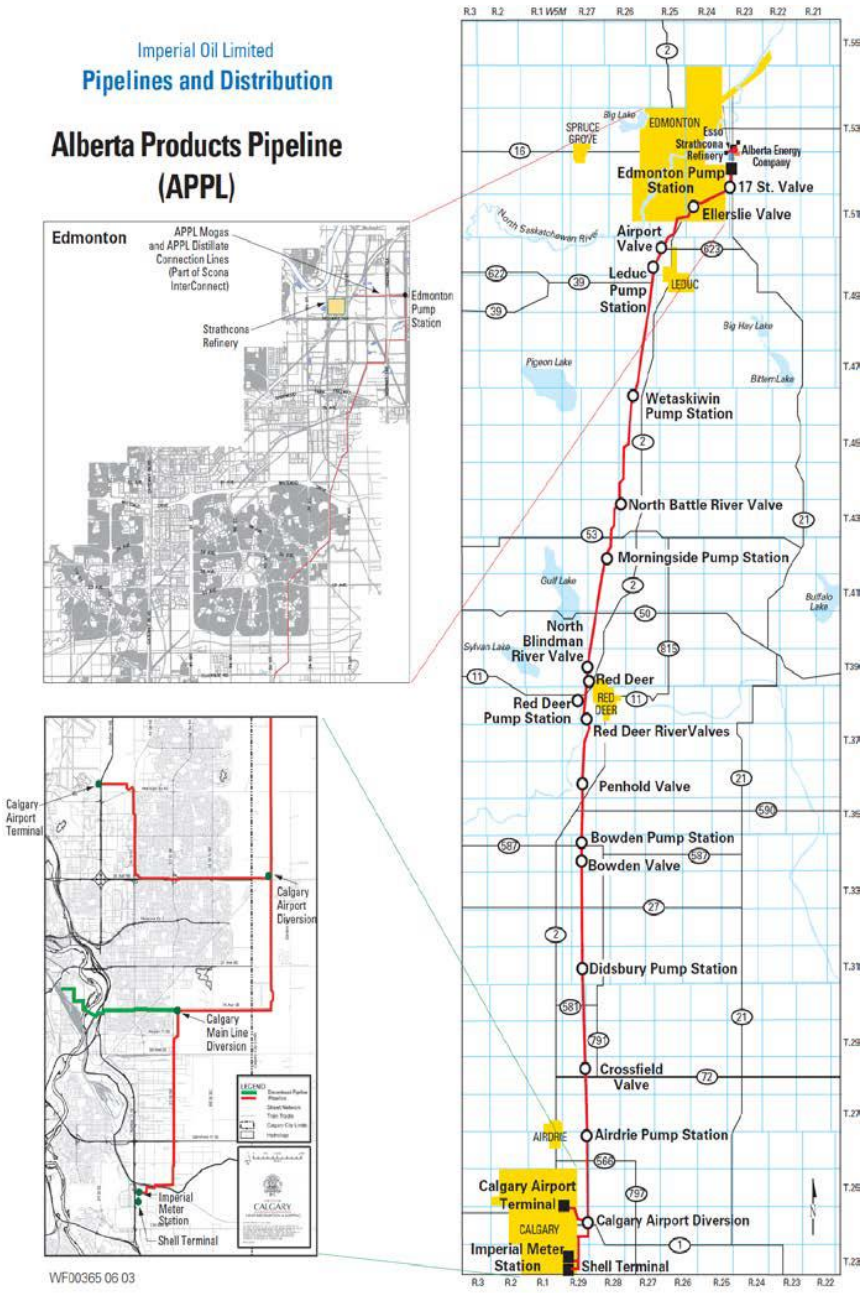


Figure 2 - TNPI Alberta Products Pipeline

The response areas are broken down into 3 Regions, (e.g. Edmonton, Red Deer and Calgary). Specific contact information for the Region is contained in Appendix H of this manual and detailed receptor maps and stream control points are available online within the TNPI Intelex system. Within each of these regions information is broken down by municipalities. A graphical representation of the plans for each region are contained electronically and provide detailed receptor information, overland flow and stream tracing models and associated control points with photos for each Region.

2.2 Plan Objectives

2.2.1 General

- Preserving Life Safety
- Protecting the environment
- Developing and maintaining an Emergency Management Program for all segments of TNPI's business. (In most instances, TNPI will endeavor to meet or exceed regulatory requirements in our area of operations)
- Maintain a state of operational readiness which includes training to respond to any incident/event that may occur
- Be prepared to quickly and effectively implement recovery and remedial efforts
- Maintain a program of hazard and impact mitigation
- Engage and inform stakeholders and public officials on pipeline safety, awareness, roles, and emergency procedures
- Demonstrate commitment to emergency preparedness, monitoring our Emergency Management Program effectiveness, and seek to continuously improve performance

2.2.2 Response Objectives

Life

- Protect Responders from hazards related to the response
- Protect public from hazards of released materials
- Protect injured in immediate area from further injury
- Protect drinking water from hazards of released materials

Environment

- Protect aquatic organisms from hazards of released materials
- Protect animals, reptiles and birds from hazards of released materials
- Protect environmentally-sensitive habitats from contamination
- Protect agricultural areas from contamination

Property

- Protect recreational, commercial and residential areas from contamination and disruption
- Protect shareholders from impact of incident

2.2.3 Potential Strategies

- Secure the site and establish hot, warm, and cold zones as well as access, egress and decontamination areas
- Develop a safe work procedure for the protection of the responders
- Remove ignition sources, and activate fire safety systems/plans at applicable sites
- Assist public First Responders in decisions to evacuate or shelter-in-place local residents and businesses
- Assist First Responders to consider closing highways if necessary
- Establish exclusion areas
- Contain and control the spread of released product(s)
- Protect sensitive habitat areas
- Protect sensitive social and economic locations
- Recover released product(s)
- Establish a waste management program
- Establish a wildlife recovery and wildlife rehabilitation program
- Establish a claims centre
- Establish a media centre complete with an internet site and social media feeds
- Remediate

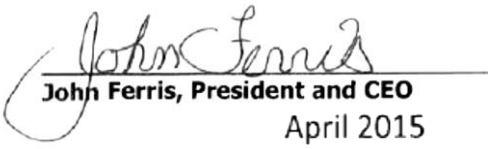
The above Objectives and Strategies of the Emergency Plan are supported by TNPI's Environment, Health, Safety, Security and Emergency Response and Operational Integrity Policy shown below:

2.2.4 Policy on Environment, Health, Safety, Security, Emergency Response and Operational Integrity

Trans-Northern Pipelines aspires to be a sustainable company by meeting or exceeding the environmental, social and economic expectations of current and future stakeholders. Our Environment, Health, Safety, Security, Emergency Response and Operational Integrity efforts are complementary to and interdependent on our social and economic performance. Trans-Northern Pipelines and its employees are accountable to our stakeholders to develop resources, conduct our operations, and offer our services in a responsible manner.

- We will develop and utilize our management systems for our activities and services which will allow us to:
  - Assess and prioritize environment, health, safety and security impacts of our operations to the public, employees and contractors. Ensure we have a sound and workable Emergency Response Plan. Sustain our journey to reach our target of zero harm for all employees and contractors
  - Continually improve our environment, health, safety, security and reliability performance of our business and instill a conservation ethic into our culture, comply with relevant regulations and go beyond compliance in certain areas
  - Continually improve safety and reliability of our business
  - Create an environment where all employees will be able to communicate openly about hazards, incidents and near misses without any fear of disciplinary action
- We will evaluate the effectiveness of our management system by:
  - Setting targets and objectives
  - Monitoring and auditing our performance. Course correcting as necessary
  - Communicating our performance to our stakeholders and employees
- We will focus on continual improvement in:
  - Safety, integrity and reliability of our operation
  - Environmental awareness including pollution prevention. The quality of our services and satisfaction of our customers

Trans-Northern Pipelines Inc.



John Ferris, President and CEO
April 2015

2.2.5 Regional Consultations and Exercise Frequency

Periodic exercises help achieve a high degree of capability within TNPI's organization and among the Emergency Response Team members. Table 1 below describes TNPI's plan for a number of exercises or drills with specified frequency. The justification for these frequencies is given below:

- Based on risk, TNPI created 89 site specific areas in Ontario and Quebec, which then are combined into 22 regions (e.g. Haldimand, Hamilton, Halton, Peel) requiring site specific consultations. In Alberta, there are 13municipalities or interested parties TNPI will consult. TNPI plans to consult according to the following criteria:
  - Meet all 22 Regions in the first year to discuss mutual response and capabilities to respond to each identified scenario. These consultations will include all stakeholders such as Federal/Provincial agencies, Municipal Emergency Management Staff, Fire, Police, Aboriginal communities, and Conservation Authorities. Detailed review of scenarios and each party's capabilities will be discussed and adequacy will be reviewed. Review hazards associated with 37 regions, interested areas of operation and risk rank according to High Consequence Areas (HCA), using defined criteria such as High Density Population, Environmental Sensitive Receptors, etc.
  - Conduct consultation in the following years in accordance with the following frequency:
    - High risk Municipalities once per year
    - Medium risk Municipalities once every 2 years
    - Low risk Municipalities once every 3 years

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Type of Reviews/Consultation and Exercise	Frequency	Comments
Review of ERP and contact information	Annually	Contact information may change
Fire Drills/Evacuation	Annually in each office or facility	According to Fire Code
Consultation with Municipalities	Once in the first year and different frequency based on risk in subsequent years	See frequency given based on High/Medium/Low risks (see Section 2.2.5)
Municipality Table Top	Once in the first year and different frequency based on risk in subsequent years	During meeting conduct Table Top
Activation	Three times per year	Control Room relocation
Table Top	Two in each Province (Quebec, Ontario and Alberta)	No specific regulatory requirement, mandatory for staff training and readiness
Attend/observe other company's full scale exercises	One per year as applicable	Share learning
Full scale exercise	One per year, alternate between Ontario/Quebec/Alberta[1]	Exceed regulatory requirements. Each exercise covering a few of the scenarios identified in Section 10 of this plan to allow all of them to be tested in a minimum frequency of once every 4 years

Table 1 - Type of Reviews/Consultation and Exercise

Definitions

Activation

An activation exercise will test certain individuals in their response to a scenario. ICS forms must be completed.

Table Top

A Table Top exercise is an intermediate step in a progressive exercise program. It is usually preceded by an orientation meeting in which representatives of departments, groups, and response teams meet to explore emergency preparedness and exercise design needs, to introduce new personnel to a proposed plan, or to revise or replace an existing plan. Table Top exercise is informal and should be free of stress and time constraints of full scale exercise. ICS forms must be completed.

Full Scale

Major exercise involves emergency response agencies, the organization, and the deployment of all resources required to test the plan. A major exercise will involve one or more of the following:

- Police
- Fire
- Ambulance
- Regulatory Agencies
- Municipal or other governments

[1] Frequency of one per year for full scale exercise to be reviewed regularly and reduced to minimum of one per every three years, depending on maturity and readiness of the ER teams and staff.

Fire Drills

This exercise type verifies at drill time, a facility and other personnel on-site who execute their ERP roles and responsibilities when a simulated fire is discovered. Anyone present must be accounted for and a timely evacuation of all must take place.

2.3 TNPI Risk Assessment and Emergency Response Plan Development Methodology

The Emergency Response Plan (ERP) will be used to guide emergency operations in Ontario, Quebec and Alberta. Supplemental Facility Specific Emergency Response Plans (FSERPs) have been developed for TNPI operated sites along the pipe complying with regulatory requirements. Additional FSERPs have been developed for areas of high consequence identified through consultation with regulatory agencies and stakeholders. Consultations are routinely held with municipalities that the pipeline crosses and other stakeholders. The ERP and supplemental plans are reviewed and input received is considered.

2.3.1 Hazard Identification and Risk Assessment Methodology

TNPI utilized the services of a Subject Matter Expert to identify potential hazards that could result in a loss of pipeline integrity and a subsequent loss of refined petroleum product to the environment.

The following hazards have been identified:

- Manufacturing defect
- Construction / installation / maintenance error
- Third party damage
- Operator error
- Ground subsidence / ground movement / cover loss
- Natural disaster
- Sabotage / acts of terrorism

Identified hazards have led TNPI to develop several mitigative and preventive strategies to reduce the likelihood of such hazards impacting TNPI operations, e.g. over-flight survey program, security guidelines and internal training programs, etc.

To develop TNPI's Emergency Preparedness and Response Program two scenarios have been developed; a likely (2" / 50mm penetration or failure) and a worst case scenario (full bore release). Further, the worst case product characteristics for all products presently being transported through the TNPI pipeline system. This ensures an appropriate level of preparedness regardless of which material is being transported. In general the vapour pressure, flammability and toxicity of gasoline have been utilized for health and safety considerations and diesel fuel has been used for environmental factors due to its persistence characteristics.

The scenarios have formed the foundation of an overland flow model which has defined TNPI's Emergency Planning Zones (EPZs). EPZs have been overlain onto receptor maps allowing for a consequence analysis and assistance in developing an emergency preparedness and response approach. The consequence analysis considered the following risk factors

- Life safety risk factors
- Environmental risk factors
- Property risk factors

The identified consequences are as follows:

- Impact on human populations, particularly those of CSA Class 3 & 4 densities
- Impact on the environment (surface water)
- Impact on the environment (ground water)
- Impact on critical infrastructure

TNPI's ERP and FSERPs have been developed to mitigate the consequences of damaged or compromised TNPI operations on the identified receptors. TNPI's ERP has been developed to comply with requirements laid out in the National Energy Board's Onshore Pipeline Regulation in addition to industry best practices, adopted standards,

codes and guidelines e.g. CSA Z662, Z731 and CSA Z246.2. Supplemental FSERPS have been developed to comply with additional regulatory requirements and codes e.g. Canadian Environmental Protection Act (CEPA) Environmental Emergencies Regulation, CEPA Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulation, and the National and Provincial Fire Codes.

Tactical plans otherwise known as Control Point Plans (CPPs) have been developed to further define TNPI's ERP and in cases are supported by hydrological / spill models e.g. Burlington Canal, ON and Lac Deux Montagne, PQ.

TNPI's consequence analysis has also lead to its emergency preparedness approach. In addition to municipal emergency responders the analysis assists in the identification of additional receptors; defined here on in as stakeholder and / or rights-holder (First Nations). TNPI has developed an engagement strategy that has the objective of sharing current information regarding TNPI's operations and its ERP and FSERPs. Feedback and input from stakeholders and rights-holders is considered when refining FSERPs as well as in additional FSERP development where a defined scenario has the potential to have elevated consequences on stakeholders. An example of this type of FSERP development is TNPI's Toronto Transit Commission Subway Crossing FSERPs. Feedback and input from stakeholder and rights-holders also allows TNPI to refresh previously developed FSERPs and CPPs.

TNPI will continue to engage with its stakeholders and rights-holders to refine it response planning and capacity.

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3 Regulatory Framework

3.1 Regulatory Framework

The following regulatory framework has been used in the creation of this emergency plan. All statutory and regulatory reporting requirements have been addressed in Section 8.

Authority	Acts, Regulations, Standards, Directives
National Energy Board (NEB)	National Energy Board Onshore Pipeline Regulations, SOR/99-294 National Energy Board Act
Transportation Safety Board (TSB)	Canadian Transportation Accident Investigation and Safety Board Act August 1992
Alberta Energy Regulator (AER)	Pipeline Act - 2000 Pipeline Regulations - 2005Oil and Gas Conservation Act - 2000 Oil and Gas Conservation Regulations- 2011 Directive 71
Environment Canada	Canadian Environmental Protection Act Environmental Emergency Regulations (SOR/2003-307)
Ontario Ministry of the Environment and Climate Change	Environmental Protection Act (Ontario) Water Resources Act Waste Management Regulation 347
Développement durable,Environnement, et Lutte contre les changement climatiques	Environmental Quality Act
Alberta Environment and Parks	Environmental Protection and Enhancement Act - 2000 Release Reporting Regulation Waste Control Regulation
Health Canada	Canadian Labour Code, Part II
Department of Fisheries and Oceans (DFO)	Fisheries Act
Coast Guard	Canadian Shipping Act
Canadian Standards Association (CSA)	CSA Z662 Oil and Gas Pipeline Systems CSA Z246.1 Security Management for Petroleum and Natural Gas Industry Systems CSA Z731 Emergency Preparedness and Response

Table 2 - Regulatory Requirements

3.2 Regulator Roles and Responsibilities

3.2.1 National Energy Board (NEB)

Section 48(2) of the National Energy Board Act permits the National Energy Board (NEB) to make regulations "*providing for the protection of the environment and the safety of the public and of company employees in the construction, operation and abandonment of pipelines.*" The NEB has determined its regulated companies must develop and maintain Emergency Preparedness and Response (EPR) Programs to minimize the effects of incidents and emergencies that have the potential to impact the health and safety of the public, company employees, property and the environment.

and/or

As a lead regulatory agency, the NEB monitors, observes, and assesses the overall effectiveness of the company's emergency response in terms of:

- Emergency management
- Safety
- Security
- Environment
- Integrity of operations and facilities
- Energy supply
- Investigation of the event, either in cooperation with the Transportation Safety Board, under the Canada Labour Code, or as per the NEB
- Inspection of the pipeline or facility
- Inspection of the integrity of the pipeline or facility
- Requires appropriate repair methods are being used
- Requires appropriate environmental remediation of contaminated areas is conducted
- Coordination of stakeholder and First Nations feedback regarding environmental clean-up and remediation
- Confirmation a company is following its Emergency Procedures Manual commitments, plans, procedures, and NEB regulations and identifies non-compliances
- Initiation of enforcement actions as required
- Approval process to the restart of the pipeline

Also, as the federal Lead Agency, the NEB will engage TNPI in a Unified Command on larger incidents, helping to set response Objectives, by endorsing Incident Action Plans, and by establishing guidelines on the transition criteria from the emergency phase to the post-emergency phase.

Certain NEB inspectors are appointed Health & Safety Officers by the Minister of Labour to administer Part II of the Canada Labour Code, applying to the occupational safety and health of pipeline workers in the field. For more details, go to the following link - www.neb-one.gc.ca

3.2.2 Transportation Safety Board (TSB)

The TSB's mandate is to advance transportation safety in the marine, pipeline, rail and air modes of transportation. The NEB has a formal relationship with the TSB; the NEB is the lead regulatory agency in emergency situations that occur on NEB-regulated facilities or operations and the TSB is the lead investigator for determining the cause and contributing factors leading to an incident/emergency. For more information pertaining to the TSB Field phase and post-field phase investigation, go to the following link - http://www.tsb.gc.ca/

3.2.3 Alberta Energy Regulator (AER)

The AER regulates the safe, responsible, and efficient development of Alberta's energy resources, including oil, natural gas, oil sands, coal, and pipelines. During an incident the AER's main concerns are for public safety, environmental protections, and energy resource conservation when notified of an incident. Their key role is to oversee/regulate operations as performed by the pipeline company, including containment and recovery of any free produced fluids, excavated contaminated materials, and soil. Also, as a provincial Lead Agency, the AER will engage TNPI in a Unified Command on larger incidents, helping to set response Objectives, by endorsing Incident Action Plans, and by establishing guidelines on the transition criteria from the emergency phase to the post-emergency phase. For more details, go to the following link - http://www.AER.ca/

3.2.4 Environment Canada

Environment Canada primarily seeks to take reasonable emergency measures consistent with the protection of the environment and public safety to prevent the environmental emergency, or to repair, reduce, or mitigate any negative effects on the environment or human life or heath that result from the environmental emergency or that may reasonably be expected to result from it. For more details, go to the following link - http://www.ec.gc.ca/

3.2.5 Ontario Ministry of the Environment and Climate Change

The Ministry of the Environment and Climate Change is responsible for protecting clean and safe air, land and water to ensure healthy communities, ecological protection and sustainable development for present and future generations of Ontarians. The Ministry of the Environment and Climate Change ensures when a pollutant has been released into the natural environment it is reported and documentation and communication occurs. The Ministry of the Environment and Climate Change further ensures when an adverse effect occurs or may occur efforts will be taken in order to mitigate the hazard and ameliorate the affected area back to pre-spill conditions. Also, as a provincial Lead Agency, the OMOECC will engage TNPI in a Unified Command on larger incidents, helping to set response Objectives, by endorsing Incident Action Plans, and by establishing guidelines on the transition criteria from the emergency phase to the post-emergency phase. For more details, go to the following link - https://www.ontario.ca/page/ministry-environment-and-climate-change

3.2.6 Développement durable,Environnement, et Lutte contre les changement climatiques

MDDEP (Environmental Quality Act) ensures when a solid, liquid and/or gaseous material has been released to the outside environment and causes or has the potential to cause an adverse effect it is reported and documentation and communication occurs in order to mitigate the hazard and restore the affected area back to pre-spill conditions. For more details, go to the following link - http://www.mddefp.gouv.qc.ca

3.2.7 Alberta Environment and Parks (AEP)

AEP has an agreement with AER regarding emergency response reporting, the purpose is the one window approach for those reporting requirements that overlap jurisdictions. For refined product releases, Primary Contact is AER for any release that has caused, is causing or may cause an adverse effect. The Release Reporting Regulation and the Waste Control Regulation are the regulations of concern to TNPI and fall under the Environmental Protection and Enhancement Act (EPEA). For more details, go to the following link - http://aep.alberta.ca/

3.2.8 Health Canada

Health Canada is the Federal department responsible for environmental and workplace health. There is always a chance a spill or leak can happen when chemicals are used in the workplace. The *accidental release measures* section of the material safety data sheet (SDS) provides general guidance on the actions to take in case of a spill or leak. For more details, go to the following link - http://www.hc-sc.gc.ca

3.2.9 Department of Fisheries and Oceans (DFO)/Canadian Coast Guard (CCG)

Fisheries and Oceans Canada (DFO) holds the lead federal role in managing Canada's fisheries and safeguarding its waters. The Canadian Coast Guard (CCG), a special operating agency within DFO, is responsible for services and programs that contribute to the safety, security, and accessibility of Canada's waterways. CCG is the lead federal agency for ship source oil spill response that mitigates marine pollution and oil spills in Canadian waters, and other countries under international agreement. CCG's main responsibilities and role during an incident is to minimize the environmental, economic, and public safety impacts of marine pollution incidents. The services provided are as follows:

- Provision of environmental response personnel and capacities
- Monitoring, assessment, and response to reported cases of marine pollution

Following the notification of a spill, CCG will monitor the effectiveness of the private sector response, assume control of the incident if necessary, or directly utilize CCG resources, such as vessels and other specialized pollution countermeasures equipment that are held in reserve to either assist or respond to those spills when the polluter is unknown, unwilling, or unable to respond. For further details, go to the following links - http://www.dfo-mpo.gc.ca (DFO) http://www.ccg-gcc.gc.ca (CCG)

3.2.10 Canadian Standards Association

CSA Group's Corporate Mark Integrity (MI) team is an integral part of the CSA Group Legal Department. The MI team investigates incidents involving CSA certified products, issues All Points Bulletins (APBs), product recalls and safety notices in co-operation with manufacturers and supports the standards development process. For the relevance to this plan, the CSA is of great importance as the group produces consensus standards in which fundamental building blocks are utilized in the production of emergency response plans. These standards are adopted into the law by the lead agencies which regulate the pipeline (as shown above). For more details, go to the following link - http://www.csagroup.org

4 Response Activation

4.1 General Response Activation

Emergencies involving TNPI's facilities, infrastructure or operations can be detected and/or reported by members of the public, private property owners, Public First Responders, regular ground or aircraft patrol, or company personnel engaged in monitoring operating parameters.

The posted and distributed Emergency activation number: 1-800-361-0608 is answered 24/7/365 by a bilingual answering service. Information is collected and verbally transferred to TNPI Line Control and followed up with an email. If activation occurs through other channels such as an office line, cell phone or other media, the recipient must forward the information to Line Control: [redacted] to begin the activation process. The response activation flowchart is shown in Figure 3.

4.1.1 Process

- Call is received or transferred to TNPI Line Control
- Initial call receiver collects all needed information on the Leak/Spill Activation Report Form, and determines if action is required
- Line Control connects caller with a Technical Advisor (if the caller requires specific Occupational Health and Safety information about the products)
- Line Control determines if Pipeline should be shutdown (refer to Shut Down Procedure located in the Control Room and in Intelex Doc # 5456).
- Line Control completes call down list and informs TNPI's Incident Commander (IC)
    - If a TNPI employee is at the scene of the incident, the TNPI representative on-scene will assume the role of Incident Commander
    - If a first responder (e.g. police, fire) is at the scene, they will assume the role of Incident Commander until a TNPI employee arrives, when a Unified Command will be established
    - If only the public are present, the role of Incident Commander will be played remotely by the Line Control Operator until either a TNPI or first responder arrives on scene or Command is transferred to the person at incident location
- Line Controller activates (911) Public First Responders if required by the incident and requested by IC
- Notifications are made by the Incident Commander (IC) or designate to the appropriate parties both internally and externally - Refer to Reporting Section 8
- IC activates internal personnel to respond directly to site (Incident Command Post) or the Emergency Operations Center (EOC)
- IC activates required external contractors to respond directly to site (ICP or Staging Area)
- Internal and external personnel and equipment are mobilized to incident site (ICP or Staging Area)

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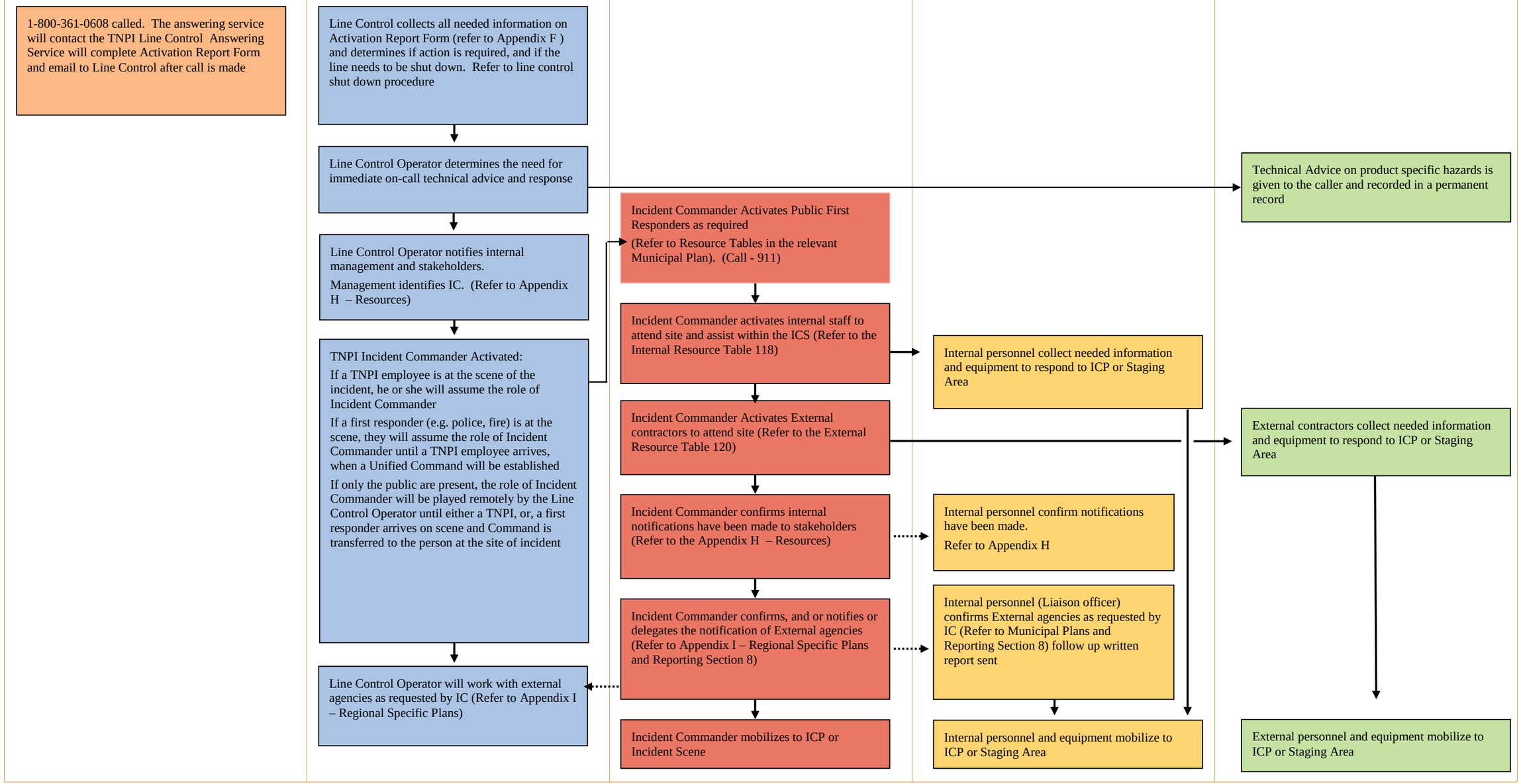

Figure 3 - Activation Chart

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4.1.2 Characterization of Incident

Incident Characterization will be completed by the initial TNPI Incident Commander. This characterization is required in order to determine which ICS roles should be staffed, and to establish the appropriate public safety measures. The following process will be utilized:

- Review Table 4 - Incident Characterization which defines all incidents into 4 tiers. Utilize the decision-making Chart in Chart 1 - Activation to determine the appropriate characterization for the incident
- Review Table 4 - Incident Characterization to identify which ICS roles should be staffed as well required tactical personnel and equipment resources
- Review Table 5 - Risk Levels based on Likelihood and Consequences and Incident Classification which identifies Incident Classification in accordance with directive 71 under the AER

In Alberta, an incident, according to the AER, is an unexpected event that requires action by the company to prevent or minimize the impact on people, property, and the environment. Minor incidents that can be handled on site through normal operating procedures are typically defined as *Alerts*, while situations that require more-complex solutions are classified as *Emergencies*.

Note

The AER classifies incidents as an Alert or as a Level 1, 2, or 3 Emergency. If the incident is in Alberta, the AER Tiers of Incident will need to be used and communicated during reporting. Review Table 4 for AER Incident Tiers.

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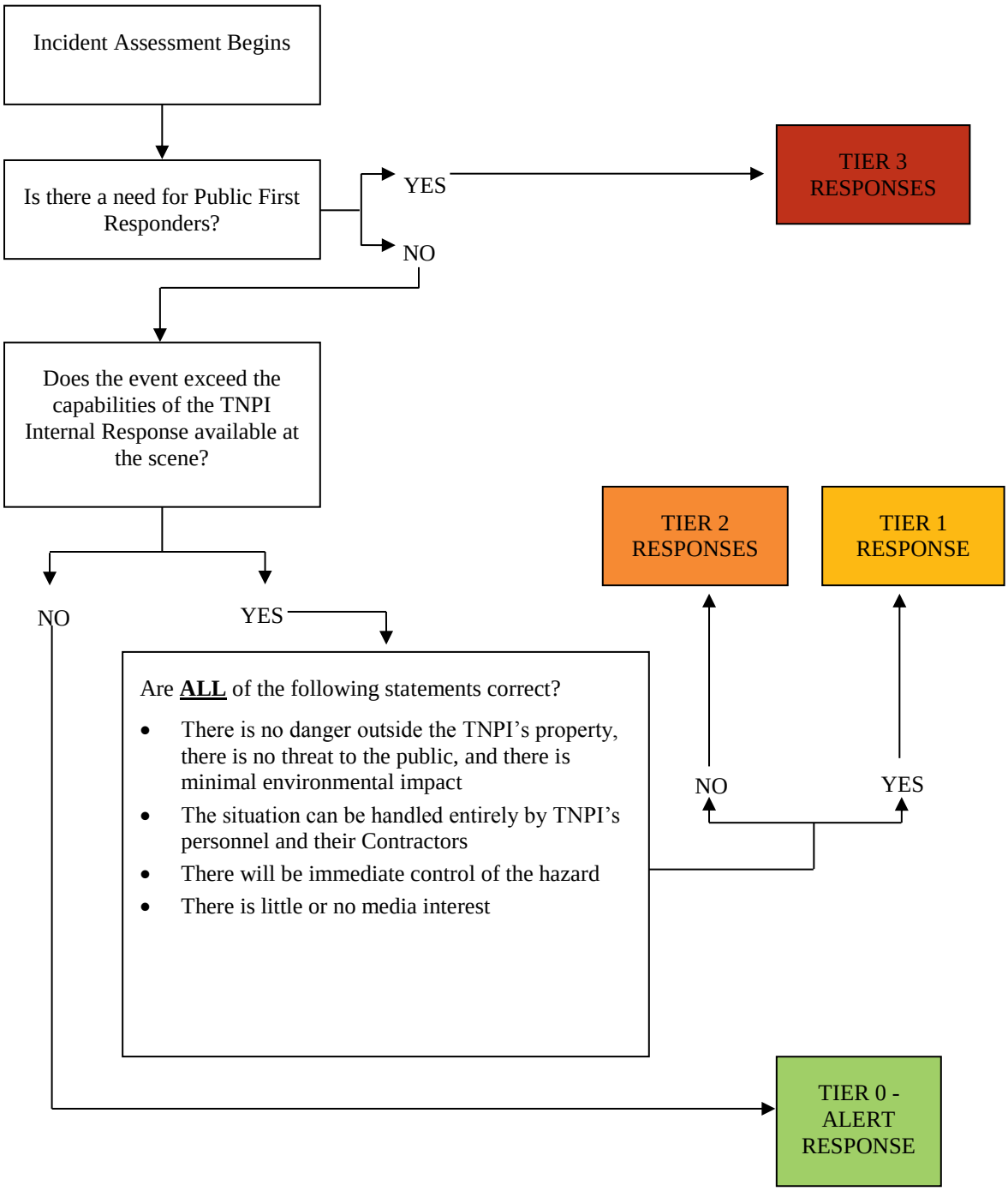

Chart 1 - Activation

Tier	AER Incident Classification	Deciding Factors	Initial Concerns	ICS Implementation requirements	Anticipated Resources (Employees/ Equipment)
Tier 3 - Most Severe Public First Responders required (Fire, Police, EMS)	LEVEL 3	At least one of the following factors/requirements is evident at the incident scene. Issues of life safety for responding personnel and/or general public. **Note** • Life safety issues may include but are not limited to: • Potential risk of fire and explosion • Atmospheres containing LELs above 10% • Atmospheres containing limits above product TLV • Areas of high population where isolation of the public from free flowing liquid cannot be adequately controlled by the TNPI - IC • Potential impacts on high risk areas requiring a site specific plan as per TNPI's risk matrix • Individuals require the assistance of first responders due to injury or circumstance • Evidence of an act of mischief or terrorism	• Activate Public First Responders (Fire, Police, and EMS) to assist and resources • Move all responding personnel to an uphill, up-wind position safely away from the incident scene • Isolate area of incident from a distance. Most Tier 3 events will require responding personnel to wear Level B or C PPE (Personal Protective Equipment) in order to access warm and hot zones • Complete risk assessment must be completed	Complete ICS implementation under either Single or Unified Command (most Tier 3 incidents will involve a Unified Command) All applicable ICS paperwork should be completed	***Internal*** **Employees** - Some or all Command and General Staff positions with sufficient capacity to run 24 hours on multiple shifts **Equipment** - TNPI response trailer, some or all facilities to meet the ICS structure needs ***External*** **Employees** - Public First Responders (Fire, Police, ICS), Company Stakeholders (additional resources for the ICS), Emergency Response Contractors (to take on roles within the ICS and to execute field operations), Media Consultant, Legal Counsel, Specialized Technical experts (as required) **Equipment** - Any and all response and support equipment required to execute work at the incident
Tier 2 - Moderately Severe Requiring Third Party Contractors Extensive exposures to Public or Private owned lands	LEVEL 2	The Scope of the incident can be defined as the following: • There is no immediate danger outside TNPI's property or the right of way, but there is the potential for the emergency to exte**nd beyond the TNPI's property** • Imminent control of the hazard is probable but there is a moderate threat to the **public and/or the environment** • There may be local and regiona**l media interest in the event** • The event exceeds the capabilities of the TNPI resources available at the scene and requires tactical contractor assist**ance** **Note** Required capabilities may include ability to respond to extensive areas of impact, clean-up and remediation, training, equipment and manpower	• Activate contract first responders and resources • Isolate and secure area • Initiate defensive actions from a safe distance to stop the extension of the incident • Conduct assessment to determine initial impacts and possible environmental exposures. If possible, impacts and exposures should be identified while responders are on route **Note** Above actions should only be completed if safe to do so	Complete ICS implementation under either Single or Unified Command All applicable ICS paperwork should be completed	***Internal*** **Employees** - Some or all Command and General Staff positions with sufficient capacity to run 24 hours on multiple shifts **Equipment** - TNPI response trailer, some or all facilities to meet the ICS structure needs ***External*** **Employees** - Company Stakeholders (additional resources for the ICS), Emergency Response Contractors (to take on roles within the ICS and to execute field operations), Media Consultant, Legal Counsel, specialized Technical Experts (as required) **Equipment** - Any and all response and support equipment required to execute work at the incident
Tier 1 - Moderately Severe Requiring Third Party	LEVEL 1	The Scope of the incident can be defined as the following: • There is no danger outside the licensee's property, there is no threat to the public, and there i**s minimal environmental impact**	• Activate contract first responders and resources • Isolate and secure the area Initiate defensive	• Partial implementation of the ICS • The TNPI Incident Commander	***Internal*** **Employees** - Limited Command and General Staff required. NOT expected to run multiple shifts over 24

Tier	AER Incident Classification	Deciding Factors	Initial Concerns	ICS Implementation requirements	Anticipated Resources (Employees/ Equipment)
Contractors Minor exposures to Public or Private owned lands		• The situation can be handled entirely by TNPI's personnel and contractors • There will be im**mediate control of the hazard** • There **is little or no media interest** • The event might exceed the capabilities of the TNPI resources available at the scene and might requiring tactical contractors **Note** Required capabilities may include ability to respond to areas of impact, clean up and remediation, training, equipment and manpower requirements	actions from a safe distance to stop the spread of the incident impacts • Conduct a site assessment to determine initial impacts and possible environmental exposures • If possible, impacts and exposures should be identified while responders are on route **Note** Completed only if safe to do so	will determine which ICS roles will be staffed, and if an Incident Action Plan is needed for any subsequent Operational Periods • This paperwork must still meet all reporting and notification requirements. The ICS 201 must always be completed	hour periods. **Equipment** - TNPI response trailer ***External*** **Employees** - Emergency Response contractors (to take on roles within the ICS and to execute field operations), specialized Technical Experts (as required) **Equipment** - Any and all response and support equipment required to execute work at the incident
Tier 0 - Low Severity and Impact	ALERT	The incident is considered to be a maintenance-based event. The incident is isolated to areas which have no impact on life safety, no environmental exposures and no external property exposures The incident can be handled utilizing the TNPI equipment and trained personnel available at the scene	Ensure all reporting, documentation and due diligence requirements outlined in the Plan, are met	Depending on the length of the event, the TNPI Incident Commander may decide to use the opportunity to practice elements of ICS This must still meet all reporting and notification requirements An ICS 201 must always be completed	***Internal*** **Employees** - Responding field staff and supervisors **Equipment** - TNPI response trailer ***External*** **Employees** - None **Equipment** - None **Note** The initial Objectives will be the same on every incident (e.g. Life Safety, Incident Stabilization, and Minimizing Impacts) **Note** All pertinent ICS forms are found in Appendix E of this plan

Table 3 - Incident Characterization

		Likelihood Rank			
Consequence Rank	Minor (1)	2	3	4	5
	Moderate (2)	3	4	5	6
	Major (3)	4	5	6	7
	Catastrophic (4)	5	6	7	8
		Unlikely (1)	Moderate (2)	Likely (3)	Almost Certain (4)

Very Low 2-3	Alert (Level 0)
Low 4-5	Level 1 Emergency
Medium 6	Level 2 Emergency
High 7-8	Level 3 Emergency

Table 4 - Risk Levels based on Likelihood and Consequences and Incident Classification

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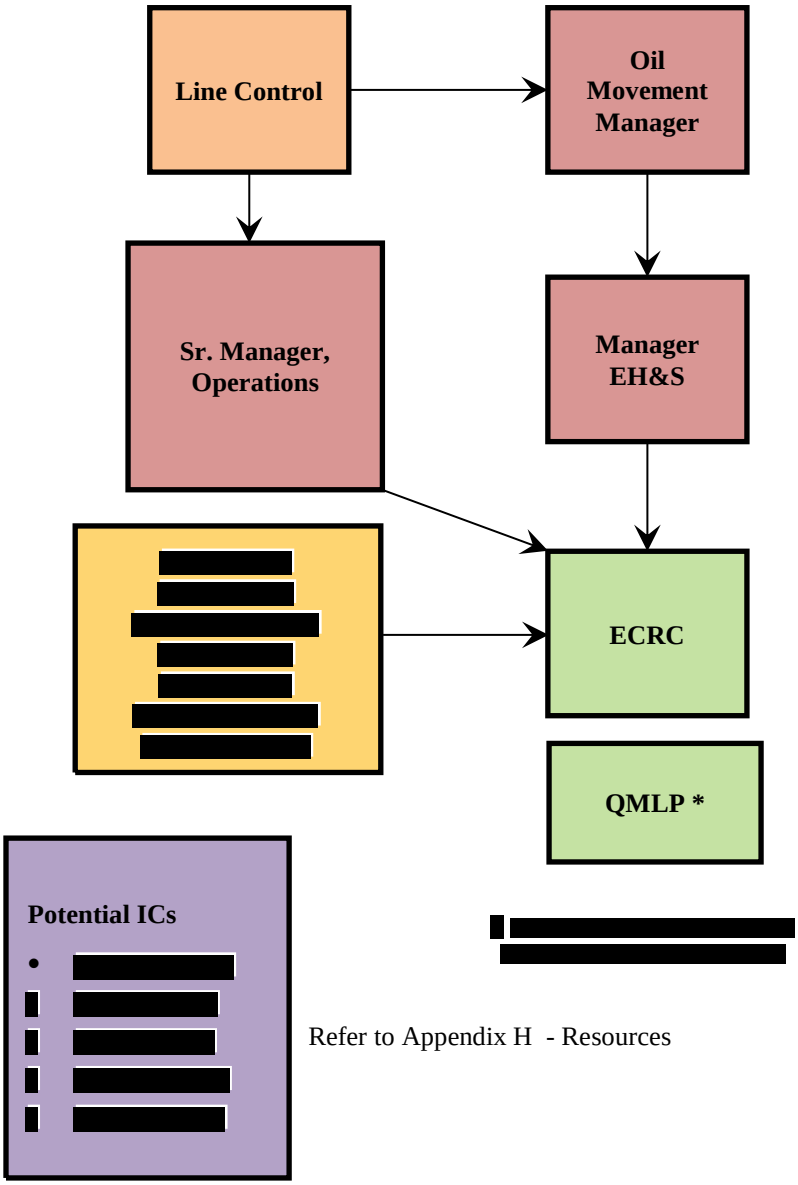
4.2 Activation

4.2.1 Internal Employees - Activation Flow Chart

Chart 2 identifies the activation flowchart for an incident. Possible Incident Commanders are identified, depending on the incident location.



Refer to Appendix H - Resources

Chart 2 - 4.2.1 Internal Employees - Activation Flow Chart

5 Incident Command System (ICS)

5.1 General Incident Command

5.1.1 TNPI Adoption of ICS

TNPI has adopted the Incident Command System (ICS) structure as the method for managing all emergency events. The Initial Incident Commander, who may be either a TNPI employee/contractor, or a first responder (EMS), will evaluate the incident upon arrival on-scene, and establish Command (and an Incident Command Post). They will then establish initial Objectives and Strategies and an Incident Management Team (IMT) as additional resources arrive. Upon arrival, the TNPI Incident Commander engages any responding agencies and becomes the responsible party in a Unified Command Structure where appropriate, and will characterize the incident using the tiered system set out in Section 4.1 General Response Activation. It is understood many agencies in Ontario operate under the Incident Management System (IMS); however, the ICS shares most elements with IMS and should not cause any significant problems in coordinating responder activities.

5.1.2 Single Command

Single Command (with a single TNPI Incident Commander) will be applied on most smaller incidents, where few, if any regulators or outside agencies attend the incident or play any significant role. A Single Command model is usually followed when:

- Only TNPI is involved
- Multiple jurisdictions or agencies involved in decision-making agree to follow this approach

TNPI will utilize the Single Command approach when they are overseeing an incident in its entirety. Additionally, a larger scale incident will commonly transition from Unified to Single Command when an incident completes the Emergency Phase and transitions into a remediation project.

5.1.3 Unified Command

Unified Command enables decisions to be made jointly by two or more jurisdictions (e.g. TNPI and other Agencies) that have legal responsibilities regarding an incident. Incident Command does not automatically become *unified* because of the involvement of more than one jurisdiction. Rather, Unified Command is required when incident management requires decision-making to come from more than one jurisdiction. Once joint decisions have been made, one member is identified to speak for the Unified Command Team.

In Unified Command, TNPI will assume the role of the Responsible Party (RP). TNPI will work closely with all agencies to ensure a safe and effective response. Each Region in which TNPI operates has its own organizational structure.

Note

Whether Unified Command or Single Command is employed, IMT participants may include federal, provincial, local officials, and TNPI personnel.

5.1.4 ICS Organization Chart

Refer to Figure 4 for the Single Command Organization Chart. It is important to remember all incidents are different and will require unique roles. As a result, not all roles will be filled on every incident. Instead, the IMT will be as small as possible to meet the needs of the incident. The Incident Organization Chart ICS 207-OS will be completed each day by the Resources Unit Leader (or Planning Section Chief) posted in the ICP, and included in the Incident Action Plan (IAP).

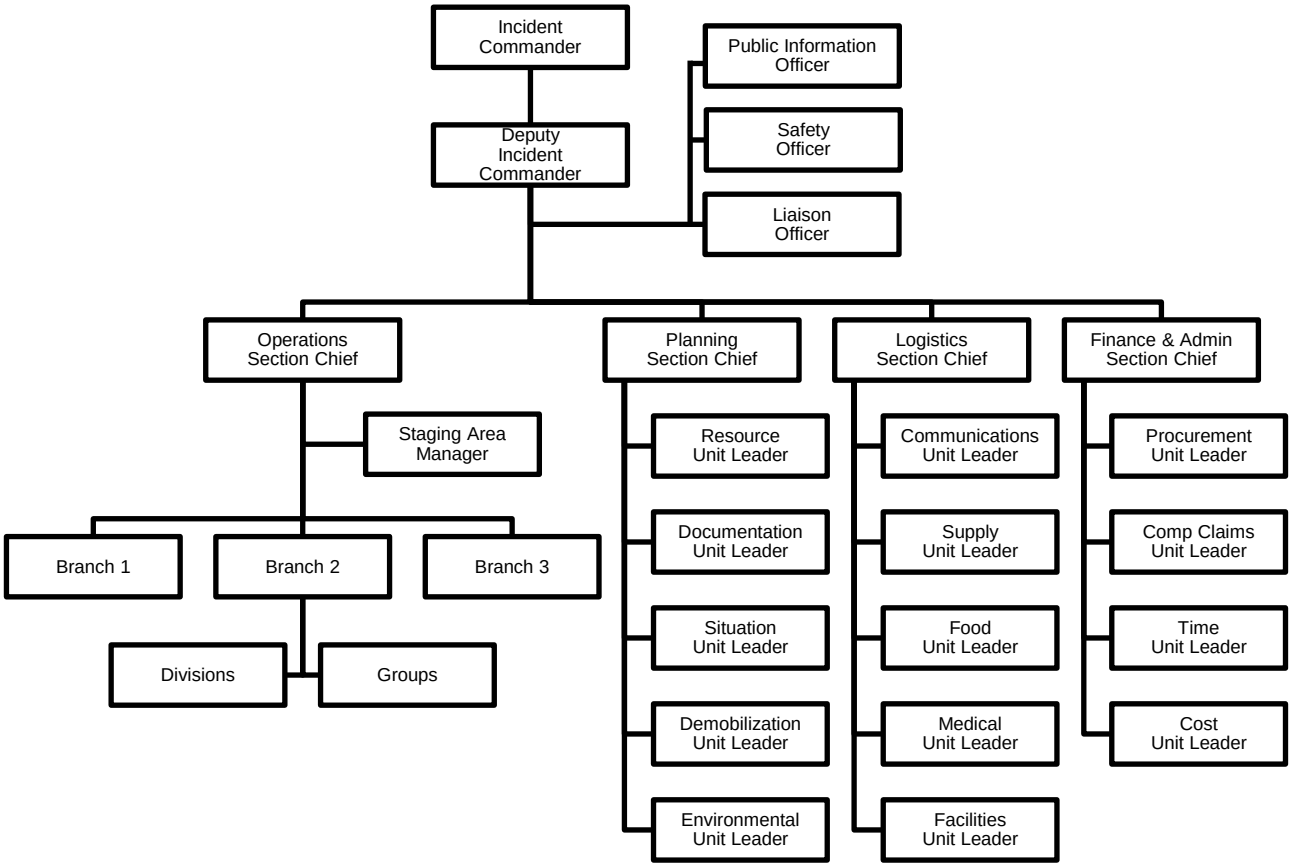


Figure 4 - Incident Management Team Organization for a Single Command incident

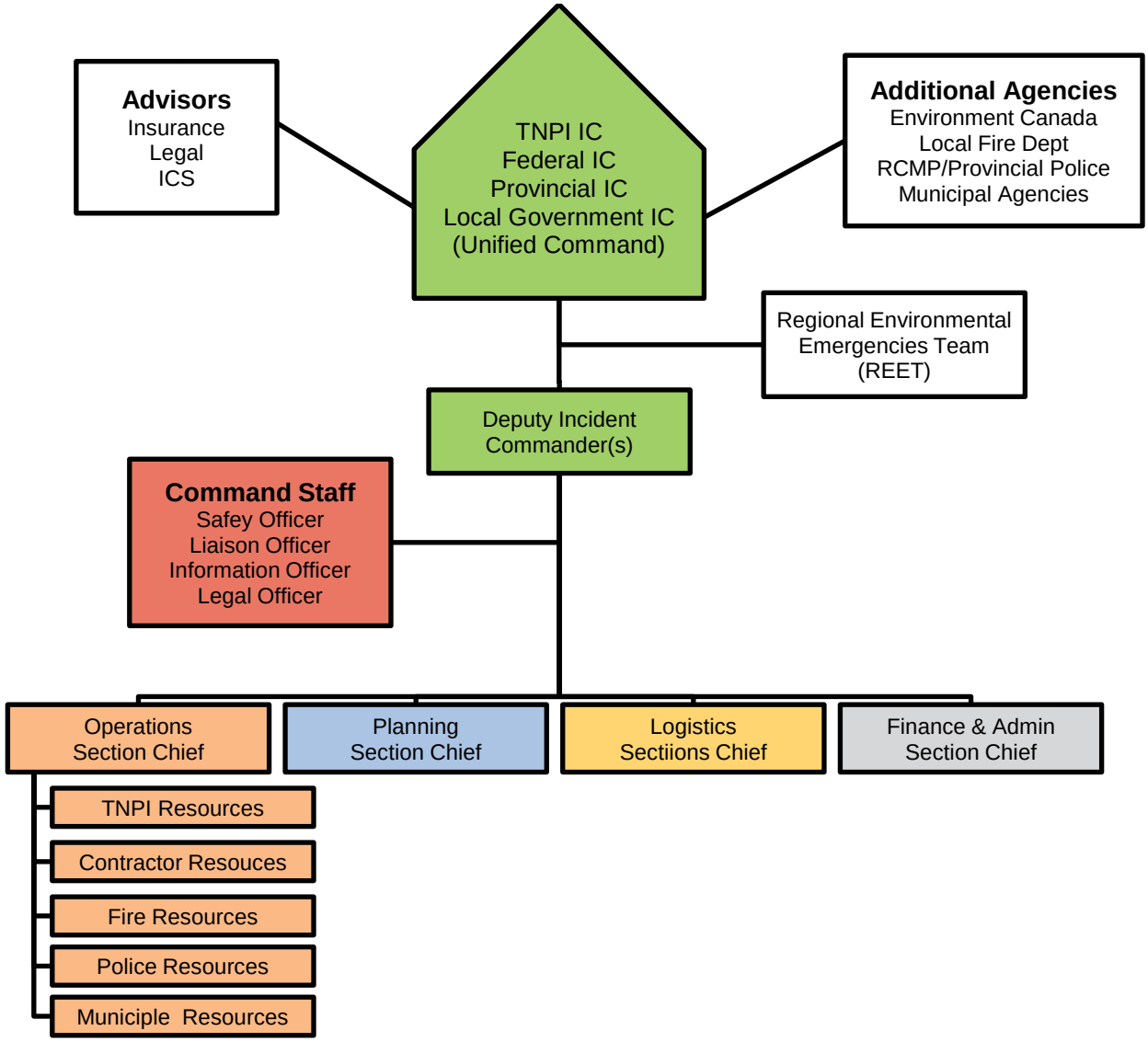


Figure 5 - Incident Command Structure for Unified Command

Where a Unified Command is applied, the members of the Unified Command will decide on an appropriate Operations Section Chief, to whom all tactical responders will ultimately report. In most cases, this will be staffed by a TNPI representative. However, in cases where the primary tactical activities are firefighting/suppression, the Operations Section Chief will likely be staffed by a Fire Department representative. In this case, a TNPI Deputy Operations Section Chief could be staffed.

5.1.5 Interoperability

One of the most important terms to remember during an emergency is interoperability; the ability of responders from different organizations and jurisdictions to interact and work well together. This is accomplished through two primary mechanisms:

Functional - standardized terms, structures and procedures are used by all responders to allow people from different organizations and jurisdictions to understand each other's jobs and requirements and to cooperate and work well together.

Technological - the equipment used must enable people from different organizations to be able to easily communicate and share data together.

5.2 Positions and Responsibilities

5.2.1 Incident Commander (IC)

The Incident Commander is responsible for the overall management of an incident. An Incident Commander may operate in a Single Command or may utilize a Unified Command structure consisting of two or more Incident Commanders each representing a different jurisdiction or agency. It is the first and primary organizational component of ICS, to which all other functions either directly or indirectly report. Responsibility for establishing Incident Command is not restricted to any organization or jurisdiction and may be exercised by emergency services, First Nations, municipal, provincial or federal governments, or by TNPI. Generally, the first (TNPI, agency or first responder) organization to respond establishes Incident Command. However, responsibility for Incident Command may change from one organization or jurisdiction to another, based on required expertise, scale of the incident or jurisdictional authority. For example, if there is a risk of fire initially, the local fire department would engage TNPI in a Unified Command, but once the risk of fire had diminished, the fire department would leave the Unified Command.

5.2.1.1 Responsibilities of an Incident Commander

- Establishing an appropriate command structure and necessary facilities (ICP, Staging Areas, etc.).
- Establishing Objectives, Strategies, Tactics and priorities appropriate to the level of response.
- Establishing communications
- Provide regular updates to EOC
- Ensuring the safety of all responders and the public
- Assessing and reassessing the situation
- Approving an Incident Action Plan
- Coordinating all activities required to manage an incident
- Authorizing demobilization

5.2.1.2 Documentation

ICS Forms are found in Appendix E .

Form Incident Briefing ICS 201-0S (6 pages) - This form captures pertinent information about the incident, and provides the IC with notes to ensure critical information is not lost, especially when briefing arriving IMT personnel, or when transferring Command. The 201 also provides documentation of the initial phase of the incident. The 201 must be updated during the initial phase of the incident, and should be posted on the Incident Status Display.

Form Incident Objectives ICS 202-OS - If the incident will enter a second Operational Period, the 202 should be completed after the Unified Command Objectives Meeting and included in the IAP.

Form Organization Assignment List ICS 203-OS - Review

Form Incident Organization Chart ICS 207-OS - Review

Form Daily Meeting Schedule ICS 230-OS - Review

Press Releases - Review and approve for release

IAP Incident Action Plan - Obtain the completed IAP from the Planning Section Chief and review. If approved, sign the IAP Cover Sheet and return it to the Planning Section Chief.

Form Unit Log ICS 214-OS - Assign a member of your staff to complete the ICS 214. Submit to the Documentation Unit at the end of the Operational Period.

5.2.1.3 Meetings

Meeting	Responsibility
Initial Incident Briefing	**Facilitate**. Provide basic information regarding the incident situation and resources allocated. Use ICS 201 as the briefing outline
Command Staff Meeting	**Facilitate**. Coordinate Command Staff functions, responsibilities, and Objectives. Schedule as necessary
Command Objectives Meeting	**Review / identify and prioritize objectives** for the next Operational Period for the ICS 202 form. Objectives from the previous operational period are reviewed and any new objectives are identified
Tactics Meeting	Unified Command members may attend as needed
Planning Meeting	**State incident Objectives and policy issues**. Approve the work plan as shown on ICS 215(s) for the next Operational Period. Approve the IAP
Operations Briefing	Endorse IAP. **Provide motivational remarks**
Media Briefing	Not required to attend, but usually your presence (along with assisting response organization members) will be featured to address a particular issue - under the direction of Hill and Knowlton

Table 5 - Incident Commander Meetings

5.2.1.4 Assigned Individual

Most significant incidents will find this position being filled by a senior Fire Department official within a Unified Command Structure. TNPI will be involved as one of the members of the Unified Command. Most incidents involving a possible public Life Safety component will likely be managed this way. TNPI will assign a trained senior manager from the area to be the Incident Commander or the TNPI IC within a Unified Command structure.

5.2.2 Deputy Incident Commander (DIC)

An Incident Commander may designate one or more Deputy Incident Commander(s) for the purpose of performing tasks assigned by the Incident Commander, working in relief of the Incident Commander, or representing a single Assisting Agency that factors prominently in the incident response. Any personnel considered for the position of Deputy Incident Commander should have qualifications equivalent to the Incident Commander and be ready to assume the position of Incident Commander at any time.

5.2.3 Public Information Officer (PIO)

The PIO is responsible for the development and release of emergency information to the public and the media regarding an incident. Offers communications counsel to the Incident Commander and is responsible for the strategic direction of communications during an incident and for establishing the PIO Team. Approval for all releases of information must be obtained from the TNPI Incident Command (and reviewed by all members of the Unified Command if established) as well as corporate communications. Detailed communications plan contained in Section 7 of this manual.

5.2.3.1 Responsibilities of the PIO

- Obtaining briefings from Incident Command
- Activating the PIO Officer and staff (Assistants as necessary)
- Briefing the PIO staff (Assistants)
- Meet with agency Information Officers to establish a protocol for the release of incident information, the approval of press releases, and the conduct of media briefings
- Participating in all briefings as required by Incident Command
- Identifying potential issues, important stakeholders and other strategic communications considerations

- Assessing need for communication to media, public and other stakeholders
- Advising Incident Command on media/public emergency information and media relations
- Confirming the approvals process for materials including consulting with Incident Command and Planning regarding any restraints on the release of information
- Developing key messages
- Obtaining approvals for all communication materials
- Ensuring information about the incident is provided to stakeholders and media including emergency instructions (such as evacuations) to the public via the media
- Providing information to Incident Command about the incident notification received from the public and media via monitoring
- Conducting media briefings
- Conducting media tours, as approved by the Unified Command

5.2.3.2 Documentation

ICS Forms are found in Appendix E .

MBM: Obtain Media Briefing Materials - The Situation Unit's Incident Status Display (especially the 201 and 209) will probably be the main source of information. Submit them to the Unified Command to review prior to any media briefings, and develop handouts for media attendees.

Form Unit Log ICS 214-OS - Assign a member of your staff to complete the ICS 214-OS. Submit to the Documentation Unit at the end of the OP.

5.2.3.3 Meetings

Meeting	Responsibility
Initial Incident Briefing	Assist with discussions as appropriate
Command Staff Meeting	Assist with discussions as appropriate
Planning Meeting	State media considerations regarding the work plan
Media Briefing	Facilitate • Brief media and public on response situation • Provide assurance the response is being handled competently

Table 6 - Public Information Officer Meetings

5.2.3.4 Assigned Third Party

Hill and Knowlton Canada - For activation details refer to Appendix H - Resources.

5.2.4 Liaison Officer (LO)

The LO serves as the primary contact for agencies cooperating with, or supporting the incident response. The LO advises Incident Command in relation to outside assistance, including current or potential inter-organizational needs.

5.2.4.1 Responsibilities of the Liaison Officer

- Ensuring all agency notifications have been made
- Ensuring all potentially affected stakeholders are notified
- Gathering information about agencies involved in the incident. This includes information about representatives, standards and specialized resources or special support they might need, or be able to provide
- Serving as a coordinator for agencies not represented in Incident Command
- Providing briefings to organization representatives about the operation
- Maintaining a list of supporting and cooperating organizations, and keeping it updated as the incident evolves

5.2.4.2 Documentation

ICS Forms are found in Appendix E .

List of Agency Contacts - Agency contact information. Submit to Documentation Unit ongoing as needed.

Form Unit Log ICS 214-OS - Assign a member of your staff to complete the ICS 214. Submit to the Documentation Unit at the end of the Operational Period.

5.2.4.3 Meetings

Meeting	Responsibility
Initial Incident Briefing	Assist with discussions as appropriate
Command Staff Meeting	Assist with discussions as appropriate
Planning Meeting	State contributing organization / agency considerations regarding the work plan
Operations Briefing	Give contributing organization / agency reports of concern
Agency Rep Meeting	Facilitate Update agency representatives on plans for next Operational Period

Table 7 - Liaison Officer Meetings

5.2.4.4 Assigned Individual

TNPI will assign a trained manager from the area to this position. For activation details, refer to Appendix H - Resources.

5.2.5 Safety Officer (SO)

The SO is responsible for maintaining systems and procedures to ensure the health and safety of responders.

5.2.5.1 Responsibilities of the SO

- Monitoring safety conditions and developing appropriate safety measures
- Working closely with Operations to ensure responders are following the Safety Plan, e.g. wearing necessary PPE, conducting vapour monitoring, conducting decontamination, etc.
- Advising Incident Command on safety issues
- Conducting risk analysis, normally through the planning process
- Development of a Site-Specific Safety Plan
- Assisting in the review of the Incident Action Plan; completing 204As where necessary
- Assisting with writing the Incident Medical Plan

5.2.5.2 Documentation

ICS Forms are found in Appendix E .

Initial Health and Safety Plan (see Section 10) - Complete as soon as possible and submit to the Operations Section Chief and IC to review to allow initial response efforts to begin.

Form Safety Message / Plan ICS 208 - Complete and then submit plan to the Incident Commander(s), all Section Chiefs, Operations personnel, and Documentation Unit.

The Health & Safety Plan at a minimum should address:

- Health and safety hazard analysis for each site, task, or operation
- Comprehensive operations work-plan
- Personnel training requirements
- PPE selection criteria
- Site specific occupational medical monitoring requirements
- Air monitoring plan and site control measures
- Confined space entry procedures (as necessary)
- Pre-entry briefings (tailgate meetings) - initial and as needed
- Pre-operations health and safety conference for all incident participants
- Quality assurance of Health & Safety Plan effectiveness

Form Assignment List Attachment ICS 204A-OS - Add Safety Message as required.

Form Unit Log ICS 214-OS - Assign a member of your staff to complete the ICS 214. Submit to the Documentation Unit at the end of the Operational Period.

Form Medical Plan ICS 206-OS - Receive Medical Plan from the Medical Unit Leader (whose responsibility it is to prepare the Medical Plan) and review. Once reviewed, return form to Medical Unit Leader with signature of approval or suggested modifications. This needs to be done ASAP after the plan is submitted to you.

5.2.5.3 Meetings

Meeting	Responsibility
Initial Incident Briefing	Assist with discussions as appropriate
Command Staff Meeting	Assist with discussions as appropriate
Tactics Meeting	Attend as needed
Planning Meeting	State safety considerations regarding the work plan
Operations Briefing	Give safety message

Table 8 - Safety Officer Meetings

5.2.5.4 Assigned Individual

TNPI will assign a trained safety manager from the area to this position. For activation details, refer to Appendix H - Resources.

5.2.6 Operations Section Chief

The Operations Section Chief implements the Incident Action Plan (IAP) and manages overall operations.

5.2.6.1 Responsibilities of the Operations Section Chief

- Developing and managing the Operations Section to achieve the incident Objectives set out by Incident Command
- Organizing, assigning and supervising all resources assigned to an incident, including air operations and resources in staging areas
    - Managing the operational span-of-control (a maximum of 7 persons reporting to any one supervisor), through the use of geographical divisions, functional Groups, and Branches, if necessary

5.2.6.2 Documentation

ICS Forms are found in Appendix E .

Form Operational Planning Worksheet ICS 215-OS - Ensure a blank poster-sized copy is displayed at the Tactics Meeting. At the Tactics Meeting, in concert with the Planning Section Chief, fill out the form with preliminary information. Finalize the information at the Planning Meeting. Alternatively, the 234 Work Analysis Matrix can be used, with the information then transposed onto the 215 after the Tactics Meeting.

Form Assignment List ICS 204-OS - Assign Ops personnel to assist the Resources Unit Leader using the ICS or 234 215 forms. Submit to Planning Section Chief (for approval and inclusion in the IAP), immediately after the Planning Meeting.

Form Unit Log ICS 214-OS - Assign a member of your staff to complete the ICS 214. Submit to the Documentation Unit at the end of the Operational Period.

5.2.6.3 Meetings

Meeting	Responsibility
Initial Incident Briefing	Assist with discussions as appropriate.

Tactics Meeting	Review previous IAP to prepare for meeting. Will be jointly responsible with the Planning Section Chief to prepare primary and alternate Strategies. Along with the Planning Section Chief, fill out the ICS 215 - Operational Planning Worksheet or the 234 - Work Analysis Matrix with preliminary information.
Planning Meeting	State primary and alternate Strategies to meet Objectives with Planning Section Chief and Logistics Section Chief. Along with the Planning Section Chief, finalize the ICS 215. Designate Branch, Division, Group boundaries and functions as appropriate using maps and ICS 215. Specify tactics for each Division noting limitations. Specify resources needed by Division / Group with Planning Section Chief and Logistics Section Chief. Plot operations facilities and reporting locations on map (Logistics Section Chief to assist). After meeting, Assign Ops personnel to use ICS 215 and/or 234 to develop Assignment Lists (ICS 204) with Resources Unit Leader.
Operations Briefing	Brief Ops personnel on current response actions and last shift's accomplishments. Distribute the IAP. Summarize Division/Group and Air Operations assignments.

Table 9 - Operations Section Chief Meetings

5.2.6.4 Assigned Individual

TNPI will assign a trained manager from the area to be contracted to this position. For activation details refer to Appendix H - Resources.

5.2.7 Planning Section Chief

Coordinates the development of each Incident Action Plan and ensures information is shared effectively with Incident Command and ICS staff in an efficient planning process. Because of the important role contractors will play in a response, this person to need to work closely with key contractors to fulfill the roles and responsibilities of this position.

5.2.7.1 Responsibilities of the Planning Section Chief

- Collecting, collating, evaluating, analyzing and disseminating incident information
- Making incident predictions, e.g. fate of spilled product, weather, drain-down estimates
- Managing the planning process, including preparing and documenting the IAP for each Operational Period
- Conducting long-range and/or General Planning
- Maintaining incident documentation
- Tracking resources assigned to the incident
- Managing the activities of technical specialists
- Developing plans for demobilization

5.2.7.2 Documentation

ICS Forms are found in Appendix E .

Form Incident Objectives ICS 202-OS - After the Unified Command Objectives Meeting (the PSC may be asked to attend) prepare the Incident Objectives ICS 202-OS, describing both the overall and specific Objectives for each Operational Period. This form becomes the basis for the Strategies and Tactics that will be developed during subsequent Meetings and is included in the IAP.

Form Incident Organization Chart ICS 207-OS - Complete the Organization Chart, or staff the Resources Unit Lead role, which will complete it daily for inclusion in the IAP.

Form Incident Summary Status ICS 209-OS - Complete the 209, or staff the Situation Unit Leader role, who will ensure its completion for inclusion in the IAP.

Form Operational Planning Worksheet ICS 215-OS - Ensure blank poster-sized forms are posted at the Tactics Meeting. At the Tactics Meeting, in concert with the Operations Section Chief, fill out the forms with preliminary information (or assign the role to the Resources Unit Leader if staffed). Finalize the forms at the Planning Meeting. After the forms are finalized, assign the Resources Unit Leader to create 204s for each assignment.

Form Incident Open Action Tracker ICS 233-OS - Complete the form during any Meeting when outstanding non-tactical assignments are identified.

Form Unit Log ICS 214-OS - Assign a member of your staff to complete the ICS 214. Submit to the Documentation Unit at the end of the Operational Period.

IAP Incident Action Plan - Supervise the preparation of the IAP. Attach the IAP Cover Sheet. This may include some or all of the following associated forms: ICS-202 Response Objectives Form. Obtain the ICS - 203 or 207 Organization List or Chart from the Resources Unit Leader. Obtain ICS - 204 Assignment Lists from the Resources Unit Leader, and one copy each of any attachments. Obtain the ICS - 205 and 205a - Radio Communications Plan and Communications List, respectively, from the Communications Unit Leader. Obtain the ICS - 206 Medical Plan from the Medical Unit Leader. Obtain any other items deemed necessary to include in the IAP. Collect all documentation and collate. Present to the Unified Command for approval and signature of the IAP Cover Sheet. Once signed, have the IAP duplicated (by the Documentation Unit) and distributed to all supervisory personnel at the Section, Branch, Division/Group, and Unit Leader levels prior to the Operations Briefing.

5.2.7.3 Meetings

Meeting	Responsibility
Initial Incident Briefing	Assist with discussions as appropriate
Tactics Meeting	Facilitate a brief (<30 min) working meeting focused on identification of tactical assignments. Review the previous IAP to prepare for meeting. Ensure a blank poster-sized ICS 215 or 234 is displayed. Will be responsible to jointly prepare primary and alternate Strategies with the Operations Section Chief. Along with the Operations Section Chief, fill out the ICS 215 or 234 with preliminary information
Planning Meeting	Facilitate a brief (<45 min) working meeting focused on Unified Command acceptance of the Plan. Display ICS 202 and preliminary ICS 215 in preparation for the meeting. Will be responsible to brief on situation, critical and sensitive areas, weather and sea conditions, resource status and availability, with the Situation Unit Leader and Resources Unit Leader. State primary and alternate Strategies to meet Objectives with Operations Section Chief and Logistics Section Chief. Specify resources needed by Division / Group with Operations Section Chief and Logistics Section Chief and finalize the ICS 215. Develop resources, support, and overhead orders with Logistics Section Chief. Assist Logistics Section Chief to consider support issues: communications, traffic, safety, etc. Ensure verbal approval of the Plan from any senior ICS staff, and ask for tacit approval from the Unified Command. Ensure all outstanding items on the 233 are assigned. Assign the IAP deadline
Operations Briefing	Facilitate. Ensure the IAP is assembled and distributed prior to the meeting. Will be responsible for reviewing the Command objectives, and reviewing any changes to the IAP

Table 10 - Planning Section Chief Meetings

5.2.7.4 Assigned Individual

TNPI will assign a trained manager from the area to this position, or will contract this position depending on the incident requirements. If contracted, particular oversight will be required by the TNPI IC/DIC. For activation details refer to Appendix H - Resources.

5.2.8 Environmental Unit Leader

The Environmental Unit Leader reports to the Planning Section Chief, coordinates and implements environmental-based assessment and planning for the Planning Section Chief.

5.2.8.1 Responsibilities of the Environmental Unit Leader

- Work with Regional Environmental Emergency Team (REET) if established. If not, identify appropriate agency and non-government personnel who can assist in the identification of environmental sensitivities
- Production of environmental sensitivity assessments and risk evaluations (to be prioritized and captured on the form Resources at Risk Summary ICS 232-OS)
- Source and management of environmental and wildlife specialists as required on an incident
- Production of Environmental-related plans including but not limited to:
    - Area Contingency or Geographic Response Plan
    - Wildlife Plan
    - Decontamination Plan
    - Analytical monitoring and sampling Plan
    - Waste Plan and obtain waste disposal permit from local government
    - Shoreline Cleanup Plan

5.2.8.2 Documentation

ICS Forms are found in Appendix E .

Form Resources at Risk Summary ICS 232-OS - Ensure this form is completed with input from resource Stakeholders. Update prior to the Planning Meeting. Forward completed form to the Planning Section Chief for possible inclusion in the IAP. Forward to the Documentation Unit as well. Ensure information is shared with other supporting staff to keep situation mapping and reporting up to date.

Form Unit Log ICS 214-OS - Assign a member of your staff to complete the ICS 214. Submit to the Documentation Unit at the end of the Operational Period.

5.2.8.3 Meetings

Meeting	Responsibility
Initial Incident Briefing	Assist with discussions as appropriate
Tactics Meeting	Assist with discussions as appropriate
Planning Meeting	Identify prioritized sensitivities in the area, and provide input into appropriate Strategies and Tactics for their protection.
Operations Briefing	Provide specific information to responders related to sensitive areas, and cleanup tactics to minimize environmental damage as a result of the cleanup

Table 11 - Environmental Unit Leader Meetings

5.2.8.4 Assigned Individual

TNPI will assign a trained manager from the area to this position, or will contract this position depending on the incident requirements. If contracted, final review will occur from the TNPI IC. For activation details refer to Appendix H - Resources.

5.2.9 Situation Unit Leader

Reporting to Planning Section Chief, coordinates incident information gathering and predictions in support of the planning process.

5.2.9.1 Responsibilities of the Situation Unit Leader

- Gathering and display of incident information on the Incident Status Display
- Making incident predictions

5.2.9.2 Documentation

ICS Forms are found in Appendix E .

Form Incident Summary Status ICS 209-OS - Ensure each area of the 209 is completed by the appropriate person.

Form Daily Meeting Schedule ICS 230-OS - Determine Meeting schedule from the PSC, complete and post around the ICP.

Form Meeting Summary ICS 231-OS - Attend Meetings and make notes.

Form Unit Log ICS 214-OS - Assign a member of your staff to complete the ICS 214. Submit to the Documentation Unit at the end of the Operational Period.

5.2.9.3 Meetings

Meeting	Responsibility
Initial Incident Briefing	Assist with discussions as appropriate
Tactics Meeting	Provide updates and predictions of incident potential
Planning Meeting	Provide updates and predictions of incident potential

Table 12 - Situation Unit Leader Meetings

5.2.9.4 Assigned Individual

TNPI will assign a trained manager from the area to this position, or will contract this position depending on the incident requirements. If contracted, final review will occur from the TNPI IC. For activation details refer to Appendix H - Resources.

5.2.10 Resources Unit Leader

Reporting to Planning Section Chief, tracks the location and status of all resources assigned to the incident.

5.2.10.1 Responsibilities of the Resources Unit Leader

- Established an incident Check-in process (using Forms ICS 211E-OS, ICS 211P-OS) at all incident facilities
- Tracks the location and status of all incident resources (both personnel and equipment)
- Assists in the development of the Incident Action Plan

5.2.10.2 Documentation

ICS Forms are found in Appendix E .

Form Organization Assignment List ICS 203-OS - Completes the Organization List (often not used - ICS 207-OS is often used instead).

Form Incident Organization Chart ICS 207-OS - Completes the Organization Chart.

Form Incident Summary Status ICS 209-OS - Completes the Resources (right-hand) side of the form.

Form Operational Planning Worksheet ICS 215-OS - Completes the form during, or after the Tactics Meeting.

Form Assignment List Attachment ICS 204A-OS - Completes the Assignment Lists for each tactical assignment.

Form Individual Log ICS 214A-OS - Assign a member of your staff to complete the ICS 214. Submit to the Documentation Unit at the end of the Operational Period.

5.2.10.3 Meetings

Meeting	Responsibility
Initial Incident Briefing	Assist with discussions as appropriate

Tactics Meeting	Provide updates on resource availability status. Complete the 215 or 234
Planning Meeting	Provide updates on resource availability status. Finalize the 215

Table 13 - Resource Unit Leader Meetings

5.2.10.4 Assigned Individual

TNPI will assign a trained manager from the area to this position, or will contract this position to QMLP or ECRC depending on the incident requirements. If contracted, final review will occur from the TNPI IC. For activation details refer to Appendix H - Resources.

5.2.11 Logistics Section Chief

Provides all supporting resources (except aviation) required to implement the IAP. These may include facilities, transportation, supplies, fuel, maintenance equipment, food service, communications, medical services for responders and support personnel. Logistics and Finance/Administration Sections work closely together to contract for, and purchase required goods and services. The Logistics Section Chief also develops several portions of the written IAP and forwards them to the Planning Section.

5.2.11.1 Responsibilities of Logistics Section Chief

- Ordering, obtaining, maintaining, distributing and accounting for required personnel, equipment and supplies, not immediately accessible (either currently deployed or in a Staging Area) to Operations
- Developing the telecommunications plan
- Providing telecommunications/IT services and resources
- Setting up food services
- Setting up and maintaining incident facilities, e.g. ICP, Staging Areas, Base, Camps, etc.
- Providing support transportation for incident personnel
- Providing medical services to incident personnel

5.2.11.2 Documentation

ICS Forms are found in Appendix E .

Form Medical Plan ICS 206-OS - Provide input and review plan which is to be produced by the Medical Unit Leader. Ensure the plan is submitted to the Planning Section Chief (for inclusion in the IAP), the Safety Officer, all Operations Personnel, and the Documentation Unit ASAP upon start-up.

Forms Incident Radio Communications Plan ICS 205-OS & Communications List ICS 205A-OS - Provide input and review forms, which are to be produced by the Communications Unit Leader. Ensure the Communications Unit Leader is providing the list to the Display Processor, the Documentation Unit, the Planning Section Chief for inclusion in the IAP, and all other response personnel as required.

Plans Traffic & Vessel Routing Plan - Provide input and review plans which are to be produced by the Ground Support Unit Leader and Vessel Support Unit Leader, respectively. Ensure the plan is submitted to Operations and Logistics personnel and to the GIS Specialist to generate a map (if necessary). Also submit to the Documentation Unit.

Form Unit Log ICS 214-OS - Assign a member of your staff to complete the ICS 214. Submit to the Documentation Unit at the end of the Operational Period.

5.2.11.3 Meetings

Meeting	Responsibility
Initial Incident Briefing	Assist with discussions as appropriate
Tactics Meeting	Assist with discussions as appropriate

Planning Meeting	Develop resources, support, and overhead orders with Planning Section Chief. Assist Planning Section Chief to consider support issues: communications, traffic, safety, etc. After meeting, use ICS 215 to prepare tactical and logistical resource orders
Operations Briefing	Give transport, communications, and supply updates

Table 14 - Logistics Section Chief Meetings

5.2.11.4 Assigned Individual

TNPI will assign a trained manager from the area to this position, or will contract this position depending on the incident requirements. If contracted, final review will occur from the TNPI IC. For activation details refer to Appendix H - Resources.

5.2.12 Finance/Administration Section Chief

Provides financial and cost analysis support to an incident response.

5.2.12.1 Responsibilities of Finance/Administration Section Chief

- Tracking timesheets for incident personnel and equipment
- Contract negotiation and monitoring
- Reimbursing expenses (individual and organization/department)
- Making cost estimates
- Monitoring sources of funding
- Claims management
- Tracking and reporting of the financial usage rate

5.2.12.2 Documentation

ICS Forms are found in Appendix E .

Plan Finance Operating Plan - Develop a plan to ensure the effective operation of the Finance/Admin Section. Submit plan to Documentation Unit, all Finance Section personnel, and Logistics Section ASAP upon start-up.

Form Incident Cost Summary ICS 229 - Complete a cost estimate as part of the IAP for each Operational Period. Submit to the Documentation Unit at the end of the Operational Period.

Form Claims Log ICS 227 - Maintain current Claims Log for the incident. Submit to the Documentation Unit at the end of the Operational Period.

Form Unit Log ICS 214-OS - Assign a member of your staff to complete the ICS 214. Submit to the Documentation Unit at the end of the Operational Period.

5.2.12.3 Meetings

Meeting	Responsibility
Initial Incident Briefing	Assist with discussions as appropriate
Tactics Meeting	Assist with discussions as appropriate
Planning Meeting	Assist with discussions as appropriate. Provide cost estimate to the Incident Commander(s)

Table 15 - Finance Administration Section Chief Meetings

5.2.12.4 Assigned Individual

TNPI will assign an individual from the area to this position. For activation details refer to Appendix H - Resources.

5.3 Using ICS

5.3.1 Job Specific Response Field Guide

For each IMT position, there is a Response Field Guide including job-specific activity checklists, documentation and reports. The field guides are a reference guide, and form the foundation of all incident paperwork. Response Field Guides are located in Appendix B , ICS forms in Appendix E , and TNPI support forms in Appendix F .

5.3.2 ICS Timeline and Operational Cycle

5.3.2.1 General

All incidents start with an initial notification, followed by a response, assessment and the production of an Incident Briefing Form - ICS 201. ICS forms are found in Appendix E . The notification and period immediately following is defined as the Initial Response Phase. Following the completion of this Initial Response Phase, the incident will be formally characterized and will become a routine maintenance event or an emergency event.

Incidents characterized as Tier 0 or Tier 1 incidents are typically small in scope, very short in duration, will likely not go any further, and will be managed using existing field maintenance documents and protocols. Incidents which are characterized as a Tier 2 or Tier 3 incidents will grow quickly to involve many personnel and last for extended periods of time. Tier 2 or Tier 3 incidents will require a Planning Section Chief who will systematically organize the work to be performed in each Operational Period through a number of meetings and extensive interaction with other IMT staff. This process can be described as the ICS Planning Cycle and is shown in Figure 6.

The following Chart outlines the typical timelines that will occur during the Initial Response Phase. The Chart also outlines associated operational tasks and forms/documents relevant to each Section of the timeline of the incident. This Initial Response Flowchart follows the initial activation flowchart found in Section 4.1.

TNPI as a member of CEPA has participated in development of Response Time Standards and the following Table is reviewed and the times identified are within the acceptable and recommended ranges by CEPA.

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Initial Incident Phase - Timeline

TNPI Initial Incident Commander	Internal Resources (Personnel and Equipment)	External Contractors (Personnel and Equipment)	Comments	Documents	Actual time to complete	Estimated cumulative time	
						Min - Estimate	Max - Estimate
ALL Reported Incidents							
Mobilization to site • Check wind direction to ensure safe approach to the incident scene • Stop 500M from incident and complete initial assessment • Stop 100M from the incident and complete initial assessment			Process follows the Initial Incident Commander - Field Operations Guide (Appendix B)	• First on-site Checklist (Appendix B) • ICS 214 (Appendix E)	On Route 0.5 - 2.5 hours	0.5 hours (30min)	2.5 hours
Arrive on site			If there are public first responders on site when you arrive, then respect their isolation zone and complete your own initial assessment to ensure it is safe to request access to the site. Ask for the commanding officer (Incident Commander - IC) on the site. Identify yourself as a TNPI employee, and engage the first responder IC in a Unified Command If there are no first responders on-scene, establish and position Command through the Control Centre **Note** All operations from this point forward need to be approved by the IC or Unified Command having authority on the site. If there are by-standers on site when you arrive, ask them to remove themselves from the area and complete your initial assessment and scene security measures	N/A	N/A	0.5 hours (30min)	2.5 hours
Initial safe entry and assessment • Don PPE • Initial assessment and zoning • Site security • Safe entry communication plan • Site Entry • Site Assessment			Process follows the Initial Incident Commander - Field Operations Guide (Appendix B)	• Site Entry and Assessment Checklist (Appendix B) • Hazard Control Zone Form (Appendix F) • Initial Approach Map (Appendix F) • D.E.C.I.D.E. Process (Appendix F) • ICS 201 (Appendix E)	0.5 - 1 hour	1 hour	3.5 hours
Incident Characterization			If not evident earlier in the incident, sufficient information will now be available to characterize the event as outlined in Section 6 If incident is determined to be a TIER 0 or a TIER 1 incident, the Initial Incident Commander will declare the event a project and will manage the site as a day-to-day operation utilizing maintenance procedures and forms. (Do not continue on this form) If incident is determined to be a TIER 2 or TIER 3 incident, then the incident is confirmed and continues using ICS process and forms (Continue on this form)	N/A	0.1 - 0.25 hours	1.1 hours	3.75 hours
TNPI Initial Incident Commander	**Internal Resources**	**External Contractors**	**Comments**	**Documents**	**Actual time to complete**	**Estimated cumulative time**	

	(Personnel and Equipment)	**(Personnel and Equipment)**				Min - Estimate	Max - Estimate
TIER 1 and TIER 2 incident Only							
Activation of required resources is confirmed or ordered	Mobilization to incident scene (Staging Area) or ICP	Mobilization to incident scene (Staging Area) or ICP	Timing for resources to arrive on site may be immediate if they were activated during the initial activation process of may take several hours if activation is made at this time	Update ICS 201 Resource Section (Appendix E)	0 - 4 hours	1.1 hours	7.75 hours
Completion of OHS plan and update Initial Incident Briefing			All documents needed to create an initial OHS plan can be found in the Initial Incident Commander Field Guide. This time will also be used to update and maintain a current ICS 201 form. Both of these documents will be used to brief incoming staff and contractors and to communicate initial safety and operational tasks If documents are not completed prior to the arrival of Internal Resources and Contractors, these individuals may be tasked to assist in their creation	• ICS 208 (Appendix E) This may also include: • Public Protective Actions (Appendix F) • Metering Form • (Appendix F • Personal Protective Equipment (Section 6.3) • Site Training and Briefing (Section 9) • Decontamination (Section 6.5) • Fire Safety (Section 6.6.9) • Incident Medical Plan (Appendix E) • Traffic Control and Security (Section 6.2)	N/A - to be completed in conjunction with the mobilization of Internal and External Contractors to the incident scene	1.1 hours	7.75 hours
Resources arrive on site (Internal and External)	Incoming personnel and equipment are accounted for and briefed by the Initial Incident Commander. Begin work using the initial plan laid out in the ICS 201 in accordance with the initial OHS plan	Incoming personnel and equipment are accounted for and briefed by the Initial Incident Commander. Begin work using the initial plan laid out in the ICS 201 in accordance with the initial OHS plan	This process must be completed in an organized fashion to ensure Staging Areas, operational tasks, and the OHS process is well understood by all arriving personnel	Update ICS 201 as resources arrive (Appendix E)	0.25 - 0.5 hours	1.35 hours	8.25 hours
Revision of the Incident Action Plan and the OHS plan to allow for additional work to begin on the site	Additional operational tasks are identified as needing completion. These tasks are planned for, discussed and approved by the Initial Incident Commander. Additions are made to the existing ICS 201 and OHS plan to encompass work following approval	Additional operational tasks are identified as needing completion. These tasks are planned for, discussed and approved by the Initial Incident Commander. Additions are made to the existing ICS 201 and OHS plan to encompass work following approval	The process of planning and approving additional operational tasks on the site will occur until a formal Command structure has been established and the first Incident Action Plan (IAP) has been completed It is assumed Planning and Operations are being undertaken by trained personnel with experience in Emergency Response. Notwithstanding all new operations and associated OHS needs must be approved by the Incident Commander and updated on the ICS 201 and OHS plan	Update ICS 201 and ICS 208 as required for new operational tasks (Appendix E)	6-12 hours	7.35 hours	20.25 hours
Initial Response Phase END - The ICS Planning Cycle now takes over until the incident is transitioned into a project.							

Table 16 - Initial Incident Phase – Timeline

TNPI's operational period is defined as 24 hours. (shift times could be shorter)

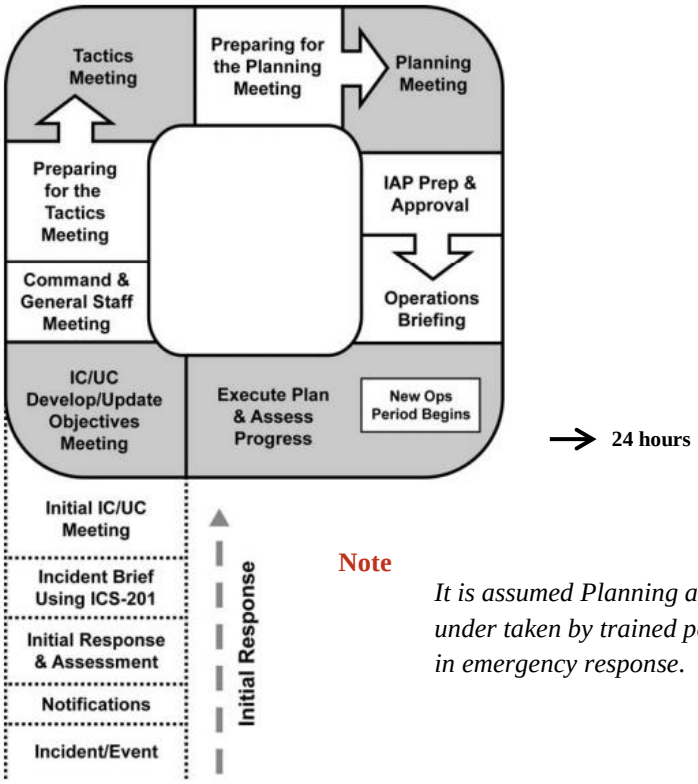


Figure 6 - Planning Meetings

Note

The Initial Incident Commander will have the authority to initiate a response without waiting for a full-blown Incident Action Plan, e.g. working with plan documented on the 201. It is likely many initial response tactics (e.g. isolating the pipeline and product containment) will be implemented during the initial response phase prior to the first completed planning cycle.

5.3.2.2 ICS Meetings

The ICS planning cycle is dependent on a number of meetings with key IMT staff to plan the requirements for each Operational Period. These meetings include:

5.3.2.3 Initial Incident Briefing

An initial Incident Briefing is conducted as new individuals arrive at the ICP. It serves as the introduction to the event, including an initial incident snapshot of the event, a summary of all associated assessments and planning, and a description of present operations and resources. The briefing is based on a completed ICS 201 which serves as the Incident Action Plan for the initial Phase of the incident.

When - When IMT staff arrive or during a change in Command

Facilitator - Briefing lead by Initial/ Current Incident Commander

Attendees - New IC, Command and General Staff, and agency personnel as required

Duration - Dependent on incident complexity

Agenda - Content of Initial Incident Briefing (ICS 201) (Appendix E)

5.3.2.4 IC/UC Objectives Meeting

Incident Command/Unified Command will develop the Objectives for the next Operational Period. The Objectives will be based on the initial Detect/Estimate/Choose/Identify/Do/Evaluate (D.E.C.I.D.E.) and initial incident briefing ICS 201. These Objectives are then translated into Strategies and Tactics, which can then be assigned to specific

resources. This will be an ongoing process which will take more than one Operational Period to complete if the incident is large or complex in nature.

When - Following the formation of IC/ UC early in the Operational Period

Facilitator - IC/ UC

Attendees - IC/ UC

Duration - Ongoing

Agenda

- Establish priorities for all IC/ UC members
- Establish Limitations and restrictions for IC/UC members
- Establish and prioritize incident Objectives (D.E.C.I.D.E. - Appendix F)
- Establish and prioritize Strategies related to incident Objectives (D.E.C.I.D.E. - Appendix F)
- Complete Incident Objectives Form ICS-202 (Appendix E)
- Establish procedures for General Staff positions, procurement practices, cost-recovery and other positions/operations as required

5.3.2.5 Tactics Meeting

This meeting establishes Strategies and Tactics needed to execute each Objective outlined by the IC/UC for the next Operational Period. The Tactics selected need to take into account the present situation, available resources and where possible, still provide sufficient options for Operations to have a choice of Tactics to achieve the incident Objectives.

When - Prior to Planning Meeting

Facilitator - Planning Section Chief

Attendees - IC/ UC, Safety Officer, Planning Section Chief, Operations Section Chief or Deputy, Resources Unit Leader, Situation Unit Leader, Logistics Section Chief.

Duration - Approximately 30 minutes.

- Agenda
- Review incident Objectives
- Review response Objectives for the next Operational Period
- Establish current incident status and available resources
- Establish primary and alternative Strategies and Tactics for each response Objective
- Complete draft Operational Planning Worksheet (ICS 215-OS) and Incident Safety Analysis (ICS 215A) for use during the Planning meeting. (Appendix E)

5.3.2.6 Planning Meeting

This meeting uses the established incident Objectives, Strategies, and proposed Tactics to finalize the Plan for the next Operational Period. The Plan takes into consideration the resources needed for the next Operational Period and identifies and solves any problems which may hinder the success of the operation.

This meeting validates the Plan prepared by the Planning Section Chief for the next Operational Period. This allows the OSC to obtain all needed resources to ensure the proposed work can be executed. The Resources Unit Leader works with Logistics to confirm they can meet Operation's needs.

When - Following the Tactics Meeting

Facilitator - Planning Section Chief

Attendees - IC/ UC, Command staff, General staff, Situation Unit Leader (SUL), Resources Unit Leader (RUL), Environmental Unit Leader (EUL) and invited technical specialists, Logistics Section Chief

Duration - Approximately 45 minutes

Agenda

- Review incident Objectives (IC/UC)
- Review present incident situation (SUL)
- Discuss primary and alternative Strategies and Tactics for the next Operational Period. Tactics and alternatives are set out on Operational Planning Worksheet (ICS 215-OS) and Incident Safety Analysis (ICS 215A) (PSC) (Appendix E)
- Designate Single resources, Strike Teams, Task Forces, Divisions and Groups and their functions. This information is set out on maps, the Operational Planning Worksheet (ICS 215-OS) and Incident Safety Analysis (ICS 215A) (PSC) (Appendix E)
- Finalize tactics for each single resource, Strike Teams, Task Forces and Groups (PSC, LSC).
- Specify resources required (OSC, PSC, and LSC)
- Establish limitation restrictions of IC/UC members

5.3.2.7 Preparation and Approval of Incident Action Plan

Immediately following the Planning Meeting, all attendees will prepare their assignments in accordance with the Planning Chief's schedule. Timelines must allow sufficient time to compile all information into an Incident Action Plan (IAP), and for completion of the review and approval process by the IC/UC prior to the Operations Briefing.

Numerous documents are required from command and general staff. Process is completed when the IAP is complete and approved by IC/ UC.

When - Following the Planning Meeting in accordance with the Planning Section Chief's timeline

Facilitator - Planning Section Chief

5.3.2.8 Operations Briefing

This briefing is the starting point for each Operational Period. The Incident Action Plan (IAP) is presented to all Operations Divisions and Group Supervisors. This Briefing is followed by secondary meetings with Supervisors and assigned resources who review response tasks and tactical details. During secondary meetings, outgoing Supervisors are debriefed and changes are made to tactics and resources depending on the information.

When - Prior (approximately 1 hour) to the beginning of each Operational Period

Facilitator - Planning Section Chief - for Command and General Staff

Operations Section Chief or Task Force Leaders - for Operations staff

Attendees - All Command Staff and operations supervisors

Duration - Approximately 30 minutes

Agenda

- Review incident Objectives and changes to the IAP for the Operational Period
- Review ongoing tactics and last shift's accomplishments
- Present safety message for the Operational Period
- Review all supporting information, weather, transportation, communications, supply updates
- Review supporting reports, media, and financial supporting organizations
- IC/UC acceptance and motivational statement (typically given by IC/UC if available)

5.3.3 Emergency Operations Centre

5.3.3.1 General

The Emergency Operations Centre (EOC) is pre-designated facility established by an agency or jurisdiction to coordinate the overall agency or jurisdictional response and support to an emergency response. The EOC is the support location for the incident.

The EOC is different from the Incident Command Post as it will be located at the TNPI office closest to the spill whereas the Incident Command Post will be located at or near the incident site.

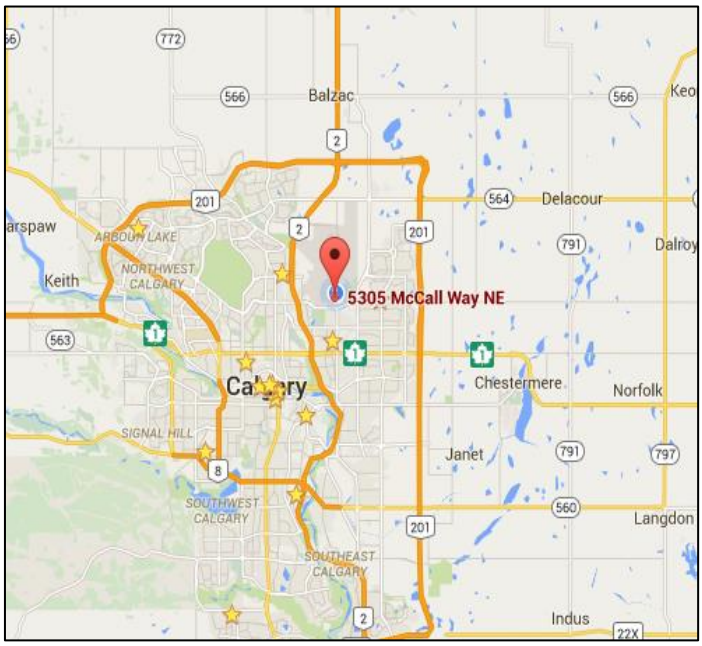
5.3.3.2 Potential Locations

The EOC will be located at the closest TNPI location to the spill. The two potential locations are:

Trans-Northern Pipelines Inc.

Bay109, 5305 McCall Way N.E

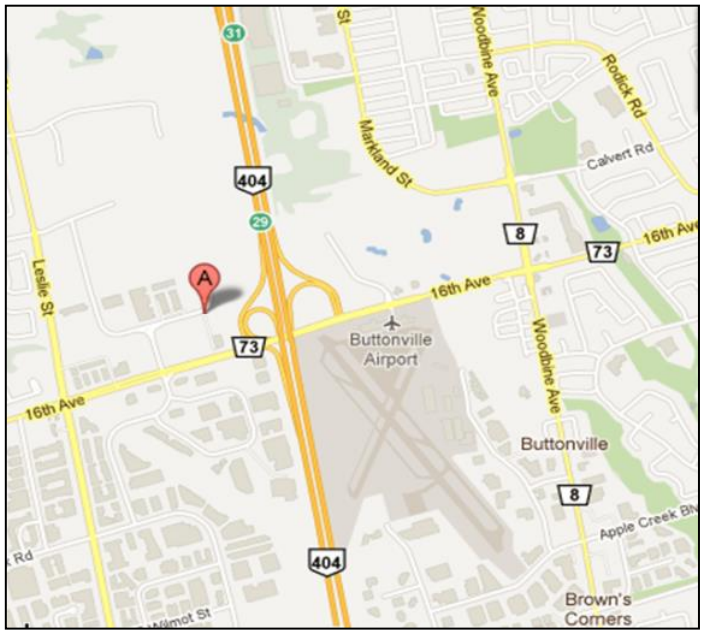
Calgary, AB T2E 7N7



Trans-Northern Pipelines Inc.

310-45 Vogell Road

Richmond Hill, ON L4B 3P6



Note

It is anticipated the initial EOC will be at one of the above locations, with the potential to move to a location closer to the incident as appropriate.

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6 Response

6.1 Responder Health and Safety

6.1.1 Introduction

It is very important to understand the different products handled pose very different hazards when spilled, depending on their chemical composition. As a result, the need for vapour monitoring, the primary hazards, and the cleanup techniques will depend on the product spilled and the volume of product spilled.

Product	Flash Point	Vapour Monitoring	Primary Hazards	Response Mode
Kerosene Type Aviation Turbine Fuel (Jet)	38°C	LEL, O_2, CO, BTEX	Skin Contact Inhalation of Vapours	Contain and recover
Middle Distillates (Diesel)	>40°C	LEL, O_2, CO, BTEX	Skin Contact Inhalation of Vapours	Contain and recover
Unleaded Gasoline	-40°C	LEL, O_2, CO, BTEX	Fire/explosion Inhalation of Vapours	Divert or deflect from possible ignition sources

An initial site assessment team, wearing half-face respirators, should conduct initial vapour monitoring to determine the levels of toxic and flammable vapours. Normally, risks to responders due to vapours on Jet-A and diesel spills on water are generally low. As a result, once an initial assessment has been completed, and vapour levels are found to be low, rigorous vapour monitoring for Lower Explosive Limit (LEL), O_2 and toxic vapours is likely not required. However, where thick layers of these products are concentrated, e.g. on land spills, especially during still conditions, there is a possibility of potentially-dangerous vapour concentrations being present and ongoing monitoring should be conducted. On Gasoline spills, the risks to responders from the exposure to potentially-flammable vapour clouds greatly outweigh the benefits of attempting containment and recovery. In all cases, the risk of accidental ignition and/or the inhalation of toxic vapours must be mitigated, and a detailed site assessment must be completed before on-scene operations are initiated. This decision will be made by the Safety Officer (SO). When conducting vapour monitoring, it is essential the monitor be calibrated using an appropriate calibration gas. All vapours have unique upper and lower explosive limits, and the cal-gas chosen must closely mimic the vapours emitted from the spilled product. Because of the relatively low LEL of Gasoline, Pentane or Pentane Equivalent (with an LEL of 1.5) is normally used. Ultimately, this decision will be made by the Safety Officer after reviewing the product's characteristics.

Typically, the risks associated with the concentration of potentially-dangerous vapours will diminish with time, due to reduced vapour production as the lighter components volatize, and vapour dispersion. In all cases, the results of the initial site assessment should be used to develop a Safety and Health Plan. There are exceptions to this however; e.g. in some cases, where spilled materials seep into the substrate, trapping vapours. Later, if the surface is broken, e.g. during excavation, and the spilled material exposed to the air, vapours normally associated with freshly-spilled material may be produced.

6.1.2 Safety Guidelines

6.1.2.1 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 coverall, high concentration of spilled material will require the use of Tyvek protective clothing
- Hard hats
- Impervious Gloves may require leather gloves to be worn over the nitrile gloves. Do not re-use contaminated gloves
- Safety Spectacles with side shields, high concentration of spilled material will require the use of Chemical Splash goggles

- CSA-approved steel-toed boots may require rubber CSA approved 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 to ensure oil is not transported beyond the contaminated area

6.1.2.2 Inhalation of Vapours

The need for respiratory protection will be determined by the Safety Officer after a review of the SDS and data retrieved from the initial site assessment. If toxic vapour levels are determined to exceed safe working limits (see vapour monitoring flowchart), it might be possible for responders to work while wearing half or full-face respirators fitted with Organic cartridges. In this case, on-going vapour monitoring is essential to ensure vapour levels do not exceed safe working limits.

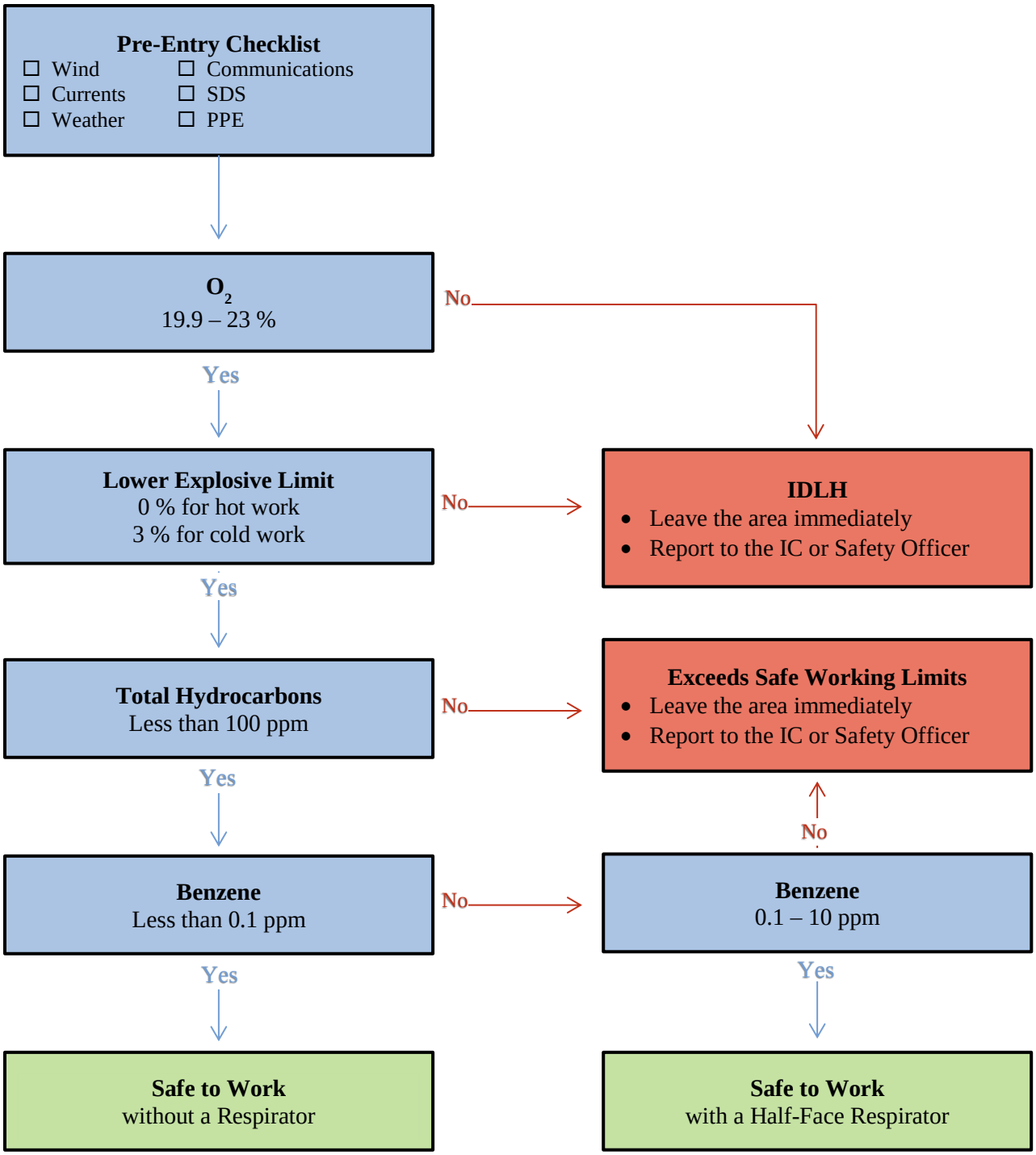

Figure 7 - Vapour Monitoring Flowchart

6.1.2.3 Fire/Explosion

All hydrocarbon products are capable of ignition if certain conditions are met. It is important to review the SDS to determine the flash point of the material spilled and to perform vapour monitoring (for LEL). However, the SDS does not replace the need for vapour monitoring. Whenever vapour levels are approaching 0% LEL for hot work or 3% LEL for cold work for any spilled product, responders should leave the area immediately.

6.1.2.4 Other Hazards including water

There are a number of additional potential hazards faced during spill response including Slips, Trips and Falls. Special care should be taken when walking on oiled docks or shoreline, especially during night-time operations.

The Site-Specific Health and Safety Plan should identify these potential hazards, and they must be clearly communicated to responders.

6.1.3 Critical Tasks

Critical Tasks are tasks which have been identified as high risk and have the potential to produce major loss to people, property, process and the environment when not performed properly.

A procedure is a step-by-step description of how to proceed from start to finish, in performing a task correctly, with hazards and controls listed for each step. Critical Procedures are developed to perform a Critical Task. The exact sequence of each step is an important consideration when developing task procedures. Procedure is not routine work, often due to the complexity of what's being performed and the fact it may be unique to time and circumstances.

Practice is a set of positive guidelines helpful to the performance of a specific type of work may not always be done in a set manner.

Basic Emergency Response tasks are identified below and Risk Ranked based on TNPI Risk Assessment methodology. However, as part of the completion of an Incident Health and Safety Plan all critical tasks and equipment must be identified again and reviewed.

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Job/Task	Hazard Category	Severity	Probability	Risk Rank	Comments
Working near body of water (fast flow or deeper than 4 feet)	Injury	I	C	5	Proper PPE required Required personal flotation device.
	Fin./Reputation	N/A	N/A		
	Environment	N/A	N/A		
Working in extreme heat or cold	Injury	III	B	9	Use appropriate guidelines for PPE and short term exposure.
	Fin./Reputation	N/A	N/A		
	Environment	N/A	N/A		
Deploying boom	Injury	III	C	12	Ensure a trained responder is used
	Fin./Reputation	N/A	N/A		
	Environment	III	C		
Removing boom	Injury	III	C	12	Damage to boom requiring replacement. Ensure trained responder is used
	Fin./Reputation	N/A	N/A		
	Environment	III	C		
Using skimmer	Injury	III	C	12	Damage to equipment and or ineffective cleanup
	Fin./Reputation	N/A	N/A		
	Environment	III	C		
Using a vacuum system to remove oil	Injury	II	B	4	Refer to critical task procedure
	Fin./Reputation	N/A	N/A		
	Environment	II	C		
Working with flammable material	Injury	III	C	7	Appropriate PPE requirements. Approach strategy, procedures & Training
	Fin./Reputation	III	C		
	Environment	III	B		
Decontamination	Injury	IV	B	14	Utilize appropriate PPE and sanitation standards
	Fin./Reputation	N/A	N/A		
	Environment	N/A	N/A		
Operating a boat	Injury	III	C	12	Operator boat license required
	Fin./Reputation	N/A	N/A		
	Environment	N/A	N/A		
Working alone	Injury	III	B	9	Use of ER approach strategy, Follow the Working Alone
	Fin./Reputation	N/A	N/A		

Job/Task	Hazard Category	Severity	Probability	Risk Rank	Comments
	Environment	N/A	N/A		Policy
Working around excavations	Injury	II	D	6	Use of critical procedure to be followed
	Fin./Reputation	II	C		
	Environment	II	C		
Waste disposal	Injury	N/A	N/A	12	Use of licensed disposal operator and disposal site to be used
	Fin./Reputation	N/A	N/A		
	Environment	III	C		
Working around heavy equipment	Injury	III	C	12	Safety observer and proper training required
	Fin./Reputation	N/A	N/A		
	Environment	N/A	N/A		
Fatigue	Injury	III	B	9	Require specific procedure to allow resources to replace individual on shift
	Fin./Reputation	N/A	N/A		
	Environment	N/A	N/A		

Table 17 - Critical Tasks

6.1.4 Health and Safety Plan

Generic Health and Safety Plan is contained in Appendix E - ICS Forms.

6.2 Scene Arrival

6.2.1 Safety and Scene Control

The protection of Life, Environment and Property are the prime Objectives of the Plan. Plan Objectives are outlined in Section 2.2 of the plan.

Public safety will be addressed through interactions with public first responders as outlined in Section 5.1.3 Unified Command. In addition, planned communication will ensure risk information and actions will be conveyed to the public. Section 7 of the Plan outlines communications plans and procedures.

Occupational safety is of paramount importance in the conduct of Company business. Every effort will be taken to provide a safe work environment, identify and control health and safety hazards, and promote the health and safety of all company employees and contractor personnel.

6.2.2 First on Site

The first person on site must ensure all hazards are identified and any known or anticipated life safety conditions are mitigated.

6.2.3 Pre-Entry Safety

- Complete First on Site Checklist - Appendix B - Initial Incident Commander
- Decide if it is safe to enter the site based on the findings of the Checklist
- Don appropriate personal protection equipment
- Determine if people are injured or trapped. Activate First Responders as applicable
- Complete Initial Safe Work Permit
- Define hazard zones from a distance (hot, cold, warm)

- Use barrier tape or other means to define cold zone perimeters
- Define entry communication plan and reporting structure especially if working alone Establish safe point of entry and alternate evacuation route prior to entry. Key elements will include: points which are up-wind, up-hill and up-stream of the potentially affected area

6.2.4 Safe Entry Guidelines

Site entry must be made by a minimum of two individuals or one individual utilizing the TNPI Working Alone Procedure (independent safe work system). If situation and occupational limits are unknown, entry must be made with applicable monitoring and respiratory PPE.

6.2.4.1 Conditions for non-entry (see Section 10 for Safe Entry Flowchart)

- **NO ENTRY** - involved fire conditions or imminent fire conditions
- **NO ENTRY** - above 10% Lower Explosive Limit (LEL)
- **NO ENTRY** - above Threshold Limit Value (TLV) when no respiratory protection will be donned by entry team or safe working capacity of respiratory protection
- **NO ENTRY** - when limits exceed or may exceed safe working ranges of the respiratory protection donned by entry team
- **NO ENTRY** - when conditions may result in excessive contact or chemical immersion
- **NO ENTRY** - when there is a risk of contact with hazardous energies (electrical, mechanical, hydraulic, pneumatic, thermal, electromagnetic radiation, stored energy)

6.2.4.2 Entry Precautions

- Complete Entry and Assessment Checklist
- Where ever possible, enter from an up-wind, up-hill, up-stream position
- Identify and Extinguish any ignition sources
- Continuously evaluate changing conditions, e.g. wind direction and evacuation routes
- Fulfill all requirements of the pre-entry communication plan
- Complete detailed site assessment and Update Safe work Permit as required
- Revise and re-establish appropriate zones based on site and hazard assessment
- Evacuate as soon as a dangerous condition is identified

6.2.4.3 Site Staging

The first on site individual must initiate site staging. This will be completed using the TNPI pick-up truck and caution tape and will progress as first responders and contractors arrive on site with personnel and equipment. An example of initial site staging is shown in Figure 8.

6.2.4.4 Isolation Procedure

During an incident, the public may be at risk of exposure to hazards related to the incident. For this reason, manned isolation points must be established to restrict unauthorized entry into the response zones that could potentially jeopardize public safety. TNPI is prepared to deal with major highways and railways passing through the emergency planning zone that may be impacted by the hazard. It may be necessary to obtain a fire hazard order (issued by the AER in Alberta) or to declare a state of local emergency to restrict access to a designated area. A state of local emergency may be declared by the local authority if they decide it is prudent to do so (AER, Directive 071, 2008).

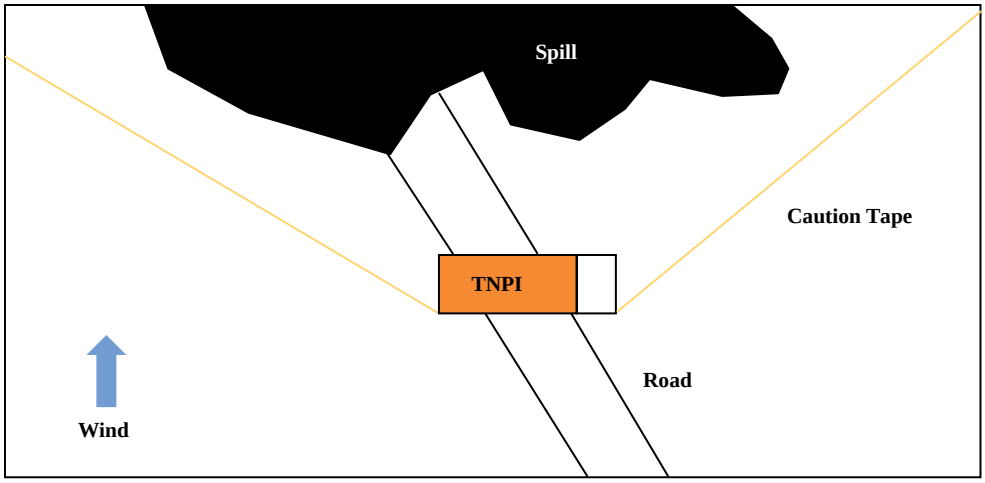

Figure 8 - Spill Site Set-up

6.2.5 First Responders on Site upon Arrival

When public First Responders are on site when you arrive, it is anticipated scene control will have been completed; however, it is unlikely First Responding personnel would have the knowledge or capacity to conduct a thorough safety assessment. In this case, TNPI personnel would conduct an initial assessment and pass this information to the responding agencies.

Note
Pre-entry safety and site control processes must meet or exceed the requirements of TNPI. Enhancement and additional documentation may be required to meet TNPI's level of safety. A typical site setup is shown in Figure 9.

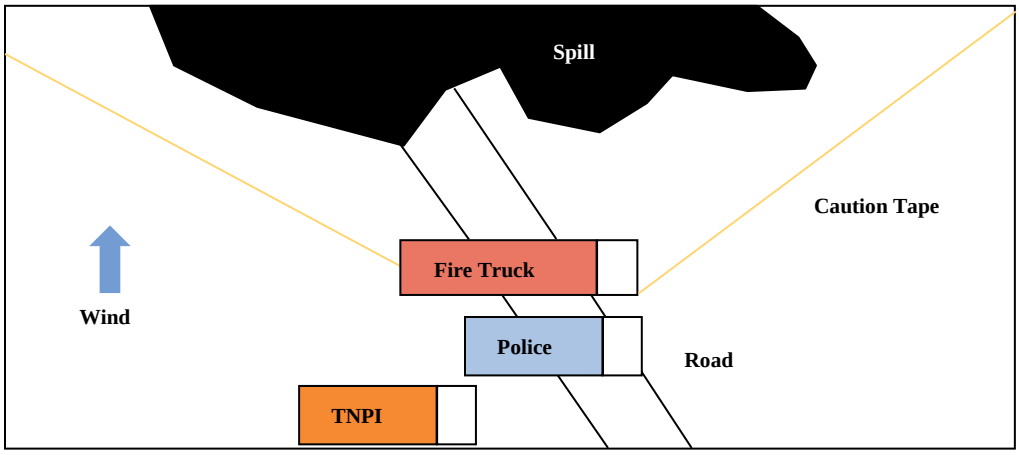

Figure 9 - Initial Scene Staging

6.2.6 Stand Down Procedure

The decision to terminate a spill response is made by the person having jurisdictional authority over the incident in consultation with the other Unified Command members and associated subject matter experts. The decision is based on an assessment of clean-up operations to determine if there is any likelihood of the escalation of worsening of the incident. Once the situation is deemed to have stabilized, the Unified Command will typically stand down the emergency, and de-escalate the response to a project. During the project phase of the response, cleanup efforts may continue for some time, until the point is reached where there is no benefit to continuing the cleanup.

Once the decision has been made to terminate operations, the Incident Commander (TNPI) will notify the AER or NEB who will then stand down supporting agencies when parties agree the incident has been adequately controlled and their input is no longer required. This is likely to involve the progressive stand down of different agencies, as some may need resourcing for longer periods than others.

In the event a spill impacts wildlife, ongoing resourcing may be required, beyond the termination of clean-up operations, to complete the rehabilitation of some affected animals and to conduct monitoring programs after their release. Demobilization of the wildlife response will be guided by parameters established by Environmental Unit Leader and Regulatory officials at the beginning of operations and incorporated into the Incident Action Plan in consultation with the TNPI Incident Commander. Each agency, once stood down, should conduct an internal debrief to analyze its involvement in the response. Once the major operational phase of the response is complete, TNPI should follow it up with a formal report on the incident response.

6.2.7 Product Risk Assessment

Product Risk Assessment must be completed to identify occupational hazards associated with any product involved in an incident. This will include health and safety data, flammability, reactivity and other pertinent product specific information.

- Sources include: Product Risk assessment sheets found in Appendix A and SDS sheets which can be sourced from TNPI Line control for the product in question
- Responsibility for sourcing and completion will be that of the Safety Officer

6.2.8 Product Fates and Effects

6.2.8.1 Introduction

Refined products spilled into the aquatic environment are subject to various physical and chemical processes may cause the product to change (weather) or migrate. Some processes cause oil to be removed from the water surface, while others change its form on the surface. Important factors influencing the behaviour and fate of spilled Refined Products include:

- Physical and chemical characteristics, such as viscosity, specific gravity, and volatility, vapour pressure
- Quantity of oil spilled
- Prevailing weather and water conditions, e.g. water temperature

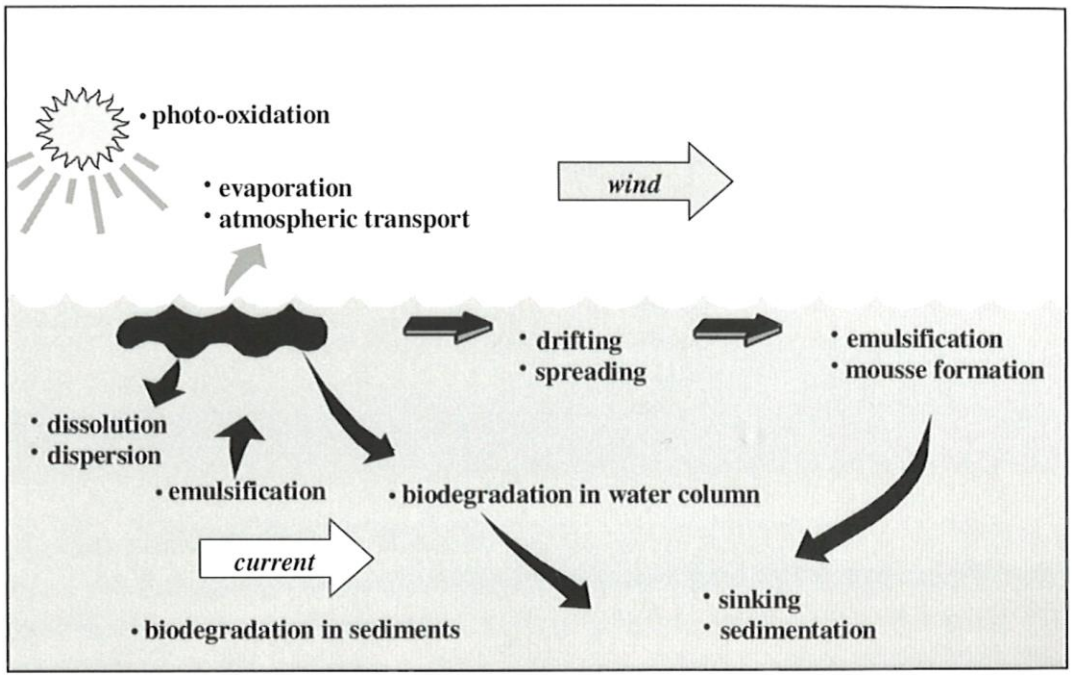

Figure 10 - Fates of Spilled Product

Process	Definition	Effects on Refined Products Spill Response
Drifting	Physical movement of surface refined	Moves the location of oil slicks,

Process	Definition	Effects on Refined Products Spill Response
	products from one location to another due to the combined effects of winds, waves, and current	which may affect response strategies
Spreading	Spread of Refined Products on the water surface	Expands the area extent of oil slicks as thickness diminishes. This also diminishes the ability to recover
Evaporation	Physical process resulting in transfer of Refined Products from the water surface to the atmosphere	May result in the loss of 25% to 90% or more of the Refined Products mass within a few hours or days (24 hours for gasoline) and generally increases the viscosity of remaining spilled Refined Products. Viscosity changes affect the selection of response options
Dispersion	Transport of Refined Products from the water surface into the water column (in the form of small droplets) due to wave action	Decreases volume of surface Refined Products
Dissolution	Physical process resulting in dissolution of Refined Products in the water column	Very small percentage of total amount; important because of potential toxicity
Sinking / Sedimentation	Increase in density of Refined Products due to weathering and interaction with suspended sediments or material of biological origin; deposition of material to the bottom	Tracking and recovery of Refined Products can be difficult and laborious, if not impossible; exposes organisms in water and possibly bottom to Refined Products
Atmospheric Transport	Transport of evaporated Refined Products in the atmosphere	May affect response decisions due to the concentration of Refined Products in the atmosphere; safety of personnel is the key issue
Biodegradation	Biological-chemical process altering or transforming petroleum hydrocarbons through microbial action	Slow process relative to other weathering mechanisms. Has little to no effect on near-term Refined Products fate or spill response
Photo-oxidation	Transformation of petroleum hydrocarbons through interaction with sunlight	Effects are negligible relative to other weathering mechanisms
Chemical-oxidation	Transformation of petroleum hydrocarbons through interaction with chemical agents	Effects are negligible relative to other weathering mechanisms

Table 18 - Definition of Fates of Spilled Oil

6.2.8.2 Petroleum Product Properties

Regardless of their physical and chemical properties, all Refined Products will weather once spilled. The rate of weathering depends on the conditions at the time of the spill and the nature of the spilled product. The following parameters are used to characterize Refined Products properties:

- Specific Gravity (liquid)
- Flash Point
- Lower Explosion Limit

- Solubility
- Vapour Density

See Appendix C for Definitions.

6.2.8.3 Forecasting Product Drift

Refined Products slicks drift under the effect of wind and surface currents. The combined effects of currents and approximately 3-4% of the wind velocity is additive (Figure 11) and computerized trajectory models can be useful in forecasting slick movement. Generally, the wind component plays a greater role in product coming to shore than the current.

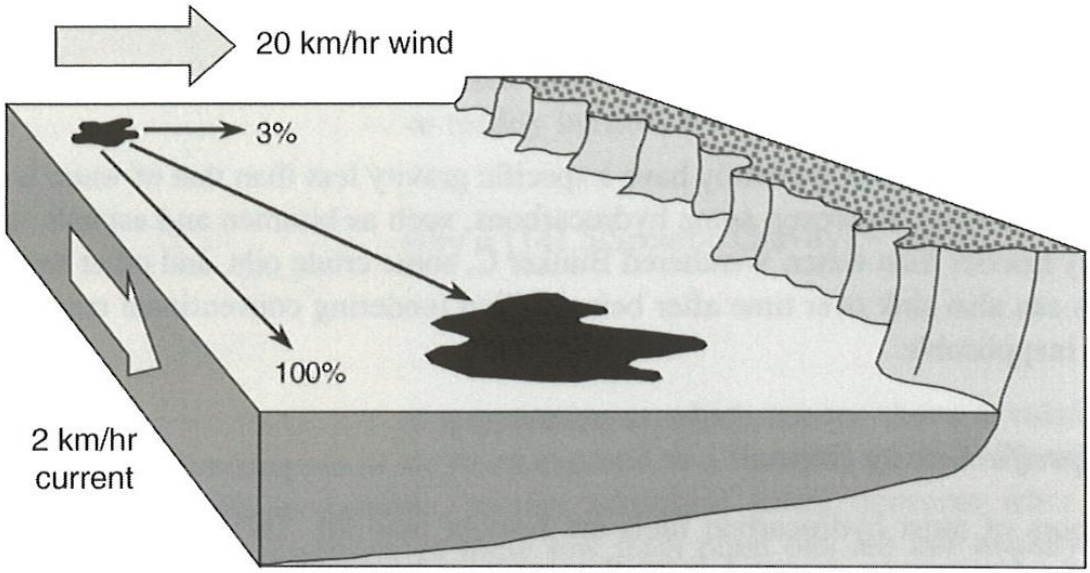

Figure 11 - Movement of Refined Products in Water

In the above example, the wind-driven and background current vectors must be added to estimate when a slick might reach a shoreline. The direction *to* for current and *from* for wind should be noted (e.g. current to the east and wind from the north).

Computer modelling of spilled product movement will be used as a predictive tool during a spill response and will be provided by Environment Canada through or ECRC.

6.2.8.4 Estimating Product Volumes

The volume of spilled product lost from a pipeline incident is typically more related to drain down volume or the automated measuring system that alarms. Methods for estimating product volume include:

- Rate of flow through a pipeline and the duration of spill before shutoff
- The size and number of tanks breached
- The colour and size of slicks

Estimating product volume based on the colour and size of spills is often complicated due to the complexity of spills, their geometry and other factors. Observer experience will have a marked effect on the accuracy of estimates. The following should be considered when estimating spill volumes:

- Spill thickness can vary considerably even in a single spill. If there are dark brown or black patches, most of the product is located in these darker areas
- Coloured or silvery bands indicate extremely thin slicks; these colours can often be seen at the borders or outer areas of thicker spills

6.2.9 Visual Observation and Photography

Visual observation and aerial photography have been used effectively in open water for identifying and tracking oil spills. The volume and properties of spilled product can be estimated using colour and area measurements from an aerial photograph. Visual observation and the use of conventional cameras can be hindered by lack of visibility due to weather conditions, including rain, fog and darkness. Slicks can also be difficult to visually detect in water with high sediment or algae content.

6.2.9.1 Site Zoning

It is important to establish Hazard Zoning immediately upon arrival at the incident site. Hazard Zoning will define areas requiring personal protection equipment, transition areas, staging areas and public exclusion areas. This Zoning is an essential part of the Site Safety Plan as it ensures unprotected workers are not able to be in areas where they may be affected or come in contact with a known or anticipated hazard.

6.2.9.2 Zoning Descriptions

Hot Zone

This zone is defined as an area requiring personal protection equipment where hazards may cause harm to an unprotected worker. Common examples include:

- Atmospheric hazards above TLV requiring respiratory protection
- Flammable atmospheres between 5 and 10% of the LEL
- Areas physically contaminated with a refined petroleum product
- Fire and explosion exclusion zones

Warm Zone

This zone is the transition zone between the Hot Zone and Cold Zone. It allows an adequate buffer for movement and changes which may occur within the Hot Zone. Additionally, this zone is where decontamination occurs, ensuring safe entry and exit of personnel and equipment in and out of the Hot Zone while preventing the extension of contamination.

Cold Zone

This zone is a safe zone where Staging and Command of an incident can occur.

Note

Ensure the Cold Zone is isolated from the public and is a secure place for responding personnel.

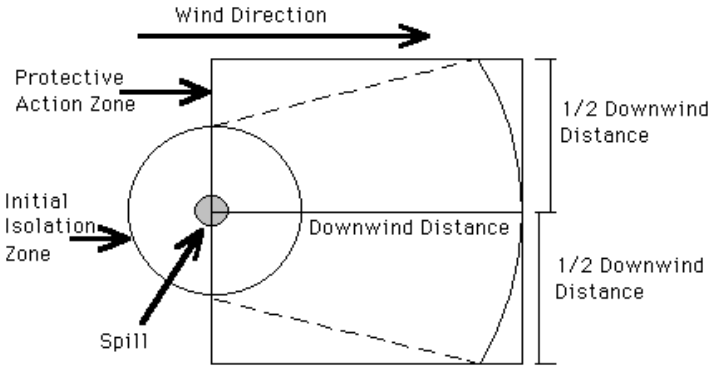

Figure 12 - Zone Diagram

6.2.9.3 Responsibility

The responsibility for the completion and/or review of site zoning will be that of the Safety Officer or the individual fulfilling those responsibilities. Documentation for the completion of hazard zone can be found in the Appendix F - Hazard Control Zoning Form.

6.2.9.4 Staging Area Set Up

The Staging Area is the location where personnel and equipment are temporarily placed awaiting tactical deployment during a spill response. The Staging Area provides a system for receiving, tracking and documenting all personnel, equipment, and supplies coming into and out of the Staging Area. The Staging Area also provides a security check point, a Field Command Post, portable toilets, break room, decontamination facility, communications facility and a Safety Watch. It may also include a Heli-Spot and a wild life trailer. A typical Staging Area set up is shown in Figure 13. If Staging Areas are established, a Staging Area Manager must be staffed.

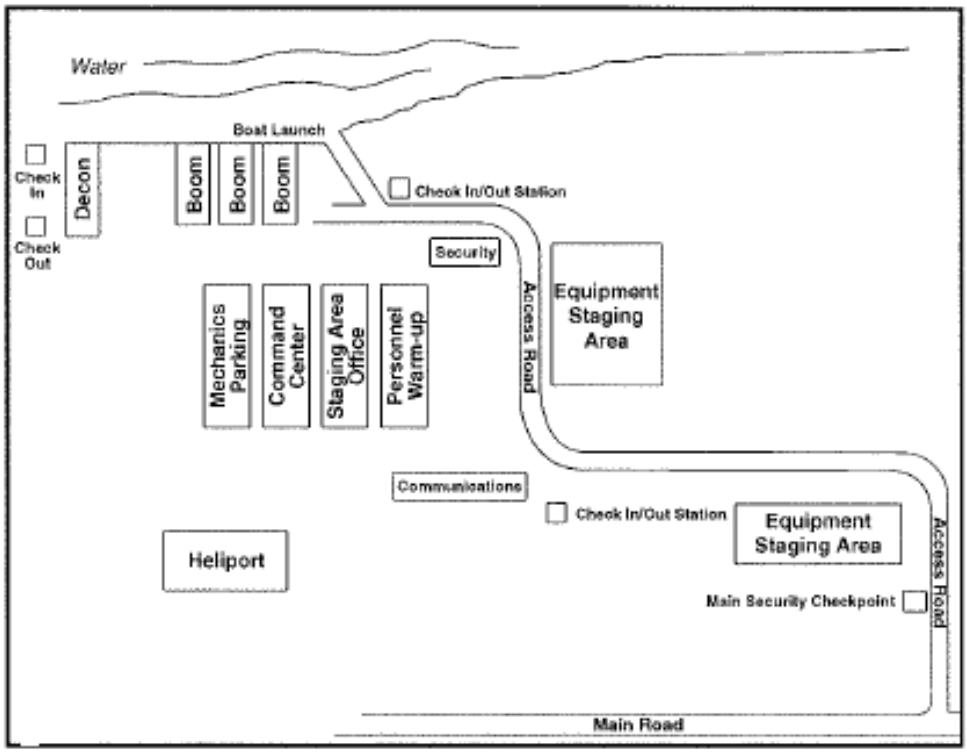

Figure 13 - Staging Area

6.2.9.5 Logistical Needs for Staging Areas

The Staging Area will require:

- Open area for manoeuvrability of equipment
- Electric power, phone and fax service
- Radio communication with Operations Section Chief
- Office trailer or building on site or nearby
- Supplies and consumables for personnel and equipment (e.g. food, fuel, water, sanitation)
- Medical Plan and appropriate emergency medical supplies for personnel
- Security needs, depending upon location and other available security control

6.3 Personal Protection Equipment (PPE)

6.3.1 General

Protective clothing is designed to reduce or eliminate the exposure of responders to chemical hazards. There are four levels of protective clothing recognized for use when handling hazardous materials. Each article of clothing has limits to the exposure of chemicals. The manufacturer's technical research data shall be consulted prior to use of PPE in an incident to ensure the appropriate level of protection has been selected. The maximum level of PPE for TNPI responders will be Level C protection.

6.3.2 PPE Decision Making Form Set

Note

Refer to Appendix F - PPE Decision Making Form Set.

Note

Refer to Appendix A - Risk Assessments for PPE selection based on product.

6.4 Monitoring

6.4.1 General

Atmospheric monitoring is an integral part of the initial Health and Safety Plan. Direct reading gas monitors are used to quantify the concentration of known gases to ensure safety and compliance of workers. Vapour monitoring devices must be calibrated using appropriate calibration gasses (See Section 6.1) and bump tested prior to use. Responding personnel must complete the Monitoring Checklist Log when using a meter in the field (Forms found in Appendix F).

6.4.2 Materials of Interest

The following charts list the most-likely products of interest and their associated OHS values. This information should be used to set appropriate zones during an incident. Not all of the listed chemicals will be present at every incident. A hazard evaluation must identify the products involved. Table 20 and Table 21 outline the occupational exposure limits and the flammable limits of potential hazardous products. Table 22 outlines the isolation distances from the Emergency Response Guidebook.

Note

Benzene is not transported through the pipeline as a pure product. It is included in Table 20 as it is a component ingredient of concern in gasoline. As such it will be metered for independently of gasoline in order to ensure workers are adequately protected.

Product	Odour Threshold	ppm mg/m^3	TWAEV	ppm mg/m^3	IDLH	ppm mg/m^3	Monitoring Device
Benzene	8.65	ppm	0.5	ppm	3000	ppm	PID or Colorimetric tube
Diesel	1.2	ppm	200	ppm	ND	ppm	PID
Gasoline	0.025	ppm	300	ppm	ND	ppm	PID or Colorimetric tube

Table 19 - Inhalation Toxicity

Product	LEL	Flash Point	Monitoring Device
Benzene	1.2%	-11°C	Catalytic Bead (LEL)
Diesel	0.6%	52°C	Catalytic Bead (LEL)
Gasoline	1.4%	-43°C	Catalytic Bead (LEL)

Table 20 - Flammability

Product	Immediate	Precautionary Large Spill	Fire
Gasoline	Isolate 50 m	Evacuate 300 m	Isolate 800 m
Diesel	isolate 50 m	Evacuate 300 m	Isolate 800 m

Table 21 - Isolation Distances

6.4.3 Functional bump testing

The operation of exposing the meter to a known gas prior to use to ensure it is functioning properly and accurately is known as *bump testing*. Although this is much like calibration, there are no changes made to the set points of the meter. If the meter does not function within limits then it will require calibration prior to use. Most manufacturers insist a monitor be bump tested prior to each days use. Acceptable or pass variances range from +/- 10% to +/- 25%, depending on the manufacturer.

6.4.4 Record Keeping

Be sure both calibration and functional bump testing are recorded in a permanent log. This is the only way to prove you have fulfilled the manufacture's requirements and legislative requirements. Metering Forms may be used for record keeping and are found in Appendix F .

6.5 Decontamination

Decontamination is an important element of any response effort. It is completed for two main purposes:

- To reduce the level of contaminants which have been accumulated on personnel and equipment during an incident for the purpose of safe doffing of equipment without exposure to the hazard
- To prevent an extension of contamination beyond the warm zone

If required, decontamination will be set up before site entry occurs. The Decontamination Form will be used to assist in decontamination decision making (Found in Appendix F). The basic decontamination set up is shown in Figure 14.

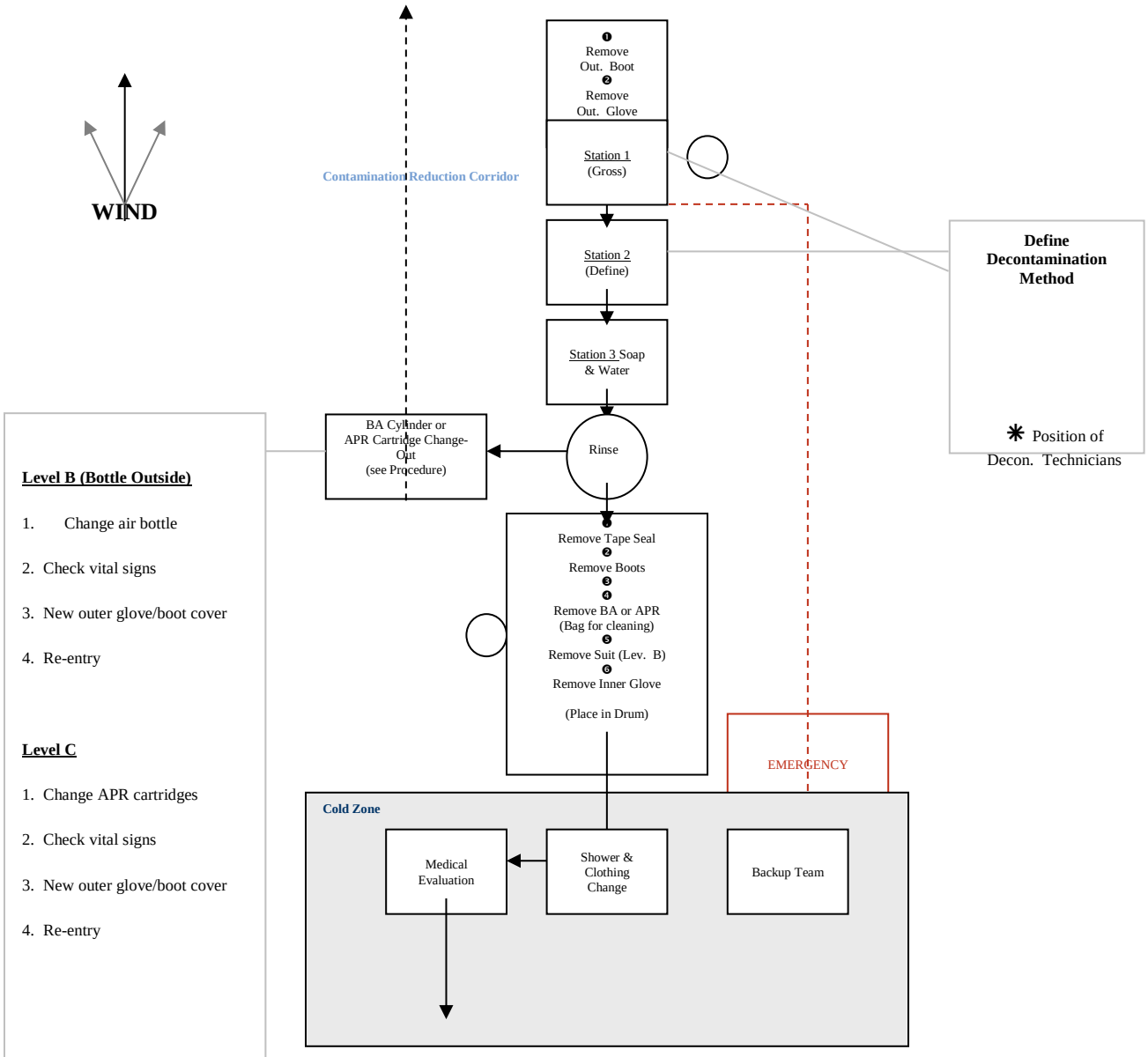

Figure 14 - Basic Decontamination Corridor

6.6 Response Plans

The response plans contained within this section outline many of the tactics which may be deployed during an incident to control or cleanup a situation. The response plans are intended to cover all of the potential emergencies which may be encountered. These plans include:

- Spill of Refined Products from the Pipeline
- Fires
- Acts of mischief and Terrorism

Although some of the plans apply to quite specific intended scenarios, others may be used for a number of different applications. Specific response plans have been developed for the TNPI operated facilities and are found within the facility specific plans. The facility-specific plans as well as the plans found in this Section of the Plan may be used in conjunction with Regional-Specific Plans developed by TNPI. Comprehensive plans for other areas such as waste management, air and vapour monitoring, fire management etc. are all developed as part of the Incident Action Plan for each individual response.

Supplemental plans are described below:

- Detailed Maps for each Region are available in an online environment. The maps (plans) are segregated by the 22 Regions in the East and 3 Regions in the West. Each Region has specific plans for each HCA Municipality receptor maps, overland flow and stream tracing and all associated control points

6.6.1 Additional Information and Related Plans

6.6.1.1 Control Point Plans

Specific Control Point Plans have been created for marine exposures downstream from the pipeline. Each Plan outlines which tactics would be best-suited to a specific area. All control points may be found in the Regional-Specific Plans.

6.6.1.2 Regional-Specific Plans

Municipal Plans have been created as part of the Regional Plans for high risk areas along the pipeline. All Site-Specific Plans can be found in the Regional-Specific Plans.

6.6.1.3 Facility-Specific Plans

Facility-Specific Plans have been created as standalone plans for TNPI- run, high volume storage facilities areas along the pipeline. There are three such facilities in the system:

- Toronto Airport Terminal
- Farran's Point Terminal
- Calgary Airport Terminal

6.6.1.4 Product-Specific Response Factors

The following table outlines product-specific response factors which must be considered when identifying and evaluating possible response Tactics to be used in the field. All of the factors are driven by the fates and effects of the products and the health and safety ramifications of potential response actions.

Product	Response Characteristics	Risk Interpretation	Considerations for Response Tasking
Diesel	VP: 0,4 mm Hg OT: 0.11 ppm TLV: 100 ppm LEL: 0.6 % FP: 52°C Density: 0.87 - 0.95	Diesel will be detected through odour before it is hazardous Flammability will not be likely unless the spilled product is being heated by an external source	Individuals trained in APR and remediating techniques will have adequate training for diesel spill response. All techniques should be considered and implemented for this product with no limitations Consideration will be made for public communication to educate the public regarding the large range between the odour threshold and the TLV
Gasoline	VP: 300 mmHg OT: 0.001 ppm TLV: 300 ppm LEL: 1.4 % FP: < - 21°C Density: 0.7 - 0.8	Gasoline will be detectable though odour before it is hazardous. This being said this product is expected to present itself in concentrations which are hazardous to human inhalation. This must be protected against. Spills of any significant size are likely to yield concentrations in the flammable range and must be protected against Gasoline will be hazardous as an inhalation hazard long before it reaches the flammable range	The first response task will be to ensure adequate evacuation are completed and verifying zoning to ensure no individuals are in a toxic or flammable zone Continuous metering will ensure no work is conducted above 10% LEL for inspection and recon, 10% for cold work and 5% for hot work Careful consideration must be made in the choice of defensive and offensive actions to ensure the collection and removal of spilled gasoline can be completed without the creation of unsafe working conditions for workers and the public. Tactics utilized must ensure flammable conditions within the safe working levels listed above. If this cannot be achieved then a different tactic must be used. In most cases, it is best not to try to contain spilled gasoline, but instead to allow it to evaporate
Jet A	VP: 5.25 mmHg OT 1.55 ppm TLV: 200 mg/m^3 LEL: 0.7% FP: 38°C Density: 0.77	Jet A will be detected through odour before it is hazardous Flammability will not be likely unless the spilled product is being heated by some external source	Individuals trained in APR and remediating techniques will have adequate training for Jet A spill response. All techniques should be considered and implemented for this product with no limitations Consideration will be made for public communication to educate the public regarding the large range between the odour threshold and the TLV

Table 22 - Product Specific Response Factors

Note

See Acronym meanings in Appendix D.

6.6.2 Waterbody Response Containment

Tactics outlined in this section describe common containment techniques which may be utilized to contain Refined Products following an incident.

6.6.2.1 Deflection Boom at a Culvert

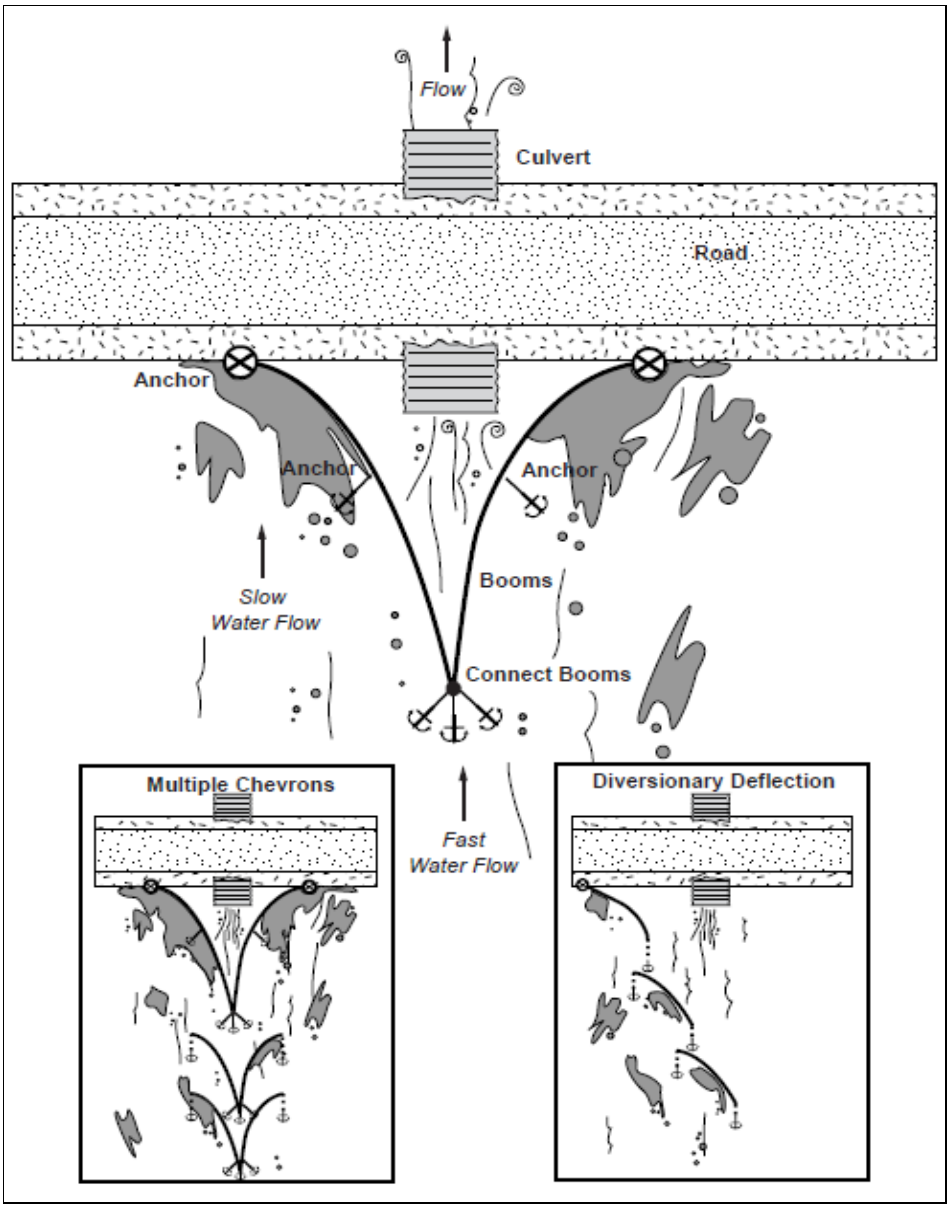

Figure 15 - Deflection Boom at a Culvert

The previous diagram demonstrates boom deployment in either chevron or diversionary configurations to deflect product from the mouth of a culvert to collection sites along the road. There is often a violent whirlpool at the upstream opening of a culvert, with lighter currents off to the sides. Blocking the culvert would be inadvisable because of the likelihood of washing out the road. Deadmen are typically used for anchors on the road. Collected product can be directly pumped to a vacuum truck on the road. Select vessels and boom according to area, water depth restrictions, and function. Specific personnel requirements depend on the length and type of boom and the nature of the area.

6.6.2.1.1 Equipment Required for Booming a Culvert

Anchor System	>/=2
Boom	>/=50 feet

Table 23 - Equipment for Booming at a Culvert

6.6.2.1.2 Deployment Considerations and Limitations

- Boom is most commonly used for this tactic
- The speed of the current perpendicular to the boom must be maintained at ¾ knots or less to prevent product loss; Figure 16 shows recommended boom deployment angles based on current speed
- The number and configuration of booms depend on the flow rate and number of collection sites. With any boom system, do not assume 100% containment with one system
- An oleophilic skimmer should be used alongside the roadway. When selecting a skimmer, consideration must be given to product viscosity, available capacity, and volume of product to be received

CURRENT (knots)	CURRENT (ft/second)	BOOM ANGLE RELATIVE TO CURRENT REQUIRED TO KEEP COMPONENT OF CURRENT <3/4 KNOT
1.5	2.5	30° to 42°
1.75	2.9	25° to 35°
2.0	3.4	22° to 30°
2.25	3.8	19° to 26°
2.5	4.2	17° to 24°
2.75	4.6	16° to 21°
3.0	5.0	15° to 19°

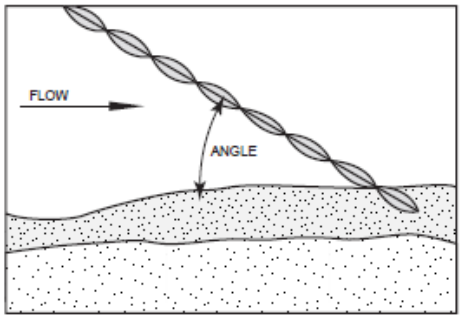

Figure 16 - Recommended Boom Deployment Angles for Various Current Speeds

6.6.2.2 Culvert Blocking

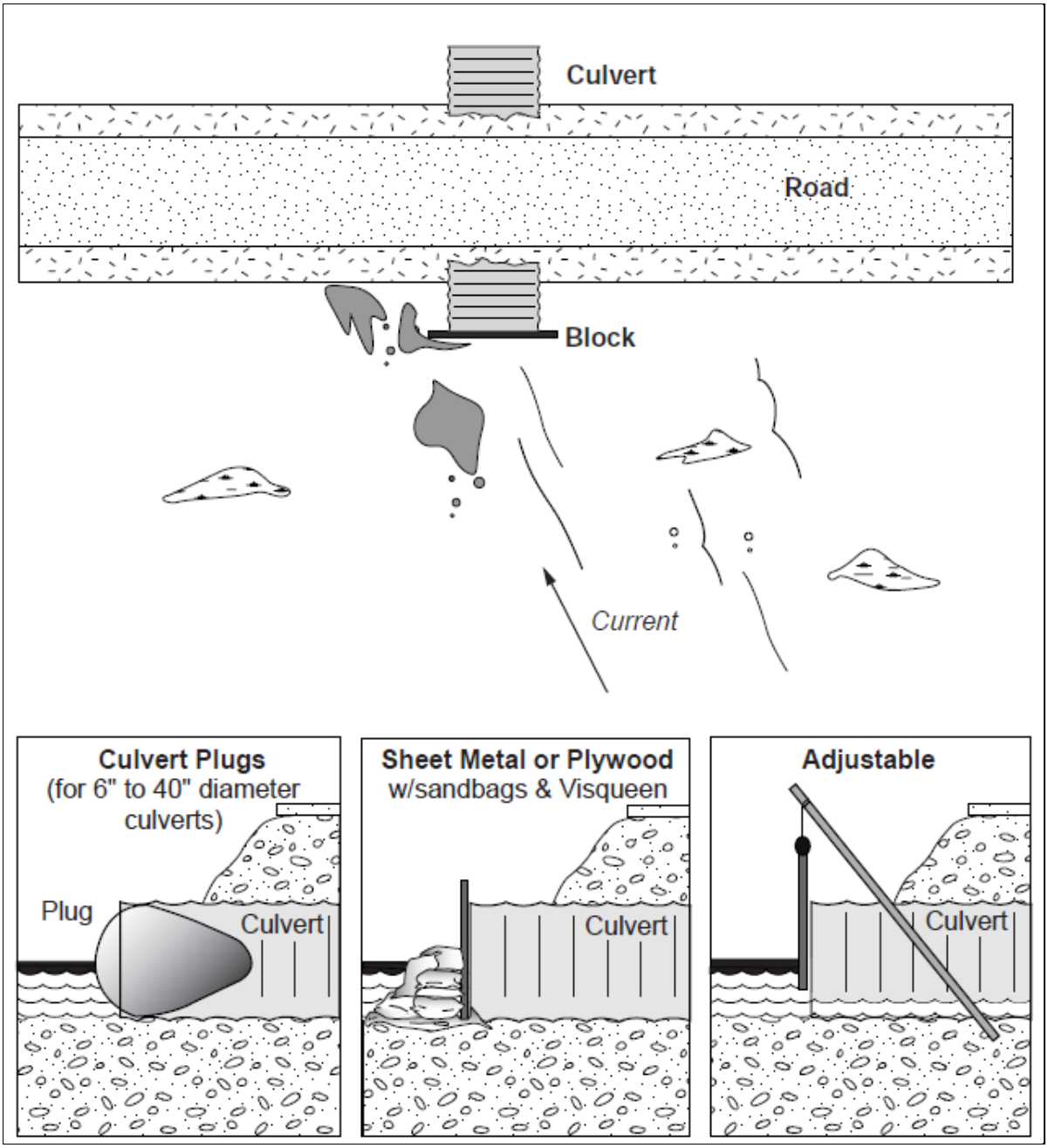

Figure 17 - Culvert Blocking

The above diagram demonstrates culvert blocking using sheet metal, plywood barriers, or inflatable culvert plugs. Use a full block only when the culvert will be blocked for the entire cleanup operation, if the gasoline/diesel floating on the water will not contaminate additional soil, and if blocking the water flow will not threaten the road. Otherwise, an adjustable weir should be used. Plywood and/or sandbags can also be used as culvert blocks, but are more labour-intensive and pose a higher potential for injury. A wood block may require a headwall with kickers oriented to support the boards or plywood. Place the blocking materials over the upstream end of the culvert. Plastic sheeting (Visqueen) over the outside of the block will prevent oil penetration.

6.6.2.2.1 Equipment Required for Culvert Blocking

Inflatable culvert plugs	1
Sheet metal or Plywood Barriers, or	1
Sandbags, or	>/=10
Gravel	-

Table 24 - Equipment Required for Culvert Blocking

6.6.2.2.2 Deployment Considerations and Limitations

- When working with equipment around or near flow lines, a spotter must be added to each front-end loader or dozer
- Can also be used if high-volume pumps are available to pump water over the road to the other side of the culvert

6.6.2.3 Barriers on Land

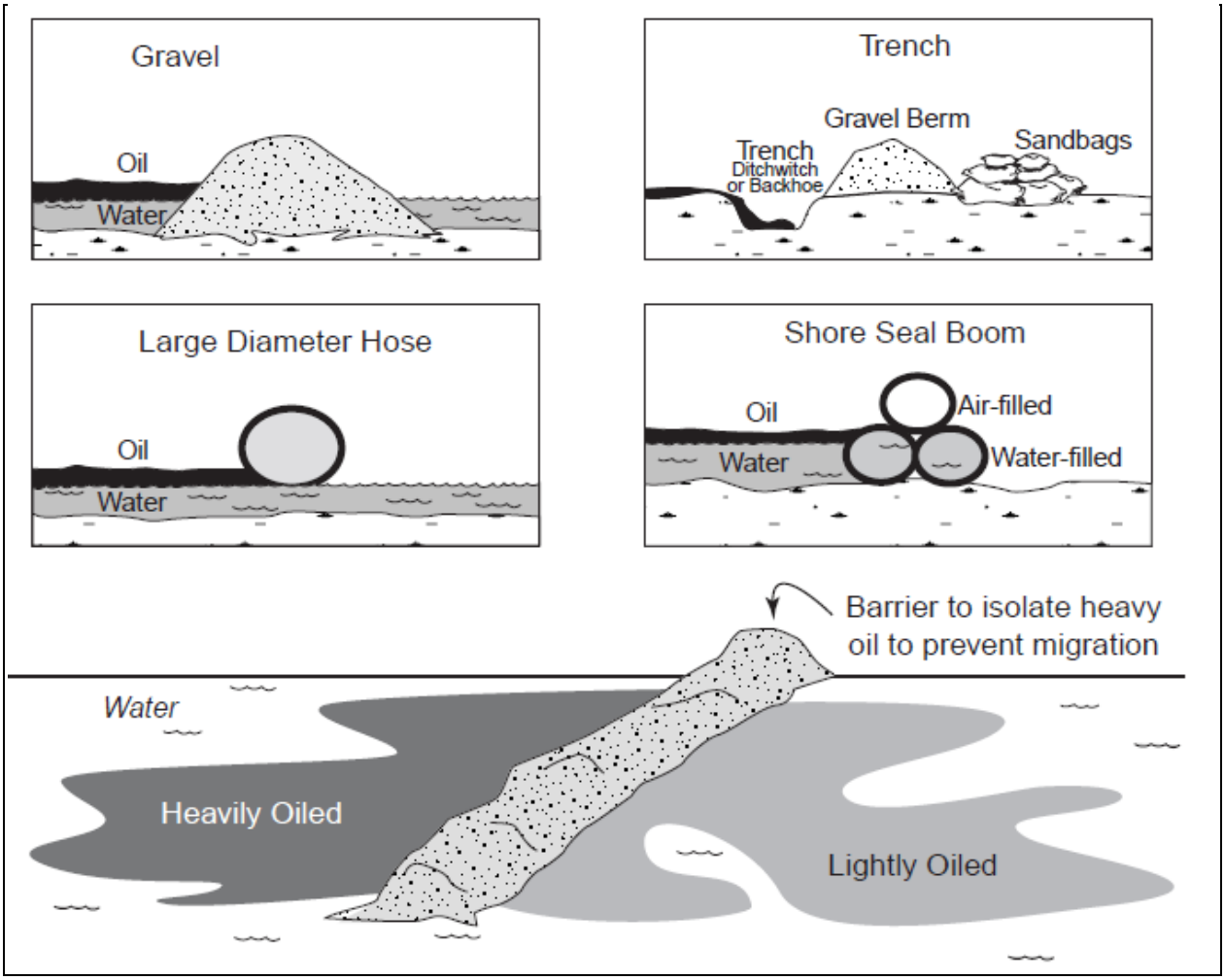

Figure 18 - Blocking on Land

The above diagrams show the construction of a containment berm using available materials such as earth, gravel, or snow. Use earth-moving equipment or manual labour to construct the berm. Form the materials into a horseshoe shape ahead of the flow of product. Use plastic sheeting to line the walls of a soil berm to prevent product penetration. A snow berm can be strengthened by spraying it with a fine water mist that forms an ice layer on top of the snow. Sandbags filled with sand or other heavy material also make excellent containment barriers. Sorbents

such as boom, sheets, rolls, peat moss, etc. may be used when overland flows are relatively minor or in wetlands. If the sorbent used is boom, it should be staked in place with stakes approximately 5 feet apart.

These barriers can serve to:

- Contain and stabilize the spilled product
- Contain or divert oil on water or product that has potential to migrate
- Create cells for recovery
- Block natural depressions to act as containment areas for recovery

An excavated trench (ensure ground disturbance calls are made first) may also be used to intercept the flow of a spill or divert the flow around a sensitive area. Dig the trench at right angles to the flow of the spill. The trench should be angled slightly down slope (in the direction of surface flow) to avoid excessive pooling in the trench. Place excavated material on the downhill side of the trench. In areas with a low water table, line the sides and bottom of the trench with plastic sheeting or similar impermeable materials. If the groundwater table is high, line the downhill side of the trench. The trench can be flooded with water to inhibit spill penetration into sediments and to stimulate flow toward the recovery device in the trench or pit.

6.6.2.3.1 Equipment Required for Blocking on Land

Backhoe or	1
Bobcat with trimmer	1
Front - end loader with bucket or	1
Hose (5 inch) or	>/=1 feet
Shore Seal Boom or	>/=50 feet
Sandbags	>/=10

Table 25 - Equipment required for Barriers on Land

6.6.2.3.2 Deployment Considerations and Limitations

- Disposal of construction material should be taken into account before using this tactic
- Do not excavate where excavation will cause more damage than the spill or where there in an impermeable layer. The bobcat trimmer is the last option for trenching. A permit may be needed from the land-owner
- When working with equipment around or near flow lines, a spotter must be added to each front-end loader
- A civil work permit from the operator is required for all work on owner-company pads

6.6.2.4 Deflection or Exclusion Booming on Lake

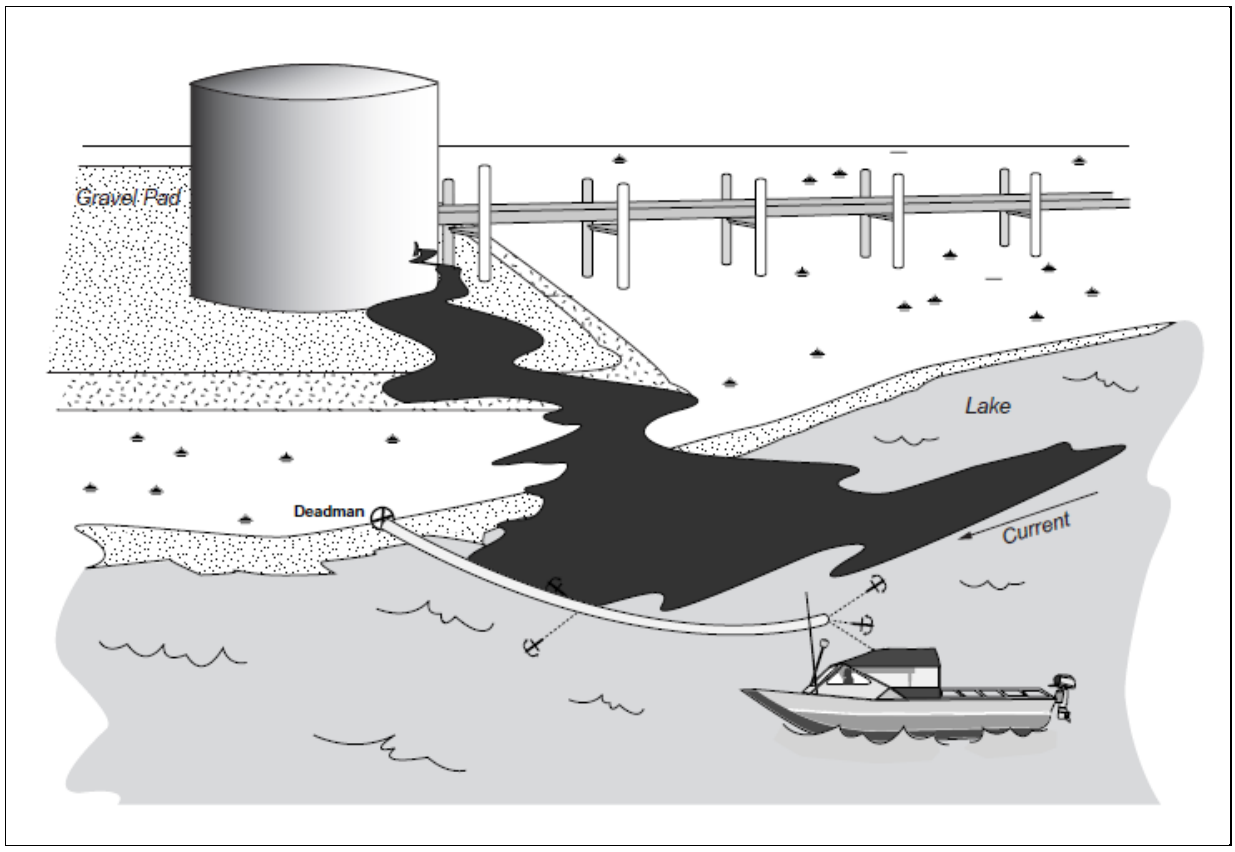

Figure 19 - Deflection Booming On Lake

During breakup and summer, lengths of conventional boom can be deployed on a lake. The boom deployment techniques are the same as those in open water. The purpose of containment booming is to divert product to a collection point for removal with skimmers. It can also be used as exclusion booming to protect lengths of shoreline.

6.6.2.4.1 Equipment Required for Deflection or Exclusion Booming on Lake

Work Boat	1
Anchor System	Variable

Table 26 - Equipment for Deflection Booming on Lake

6.6.2.4.2 Deployment Considerations and Limitations

- Summer Considerations:
  - Equipment is same as for breakup
  - Prop boats can be used
- Freeze up Considerations:
  - No ice under water in ponds
  - Slush ice possible
  - Thin ice
  - Boom is most commonly used for this tactic

6.6.2.5 Underflow Dam

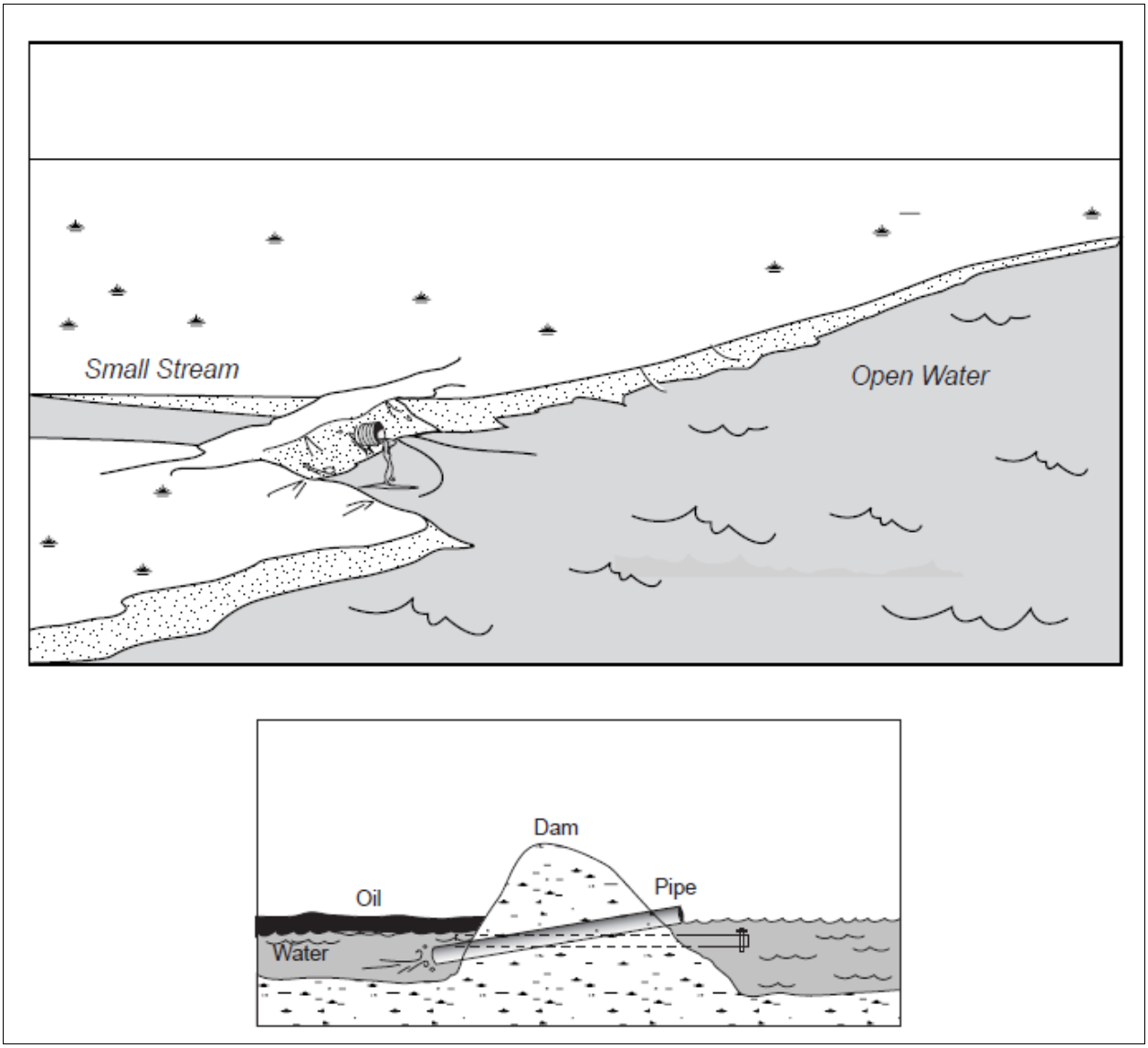

Figure 20 - Underflow Dam

The above diagram shows how the underflow dam can be used when there is too much water flow to allow for a complete blockage of a drainage channel. The dam is built of earth gravel or other barriers such as sandbags or plywood sheets. Wherever possible, line the upstream side of the dam with plastic sheeting to prevent erosion and penetration of oil into the dam material. Underflow dams use inclined pipes to move water downstream while leaving the spill contained behind the dam. The capacity of the pipe (or pipes) should exceed the stream flow rate. It may be necessary to use pumps. Pipes must be placed on the upstream side of the dam, with the elevated end on the downstream side. Make sure the upstream end of the pipe is submerged and below the product/water interface. The height of the elevated downstream end of the pipe will determine the water level behind the dam.

6.6.2.5.1 Equipment Required for an Underflow Dam

Front-end Loader (with bucket and forks) or	1
Sand bags (bulk bags may be used) or	Min quantity of fill
Plywood	>/=1
Visqueen/or Plastic Sheeting	1 roll
Pipe, 6 inch or larger	>/=20 feet

Table 27 - Equipment Required for an Underflow Dam

6.6.2.5.2 Deployment Considerations and Limitations

- Permits are required in fish-bearing waterways
- When working with equipment around or near flow lines, add a spotter to each front-end loader and dozer
- Check dams periodically for leakage and integrity, replace eroded materials, and continually monitor the water/product interface. Valved pipes, pumps, or number of siphons may require periodic adjustment to compensate for minor changes in stream flow
- Gravel or topping may have to be added continually to the dam if erosion is a problem
- Damming of stream mouth may block fish passage. The dam must be removed immediately after it is no longer needed
- Sandbags are labour-intensive and should be the last consideration
- In larger streams, consider the use of bulk bags for dam construction

6.6.2.6 Deadarm Trench on River Bank

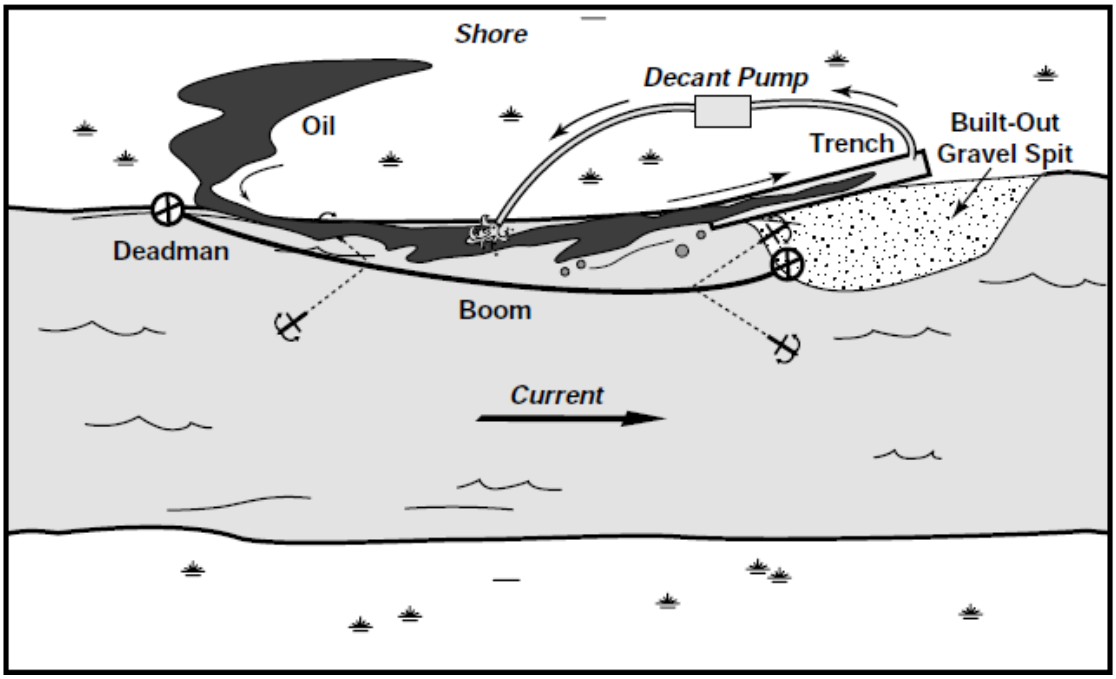

Figure 21 - Deadarm Trench on River Bank

The above diagram shows how a natural or man-made deadarm trench may be used along the bank of a river to keep product from migrating downstream from a spill on land. The deadarm will serve as a control point downstream of where the product is entering the river. Deflection boom is deployed to help divert the product into the deadarm, which may be lined with an impermeable liner. In addition, the entry of oil at the mouth of the deadarm can be

controlled with an adjustable weir. The use of the circulation pump is most often thought of in the context of large spills to open water; however, it can also be necessary during land-based spill responses where oil is spilled into ponds or streams or when there are large volumes of water from snowmelt during spring thaw. The circulation pump is set in place with the intent to maximize storage capacity for recovered oil and expedite cleanup.

6.6.2.6.1 Equipment Required for a Deadarm Trench on River Bank

Select vessels and boom according to area, water depth restrictions, and function.

Work Boat	1
Backhoe	1
Anchor System	Variable
Trash Pump (3-inch)	1
Suction Hose (3-inch)	>/=20 feet
Discharge Hose (3-inch)	>/=50 feet

Table 28 - Equipment Required for a Deadarm Trench on River Bank

6.6.2.6.2 Deployment Considerations and Limitations

- Boom is most commonly used for this tactic
- The angel of the trench to current is important. Keep the current perpendicular to the boom at ¾ knots or less; Figure 22 shows the recommended boom deployment angles for various current speeds
- Product will follow current along the shore
- Readjust angles and widths between boom sections as wind and current change. Constantly monitor near shore boom systems to prevent escape of product
- In deciding to use the circulation pump, it is necessary to examine the environmental benefits gained by such action versus the impacts of not using said device. By definition, the spill has already impacted the local receiving water to a certain degree. If nothing is done, the extent of contamination and duration of exposure can be expected to grow with time. Recovery actions will contain and remove some portion of the oil, with a reduction in potential impacts proportional to the success of the operation. If recovery operations are temporarily halted due to lack of local storage for the recovered fluids, oil remaining in the environment will continue to move into uncontaminated downstream areas. The decision to use the circulation pump then becomes one of determining whether it is more beneficial to remove as much free oil as fast as possible or attempt to contain the remaining oil while waiting for additional storage and risk expansion of the area of impact (soluble components will continue to be released to the water from any contained oil during this period). Every situation is different and each must be evaluated on the basis of its unique sensitivities

CURRENT (knots)	CURRENT (ft/second)	BOOM ANGLE RELATIVE TO CURRENT REQUIRED TO KEEP COMPONENT OF CURRENT <3/4 KNOT
1.5	2.5	30° to 42°
1.75	2.9	25° to 35°
2.0	3.4	22° to 30°
2.25	3.8	19° to 26°
2.5	4.2	17° to 24°
2.75	4.6	16° to 21°
3.0	5.0	15° to 19°

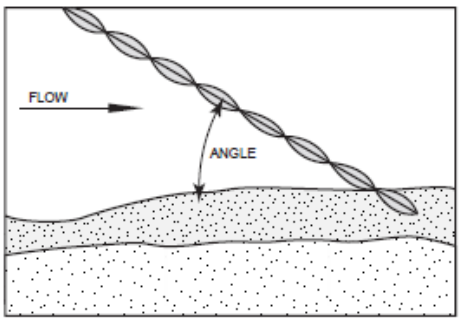

Figure 22 - Recommended Boom Deployment Angles for Various Current Speeds

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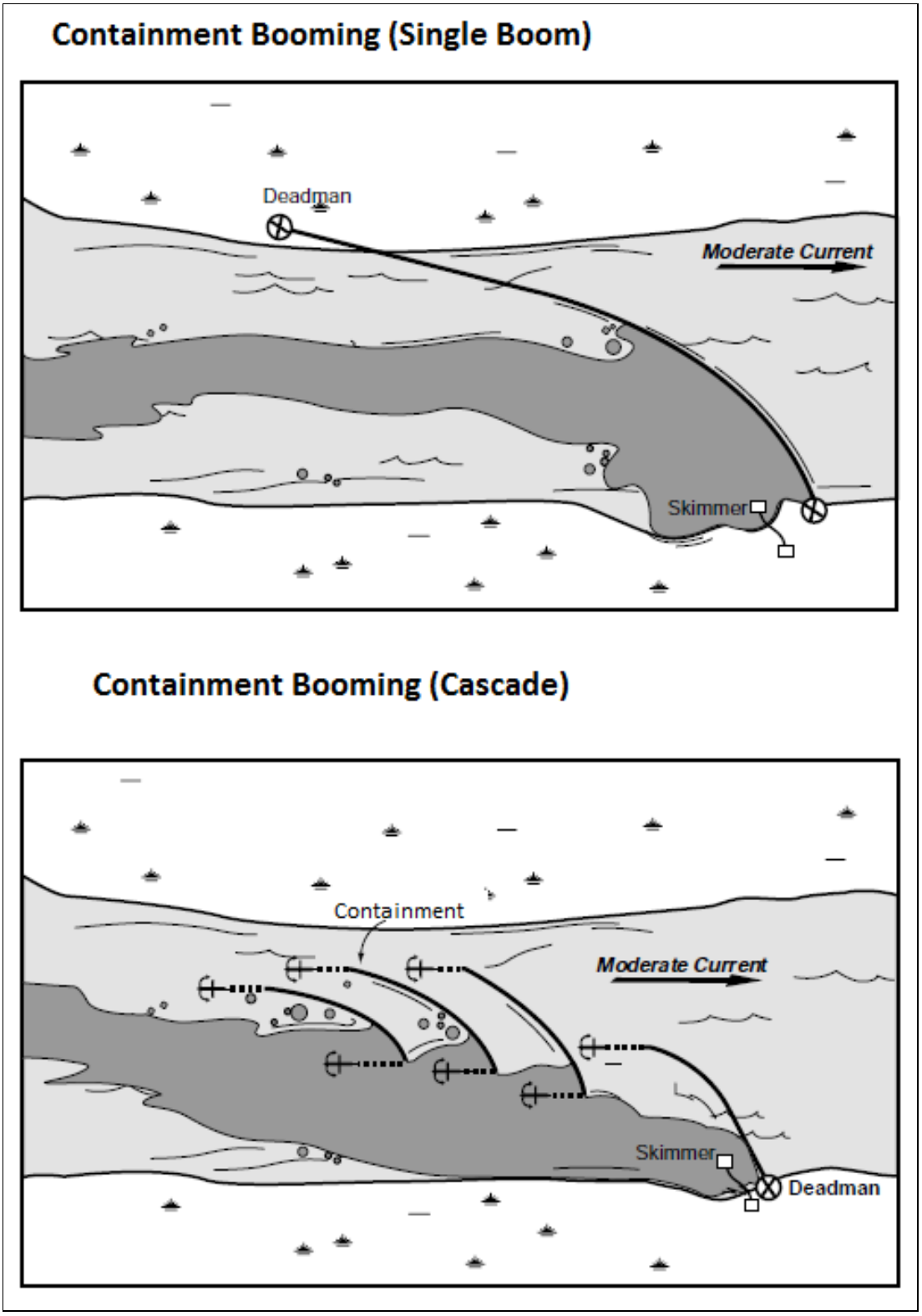
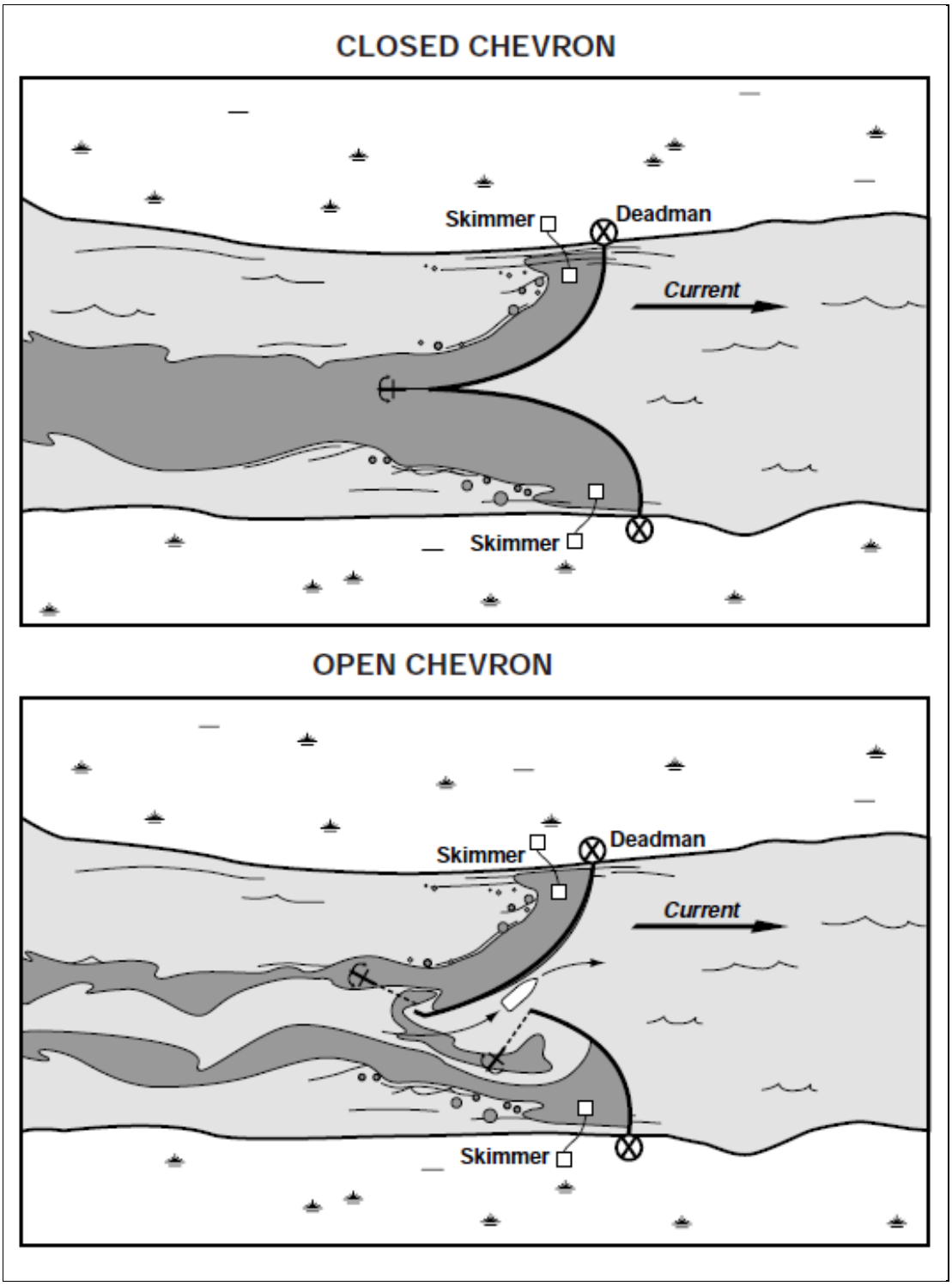
6.6.2.7 Containment Booming in Stream




CLOSED CHEVRON
Skimmer
Deadman
Current
Skimmer
OPEN CHEVRON
Skimmer
Deadman
Current
Skimmer

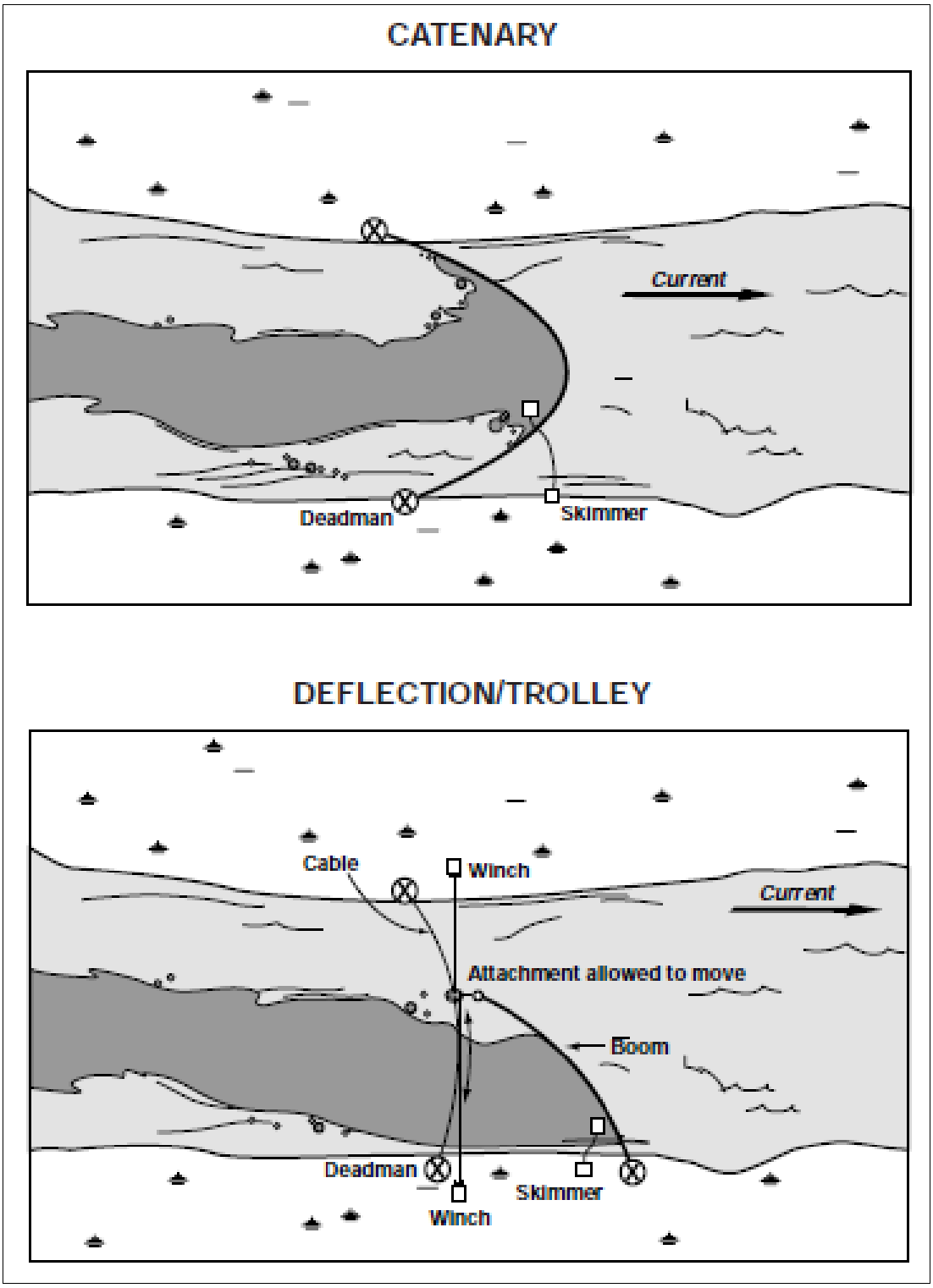


Figure 23 - Containment Boom in Stream

The above diagram shows containment booming in stream. The object of stream booming is to remove product from the fastest water and divert it to slower water. A stream may be boomed by deploying the boom either upstream or downstream. In either case, the boom is first set out on the stream bank. Before the boom is deployed, rig anchor points on the boom. The boom is attached to a shore anchor, and then the boom is either towed upstream to a midstream anchor point, or the boom is allowed to drift downstream with the current. Once the boom is set,

intermediate anchors are set as needed to ensure the boom maintains the proper configuration (remembering the current perpendicular to the boom should not exceed ¾ knots).

Examples of deployment configurations follow:

Single Boom Containment - A boom is deployed from one bank at an angle to the current and anchored midstream or on the opposite bank for diverting the product to an eddy or other quiet-water collection point on the shoreline. Alternatively, a single long boom can be used in a multichannel to divert product so it stays in one channel.

Cascading Boom Containment - Several booms are deployed in a cascade fashion when a single boom can't be used because of a fast current or because it's necessary to leave openings for boats to get through. This configuration can be used in strong currents where it is impossible or difficult to deploy one long boom. Shorter sections of boom used in a cascade deployment are easier to handle in fast water. However, more equipment is needed than when a single boom is used.

Chevron Boom - Chevron boom configurations are also for use in fast water. Two booms are deployed from an anchor in the middle of the stream and attached to each bank. A chevron configuration is used to break a slick for diversion to two or more collection areas. An open chevron configuration can be used where boat traffic must be able to pass. (The two booms are anchored separately midstream, with one anchor point upstream or downstream of the other).

Catenary (currents less than ¼ knot) - The boom is attached to an anchor on one bank and the other end is towed to the other bank and attached to an anchor there. The current naturally puts the boom in a U shape (i.e. catenary). The deployment and maintenance of a single long boom can be difficult and labour-intensive. It is usually used for recovery operations.

Trolley (cable-supported diversionary boom) - A cable or line is strung across a river and the boom attached to the trolley line with a pulley.

6.6.2.7.1 Equipment Required for Containment on Stream

Select vessels and boom according to area, water depth restrictions, and function. Specific personnel requirements depend on the length and type of boom and the nature of the area.

Work Boat	2
Anchor System	Variable
Chain Saw Winch	2
Floating Winch	2

Table 29 - Equipment Required for Containment on Stream

6.6.2.7.2 Deployment Considerations and Limitations:

- River boom is most commonly used for this tactic
- Since the speed of the current perpendicular to the boom must be maintained at ¾ knots or less, the length of boom needed to stretch across a stream depends on the current. For a stream 100 feet across with a 1 knot current, a boom approximately 140 feet long is needed. If the current is 2 knots, the same stream would require 320 feet of boom. The speed of the current is not equal across the stream; the fastest water is with the deepest water. Product moving in a stream will be entrained in the fastest water. Figure 22 shows recommended boom deployment angles for Various Current Speeds
- Don't assume 100% containment with one boom system
- Readjust angles and widths between boom sections as current and wind change. Constantly monitor near shore boom systems to prevent escape product
- A cable across the river can be dangerous. Make sure everyone knows it's there and any approaching boats are warned. Mark the cable with buoys

6.6.2.8 Exclusion Booming on River

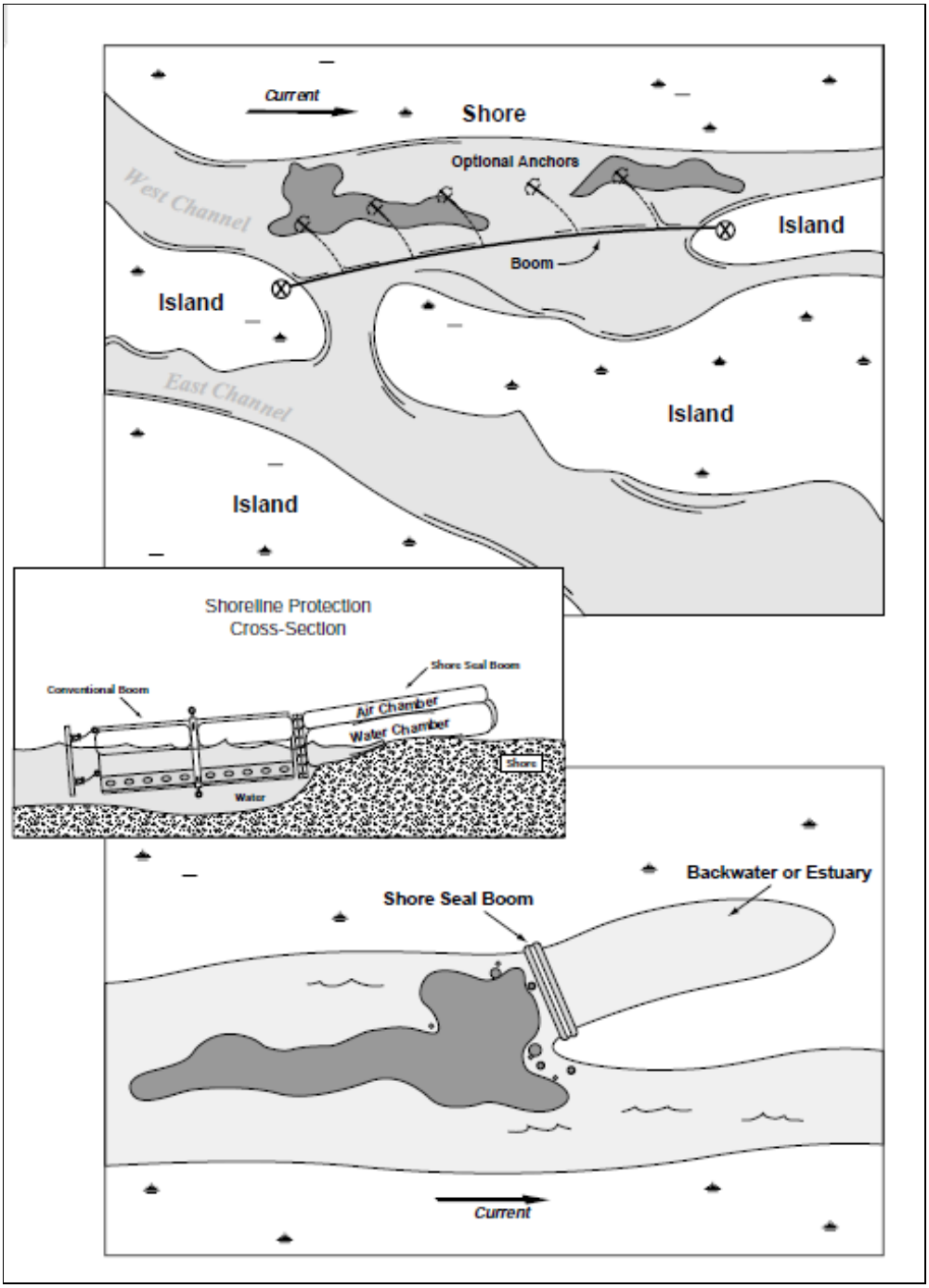


Figure 24 - Exclusion Booming on River

The previous diagram shows how either conventional boom or a Shore Seal boom may be used to exclude product from a sensitive area. For example, the Shore Seal boom may be used in shallow water to boom off a backwater, or a conventional boom can be placed across the mouth of a side channel to keep oil out. In addition, Shore Seal boom can be connected to conventional boom to protect the shoreline.

6.6.2.8.1 Equipment Required for Exclusion Booming on River

Select vessels and boom according to area, water depth restrictions, and function. Specific personnel requirements depend on the length and type of boom and the nature of the area.

Shore Seal Boom	>/=50 feet
Boom	>/=50 feet
Anchor System	Variable
Work Boat	1

Table 30 - Equipment Required for Exclusion Booming on River

6.6.2.8.2 Deployment Considerations and Limitations

- River Boom is most commonly used for this tactic
- Since the speed of the current perpendicular to the boom must be maintained at ¾ knots or less, the length of boom needed to stretch across a stream depends on the current. For a stream 100 feet across with a 1 knot current, a boom approximately 140 feet long is needed. If the current is 2 knots, the same stream would require 320 feet of boom
- The speed of the current is not equal across the stream; the fastest water is the deepest water. Product moving in a stream will be entrained in the fastest water
- Don't assume 100% containment with one boom system
- Readjust angles and widths between boom sections as current and wind change. Constantly monitor near shore boom systems to prevent escape of product

6.6.2.9 Deflection Booming in Open Water

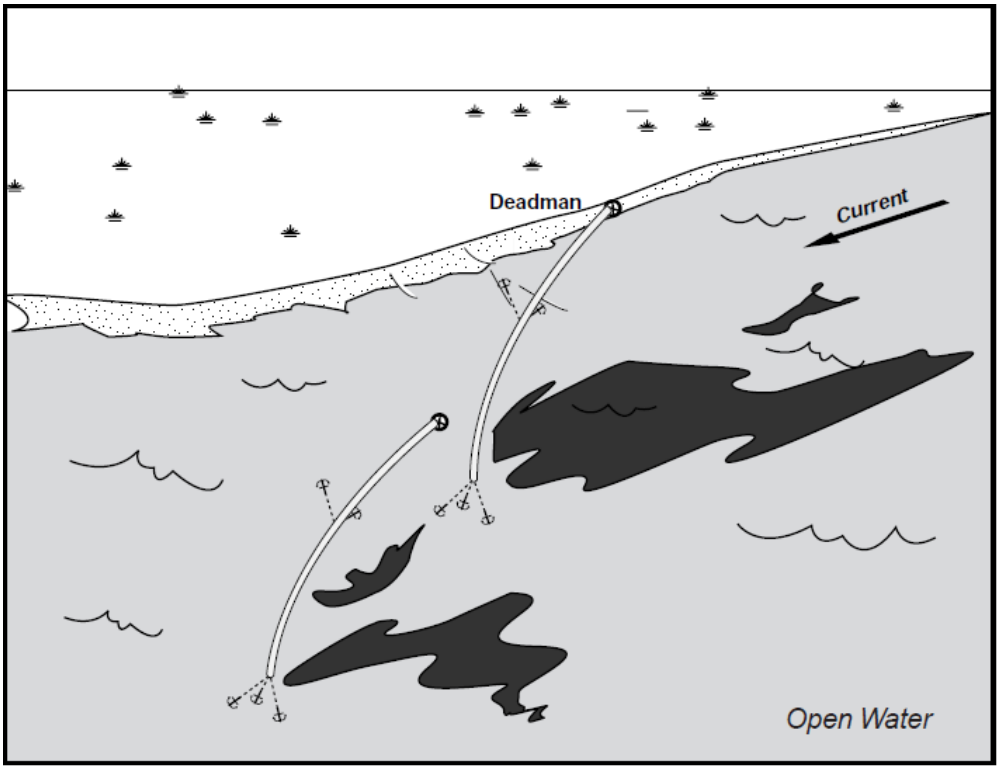


Figure 25 - Deflection Booming in Open Water

Deflection booming is often used where the water current is greater than 1 knot or where exclusion boom does not protect the shoreline. As seen in Figure 25, deflection booming diverts product to locations that are less sensitive or more suitable for recovery. Boom is anchored at one end at the shoreline, while the free end is held at an angle by an anchor system. Deflection boom is deployed at an angle to the current to reduce and divert surface flow. This allows the product to move along the boom and eliminates vortexes and entrainment. Anchoring is usually placed

every 50 feet depending on the current. Anchoring distance will vary depending on the current. Cascading deflection boom involves two or more lengths of boom ranging from 100 feet to 500 feet placed in a cascading formation in the water. The lead boom deflects the slick, and subsequent booms placed downstream of the lead boom continue the deflection process until the slick is directed to the desired area.

6.6.2.9.1 Equipment Required for Deflection Booming in Open Water

To determine the approximate length of boom required, multiply 1.5 times the length of shoreline to be protected. Select vessels and booms according to area, water depth restrictions, and function. Specific personnel requirements depend on the length and type of boom and the nature of the area.

Anchor System	Variable
Boom	50 feet to 500 feet
Onshore Anchors (e.g. Deadmen)	Variable

Table 31 - Equipment Required for Deflection Booming in Open Water

6.6.2.9.2 Deployment Considerations and Limitations

- The optimum angle of boom deployment depends on the current speed and the length and type of boom. The angle is smaller in strong currents than in weak currents and decreases as boom length increases. The more stable the boom is, the larger the optimum deployment angle is for a given current speed. Because deflection booms significantly reduce surface current, successive booms are deployed at increasingly larger angles. Figure 24 shows the recommended boom deployment angles for various current speeds
- Don't assume 100% containment with one boom system
- Readjust angles and widths between boom sections as current and wind change. Constantly monitor near shore boom systems to prevent escape of product

6.6.2.10 Exclusion Booming in Open Water

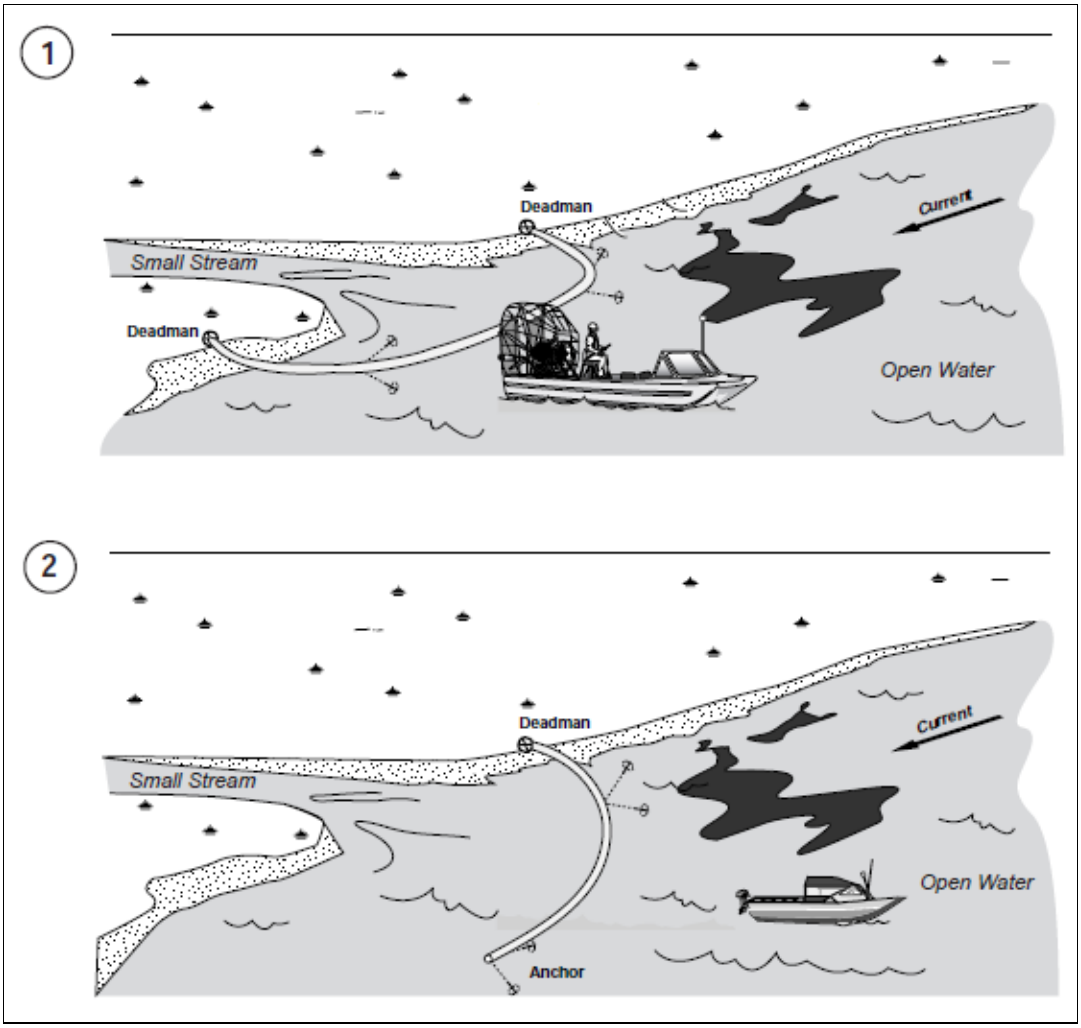


Figure 26 - Exclusion Booming in Open Water

As shown in the above diagram, exclusion booming in open water, boom is placed across small inlets and creek mouths identified as sensitive areas. Exclusion booming is used where currents are less than ¾ knots and breaking waves are less than 0.5 foot in height. The boom is either ① anchored from shore to shore across the mouths of streams or ② at an angle to a shoreline to guide product past the sensitive area. Crews with work boats deploy and tend boom along the shoreline in marshes and inlets.

6.6.2.10.1 Equipment Required for Exclusion Booming in Open Water

To determine the approximate length of boom required, multiply 1.5 times the length of shoreline to be protected. Select vessels and booms according to area, water depth restrictions, and function. Specific personnel requirements depend on the length and type of boom and the nature of the area.

Anchor System	Variable
Boom	50 feet to 500 feet

Table 32 - Exclusion Booming in Open Water

6.6.2.10.2 Deployment Considerations and Limitations

- Exclusion booming is effective if the water currents are less than ¾ knots, breaking waves are less than 0.5 feet, and water depth is at least twice the boom depth
- Exclusion booming is most effective across small stream mouths or inlets. Other areas may be more sensitive and require protection, but ability to protect efficiently needs to be considered when determining exclusion booming areas
- Don't assume 100% containment with one boom system
- Readjust angles and widths between boom sections as current and wind change. Constantly monitor near shore boom systems to prevent escape of product

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6.6.2.11 Containment on Ice with Trenches and Sumps

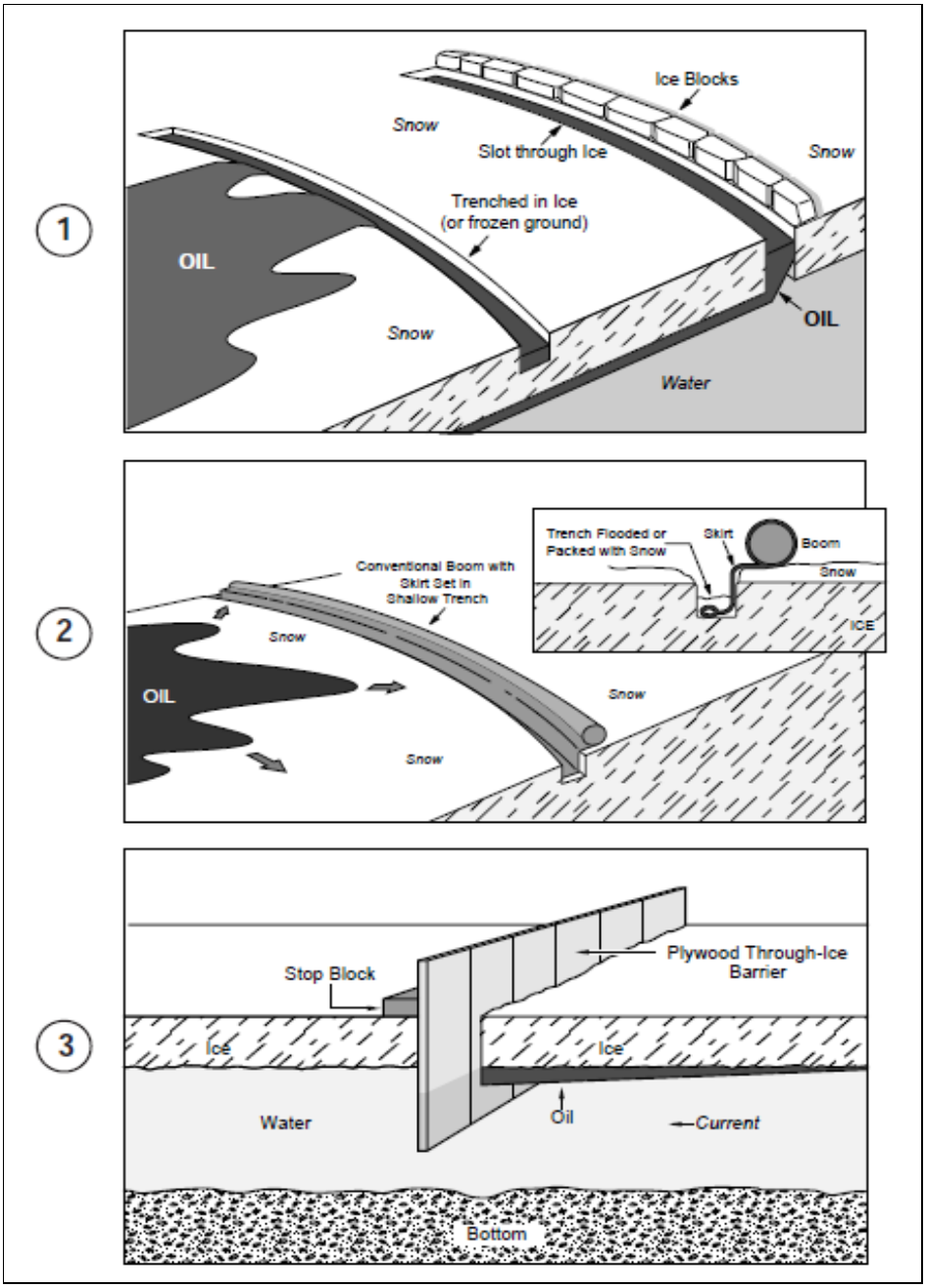


Figure 27 - Containment on Ice with Trenches and Sumps

The previous diagram shows the various techniques used for containment on ice: ① Partial trenches or through-ice slots can be dug in the ice surface with a Ditch Witch to encourage product flow to a collection point. ② The skirt of a containment boom can be set in a shallow trench to provide additional containment. ③ Another approach is to insert a plywood or metal barrier in a slot so the barrier freezes in place. This tactic can be used to divert under-ice oil to a recovery point. For smaller volumes of oil on ice, small snow berms can be created to contain the oil, but only where ice is thick enough and/or grounded to prevent cracking, pooling, and forced migration of product below the ice.

6.6.2.11.1 Equipment Required for Containment on ice with Trenches and Sumps

Rube Witch with Chain Saw	3
Visqueen	>/=50 feet
Boom, or	>50 feet
ATV's, or	2
Plywood	>1

Table 33 - Equipment Required for Containment on Ice with Trenches and Sumps

6.6.2.11.2 Deployment Considerations and Limitations:

- Check ice thickness for safe bearing capacity before working on ice. The ice must be sufficiently strong to support personnel and heavy equipment. Also, ensure ice can withstand extra load of oil and ice on the surface without situating or operating any heavy equipment close to trenches or slots in the ice. Stresses in the ice for a given load can double under these situations. Ensure product that accumulates in an ice trench is continually removed. If allowed to build up to a thick layer, some product may escape the ice slot
- Use of the Rube Witch with chain saw is labour-intensive and therefore slower than a Ditch Witch

6.6.2.12 Use of Portable Skimmers with Pumps (River and Lake)

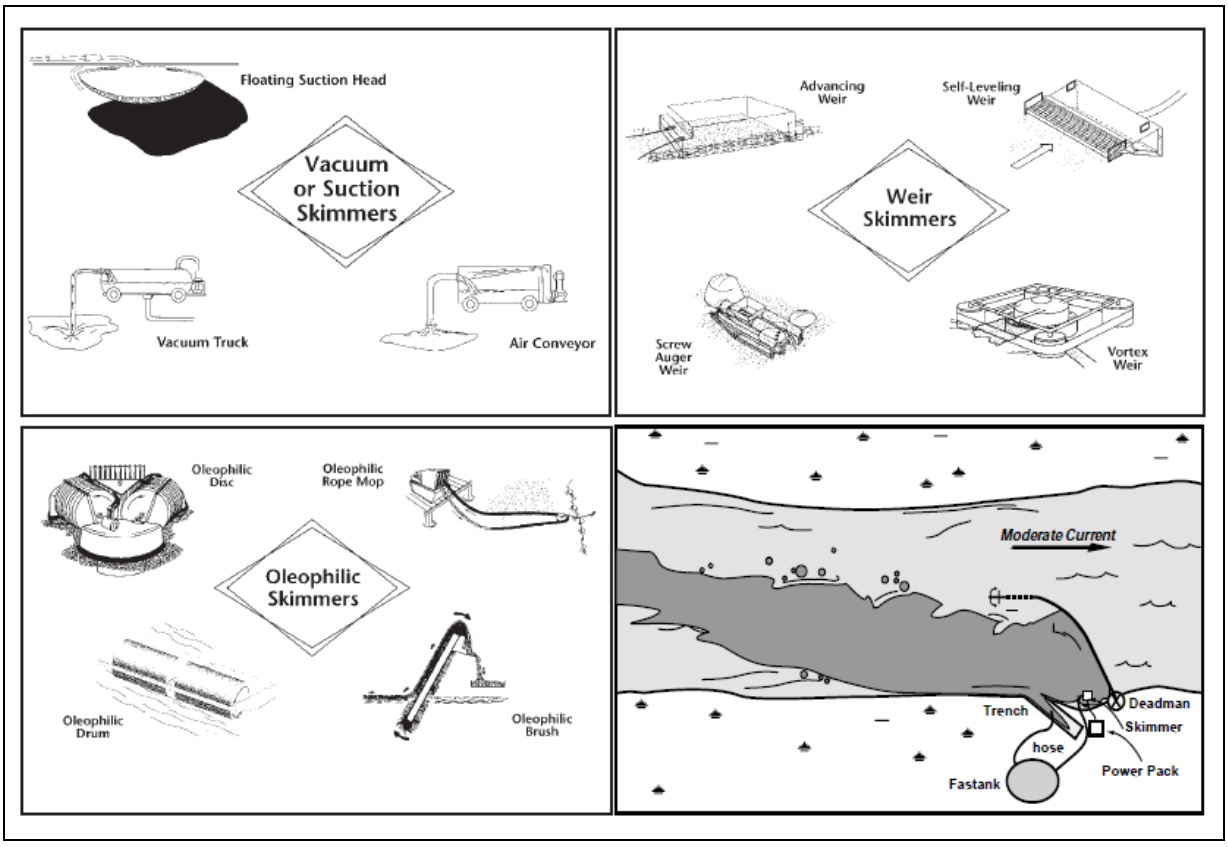


Figure 28 - Portable Skimmers with Pumps (River and Lake)

Figure 28 above diagrams show deployment of portable skimmers and pumps. Portable skimmers are easily mobilized, transported, and deployed and can be used in most spill situations for recovery. They can be used to recover product from containment areas such as the apex of a diversion boom or natural or artificial deadarms. The typical portable skimming system includes:

- Skimmer, pump, or skimmer/pump (with fuel) with power pack
- Hose (suction and discharge with fittings)
- Storage container (tank truck, storage bladder, barrels, Fastank, etc.)

Portable skimmers can be deployed on land or from small boats to recover product contained on water.

A weir skimmer has a lip or weir at its intake over which liquids flow into the skimmer pump. The user can adjust the working depth of the weir. Weir skimmers will pick up any product on water, including emulsified and weathered product; however, they recover more water than product in thin oil layers. (Avoid using a centrifugal pump since emulsification will occur; use a diaphragm pump instead).

Product adheres to an oleophillic skimmer, while water is repelled. These skimmers include rotating disks, rotating drums, or endless belts (including rope mop). Brush and rope mop skimmers are most effective in more-viscous, weathered oils, while disk and drum skimmers work better in fresh product. (While any pump can be used as long as the pump rate can be adjusted so as not to exceed the recovery rate of the skimmer, positive displacement pumps are best on oil spills).

6.6.2.12.1 Equipment Required for the Use of Portable Skimmers and Pumps on River and Lake

Typically, portable skimmers require 2 persons for setup and 1 or 2 operate.

Oleophilic
Vikoma 30K and Morris MI-30
Foxtail
Lori LSC

Table 34 - Equipment required for use of Portable Skimmers and Pumps

6.6.2.12.2 Deployment Considerations and Limitations

- Portable skimmers are initially used to pick up concentrations of product, then are used in containment areas. The skimmers can be land-based or deployed from boats, and require power packs (a small boat can be used for the power pack, as long as it is stable). When requesting a skimmer, always request a total skimming system
- The only differences in equipment or techniques for road access or no road access are logistical in nature
- Position the skimmer or pump with suction hose in area of heaviest spill concentration. Make sure intake end of hose is fitted with a screen. Use a diaphragm pump (not a centrifugal pump) with a weir skimmer

6.6.2.13 Use of Absorbents

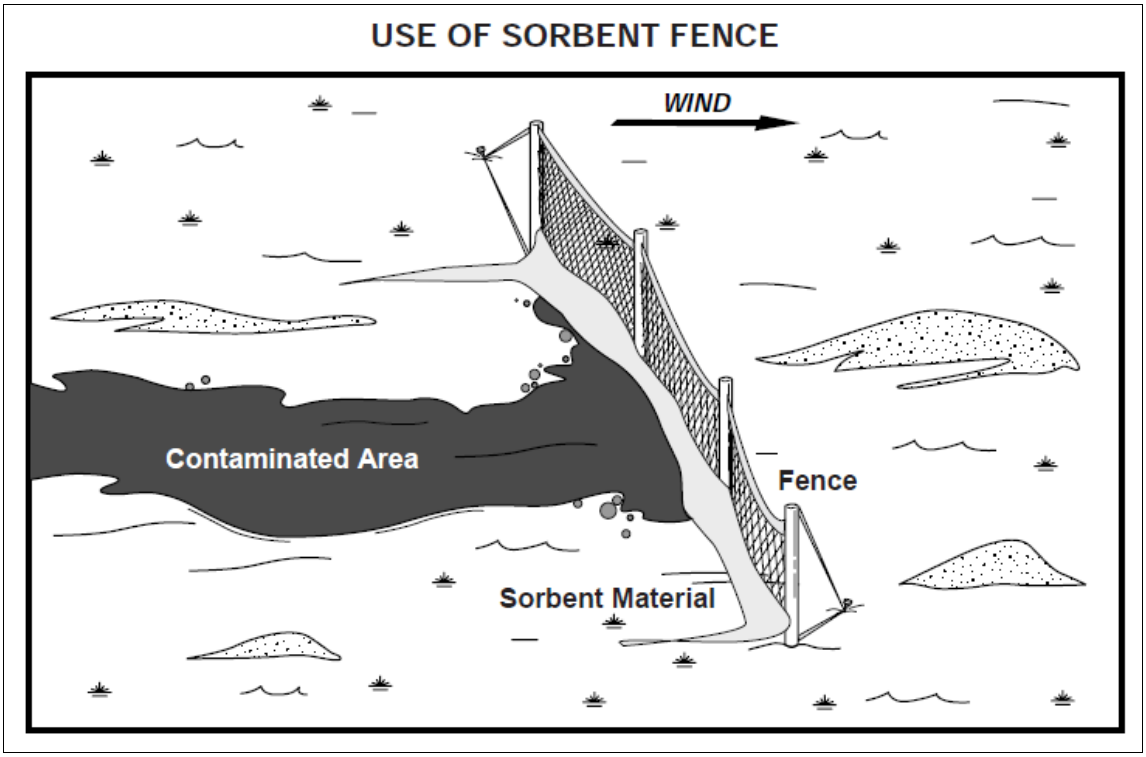


Figure 29 - Use of Absorbents

The above diagram shows the use of absorbents. Sorbent pads and rolls may be used onshore to remove small pools of liquid or product layers on rocks or man-made structures. If the spill is at the shoreline, sorbent boom can be deployed and backed up with conventional containment boom as necessary to keep the product from drifting away. Sorbents can be used with Shore Seal boom or fences to create a product absorbent barrier.

Place contaminated sorbents in plastic bags marked 'oily waste' for removal and disposal. Larger quantities can be placed in barrels or debris boxes. Minimize the amount of sorbent material used. Contaminated sorbent bags must be placed in oily waste dumpsters.

6.6.2.13.1 Equipment required for use of Absorbents

Personnel requirements depend on the nature and area of oil contamination. Personnel typically work in pairs for sorbent deployment and recovery. Additional personnel are required for loaders, dump trucks, vessel, etc.

Sorbent Boom 4 inch	Double Sorbent Boom 4 inch
Sorbent Pads 18 x 18 inch	Sorbent Sweeps 18 x 18 inch
Sorbent Pads 36 x 36 inch	Sorbent Roll 36 inch x 150 feet
Pom Poms	

Table 35 - Equipment required for use of Absorbent

6.6.2.13.2 Deployment Considerations and Limitations:

- Use of sorbents should be minimized because of disposal problem
- Sorbent wringers can be used to extend the life of sorbents
- Do not use Pom Poms in conjunction with pumping

- Sorbents work well on light refined oils, and thick sheens, but are only partially effective on solidified or weathered oil, highly viscous oil and very thin sheen. Sorbent products are ineffective unless all layers become saturated when in contact with spilled product. Use sorbent boom when overland flow is minor and terrain has low slope or is wetland
- Hay bales could be deployed in place of or in conjunction with sorbent material

6.6.3 Recovery Tactics

Tactics outlined in this section describe the common recovery techniques which may be utilized to recover product following an incident.

6.6.3.1 Mechanical Recovery of Lightly-Contaminated Snow

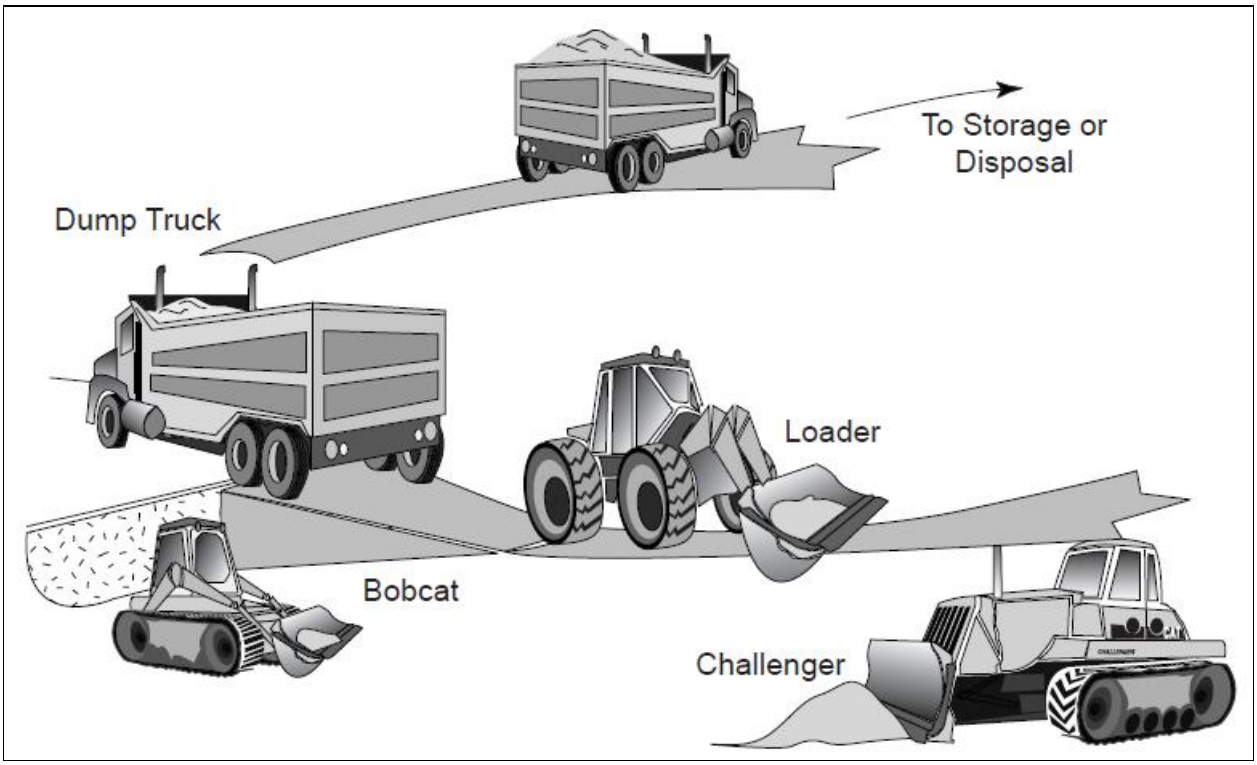


Figure 30 - Mechanical Recovery of Lightly-Contaminated Snow

The above diagram shows mechanical recover on lightly-contaminated snow. Snow provides a good sorbent material for product and forms a mulch-like mixture that is easily removed with heavy equipment such as front-end loaders and dump trucks. A Bobcat replaces the front-end loader in hard to-reach or tight quarters.

Access the product snow with dozers and loaders, pile the snow with the dozers, then load it into dump trucks located on nearby gravel pads, roads. After a front-end loader has filled a truck, the truck hauls the contaminated snow off for disposal, typically to snow melters in lined pits. If heavily contaminated snow needs blending to ease recovery, loaders and dozers push nearby lightly contaminated snow into the heavily contaminated snow area for recovery. Clean snow can also be used for blending. Product in areas inaccessible by vacuum trucks or heavy equipment is recovered with sorbents and manual labour. The sorbents are collected in totes, garbage cans, or bags and transferred with snow machine, Argos, or pickup truck to a front-end loader, which transfer the waste into a dump truck for removal and disposal. Sorbents must be placed in contaminated waste bags and then put in an oily waste dumpster.

6.6.3.1.1 Equipment Required for the Mechanical Recovery of Lightly Contaminated Snow

Front-End Loader, or	1
Bobcat	1

Dump Trucks	2
Snow melters	2
Sorbents	Variable

Table 36 - Equipment Required for the Mechanical Recovery of Lightly-Contaminated Snow

6.6.3.1.2 Deployment Considerations and Limitations:

- This tactic is limited to contaminated snow with no free liquids. Otherwise, lined or leak-proof dump trucks may be used
- If the contaminated snow is too saturated for handling, blend lightly-contaminated snow or clean snow with it
- If delivery of snow exceeds snow melter capacity, the snow can be contained in lined pits until it is processed. Existing lined pits, upright tanks, or dry ponds can be used, when available, to store snow; otherwise temporary lined pits can be constructed as necessary
- After removal of free product, contaminated snow, and after flushing, contain and monitor the area until breakup. Insulate ice berms to provide containment during breakup, when the product can be removed with direct suction, portable skimmers

6.6.3.2 Recovery by Direction Suction

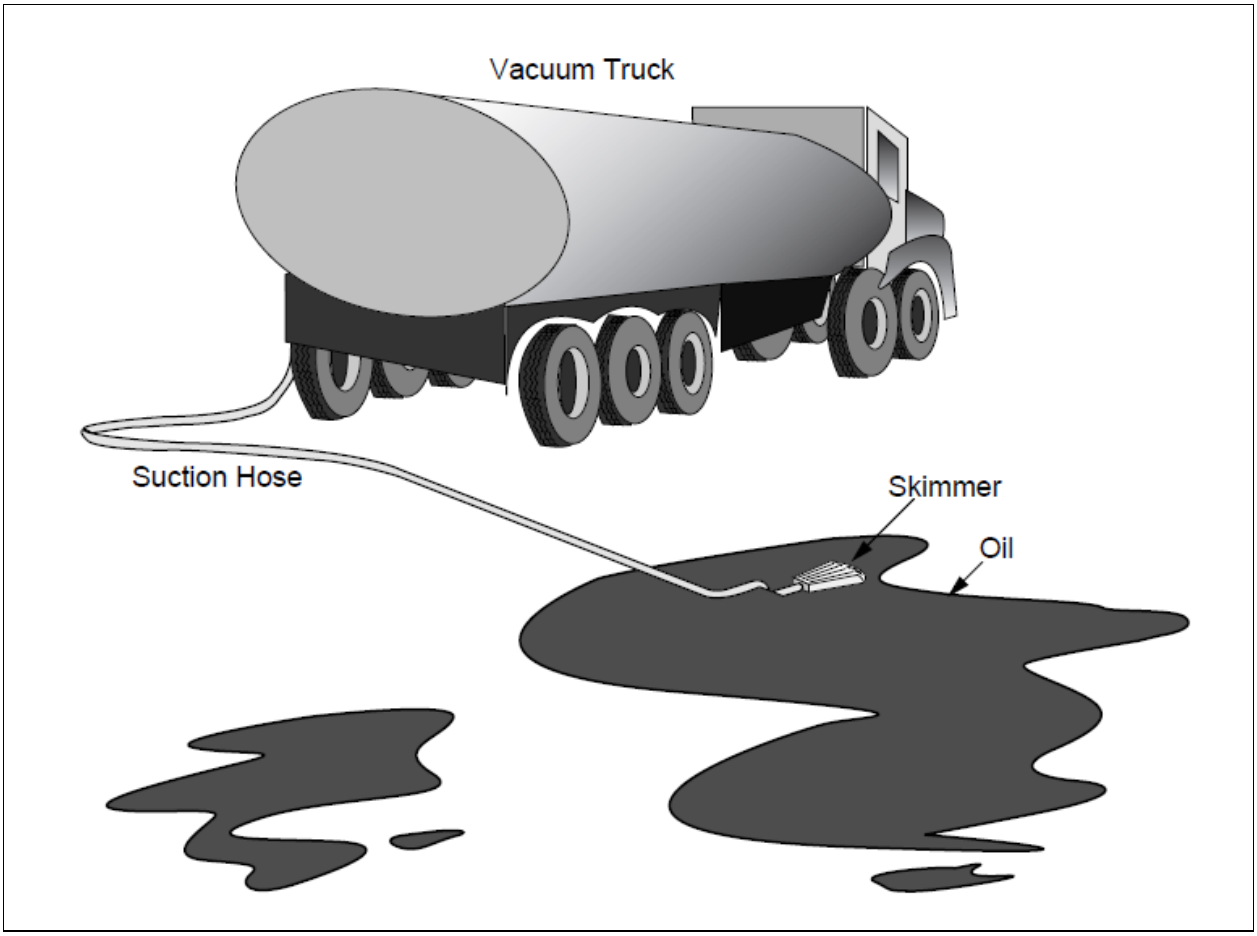


Figure 31 - Recovery by Direct Suction

The above diagram shows recovery by direction suction. For spills off pad or road, a vacuum truck can effectively reach out 200 feet. If the product is pooled on water, a skimmer head is attached to the hose extending from the vacuum truck. The hose or skimmer head is placed in the pooled product for recovery. Vacuum truck staff, man the hose or skimmer head and move it to other pooled areas as necessary. A Super Sucker can also be used for direct suction. DOP pumps or 4 inch trash pumps can also be used for this task since they can move product more than

200 feet, and could either pump the pooled oil into vacuum trucks on a pad/road, into holding tanks, or into the slop product tank at a nearby production facility.

Free product may be recovered from any pooled area including natural depressions, barriers, constructed trenches, or containment dikes.

6.6.3.2.1 Equipment Required for Recovery by Direct Suction

Liquid Transfer Pump with Power Pack	1
Trash Pump (4-inch)	1
Suction Hose(4-inch)	>/=20 feet
Discharge Hose (4-inch)	>50 feet
Skimmer Head	1
Upright Tank (400 bbl.)	1

Table 37 - Equipment Required for Recovery by Direct Suction

6.6.3.2.2 Deployment Considerations and Limitations:

- Vacuum trucks provide efficient spill recovery, unless vehicle access is prohibited or not possible, the spill is un-pumpable (highly viscous, cold or weathered), the spill is in a thin layer, or debris will clog the recovery line
- Identify the disposal facility to be used before calling out a vacuum truck
- Viscous liquids accessible within 200 feet by a vacuum truck are recovered with direct suction of that vacuum truck. Pooled areas could be in natural depressions or in constructed trenches
- Vacuum trucks can access pooled diesel up to 400 feet away from the truck
- Use of skimmers with vacuum trucks decreases recovery capacity
- Super Suckers are available to remove liquids with solids vacuum trucks cannot handle
- With a trash pump, the suction head must be completely submerged
- Since a DOP pump is submersible, product must be deep enough for effective pumping
- The amount of product will be estimated based on gauging by appropriate means

6.6.3.3 Recovery by Pit or Trench

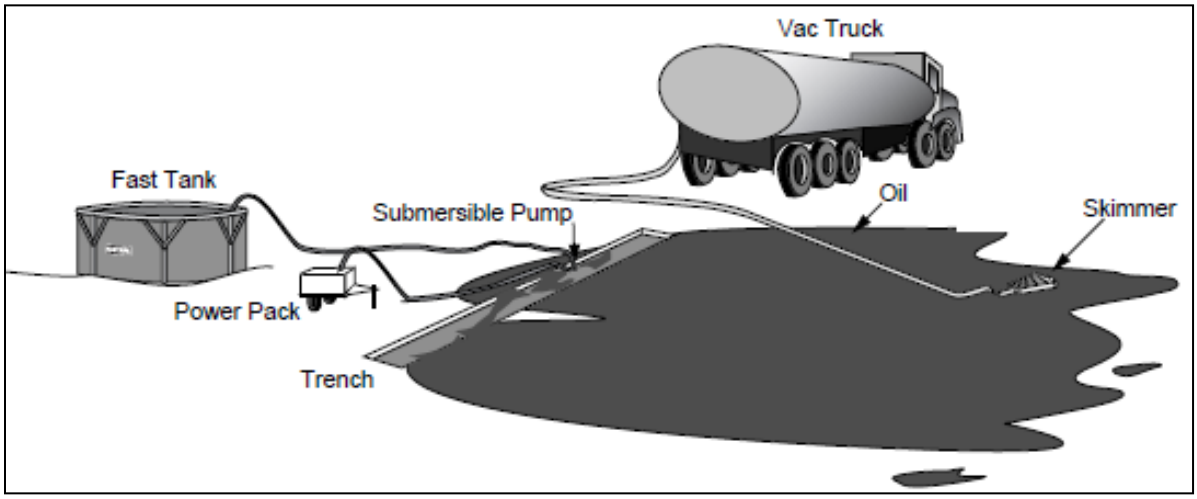


Figure 32 - Recovery by Pit or Trench

The above diagram shows how an excavated trench is used to intercept the flow of a spill or divert the flow around a sensitive area. Dig the trench at right angles to the flow of the spill. The trench should be angled slightly down slope (in the direction of the surface flow) to avoid excessive pooling in the trench.

Place excavated material on the downhill side of the trench. In areas with a low water table, line the sides and bottom of the trench with plastic sheeting or similar impermeable materials. If the groundwater table is high, line the downhill side of the trench. The trench can be flooded with water to inhibit spill penetration into sediments and to stimulate flow toward the recovery device in the trench or pit.

6.6.3.3.1 Equipment Required for Recovery by Pit or Trench

Liquid Transfer Pump	1
Peristaltic Pump (2-inch), or	1
Trash Pump (3-inch), or	1
Diaphragm Pump (3-inch), or	1
TransVac	1
Portable tank	1
Suction Hose (2-inch)	>/=20 feet
Suction Hose (3-inch)	>/=20 feet
Discharge Hose (3-inch)	>50 feet

Table 38 - Equipment Required for Recovery by Pit or Trench

6.6.3.3.2 Deployment Considerations and Limitations

- Disposal of construction material should be taken into account before using this tactic
- Do not excavate an interception trench in an area where the excavation will cause more damage than the spill itself
- The amount of product will be estimated based on gauging by appropriate means (e.g. Coliwasa tube)

6.6.3.4 Anchored V Boom to Skimmer

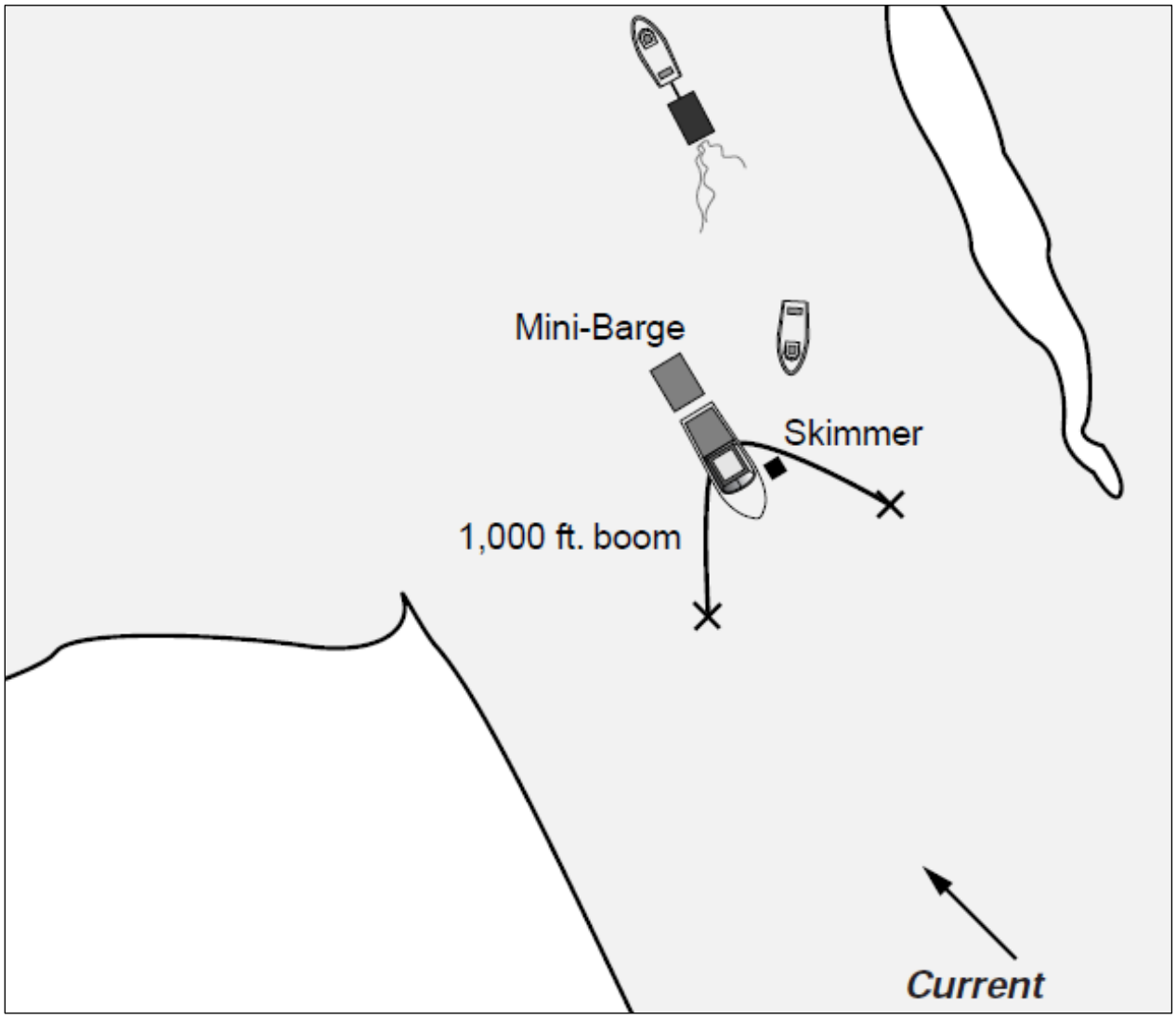


Figure 33 - Anchored V Boom to Skimmer

The previous diagram shows how a V-shaped boom configuration is anchored with two booms of 1000 feet each, with a typical sweep opening of 800 feet. Anchors are placed as appropriate. A skimmer may be tied in at the apex. A workboat supports the skimmer and tends the boom. The skimmer pumps product and water into a mini-barge anchored immediately down current.

6.6.3.4.1 Equipment Required for Anchored V boom to Skimmer

Select vessels, booms, and skimmers according to area, water depth restrictions, and function.

Work Boat	1
Boom	2000 feet
Anchor System	Variable
Work Boat or Runabout	1
249-bbl Mini-barge (237 bbl. available storage)	2

Table 39 - Equipment Required for Anchored V Boom to Skimmer

6.6.3.4.2 Deployment Considerations and Limitations

- The amount of product recovered will be estimated based on gauging by means (e.g. Ullage tape)
- In shallow water operations, a mini-barge may be grounded and used as a work platform

6.6.3.5 Hook Boom to Skimmer

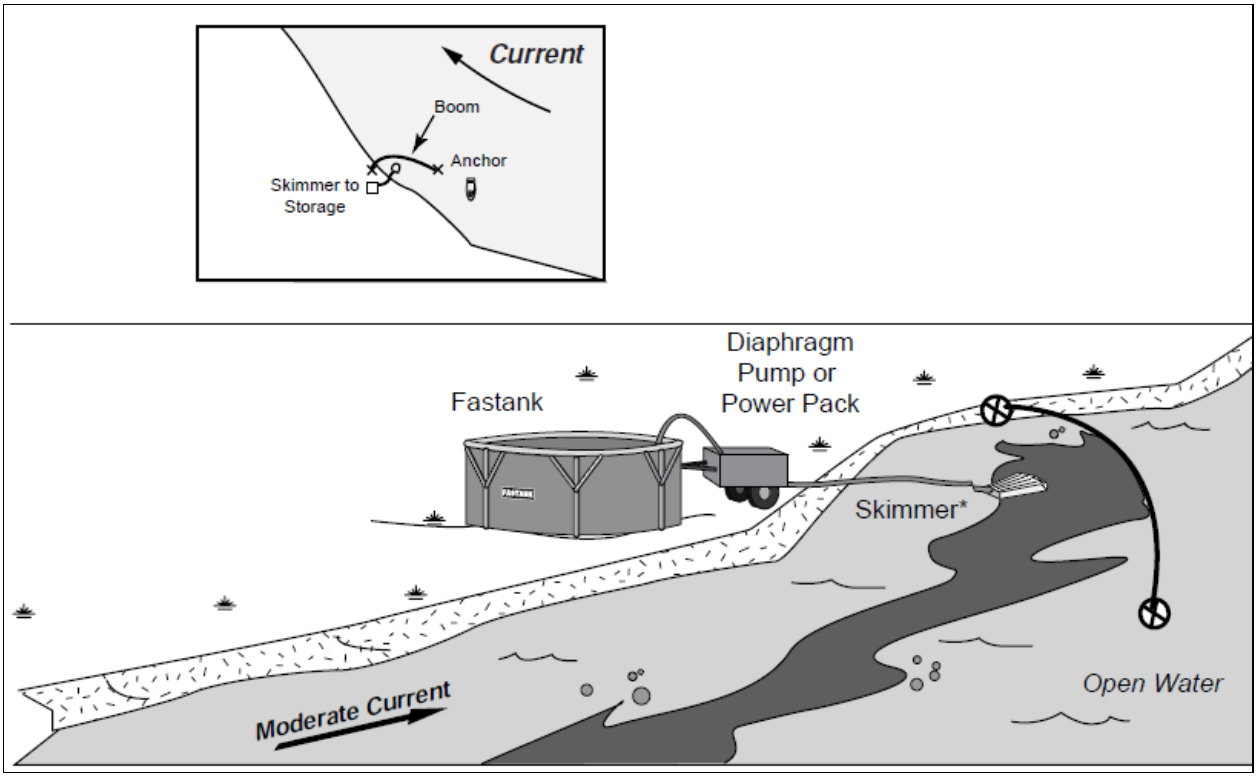


Figure 34 - Hook Boom to Skimmer

The above diagram shows how boom is anchored on the shore in lengths of 50 to 300 feet. An anchor holds the boom off the shore, and a work boat tends the booms and anchors.

A skimmer is placed near the shore in the recovery area of the boom. Diesel power packs on shore power the skimmer. A temporary tank and a trash pump are set up on shore.

Liquids are pumped to the temporary tank on shore. Onshore tanks decant 80% of the fluids as free water into the collection boom area, with approval of relevant regulatory authorities. Additional Fastanks and diaphragm pumps can be added as needed depending on product encounter rates.

6.6.3.5.1 Equipment Required for Hook Boom to Skimmer

- Select vessels, booms, and skimmers according to area, depth restrictions, and function
- Equipment and personnel required to set up and maintain boom are listed in the applicable containment tactic

Diaphragm Pump (3-inch)	1
Suction Hose (3-inch)	2>/=20 feet
Discharge Hose (3-inch)	2>50 feet
Fastank or Fold-a-tank	1
Or Tank Bladder (500gal)	1

Table 40 - Equipment Required for Hook Boom to Skimmer

6.6.3.5.2 Deployment Considerations and Limitations

- Airboats may be used if readily available to move product into collection points
- 500-gallon bladders with cargo nets placed underneath could also be used for helicopter slinging or storage
- Bigger bladders could be used if Rolligon transport (Manufacturer of heavy duty off-road transportation equipment) is available
- The amount of product will be estimated based on gauging by appropriate means (e.g. Coliwasa tube)

6.6.3.6 J Boom to Skimmer

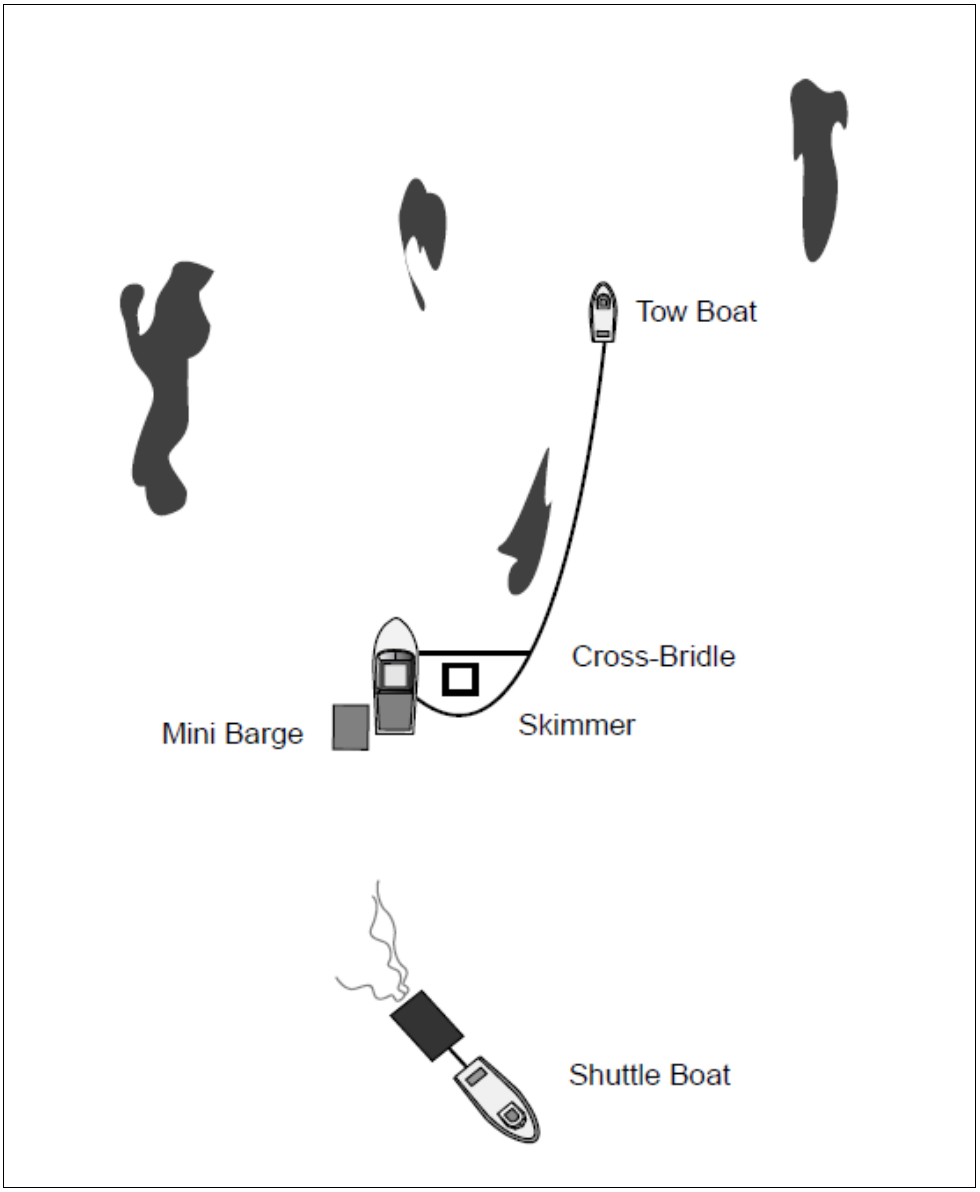


Figure 35 - J Boom to Skimmer

The above diagram shows how a work boat tows 350 to 500 feet of boom, with swath widths of 100 to 150 feet, respectively. The other end of the boom is connected to the boat that operated the skimmer. The boom is towed in a J-boom configuration that directs product into a skimmer in the apex. Continued operations offshore involve boom of 350 feet. Operations that enter near shore areas and encounter lesser waves involve boom of 500 feet.

Skimmed liquids are pumped into mini-barges. A skimmer vessel tows and fills a mini-barge until it is replaced by an empty mini-barge. Free water from the bottom of the mini-barge tank is decanted during the skimming and loading. The discharge hose, fastened up current of the skimmer, directs the free water into the boomed area. The operator turns off the pump when the discharge water becomes full of product. Mini-barges are towed to, and deliver liquids to, an intermediate storage barge.

6.6.3.6.1 Equipment Required for J Boom to Skimmer

Select vessels, booms, and skimmers according to area, water depth restrictions, and function.

Work Boat	1
Boom	Variable
Mini-Barge	2

Table 41 - Equipment Required for J Boom to Skimmer

6.6.3.6.2 Deployment Considerations and Limitations

- The amount of product recovered will be estimated based on gauging by appropriate means (e.g. Ullage tape)

6.6.3.7 U Boom to Skimmer

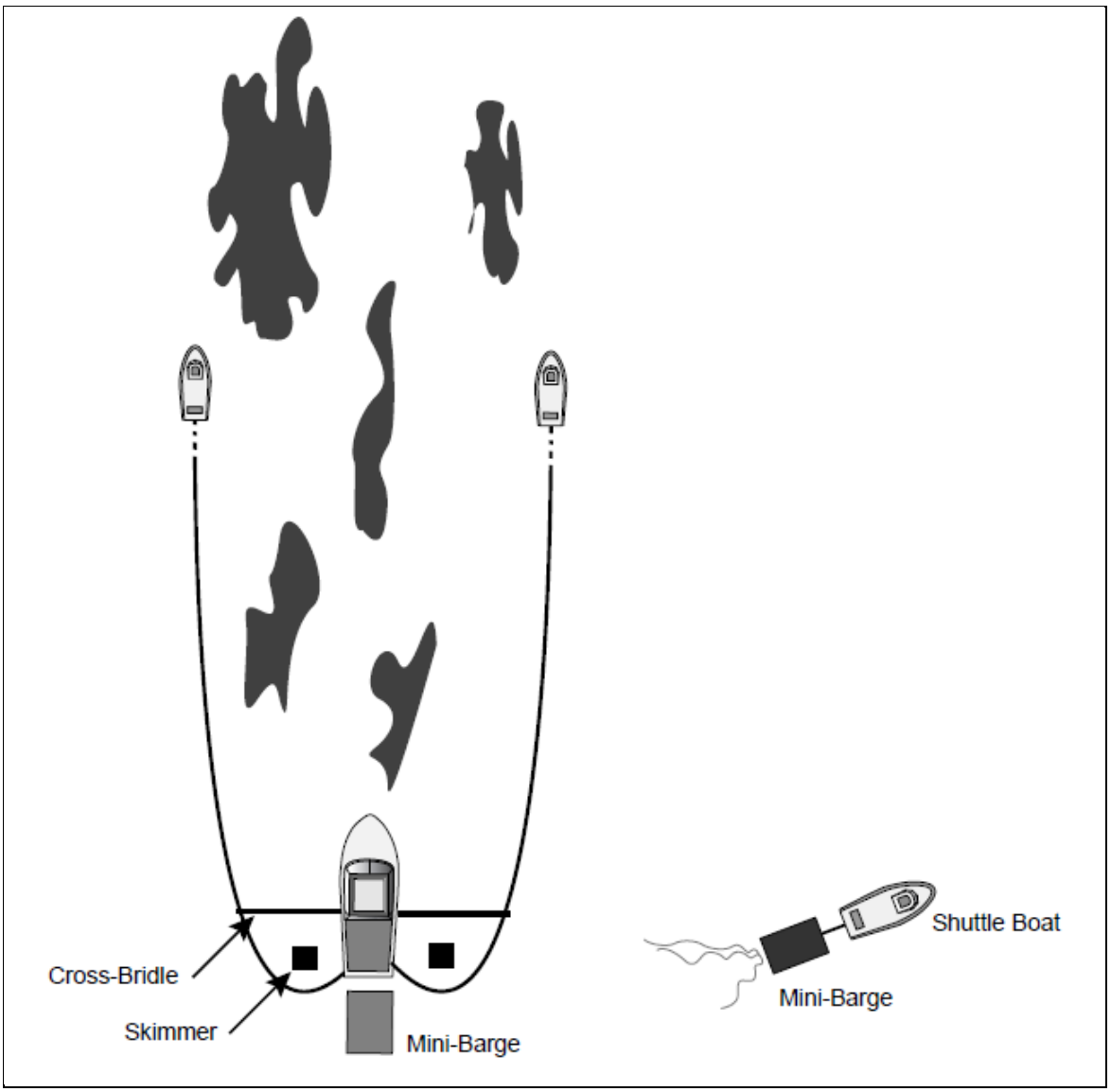


Figure 36 - U Boom to Skimmer

The above diagram shows how the U boom to skimmer would be deployed with two work boats each tow 500 feet of boom in a 300 foot-wide sweep. The skimming vessel is tied into the boom. The oil passes into the boom configuration and then into a skimmer. The power pack on the barge will power the skimmer and the skimmer pump. The skimmer pumps recovered liquids into a towed storage platform (mini-barge or floating storage bladder). Skimming continues uninterrupted.

6.6.3.7.1 Equipment Required for U boom to Skimmer

Select vessels, booms, and skimmers according to area, water depth restrictions, and function.

Boom	1000 feet
Work Boat with two integrated skimmers	1
Skimmer	On-water recovery
Mini-Barge	2
Floating Storage Bladder	2
Power Pack	1

Table 42 - Equipment Required for U Boom to Skimmer

6.6.3.7.2 Deployment Considerations and Limitations:

- Equipment operates for 10 hours in each 12 hour shift; two shifts per day
- The product recovery rate and number of mini-barges required (fill to 95% capacity) vary with the product encounter rate
- The amount of product recovered will be estimated based on gauging by appropriate means (e.g. Ullage tape) prior to offloading

6.6.4 Land Response Tactics

Tactics outlined in this section describe the common shoreline and inland cleaning techniques which may be utilized to deal with product contaminated shorelines and inland following an incident.

6.6.4.1 Shoreline Assessment

If a spill impacts the shoreline, it is important to have a clear and accurate understanding of the nature and extent of the contamination, particularly before cleanup commences. The objectives are to:

- Systematically collect data on shoreline and inland contamination conditions
- Identify and describe human use, ecological and cultural resource effects and the constraints they impose on cleanup operations
- Cross-check pre-existing information on environmental sensitivities or clarify observations from aerial surveys
- Identify any constraints that may limit operations
- Provide decision support for onshore response operations

Priorities for shoreline and inland assessment surveys may be determined using information from aerial surveys and pre-existing sensitivity atlases and databases. Priority setting criteria include:

- Degree of contamination
- Environmental resources
- Projected water level and wind conditions
- Available transportation and logistics

6.6.4.2 Natural Recovery of a Contaminated Inland and Shoreline

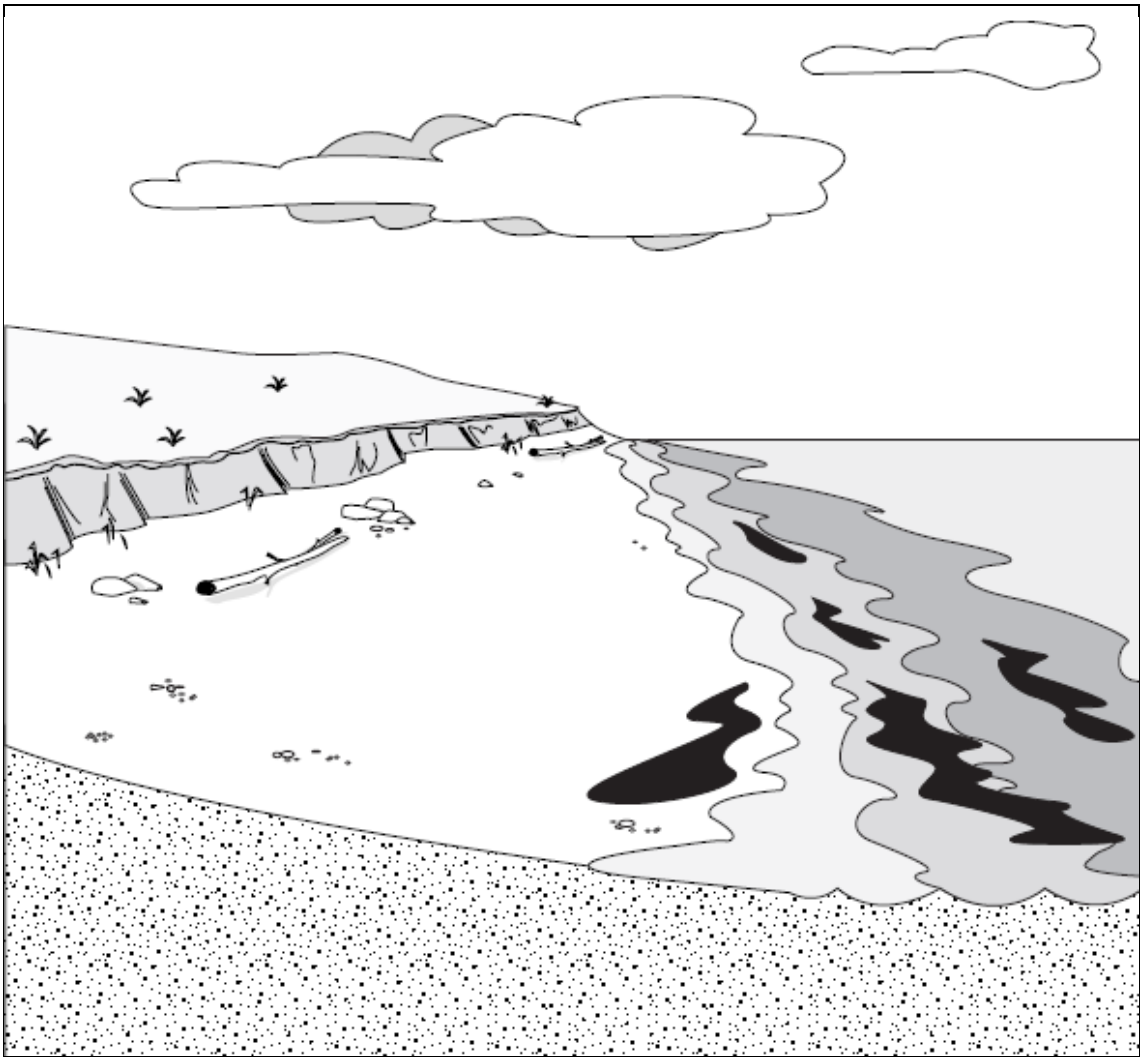


Figure 37 - Natural Recovery of a Contaminated Inland and Shore

The above diagram shows the process of Natural Recovery of Contaminated Shore, involving frequent monitoring. Natural recovery allows the shoreline to recover without intervention. This option requires field observations of the oiling conditions and of the resources at risk to assess the effects of allowing the oil to weather naturally. In some cases, monitoring the location may be necessary to ensure the assessment is correct.

Natural recovery is a shoreline and inland treatment technique that allows a site to recover without intervention or intrusion. All shore types affected by small amounts of non-persistent oil can recover naturally, given appropriate circumstances. Assessment of the oiling and resources at risk is required to determine the likely consequences of allowing oil to weather naturally. Land and shorelines must be monitored to ensure recovery occurs. Natural recovery may be appropriate when:

- Oiling has occurred on high-energy beaches (primarily cobble, boulder and rock) where wave action will remove most of the oil in a relatively short time
- Shorelines are remote or inaccessible
- Treatment or cleaning of stranded oil may cause more damage than leaving the shore to recover naturally
- Other response techniques either cannot accelerate natural recovery or are not practical

6.6.4.2.1 Deployment Considerations and Limitations:

- Unified Command approval is required for any shoreline cleanup tactic
- Natural recovery of contaminated shorelines is more applicable for:

- Small than large amounts of product
- Non - persistent than persistent product, and
- Exposed shorelines than sheltered or low wave-energy environments

- Natural recovery may not be appropriate if important ecological resources or human activities/resources are threatened
- Natural recovery should always be considered as the preferred option, particularly for small amounts of product. The trade-off analysis involves:
  - natural recovery
  - the possible benefits of a response to accelerate recovery, and
  - any possible delays to recovery that may be caused by response activities

6.6.4.3 Inland and Shoreline Clean Up Using Flooding and Flushing

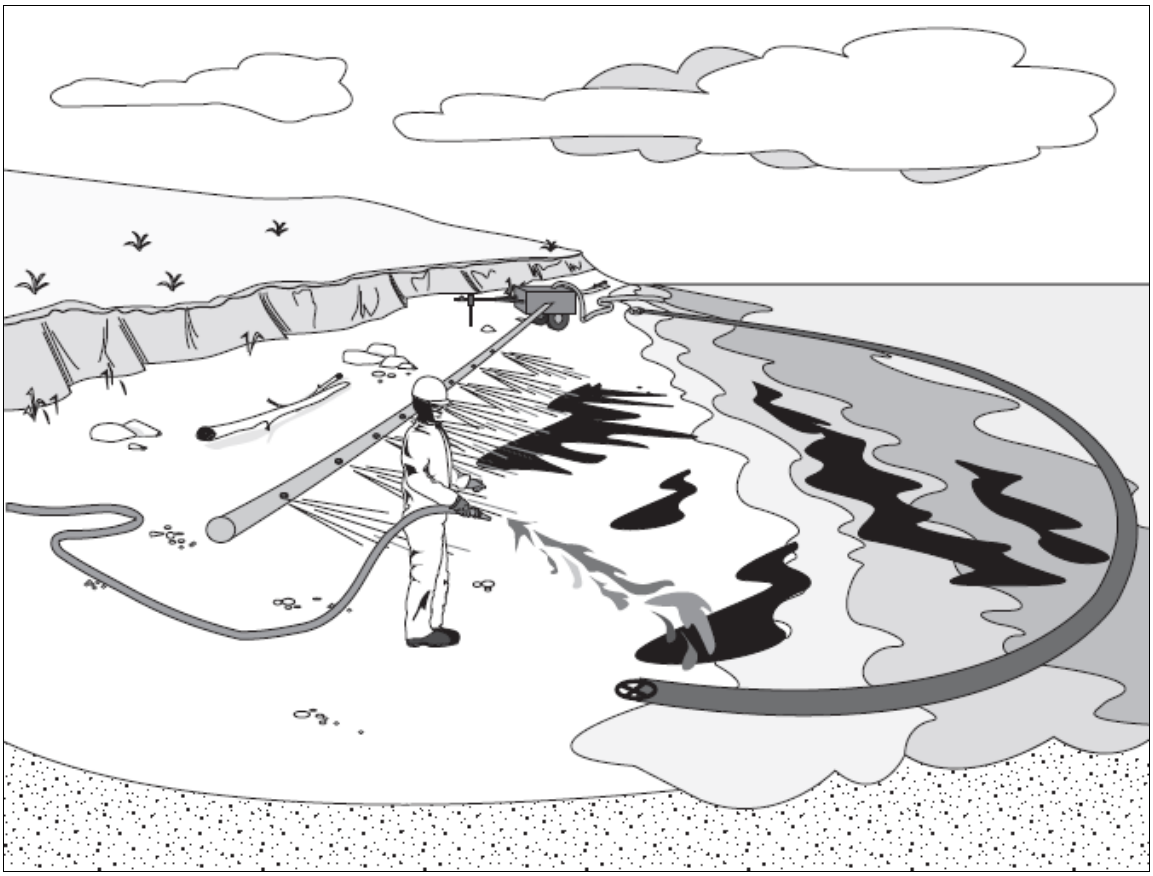


Figure 38 - Inland and Shoreline Clean Up Using Flooding and Flushing

The above diagram shows the process of inland and shoreline clean up using flooding and flushing. Physical removal involves a variety of washing or flushing tactics to move oil from the shore zone to a location for collection and removal. The variables that distinguish each tactic are pressure and temperature. For all these tactics, booms, or other methods of trapping and containment are used to collect the product for removal.

6.6.4.3.1 Flooding (Deluge)

A high-volume (50 to 250 gpm), low-pressure supply of water at ambient temperature is pumped using large diameter (3-6 inch) pipe and/or hose (header" to the upper section of the contaminated area. Water can be pumped either directly from a hose without a nozzle, or the pipe or hose can be perforated (0.1 to 0.2 inch holes) at intervals and placed along the shoreline parallel to the water line. Output pressures are less than 20 psi.

The high volume of water floods the surface area (in the case of impermeable man-made shorelines) or the beach sediments. Mobile or non-sticky product is transported with the water as it flows down slope. Flooding may be used in combination with trenches or sumps and vacuum systems to float and collect oil for recovery.

6.6.4.3.2 Low-Pressure, Cold-Water Flushing

Hand-operated or remote-controlled hoses use ambient temperature water to flush, wash, and herd product to a collection point for removal. Output pressures are controlled, usually by a nozzle, and are low (less than 50 psi). The tactic can be used with flooding to prevent re-deposition of the product.

6.6.4.3.3 Low-Pressure, Warm/Hot-Water Flushing

Hand-operated or remote-controlled hoses use heated (80°F to 212°F) water to flush, wash, and herd product to a collection point. This tactic is used primarily to dislodge and flush oil that cannot be washed using low-pressure, ambient-temperature water. Output pressures are controlled, usually by a nozzle, and are low (less than 50psi). This tactic can be used with flooding to prevent re-deposition of product, and is limited to man-made substrates with little or no biological activity.

6.6.4.3.4 High-Pressure, Cold-Water Flushing

Hand-operated or remote-controlled hoses use ambient temperature water jets to flush, wash, and herd product to a collection point. The higher water pressures dislodge and flush product that cannot be washed or mobilized using lower pressure, ambient temperature water. Output pressures are controlled and are in the range of 100 psi or greater. On sloping outcrops or structures this technique can be used with flooding to prevent re-deposition of the product.

6.6.4.3.5 High-Pressure, Warm/Hot-Water Flushing

Hand-operated or remote-controlled hoses use high-pressure, heated (80°F to 212°F) water to flush, wash, and herd product to a collection point. Output pressures may be fixed or controlled by a nozzle and are in the range of 100psi or greater. The higher pressure and warm water dislodge and flush product that cannot be washed by lower pressure and temperature water. On sloping structures, this technique can be used with flooding or low-pressure flushing to prevent re-deposition of the product. This technique is limited to man-made substrates with little or no biological activity.

6.6.4.3.6 Equipment Required for Shoreline Clean up using Flooding and Flushing

Suction Hose (2inch)	>/=20 feet
Discharge Hose (3inch)	>/=50 feet
Perforated Header Hose	>100 feet
Water Heating Plant	-
Water Truck	1

Table 43 - Equipment Required for Inland and Shoreline Clean up using Flooding and Flushing

6.6.4.3.7 Deployment Considerations and Limitations

- Unified Command approval is required for any shoreline cleanup Tactic. Additional permits may be required for beach or upland access, and to anchor boom to the beach
- Flooding is effective on most shoreline types, but it may have limited application only on sand or mud flats and on steep man-made solid structures. Generally, flooding is not a very intrusive technique
- Low-pressure, cold-water flushing is effective on most impermeable shoreline types, but may have limited application only on sand beaches, sand-gravel beaches, and sand flats and is probably not appropriate on mud flats. Generally, this is not a highly intrusive technique if used carefully in conjunction with high-volume flooding, which minimizes the potential adverse effects on shoreline organisms of using heated water
- The effectiveness of flooding and low-pressure flushing decreases as product viscosity increases and as depth of penetration increases on cobble beaches
- High-pressure, cold-water flushing has limited application only for contaminated bedrock or solid man-made shorelines. High-pressure water can dislodge attached organisms and may damage others
- High-pressure, warm/hot-water flushing usually has only limited application for solid man-made structures. The heated water or the pressures may dislodge attached organisms or damage others

6.6.4.4 Subterranean Flushing

This process is used to flush refined products from subterranean locations where they may collect. These areas include but are not limited to:

- Storm sewers
- Sanitary sewers
- Combined sewers
- Service tunnels
- Subway, train tunnels

6.6.4.4.1 Flooding (Deluge)

Upstream flow should be isolated using sewer plugs or damming techniques if possible to ensure contamination is not forced upstream during the flushing operations.

Flushing outfall must be setup to receive flushed materials and adequate collection equipment must be implemented prior to starting operations. A high-volume (50 to 250 gppm), low-pressure supply of water at ambient temperature is pumped using large diameter (3-6 inch) pipe and/or hose (header) to the upper section of the contaminated area. Water can be pumped either directly from a hose with or without a nozzle. Output pressures are less than 20 psi.

The high volume of water floods pipe or manmade surface moving collected materials to an outfall collection point.

6.6.4.4.2 Equipment Required for Subterranean Flushing

Suction Hose (2 inch)	>/=20 feet

Discharge Hose (3 inch)	>/=50 feet
Sewer plugs	1+
Water Truck	1

Table 44 - Equipment Required for Inland and Shoreline Clean up using Flooding and Flushing

6.6.4.4.3 Deployment Considerations and Limitations:

- Unified Command approval is required for any flushing cleanup tactic. Additional permits may be required for discharge collection of flushed material
- Low-pressure, water sources may need to be used when residential home connections are expect to ensure surge backup into basements
- The effectiveness of flooding and low-pressure flushing decreases as product viscosity increases
- Effectiveness will be decreased by debris and sediment in sewers as material will remain in subsurface areas and slowly leach following flushing operations

6.6.4.5 Ventilation and Purging

This process is used to remove toxic, flammable or nuisance vapours from spaces and structures. This is primarily done to remove gasoline vapours from subterranean locations and inhabitable structures:

- Storm sewers
- Sanitary sewers
- Combined sewers
- Service tunnels
- Subway, train tunnels
- Inhabitable structures (homes, business, gathering places, and others)

6.6.4.5.1 Positive Pressure Ventilation

Ignition sources must be turned off in all inhabited structures prior to setup of ventilation and purging operations. Upstream flow should be isolated using sewer plugs or containment structures if possible to ensure contamination is not forced upstream during the purging operations.

The premise is to force high volumes of air from the beginning of the system (usually the bottom lowest point) to the end of the system (usually the top highest point). As the ventilation process is completed, areas are cleared by opening and closing all accusable points until they are clear. Additional ventilation equipment may need to be deployed and moved forward in the system to clear dead end or isolated areas.

Smoke ventilation tables should be referenced to see the setup which would be most effective for a given space or structure.

6.6.4.5.2 Negative Pressure Ventilation

Ignition sources must be turned off in all inhabited structures prior to setup of ventilation and purging operations. Upstream flow should be isolated using sewer plugs or containment structures if possible to ensure contamination is not forced upstream during the purging operations.

The purpose is to draw contaminated vapours out of spaces and structures using high volumes of air this works in the opposite layout as positive pressure ventilation. Equipment is setup at the exit point of the system. This is only used for confined areas where positive ventilation is not effective.

6.6.4.5.3 Equipment Required for Ventilation and Purging Flushing

Combustible Gas indicator and or PID	>/=20 feet
Containment structure materials (wood, plastic sheeting)	>/=50 feet

Sewer plugs	1+

Table 45 - Equipment Required for Inland and Shoreline Clean up using Flooding and Flushing

6.6.4.5.4 Deployment Considerations and Limitations:

- Unified Command approval is required for any ventilation or purging techniques Tactic. Additional permits may be required for air discharge of contaminated vapours
- Continuous metering will ensure no work is conducted above 10% LEL for inspection and recon, 10% for cold work and 5% for hot work
- As inhabited structures are cleared of dangerous and nuisance vapours they must be cleared by the local fire or health authority prior to allowing individuals to re-enter structures
- If negative pressure ventilation techniques are used all equipment must be explosion proof and rated for use in flammable atmospheres. Discharge areas must be isolated and monitored to prevent exposure to unprotected workers and public bystanders

Note

Each space and structure due to their size and complexity will require ventilation calculations to be completed to ensure proper ventilation of safe spaces. Calculation models are available online. The following is a link to one of the available models - http://www.alpinefan.com/alpineair_vent_calc.php.

6.6.4.6 Shoreline and Land Clean Up Using Manual Removal and Vacuum Methods

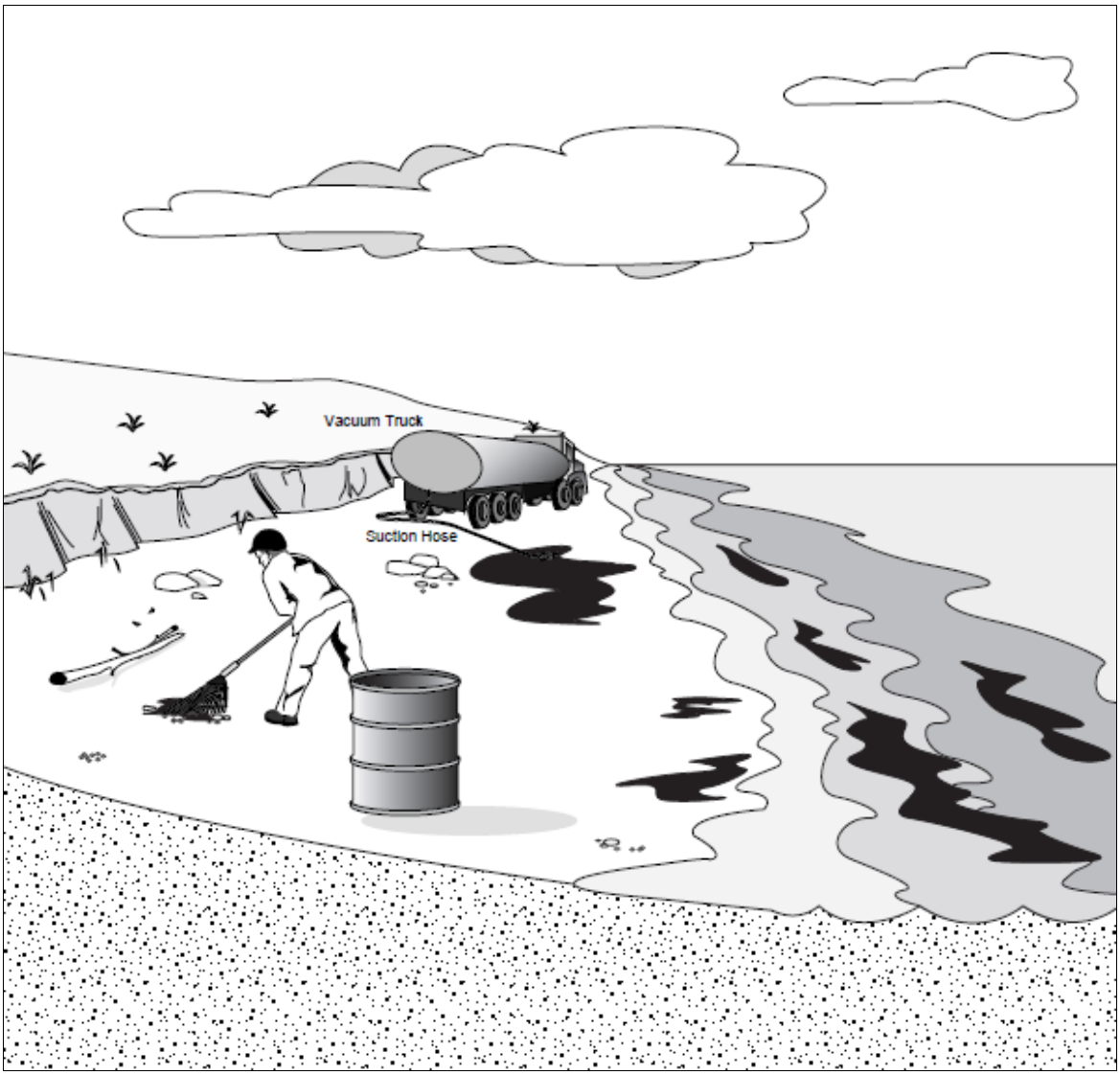


Figure 39 - Shoreline and Land Clean Up Using Manual Removal and Vacuum Techniques

The above diagram shows shoreline cleaning using vacuum techniques. This group of physical methods involves removal of the product or contaminated materials (sediments, debris, vegetation, etc.) from the shore zone to a location where they can be disposed of.

6.6.4.6.1 Manual Removal

The technique involves picking up product, contaminated sediments, or debris using gloved hands, rakes, pitchforks with screens, trowels, shovels, sorbent materials, buckets, etc. It may include scraping or wiping with sorbent materials or sieving if the product has come ashore as tar balls. Collected material can be placed directly in plastic bags, drums, etc., for transfer. If the containers are to be carried to a temporary storage area they should not weigh more than can be easily and safely carried by one person. This tactic can be used practically and effectively in any location or on any shoreline type or product type where access to the shore zone is possible and safe.

6.6.4.6.2 Application

Use on mud, sand, gravel, and cobble when oiling is light, sporadic, and/or at or near the land surface, or on land where there is no access for heavy equipment. If access is available, a vacuum truck is recommended.

6.6.4.6.3 Vacuum

Truck-mounted vacuum systems may be used; the suction end usually is deployed manually to collect product and/or oily water. These vacuum systems are primarily used where product is pooled in natural depressions or hollows, or has been herded into collection areas. Vacuums can be used in combination with flooding or deluge techniques to float and collect product. Vacuum trucks can be used to remove product that is collected in sumps. A dual-head was-vacuum system can be used in hard to access locations, such as between boulders and logs.

6.6.4.6.4 Equipment Required for Shoreline Clean up Using Manual Removal and Vacuum Techniques

Pitch Forks with Screen	>/=1
Shovels	>/=1
Sorbents	>/=1 Pkg.
Vacuum Truck	1
Oily Waste Bags	>1 Box

Table 46 - Equipment Required for Shoreline Clean Up Using Manual Removal and Vacuum Techniques

6.6.4.6.5 Deployment Considerations and Limitations:

- Unified Command approval is required for any shoreline cleanup Tactic
- Manual removal is most applicable for:
  - Surface or near-surface product, and
  - Areas inaccessible to vehicles
- Manual removal is labour intensive and slow for large contaminated areas; although slower than mechanical removal, it generates less waste and the waste materials can be segregated easily at the source
- Foot traffic should avoid the contaminated zone to prevent carrying product from there into previously clean locations. Foot traffic can have an adverse impact on marshes or in flat areas. Excessive foot traffic can impact vegetated areas or can disturb adjacent resources, such as nesting birds
- May disturb/remove sediment and shallow burrowing organisms

6.6.4.7 Shoreline and Land Clean Up Using Mechanical Removal

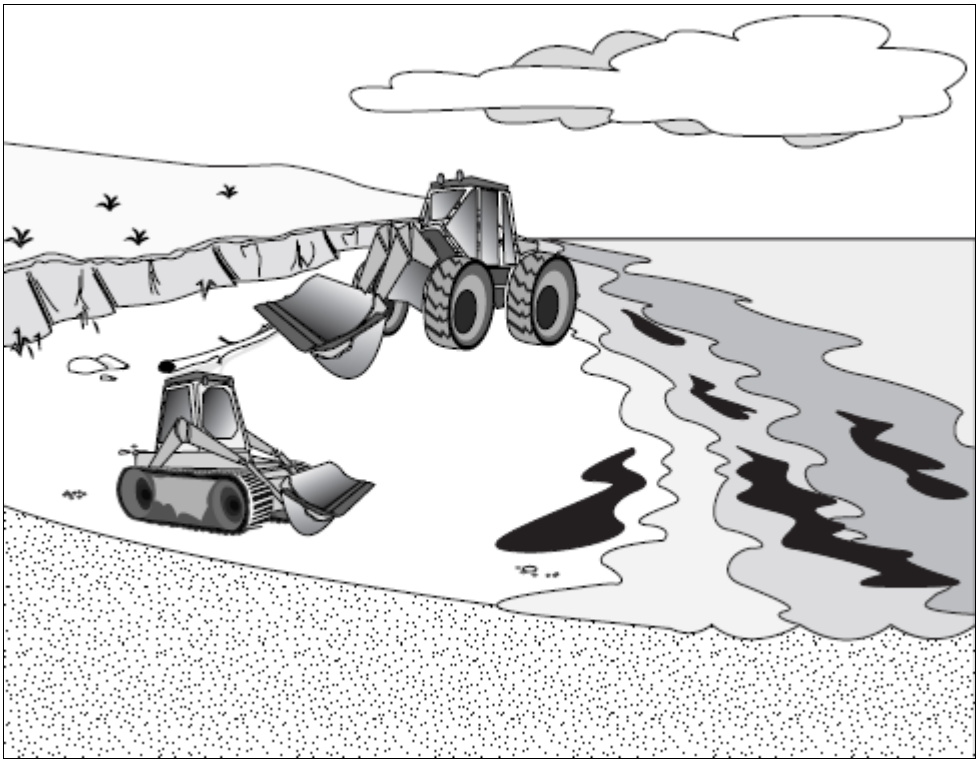


Figure 40 - Shoreline and Land Clean Up Using Mechanical Removal

The above diagram shows shoreline clean up using mechanical removal. Mechanical removal is more rapid than manual removal but generates larger quantities of waste. The method of operation varies considerably depending on the type of equipment that may be available and on the ability of that equipment to operate on a section of shore. The cleaning efficiency for each type of equipment is expressed in terms of the rate of cleaning that can be achieved and the amounts of waste that are generated.

Some equipment, (e.g. Bobcats, front-end loaders, or vacuum trucks) can remove and transfer material directly to a truck or temporary storage area in a single step. Other types (graders and bulldozers) are less efficient and require two steps to move or side cast material that must then be picked up by other equipment (bobcats, front-end loaders, or backhoes) for transfer. Several mobile beach cleaners have been developed specifically for product spill cleanup. Off-site beach cleaning machines that treat or wash and replace contaminated materials are included in this part as they involve a waste management program of transfer, temporary storage and treatment, even if replaced on the shore. These off-site cleaners involve a multistep process as contaminated material is removed from a beach and subsequently replaced by one or more types of earth-moving equipment.

6.6.4.7.1 Equipment Required for Mechanical Removal

Front End Loaders, or	1
Backhoe, or	1
Dozer, or	1
Grader	1
Vacuum Trucks	1
Dump Trucks	2

Table 47 - Equipment Required for Mechanical Removal

6.6.4.7.2 Deployment Considerations and Limitations

- Unified Command approval is required for any shoreline cleanup tactic
- Mechanical removal can be used on all but solid, man-made shoreline types, although it has limited applicability for flat surfaces due to poor bearing capacity. The bearing capacity of the sediments and the slope of the shore zone, as well as the performance characteristics of the individual equipment, control the applicability of different types of machines
- The various types of commercially-available earth-moving equipment have different operational requirements and different applications. The most important variable is the ability of a piece of equipment to travel on a beach type without becoming immobilized. Traction for wheeled equipment on soft sediments (low bearing capacity) can be improved by reducing tire pressures. Tracked equipment may be able to go where wheeled vehicles cannot, but is not a preferred option as tracks disturb sediments. Each type of equipment has a particular application:
  - **Graders** - Can operate on only hard and relatively flat surfaces and are capable of moving only a thin cut (>3 inches) of surface material
  - **Loaders, bulldozers, and backhoes** - Can operate in a wider range of conditions and are designed to move large volumes of material and can dig as well as move material
  - **Backhoes** - Use an extending arm or crane so they may be operated from a backshore area and can reach to pick up material
  - **Beach cleaning machines** - Operate in a number of different ways: mobile equipment cleans or treats on a beach whereas other equipment operates off-site (adjacent) to treat sediment so cleaned material may be replaced on the beach
  - **Vacuum trucks** - Remove pooled product or product collected in lined sumps
- Use of mechanical techniques on marshes can cause significant adverse impacts, either by mixing product with clean and/or subsurface sediments or by damaging plant stems and root systems
- All earth-moving equipment is designed to move large volumes of material in a rapid and efficient manner, which is not always an appropriate approach for shoreline clean up
- Frequently, the objective of a cleanup program is to use the equipment in such a way only a thin cut of contaminated sediment is removed. Usually the operator can advise on which piece of equipment is the most appropriate or practical to achieve a particular goal
- Repeated handling or transfer of contaminated sediments during mechanical removal should be avoided as much as possible as this increases the potential for spillage and decreases efficiency

6.6.4.8 Land Clean Up Using Sorbents and Vegetation Cutting

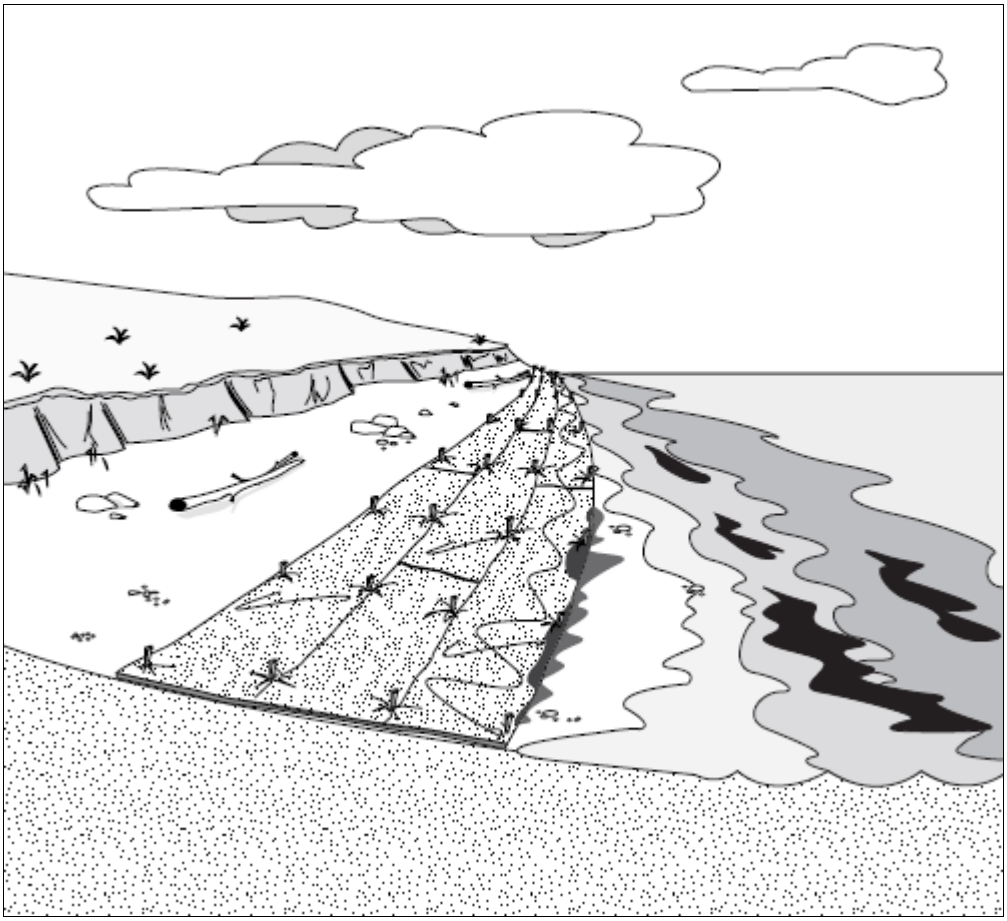


Figure 41 - Shoreline Clean Up Using Sorbents and Vegetation Cutting

6.6.4.8.1 Sorbents

Sorbent materials such as rolls or are placed in the shore zone to collect product as it comes ashore (protection mode) or in the contaminated area after it has been stranded (cleanup mode).

Usually the sorbents are deployed in fixed position, by stakes and/or anchors, as a line or parallel lines in the form of a floating boom or rope so they are lifted and can move at the water's edge. Alternatively, individual sorbents may be staked to swing over a fixed area as the water rises and falls.

In both the protection and cleanup modes, the sorbent material is left in place to collect product for subsequent removal and disposal. This technique is distinguished from the use of sorbent materials to manually remove product. That technique is described under manual removal.

6.6.4.8.2 Application

Use on all shore types to remove accumulations of oil.

6.6.4.8.3 Vegetation Cutting

Vegetation cutting removes contaminated plants to prevent remobilization of the product and contact by wildlife or to accelerate the recovery of the plants. Usually, this is a manual operation involving knives, powered weed cutters, and/or rakes.

6.6.4.8.4 Equipment Required for Land Clean up using Absorbents and Vegetation Cutting

Weed Eater	>/=1
Rakes	10-20
Sorbent Sheets	>/= 20 bales (100-200 pads/bale)
Sorbent rolls	>/= 20 rolls
Sorbent Boom	>/= 20 bales
Pom-poms (for sticky oil)	>/= 10
6-mil. Plastic bags (white or light color)	>/= 10 boxes (40-50/box)

Table 48 - Equipment Required for Shoreline Clean Up Using Absorbent and Vegetation Cutting

6.6.4.8.5 Deployment Considerations and Limitations

- Unified Command approval is required for any shoreline cleanup tactic
- Vegetation cutting is a labour-intensive technique used in marshes or on attached plants, such as seaweed, where there is concern the product may be released later to affect other resources, particularly wildlife. Also applicable where the continued presence of product may pose a contact threat to animals and birds that use the area or to adjacent healthy organisms
- Foot traffic from vegetation cutting can cause considerable damage in low-lying or marsh areas. Loss of plants or of stems and leaves can delay natural recovery rates and remove habitat for some species
- Sorbents can be used on any shoreline type and for most product types. Less applicable for very viscous, volatile product types and for semisolid products
- Sorbents can quickly reach their capacity when in contact with large amounts of product. When frequent replacement is necessary, which can occur even for relatively small amounts of product, this is a labour-intensive activity that can generate large amounts of waste on a daily basis
- Sorbents can be run through a sorbent wringer and reused
- Sections of sorbent boom can be placed at the water level and secured with fence posts every 10 feet to catch any product that may be going back out into the water
- Foot traffic may disturb sediments and affect organisms. Birds and small mammals may ingest particulate sorbents if they are left uncollected

6.6.5 Wildlife

Tactics outlined in this section describe the common wildlife protection and recovery techniques which may be utilized following an incident involving product.

6.6.5.1 Wildlife Protection Strategy

Primary - containment and recovery of product

- Control release and spread of product
- Recovery product as quickly as practicable
- Keep product from contaminating critical habitat
- The use of protective booming, and mechanical recovery operations will help reduce the amount of product that could potentially affect wildlife

Secondary - wildlife hazing

Haze wildlife away from spill area. Hazing techniques include:

- Noise
- Scare devices
- Herding wildlife using, boats, or other vehicles
- Hazing by human presence

Deter wildlife from entering spill area.

- Deterrent programs should consider the potential effects of human activity and disturbance on sensitive habitats and species
- Disturbance of breeding areas should be avoided as much as possible

Tertiary – capture, stabilization and treatment of contaminated wildlife

Use as a last resort if primary and secondary response strategies are unsuccessful.

- Extreme caution should be used when attempting to capture wildlife
  - Threatened wildlife may strike at face and hands and cause serious injury; be cautious
  - The capturing, cleaning, and caring for wildlife requires very specialized procedures. Wildlife professionals should be used to support a rescue and rehabilitation program and to direct less experienced workers

6.6.5.2 Mammal Hazing

Hazing techniques can be used to deter wildlife from entering into areas that have been previously impacted. Hazing should be carefully planned and executed, since hazed wildlife could move into other contaminated areas. It should be done in full cooperation with regulatory agencies responsible for wildlife, especially when dealing with threatened or endangered species.

Hazing techniques include:

- Noise, including pyrotechnics, air horns, motorized equipment, and recorded bird alarm sounds
- Scare devices, including deployment of Mylar tape, helium-filled balloons, and scarecrows (either human or predator effigies) on contaminated beaches
- Herding wildlife using aircraft, boats, or other vehicles
- Hazing by human presence

In addition, scare eye balloons, snow fences, or electric fences may be installed around isolated spill areas, field camps, staging areas, waste disposal sites, or other spill-related areas.

6.6.5.2.1 Considerations

- The distance from the spill site, staging area, etc. at which hazing of mammals would begin and end must be determined on a case-by-case basis
- In some cases, it may be advantageous to haze animals at a considerable distance from a spill site

- To protect animals from product:
  - Contain the product before it reaches the mammals
  - Haze them from produced areas
  - Collect dead, contaminated wildlife to prevent contamination through scavenging
  - Selected capture and stabilization of mammals on case-by-case basis

6.6.5.3 Bird Hazing

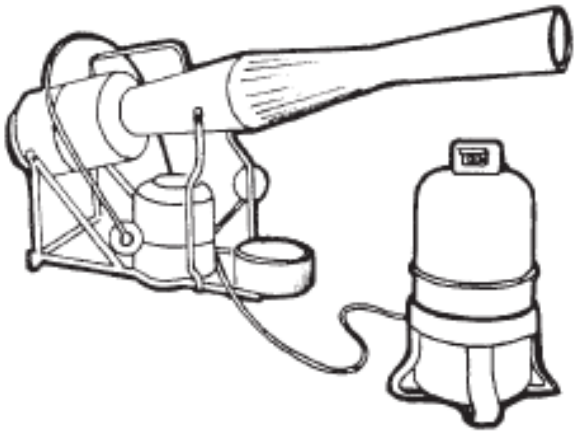


Figure 42 - Propane Exploder Cannon

Birds can be deterred from entering a spill area or hazed from an area by either visual or auditory methods, or both. The choice depends on the species involved, the local environment, and the spill situation. The primary method for protecting birds from a product spill is to prevent product from reaching areas where birds are concentrated, including migration staging areas, seabird colonies, major feeding areas, nesting colonies, and wintering areas of marine birds.

The secondary response is to deter birds from a product slick or contaminated shoreline. A deterrent may be used to discourage birds from landing in or near a product slick or contaminated area.

Guidelines for selecting the primary hazing method:

- Use propane exploder cannons (shown in Figure 43) to disperse birds where waterfowl, shorebirds, and raptors are dominant. This should include frequent human attendance at the site to reduce habitation. Visual methods (Mylar tape, balloons) can be used to disperse birds in close proximity to the spill. This is most effective for waterfowl
- Flightless birds may need to be herded with boats and/or helicopters (aircraft should not be used to disperse birds in any other circumstances). Flightless birds include young birds and molting birds. (Molting refers to the annual loss of feathers. Birds that are molting cannot fly)
- Capture and relocation is a tertiary method for dealing with flightless birds that will not leave an area. This could be used for small populations of birds of critical sensitivity. However, it is very labor-intensive and usually not practical

6.6.5.4 Wildlife Capture and Rehabilitation

A Data Sheet for Collected Live, Contaminated Wildlife will be completed for each animal (See Appendix F). Any mammal or bird with serious injuries which would require extensive treatment or which may be unable to survive in the wild will be euthanized. All decisions to euthanize will be reviewed and approved by a licensed veterinarian or an individual with veterinary and rehabilitation experience.

6.6.5.5 Salvage of Dead Flora and Fauna

6.6.5.5.1 Purpose of Salvaging Dead Flora and Fauna

Birds, plants, and mammals killed by a product spill must be collected as quickly as possible to prevent secondary poisoning of scavengers due to hydrocarbon ingestion. By salvaging these contaminated remains, the biotic components are able to return to their primary succession stage.

Salvage is the collection of contaminated remains of decaying or almost destroyed flora and fauna by certified personnel. This activity requires:

- Notification and approval of provincial and federal agencies
- Proper recordkeeping including completion Collection of Dead Animal Form (See Appendix F)
- Temporary Storage
- Ultimate storage and disposal

Only persons licensed in transportation of salvaged biotic remains may transport products.

6.6.5.6 Salvage Procedure

- Place each dead/decaying biotic piece in a poly bag, with a copy of the data sheet filled out and inserted into the bag. Ensure the form is protected from contaminant
- Place each poly bag in a 45 gallon drum and seal tightly

6.6.5.7 Identifying and Protecting Sensitive Habitat

It is important to remember detailed protection strategies and incident-specific protection priorities will be developed by the Unified Command at the time of the spill. The following relative priority listing prioritizes resources into designations of major, moderate, and lesser concern. Resources are not prioritized within each designation. These designations are for consideration in initial spill response activities; they are not applicable to extended cleanup activities.

The following criteria were developed as a tool to establish levels of concern:

- Human economic disruption - economic/social value; human food source disruption
- Mortality - wildlife, fish, other organisms (how many potentially killed in relation to abundance)
- Animal displacement and sensitivity to displacement
- Aesthetic degradation
- Habitat availability and rarity
- Sub-lethal effects, including sensitivity to physical or toxic effects of product or hazardous substances and long-term effects to habitat, species, or both
- Threatened and endangered species, and/or other legal designation
- Persistent concentration of product or hazardous substances
- Reproduction rate or re-colonizing potential
- Relative importance to ecosystem
- Potential for physical contact with spill-pathway of product or hazardous substance
- Resource sensitivity to response countermeasures

6.6.5.8 Area of Elevated Concerns

Shoreline Geomorphology - Aquatic Habitat Types

Inland Habitat Types:

- Connected lakes
- Freshwater springs
- Threatened or Endangered Species Habitat
- Gazing Animal Areas
- Waterfowl and Shorebird Spring and Fall Concentration and Staging Areas
- Waterfowl Molting Concentration Areas
- Spawning and/or Rearing Streams

Land Management Designations:

- Federal - Wilderness
- Wild and Scenic Rivers
- National Natural Landmarks

- Research Natural Areas

Cultural Resources/Archaeological Sites:

- National Historic Landmarks
- Burial Sites
- Subsistence Harvest Areas
- High Commercial Use Areas
- High Recreational Use Areas
- River Floodplains

Areas of Moderate Concern:

- Upland Habitat Types:
  - Drained Lake Basins
  - Waterfowl and Shorebird Nesting Concentration Areas
- Shorebird Molting Concentration Areas
- Herbivore Migration Routes
- Commercial Harvest Areas
- Recreational Use Areas
- Land Management Designations
- Federal - National Parks
- Cultural Resources/Archaeological Sites

Areas of Lesser Concern:

- Waterfowl and Shorebird General Distribution
- General Freshwater Fish Habitat
- Land Management Designations
- Federal - Public Lands
- National Forests
- National Preserves
- General Public Lands

6.6.5.9 Cultural Resource Considerations

6.6.5.9.1 Definition of Cultural Resources

Cultural Resources is a broad term used to refer to ruins, structures, sites, graves, artifacts, deposits, and/or objects that pertain to history or prehistory. The question is not whether someone thinks a resource has value, but whether the resource meets the criteria of federal or provincial law.

There are two kinds of impacts of concern during a spill response operation:

- Direct impact from spilled substances
- Indirect impacts from ground-disturbing activities, vandalism, and theft

6.6.5.9.2 Responsibilities

The duties of the responsible party in an oil spill are to:

- Be aware cultural resources may exist in the response area
- Recognize their existence may affect how response is conducted
- Cooperate with provincial and federal officials charged with cultural resource protection
- Assure all response personnel do not collect, remove, or disturb cultural resources encountered in a response in any way
- Consider retaining a cultural resources specialist as a consultant to Planning Section in case of a significant spill

6.6.5.9.3 Site Locations

Responsible parties and response teams should be particularly attentive to the possible existence of cultural resource sites at/on:

- Elevated terraces or cut-bank bluffs along rivers
- Most shoreline areas, particularly near embankments or promontories
- Prominent hills inland

6.6.6 Natural Disasters

6.6.6.1 General

In the event of a natural disaster, the first priority is to safely and rapidly evacuate the affected area, followed by the prompt notification to the appropriate authorities responsible for dealing with such emergencies.

6.6.6.2 Severe Thunderstorm

Thunderstorms are a year round occurrence with lightning being a major threat. The potential of flash flooding is also possible when one area is affected for an extended period.

TNPI will:

- Be aware of changing weather conditions
- Terminate outdoor work when lightning is occurring and move to shelter
- Avoid areas subject to sudden flooding until the thunderstorm passes
- Evaluate the situation after weather event

TNPI IC will:

- Initiate appropriate pipeline patrol by the most expedient means possible to determine extent of damage
- Initiate all necessary response and repairs

6.6.6.3 Tornado / Straight Line Winds

Although many disasters cannot be prevented or predicted, preparation can significantly reduce losses. In the event of a severe weather condition or a natural disaster, the Area Manager or assigned designee will be the Emergency Coordinator.

TNPI will:

Be Aware of Changing Weather Conditions

- Tornado watch - Conditions are right for the formation of a tornado
- Tornado warning - A tornado has been sighted but is not in the area at this time
- Tornado alert - A tornado has been sighted in the immediate area, take cover immediately

If Severe Weather Conditions Threaten

- Carry a battery operated portable radio and monitor conditions
- If a tornado is observed and time permits, evacuate the area
- If the tornado is approaching a pump station, notify the Control Center to remotely isolate the station
- In vehicle, drive away from tornado at right angle. Get out of car and seek shelter if tornado cannot be avoided
- If outdoors, shelter in ditch, excavation or other low spot and lie flat, face down
- Make certain all personnel are aware of the condition
- Stay in shelter until conditions are safe

Immediately After the Storm

- Account for all personnel
- Survey for damages
- Initiate team for any response or repairs
- Refer to this Plan for additional response guidance regarding fires, spills, etc., as needed

6.6.6.4 Earthquakes

The actual movement of the ground in an earthquake is rarely the direct cause of death or injury. Most casualties result from falling objects and debris because the shocks can shake, damage, or demolish buildings and other structures.

TNPI will:

- Remain indoors if there when the earthquake starts
- Take cover under a heavy furniture or stand in an inside doorway away from windows. A door frame or the inner core of a building is its strongest point and least likely to collapse
- Exit building as situation determines
- Stay outside if there when earthquake starts. Move away from buildings to avoid falling debris. Avoid damaged utility lines
- If driving, stop quickly and stay in the car. Do not re-enter damaged buildings. Walls may collapse after the original shaking has ceased

TNPI IC will:

- Evaluate the situation and initiate appropriate pipeline patrol by the most expedient means possible to determine extent of damage
- Respond to make all necessary repairs as resources and conditions allow

6.6.6.5 Severe Winter Storm

TNPI will:

- Be aware of Changing Weather Conditions
  - Winter Storm Watch - Conditions are expected but not imminent
  - Winter Storm Warning - A significant winter storm is occurring, imminent, or likely
  - Blizzard Warning - Winds at least 35 mph, blowing snow frequently reducing visibility to 0.25 miles or less, and dangerous wind chills are expected
- Listen to local radio stations for weather advisory and road condition reports, carry a survival kit, and start the trip with a full tank of gasoline
- Inspect pump station, equipment, and controls after storm for damage
- Make any repairs as necessary

6.6.7 Acts of Mischief and Terrorism

6.6.7.1 General

In the event of an act involving mischief or terrorism, the first priority is to safely and rapidly evacuate the affected area, followed by the prompt notification to the appropriate authorities responsible for dealing with such emergencies. Refer to TNPI's Security Management Standards in Intelex Doc # 4004.

TNPI - IC will:

- Contact local police department (call 911). Report all facts known about the incident
- Notify company representative as listed in plan, and all required Public & Government agencies
- From an appropriate distance, implement defensive actions to minimize the effects of the incident only if absolutely safe to do so
- Control access to incident area, only if absolutely safe to do so

QMLP / ECRC will:

- Meet with commanding authorities. When incident site is deemed safe for contractors to enter (no evidence of secondary devices or explosives) characterize the incident as severe or moderately severe, as previously outlined. If called to assist with initial operations, QMLP / ECRC personnel will assist to the extent of their training
- Response Zones

- The response zones are where resources are focused during an incident to protect public safety. A licensee should also be aware a different type and size of response zone could be established by the RCMP/police if a bomb has been confirmed at a pipeline, well, or facility. General minimum safe distances for personnel in the open for a pipe bomb are displayed in Table 49 below

FRAGMENTATION TYPE OF BOMBS

i.e.: pipe bomb, grenade, suicide vest, briefcase, backpack, bicycle, metal container

MINIMUM SAFE DISTANCE FOR PERSONNEL IN THE OPEN

Weight of Explosives *kg (lbs.)*	Safe Distance *m (ft.)*	Weight of Explosives *kg (lbs.)*	Safe Distance *m (ft.)*
0 to 12.2 (0 to 27)	274 (900)	20.9 (46)	325 (1065)
12.7 (28)	277 (910)	21.8 (48)	329 (1080)
13.6 (30)	284 (930)	22.7 (50)	337 (1104)
14.5 (32)	290 (950)	25 (55)	348 (1141)
15.4 (34)	294 (965)	27 (60)	357 (1170)
16.3 (36)	302 (990)	30 (65)	366 (1200)
18.1 (40)	311 (1020)	34 (75)	384 (1260)
19.1 (42)	314 (1030)	36 (80)	393 (1290)
20 (44)	320 (1050)	39 (85)	399 (1310)

NOTE: THIS CHART IS TO BE USED ONLY AS A GUIDE. IF THERE IS ANY DOUBT ABOUT ANY ITEM, INCREASE THE DISTANCE.

PIPE BOMBS PER YEAR IN CANADA

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
30	31	24	23	35	34	32	29	16	22

Table 49 - Minimum Safe Distance for Personnel in the Open

Note

Further information on TNPI actions in the event of acts of mischief and terrorism may be obtained from the TNPI Security Plan.

6.6.8 Fire and Explosions - Prevention and Response

A major safety risk during a petroleum product spill response is from fire or explosions. This risk is site and substance specific and must be evaluated before response personnel enter a spill area or damaged vessel/equipment. Explosions present a physical risk from:

- Burns
- Flying debris
- Atmospheric over-pressure

Burning hydrocarbons result in a variety of combustion products. Therefore, only experienced personnel with proper safety, respiratory protection and hazard detection equipment should approach a burning vessel or spilled material. Remember:

- Always approach from the upwind, upstream, or uphill side, if possible

- Retreat if heat intensity is severe or material is spreading

When preparing to work in a potentially hazardous area, personnel should:

- Assess the need to enter the area
- Determine the fire hazard potential of the material or mixture spilled
- Be alert to possible oxygen deficiency
- Obtain a combustible gas/oxygen meter that is calibrated and in good working order
- Understand how the instrument will respond to the materials being measured
- Test the atmosphere when approaching the spill (especially if in a vessel, tank man-way, or low-lying area)
- Use equipment and tools that are intrinsically safe/explosion-proof
- Observe confined space procedures if entering a confined space area

In potentially flammable atmospheres, restrict the use of instruments that are not intrinsically safe. These include:

- Open lights
- Internal combustion engines
- Non-approved radio transmission devices
- Cellular phones

All hydrocarbons have a concentration range in which they are combustible. When either too little or too much hydrocarbons are present in air, the mixture will not burn. When evaluating the risk of fire or explosion, the key measurement is the lower explosive limit (LEL). The LEL is the lowest concentration of a vapour for a given material that will support combustion.

Detectors are used to determine whether or not a mixture is combustible. However, most combustible gas detectors (LEL meters) will not work properly in an area that has an oxygen concentration below 14-16%. Therefore, to test confined spaces or inert containers for hydrocarbon level, the oxygen content must be measured first by properly protected personnel.

If LEL meter reading is:	Then:
0% (zero) to less than 3% LEL **0% (zero) to less than 5%**	Hot work (i.e. with potential ignition sources) is allowed Cold work.
Greater than 5% and less than 10% of LEL	Proceed with care, especially where there is poor air movement or circulation
Greater than 10% of LEL	Leave the area quickly and carefully

Table 50 - LEL Decision making guide

LEL meters do not detect toxic hazards. A reading of just one-tenth of a low LEL of 1.0% could still be toxic (1000 ppm of hydrocarbons can be dangerous to life and health)! Although flammability testing should be the first level of assessment, the decision to enter or work in an area should not be based solely on flammability.

6.7 Response Resources

6.7.1 Internal Resources

6.7.1.1 Engineering Controls

Engineering controls for spill prevention exist in the following areas:

- Integrity Management
- Piping
- Corrosion / Cathodic Protection
- Pumps
- Valves
- Pressure Relief Valves
- Supervisory Control and Data Acquisition (SCADA)
- Line Pipe Overpressure Protection and Monitoring
- Tankage
- Leak Detection
- Leak Detection Process
- Leak Detection Maintenance, Auditing and Testing Maintenance
- PIMS Intelex Doc # 819/FIMS Intelex Doc # 5179 (also available in Engineering files)

The corresponding maintenance programs are required by OEMS and are contained within the TNPI's document management system (Intelex). Construction Safety and Environmental Manual Doc # 1831) and Security Management Doc # 4004 and the Crossing Guidelines Doc # 1744 are also available in Intelex.

6.7.1.2 Leak Detection

Annex E (Clause E.5.1) of CSA Z662 specifically requires the leak detection system be regularly tested to demonstrate design thresholds are met and to establish a baseline of achieved performance. TNPI system is tested annually and:

(a) When changes to leak detection system or the pipeline warrant re-evaluation of system performance
(b) If the leak detection system fails to detect a leak that was within its normal detection threshold capability
(c) If a test is needed to re-establish confidence in continuing effectiveness

Additional details are located in TNPI Line Balance Leak Detection Manual.

Shut down devices

The system is supported by redundant pressure transmitters located on the suction and discharge that allow the Line Controller to monitor these points should the local controller fail. The stations' pump units and valves are continuously monitored and may be remotely operated. Programmable Logic Controllers (PLC) at each lifting, booster and delivery station scan the operating parameters and data at least ten (10) times per second. This rapid scan time enables SCADA to generate alarms and automatically execute commands to shut down pumps (high case pressures), close or open suction, and/or discharge valves to control the discharge pressure during system upsets including transient conditions.

The system also provides overpressure protection for upset conditions such as:

- Automated pump station shutdowns in the case of sudden stop (e.g. loss of path of flow) of downstream delivery stations or block valves
- Automated station shutdowns for loss of path of flow within the pumping station

6.7.1.3 Equipment Resources

TNPI has positioned five emergency trailers across the network to facilitate timely response to an oil spill or repair requirement across the service network. A copy of the trailer contents is contained in Appendix G .

Locations include:

- Elmbank (Toronto, ON)

  - Oil Spill containment and repair trailer - 259
  - Mobile command centre 213
- Lancaster (Cornwall, ON)
  - Oil Spill containment and repair trailer - 258
  - Mobile command centre 214

6.7.1.4 Personnel Resources

TNPI has numerous employees who may be called upon to assist in the event of an incident. A complete list of personnel and their positions within the ICS structure can be found in Appendix H - Activation Chart - Internal TNPI Employees. The training requirements for each ICS position have been outlined in the TNPI internal training matrix. The training matrix is available for viewing upon request at the TNPI office in Richmond Hill.

6.7.2 External Resources

6.7.2.1 QMLP

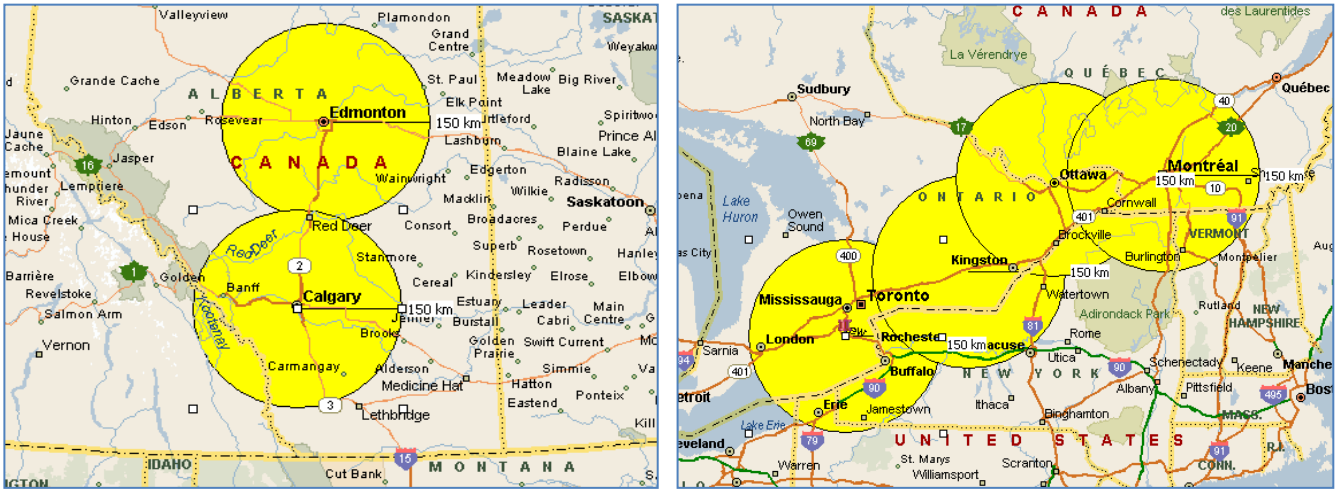
TNPI has retained QMLP (Quantum Murray LP) to provide Emergency Response Services in Alberta, Ontario and Quebec. QMLP is an industry leader in complete Emergency Response Services, and has the capability to manage a broad range of hazardous incidents on both land and water, including chemical and fuel spills, tanker rollovers, train derailments, pipeline ruptures and the release of toxins.

QMLP has been TNPI's On-land Response Contractor since 2010. Since the inception of the relationship, QMLP has been actively engaged in TNPI's Emergency Response Planning, including emergency response exercises, and has an ongoing working knowledge of the potential risks and emergency scenarios associated with TNPI.

The land based response for TNPI is provided directly by QMLP and by subcontractors operating within the QMLP National Network. A summary of response coverages is shown on the maps below.

Upon activation for spill response, QMLP will provide material, equipment, personnel, and operational management to undertake the Stabilization, Mitigation, and Remediation of a Spill, or cleanup and restoration resulting from an event. QMLP may be required to fulfill various positions within the ICS structure to ensure capacity of the command structure. The roles which may be fulfilled by a QMLP employee have been detailed in Section 5.2 following each position in the Assigned Person Section.

Figure 43 - Response Area for QMLP



Equipment Resources

All of the major contract sites hold specialized equipment for the response to TNPI incident. This includes response vehicles, boats, equipment and consumable stock. Complete equipment lists are available for viewing upon request.

Personnel Resources

QMLP has 25 Oil Spill response managers, 70 skilled responders and over 1000 laborer responders available for call out to a TNPI incident.

The training matrix is available for viewing upon request at the TNPI office in Richmond Hill.

6.7.2.2 ECRC

ECRC provides marine oil spill response services to TNPI on request. TNPI has been a member of ECRC since 2008. ECRC has participated in TNPI marine exercises, ensuring plan familiarity. ECRC will take a lead role in Operations and Planning if marine operations are involved in an incident. ECRC response centres are outlined in the map below:

Figure 44 - ECRC Contractor Locations

6.7.2.3 ECRC Initial Request and Response

If a subscriber requests ECRC to respond to a spill of oil on water in ECRC's Geographical Area of response (Initial Request), ECRC shall use its best efforts to provide a response (Initial Response). The Initial Request shall specify the approximate location and size of the spill, that the individual contacting ECRC is the person authorized to make the Initial Request, the type of oil involved, and the nature and extent of the Marine Spill Response Services required. If the Initial Request is not provided in writing, then it shall be confirmed in writing forthwith. Unless otherwise agreed between the parties, the Initial Response shall consist of the provision of Marine Spill Response Services for up to twenty-four (24) hours.

ECRC will perform all planning operations associated with their response services.

All activations must be made by an approved listed individual with the contract number in hand.

Authorized individuals are listed below:

- [redacted]
- [redacted]

Equipment Resources

ECRC maintains staffed Response Centres at Corunna and Verchères (near Montreal). The Corunna Response Centre is responsible for the Athabasca River, Lake Athabasca, Lake Winnipeg and the Canadian sections of the Great Lakes and St. Lawrence Seaway, west of Brockville. The Quebec Response Centres are responsible for the St. Lawrence Seaway and River, east of Brockville, James Bay, Hudson's Bay and Ungava Bay. The Response Centres also have sub-depots where equipment can be stored close to possible response areas. The equipment inventories in each Response Centre include specialized containment booms, oil skimmers, boats of various sizes and functionality, storage barges from 50 to 2900 tonnes, communications equipment and support equipment needed to keep the equipment operational. Examples of the ECRC Equipment may be seen on the ECRC website at - http://www.simec.ca/en/about_ecrc/equipment.asp.

ECRC also has access to management resources that are critical to good decision-making at the time of an incident. Equipment List is available for viewing upon request.

Personnel Resources

In addition to the full time complement of 37 employees, ECRC has access to a pool of consultants from across North America as well as resources developed in partnership with government authorities. ECRC also maintains inventories of equipment for immediate response to client member's requirements.

6.7.3 WCSS

WESTERN CANADIAN SPILL SERVICES LTD. (WCSS) embodies the petroleum industry's commitment to spill preparedness and environmental protection. The mandate of the WCSS is to ensure the provision of cost-effective, integrated, emergency response capabilities, and to continually improve and communicate to our customers, stakeholders and regulators all aspects of our business. This includes planning, preparedness response, and research & development for the petroleum industry. To ensure industry is capable of safe, effective oil spill response, WCSS focuses its efforts on communication initiatives with government and stakeholders, research and development, contingency planning, equipment readiness and training, and to ensure skilled personnel are prepared to react quickly and thoroughly.

Equipment Resources

WCSS maintains a fleet of response vessels specifically designed to respond and deploy containment and recovery equipment in surface water. These boats are strategically placed throughout Western Canada and are available to WCSS members in Good Standing. Boats can only be operated by personnel who have certification in the Enform/WCSS Boat Handling Course as well as the Transport Canada appropriate Marine Emergency Duties (MED) Certification. The airboats and barges also require additional certification prior to operating. In addition to vessels, WCSS also has shallow water equipment, skimmers and other spill response equipment. WCSS zones and corresponding equipment inventories are shown below in Figure 45.

Response Plans

WCSS has existing response plans and control points used by members of the co-op and in conjunction with this plan. The response plans and control point maps are available for viewing on the WCSS website - www.wcss.ab.ca.

WCSS is divided into various response zones as shown below in Figure 45.

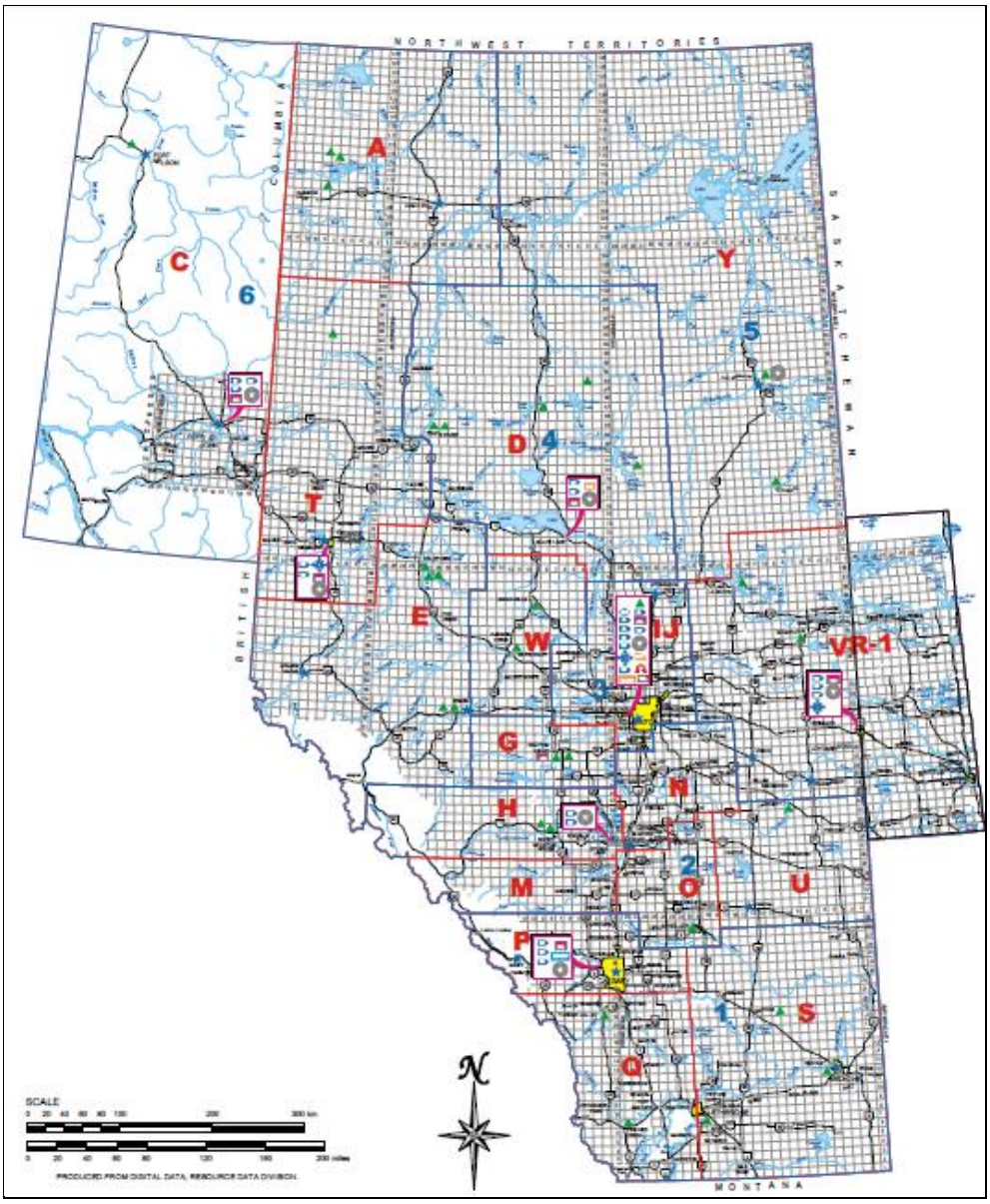


Figure 45 - WCSS Response Zones

List of Zone Equipment (click to see WCSS website - http://www.wcss.ab.ca/).

Personnel Resources

WCSS does not provide personnel. WCSS equipment is available for Quantum Murray personnel to use in the event of a water based spill.

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7 Communications

7.1 Media, Government, and Public Relations

Objective	Action
Introduction	• Overview and communications principles • PIO team structure • Response levels
Evaluate the incident in progress	
Assess - [redacted]	
Assess the situation	• Informed via incident command • Convene the response team • Form PIO team based on incident
Prepare & manage - [redacted]	
Manage the incident	• Gather information on the situation • Identify stakeholders • Identify spokespeople • Coordinate monitoring activities • Confirm approvals process • Establish communications plan • Develop key messages and statements
Communicate - [redacted]	
Communicate the incident	• Develop materials • Communicate with area residents • Communicate with media • Communicate with employees, shareholders, regulators • Communicate with other stakeholders
Evaluate - [redacted]	
Evaluate the incident	• Evaluate incoming communication, media and online coverage • Evaluate message visibility • Track PIO actions • Continuously communicate with personnel at reception centre • Stand down • Demobilize, debrief and update the PIO plan

Table 51 - Communications Overview

7.2 Communications Overview

All members of the Incident Command Team (ICT) should be familiar with the Public Information Officer (PIO) roles and responsibilities outlined in this section.

This plan is the primary reference tool for the Public Information Officer (PIO) and PIO team members in a incident, providing an overview of the communications response in the event of an incident along TNPI's pipelines and/or at its pump and meter stations in Quebec, Ontario and Alberta. The primary objective of this section of the ERP is to establish TNPI as a credible source of information early in the incident response, to reduce speculation and inaccuracies in reporting and to ensure consistent messaging and information flow within TNPI and, as far as possible, between TNPI and other potential communicators (regulators, governments, landowners, public officials, area residents, etc.) throughout the incident.

7.2.1 Principals for Mobilizing a Communications Response

TNPI's actions and communications in the first hours of an incident will set the tone for the entire response. The following principles guide the communications response:

- **Mobilize many** - Err on the side of caution if the scope of the incident is not defined. If in doubt, the PIO should mobilize the full communications team first and then scale back as needed
- **Communicate the facts as you know them** - Acknowledge an incident when it happens, even if information is limited. Staying quiet or downplaying the severity of an incident until facts are confirmed can result in significant damage to corporate reputation resulting from loss of control over the story, misinformation and public outrage at the organization
- **Be transparent** - A transparent approach is expected by regulators and other stakeholders. It respects the public's right to be informed while allowing TNPI to maintain some control over the story
- **Establish the Incident Command approvals process immediately** - Media and stakeholders expect to hear news as it is known. If TNPI does not provide it, others will. It is important to establish a timeline and protocol for approvals that guides all responses and can be quickly confirmed or adapted as appropriate to specific circumstances at the outset. A recommended approach is included in this plan
- **Update regularly** - Update information as it is available and approved for release

7.2.2 PIO Team Structure

The PIO Team is structured to work alongside Incident Command, supporting on site and off site communications activities. The PIO has a direct line of communication with the Incident Commander, Liaison Officer and other members of the response team as needed. The PIO Team is a contracted resource to TNPI, trained in the TNPI Communications Protocol contained in this plan.

Other roles may be identified by the PIO Unit Leader as needed. The PIO and Field Information Officer will be on site. Others may be on or off site, as appropriate for the situation.

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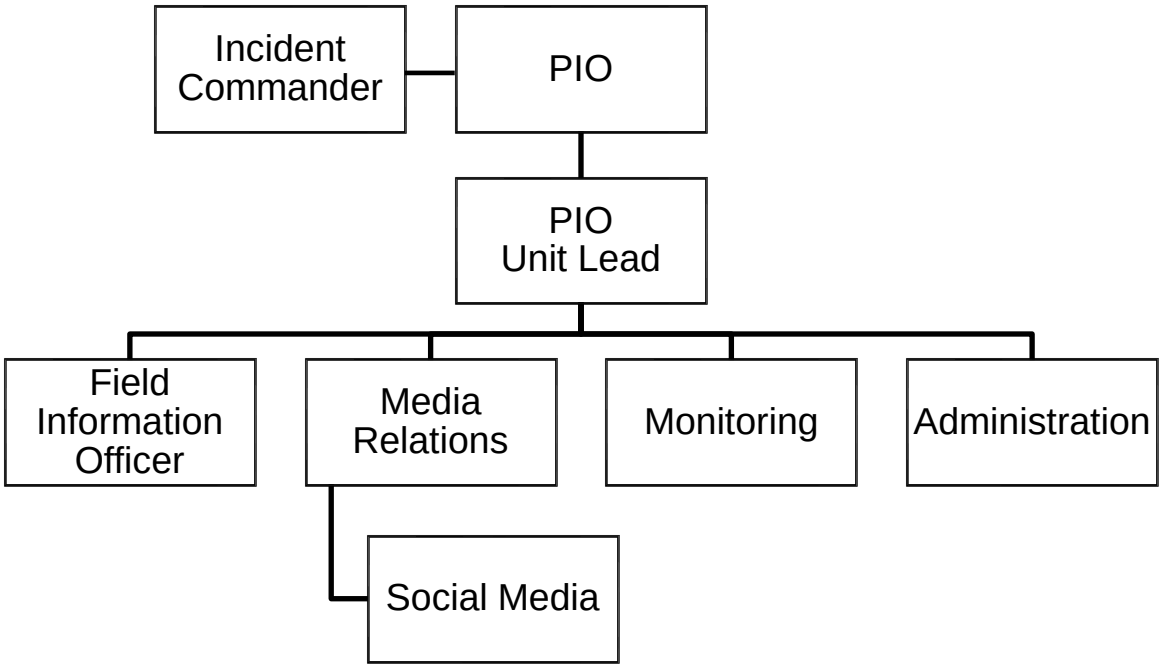

Figure 46 - PIO Team Structure

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7.6 Confirm Approvals Process

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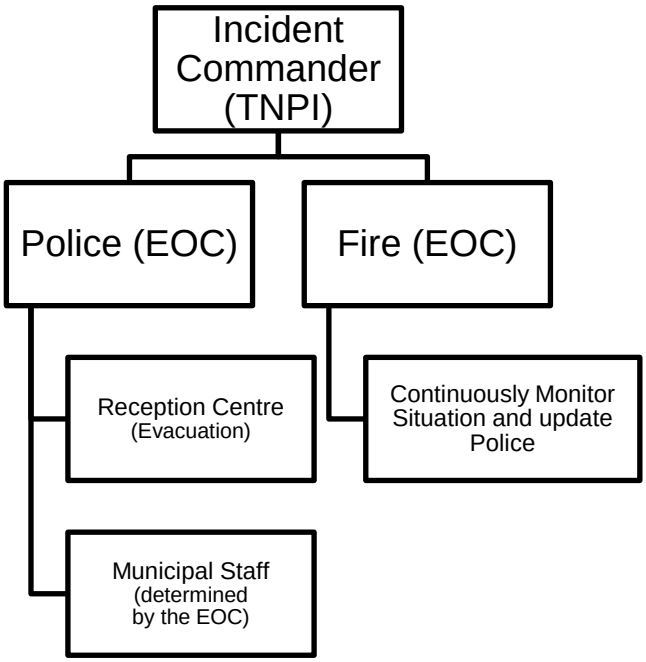

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8 Reporting

8.1 Responsibility for Reporting

Responsibility for reporting will be held by the TNPI Incident Commander. It is recommended execution of these notifications be delegated to the Liaison Officer. Individuals who have received liaison training will have the required skill set to complete the notifications to all regulators and stakeholders.

8.2 Reporting Notification Flowchart

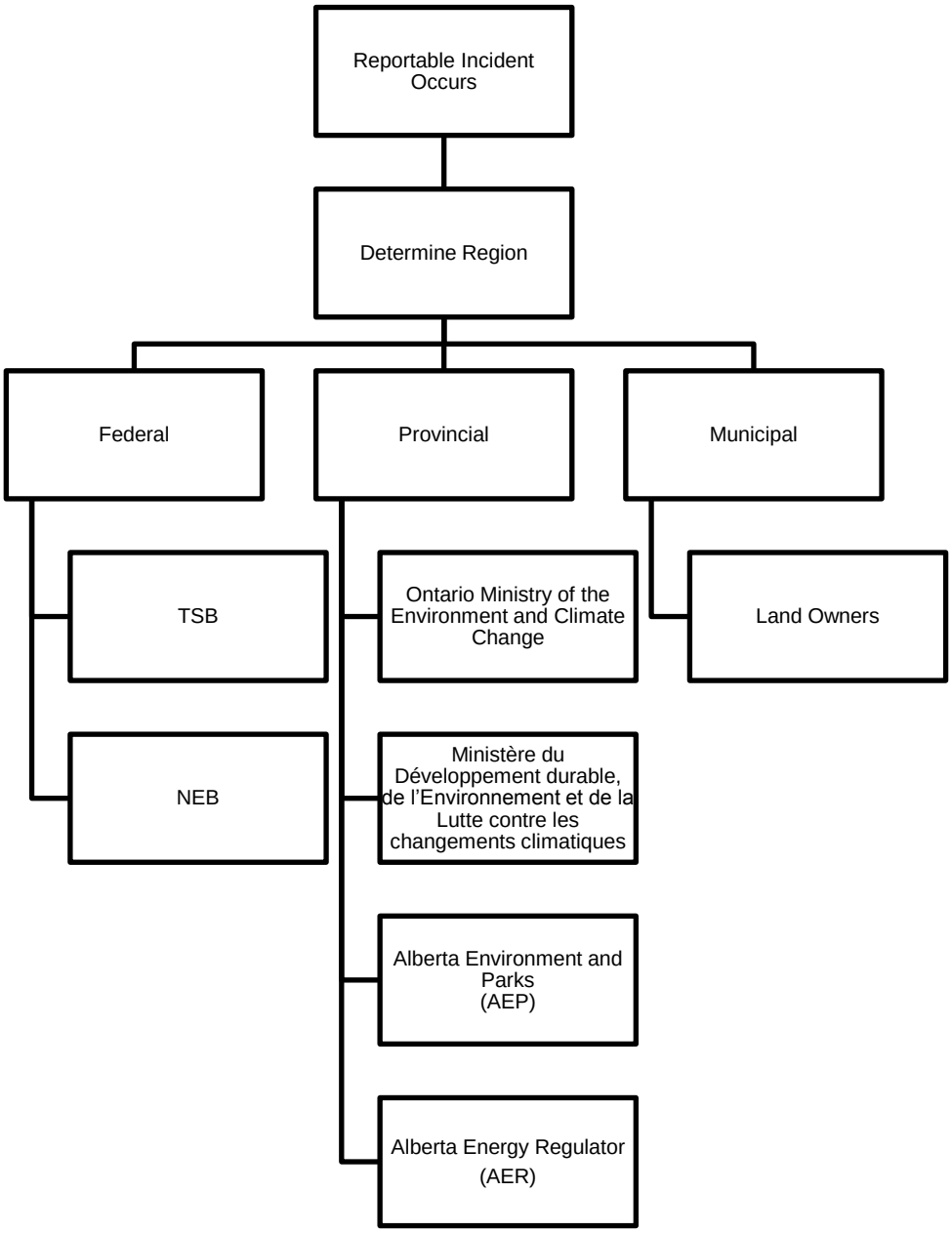

Figure 48 - Reporting Notification Flowchart

Refer to Reporting Notification requirements in Section 8.3 for further details.

8.3 Primary Reporting Notification Requirements by Regulator

Region	Federal

Regulator	*NEB/TSB*
When to Report	When a reportable pipeline accident or incident takes place, the operator and any employee of the operator having direct knowledge of the accident or incident shall report to the Board as soon as possible and by the quickest means available
Reporting Number	1-819-997-7887 (TSB Rail/Pipeline Occurrence Hot Line as soon as possible) 1-403-807-9473 (NEB – for pipeline emergencies contact the TSB, for all other emergencies, please call the NEB) and Event Reporting System (OERS) https://apps.neb-one.gc.ca/ers/home/index
Detailed Requirements	When a reportable pipeline accident or incident takes place, the report to the Board shall contain as much of the following information as is available: • The name of the operator • The date and time of the occurrence • The unique identifier of the pipeline or portion of pipeline, such as its name or number • The specific pipeline components that malfunctioned or failed • The location of the occurrence by reference to a specific designation point such as the operator's facility or the pipeline's kilometre post location • The closest city, town or village to the occurrence site • The number of persons who were killed or sustained serious injuries as a result of the occurrence • A list of any commodity contained in or released from the pipeline and an estimate of the volume of commodity released and recovered • The actual or anticipated duration of any interruption of the operation of the pipeline or a portion of the pipeline • A description of the occurrence, the events leading up to it and the extent of any damage, including the consequences on the pipeline or portion of the pipeline and on any other property and the environment • A description of any action taken or planned to address the consequences of the occurrence • A description of any action taken or planned to protect persons, property and the environment, including any evacuation as a result of the occurrence • The name and title of the person making the report and the phone number and address at which they can be reached • Any information specific to the occurrence the Board requires The above information shall be provided in the initial call to the TSB and entered into the Board's Online Event Reporting System (OERS) within 3 hours of the incident occurrence (refer to 7.6 for further details). • The remainder of that information shall be entered into OERS as soon as it becomes available and no later than 30 days after the occurrence (TSB requirement). The NEB-regulated company will determine the Level of Emergency (I, II or III) based on the level of severity of the incident and the potential hazards to the public and the environment, and determine the appropriate response. The Board and the operator of the pipeline may enter into an agreement regarding a format and time frame for reporting pipeline occurrences that are not likely to require immediate Board response. SOR/2014-37 February 28, 2014

Region ***Regulator***	**Federal** ***Environment Canada - National Environmental Emergencies Center***
When to Report	To avoid duplication of effort, Environment Canada has negotiated Environmental Occurrences Notification Agreements with Alberta and Ontario. Under these Notification Agreements, one organization for each province receives environmental occurrences notifications on behalf of Environment Canada. Environment Canada is thus required to designate the persons providing 24-hour emergency telephone service for the organizations operating for the provinces and territories, enabling them to receive notifications under The Canadian Environmental Protection Act, 1999. TNPI Quebec is the only location required to contact Environment Canada as well as the provincial regulator. Environment Canada is to be notified as soon as possible.
Reporting Number	Quebec National Environmental Emergencies Center Environment Canada Telephone - 514-283-2333 or 1-866-283-2333 Ontario Spills Action Centre Ontario Ministry of the Environment and Climate Change Telephone - 416-325-3000 or 1-800-268-6060 Alberta Alberta Environment and Parks Telephone - 780-422-4505 or 1-800-222-6514
Detailed Requirements	Regulator will dictate requirements at time of call. Be prepared to provide details of incident.

Region ***Regulator***	**Alberta** ***Alberta Environment and Parks (AEP) and Alberta Energy Regulator (AER)***
When to Report	The AER and Alberta Environment and Parks (AEP) use this number for all complaints and emergencies related to the environment and energy development in Alberta.
Reporting Number	24 Hour Hotline - 1-800-222-6514 (If reporting emergencies from outside of Alberta, please call - 780-422-4505)
Detailed Requirements	When calling, please provide as much detail as possible about the emergency or complaint: **Location** - If possible, provide the legal land location; otherwise, provide the general location of the emergency **Description of the emergency or complaint** - describe the impact or nature of the emergency or complaint **Source of the emergency or complaint** – Are you aware of or were you able to determine the source of the emergency or complaint? If not, can you describe what type of industrial activity is in the area

	(e.g. oil and gas, agriculture, manufacturing, etc.)?
Region ***Regulator***	**Alberta** ***Alberta Emergency Management Agency (AEMA)***
When to Report	Will be activated by the government for level 2 and level 3 emergencies to provide support to the incident response. Notification mechanisms outlined in the MEP response framework may be used by the local authority to notify residents if public protection measures are required outside the EPZ (Emergency Planning Zone). The notification mechanisms will be based on monitored air quality and other situations that might arise during the emergency
Reporting Number	Notification done through local authorities
Detailed Requirements	
Region ***Regulator***	**Ontario** ***Ontario Ministry of the Environment and Climate Change***
When to Report	There are no minimum reportable quantities. When a spill occurs, the EPA defines the duty to report as "...immediately when the person knows or ought to know that the pollutant is spilled AND is causing or is likely to cause an adverse effect." [EPA, Section 92(2)]
Reporting Number	Spills Action Centre - 1-800-268-6060 in Ontario 416-325-3000 from all other areas
Detailed Requirements	The Ministry of the Environment and Climate Change must be notified when a solid, liquid, and/or gaseous material has been released to the outside environment and causes or has the potential to cause an adverse effect. The Ministry of the Environment and Climate Change considers where there is the possibility of outside contamination, the incident is reportable
Region ***Regulator***	**Quebec** ***Ministère du Développement durable, l'Environnement, et Lutte contre les changements climatiques***
When to Report	Accidental releases must be reported to the Ministry of Sustainable Development, Environment and the Fight against Climate Change (MSDECC) immediately **Note** This is not a single reporting structure; as such, reporting to Environment Canada must still be completed
Reporting Number	1-866-694-5454
Detailed Requirements	You may be asked for the following information when you contact Urgence-Environnement: Name, function, organization, address and telephone number of the person to contact at the site or who knows about the case (if it is a different person) • This information will remain confidential

	• Location of the incident (address and details to help us pinpoint the location) • Type of incident (e.g. spill or exceedance of standards) • When the incident occurred (recent or not) • Details on the product spilled (e.g. name and physicochemical characteristics if known) • Quantity involved, and if applicable, estimate of the quantity spilled, type and dimensions of container, etc. • Departments or organizations already informed or at the site • Action being taken (containment, retention, recovery of the product, etc.) This information will be conveyed to the responder on duty if it is an environmental emergency The responder will determine what measures should be taken. Depending on the magnitude of the situation, the responder will monitor progress either remotely or at the site of the incident

Table 63 - Primary Reporting Notification Requirements by Regulator

8.4 Secondary Reporting Notifications by Regulator

The following stakeholders will be notified if the incident falls under their jurisdictional authority. Decisions can be made by evaluations outlined within the requirement and when to respond sections listed in Table 64.

Region	Regulator	When to Respond	Reporting Number
Federal	Environment Canada	The following persons are required to notify the appropriate 24-hour authority consisting of federal/provincial territorial authorities, whom must be notified as soon as possible in the circumstances, in the event of a release of a substance, or the likelihood of such a release into the environment, which is in contravention of a regulation referred to in Section 95, 169, 179 or 212 of *CEPA, 1999*, or in the event of an environmental emergency under Section 201 of *CEPA, 1999*: • any person who owns or has the charge, management, or control of a regulated substance immediately before its release or the likelihood of its release into the environment; • any person who causes or contributes to the release or increases the likelihood of the release; • any person who owns or has the charge, management, or control of a substance immediately before an environmental emergency; and • any person who causes or contributes to an environmental emergency.	Quebec 1-866-283-2333 1-514-283-2333 Ontario One Window SAC 1-416-325-3000 1-800-268-6060 Alberta One Window 1-780-422-4505 1-800-222-6514
Requirement Details	<u>Canadian Environmental Protection Act- 1999</u> Environmental occurrence includes: the release, or the likelihood of a release, of a substance into the environment in contravention of regulations referred to in Section 95, 169, 179 or 212 of *The Canadian Environmental Protection Act, 1999 (CEPA, 1999)*, an environmental emergency under Section 201 of *CEPA, 1999*, or a deposit of a deleterious substance, in water frequented by fish, out of the normal course of events, or a serious and imminent danger thereof under SubSection 38(4) of The Fisheries Act. The following persons are required to notify the appropriate 24 hour authority or an enforcement officer in contravention of a regulation referred to in Sections 95, 169, 179, or 212 of *CEPA, 1999*, or in the event of an environmental emergency under Section 201 of *CEPA, 1999*: A notification of a release or a deposit of a hazardous substance into the environment is to be made to an enforcement officer or any other person *designated by regulation*, under *CEPA 1999*, or to an inspector, or such other person or authority as is *prescribed by regulation*, under *The Fisheries Act*. Consequently, to receive notifications under *CEPA 1999* and *The Fisheries Act* on behalf of Environment Canada, the persons providing 24-hour emergency telephone service for the organizations operating for the provincial and territorial governments either (1) must be designated as *CEPA 1999* enforcement officers by the Minister of the Environment and		

	prescribed as *Fisheries Act* inspectors by the Minister of Fisheries and Oceans (the 'administrative approach'); or (2) must be designated and prescribed by regulation (the 'regulatory approach').		
Region	**Regulator**	**When to Respond**	**Reporting Number**
Federal	DFO Department of Fisheries/ Canadian Coastguard	Spills must be reported to the appropriate government agencies without delay. Reporting regulations vary among jurisdictions so individuals must be familiar with the reporting requirements in the jurisdiction in which they are operating. If you are unsure about the reporting requirements in a particular area, then report the spill. Canadian Coast Guard Regulations and Guidelines	DFO/Canadian Coast Guard 1-613-993-0999
Requirement Details	SubSection 38(4) of *The Fisheries Act* stipulates: *"Where, out of the normal course of events, there occurs a deposit of a deleterious substance in water frequented by fish or a serious and imminent danger thereof by reason of any condition, and where any damage or danger to fish habitat or fish or the use by man of fish results or may reasonably be expected to result therefrom, any person who at any material time* *a) owns the deleterious substance or has the charge, management, or control thereof, or* *b) causes or contributes to the causation of the deposit or danger thereof, shall, in accordance with any regulations applicable thereto, report such occurrence to an inspector or such other person or authority as is prescribed by the regulations."* Such deposits are: • those prohibited under SubSection 36(3) of *The Fisheries Act* (the "general prohibition clause"); or, • those in contravention of a regulation made under SubSection 36(5). The appropriate 24-hour authorities listed above or an inspector shall be notified without delay of these deposits pursuant to the requirements of *The Fisheries Act*. <u>Canadian Coast Guard Regulations and Guidelines</u> *2.1.2 Reporting:* *At minimum, spill reports should include the following information:* • *The caller's name and phone number;* • *The spiller's name and number;* • *Location and time of the spill;* • *Type and quantity of the spilled substance;* • *Cause and effect of the spill; and* • *Details of actions taken or proposed to minimize the effects.* ***Note*** *Failure to report a spill can result in fines of up to $1,000,000.* *2.1.3 Personal Liability* *The liability for a spill rests with the person who owns or has charge, management, or control of the substance immediately prior to its release. A company can be held responsible for the actions of its employees unless it can be shown that the employee acted contrary to established protocols. If so, the employee can be held solely liable.*		

	Although this document may refer to the above regulations and guidelines, it does not include all of their requirements. All persons involved in oil transfers should be familiar and comply with all applicable requirements.

Region	Regulator	When to Respond	Reporting Number
Federal	Natural Resources Canada	Where a spill occurs in any area to which this Act applies, any person who at the time of the spill is carrying on any work or activity related to the exploration for or development or production of oil or gas in the area of the spill shall, in the manner prescribed by the regulations, report the spill to the Chief Conservation Officer. Canada Oil and Gas Operations Act (R.S.C., 1985, c. O-7) Section 25	Toll Free 1-800-667-1940 or Ontario 1-705-755-2000

Requirement Details

The Canada Oil and Gas Operations Act promotes safety, environmental protection, conservation of oil and gas resources, and joint production arrangements. The act is jointly administered by the Department of Natural Resources and Indian Affairs and Northern Development Canada.

Section 25 prohibits a person from causing or permitting a spill and establishes a duty to report any spills that do occur. Reasonable measures must also be taken to respond to the spill and protect the environment. Section 25 also enables anyone other than the spiller to recover costs associated with responding to the spill.

Section 25

(1) No person shall cause or permit a spill on or from any area to which this Act applies.

Duty to report spills:

(2) Where a spill occurs in any area to which this Act applies, any person who at the time of the spill is carrying on any work or activity related to the exploration for or development or production of oil or gas in the area of the spill shall, in the manner prescribed by the regulations, report the spill to the Chief Conservation Officer.

Duty to take reasonable measures:

(3) Every person required to report a spill under SubSection (2) shall, as soon as possible, take all reasonable measures consistent with safety and the protection of the environment to prevent any further spill, to repair or remedy any condition resulting from the spill and to reduce or mitigate any danger to life, health, property, or the environment that results or may reasonably be expected to result from the spill.

Taking emergency action

(4) Where the Chief Conservation Officer, on reasonable grounds, is satisfied that:

a) a spill has occurred in any area to which this Act applies and immediate action is necessary in order to effect any reasonable measures referred to in SubSection (3), and
b) *such action is not being taken or will not be taken under SubSection (3),he may take such action or direct that it be taken by such persons as may be necessary.*

Region	Regulator	When to Respond	Reporting Number
Federal	Labour Canada	Oil and Gas Occupational Safety and Health Regulations (SOR/87-612)	1-800-641-4049

		Hazardous Occurrence Report [SOR/94-165, s. 62(F)] *16.4 (1) The employer shall report, by the most rapid means of communication [available].*	
Requirement Details	127. (Employment Safety) *(1) Subject to SubSection (2), if an employee is killed or seriously injured in a work place, no person shall, unless authorized to do so by a health and safety officer, remove or in any way interfere with or disturb any wreckage, article, or thing related to the incident except to the extent necessary to:* *a) save a life, prevent injury, or relieve human suffering in the vicinity;* *b) maintain an essential public service; or* *c) prevent unnecessary damage to or loss of property.* Canada Labour Code (R.S.C., 1985, c. L-2) Part II Occupational Health and Safety, Chapter 127 Duty to assist officer *142. The person in charge of a work place and every person employed at, or in connection with a work place shall give every appeals officer and health and safety officer all reasonable assistance to enable them to carry out their duties under this Part.* R.S., 1985, c. L-2, s. 142 R.S., 1985, c. 9 (1st Supp.), s. 4; 2000, c. 20, s. 14 Obstruction and false statements *143. No person shall obstruct or hinder, or make a false or misleading statement either orally or in writing to an appeals officer or a health and safety officer engaged in carrying out their duties under this Part.* R.S., 1985, c. L-2, s. 143 R.S., 1985, c. 9 (1st Supp.), s. 4; 2000, c. 20, s. 14 Oil and Gas Occupational Safety and Health Regulations *16.4 (1) The employer shall report, by the most rapid means of communication available to the employer, the date, time, location, and nature of any accident, occupational disease, or other hazardous occurrence referred to in Section 16.3 to a safety officer and to the safety and health committee or the safety and health representative, if either exists, as soon as possible but not later than 24 hours after becoming aware of the occurrence, where the occurrence resulted in the following circumstance:* *a) an accidental accumulation, spill or leak of a hazardous substance;* *b) the death of an employee;* *c) a missing person;* *d) a disabling injury to an employee;* *e) the implementation of emergency rescue, revival or evacuation procedures;* *f) a fire or explosion that threatened the safety or health of an employee;* *g) the free fall of an elevating device that rendered the elevating device unsafe for use by an employee;* *h) an accidental accumulation, spill or leak of a hazardous substance; or* *i) the loss of or damage to support craft.* *(2) A written report of the accident, occupational disease, or other hazardous occurrence referred to in SubSection (1) shall be submitted by the employer within 14 days after the occurrence to:* *a) the regional safety officer at the regional office; and* *b) the safety and health committee or the safety and health representative, if either exists.* *c) the report referred to in SubSection (2) shall be in the form set out in Schedule I to this*	

	Part and contain the information required by the form. (SOR/87-612) Hazardous Occurrence Report [SOR/94-165, s. 62(F)] *(2) A written report of the accident, occupational disease, or other hazardous occurrence referred to in SubSection (1) shall be submitted by the employer within 14 days after the occurrence to:* *a) the regional safety officer at the regional office; and* *b) the safety and health committee or the safety and health representative, if either exists.* SOR/88-199, s. 19; SOR/94-165, s. 63

Table 64 - Secondary Reporting Notifications by Regulator

8.5 Other Notifications

The following additional Organizations may have notification requirements depending upon the nature and location of the incident:

8.5.1 Regional Health Authorities, Conservation Authorities, Government Agencies, and Other Stakeholders

Municipal Conservation authorities and other stakeholders may need to be notified as identified in the relevant Municipal Plan.

8.5.2 Public First Responders, including Fire, Police and EMS

Public First Responders may need to be contacted in case of an emergency. Please refer to the Municipal Specific Plan for detailed contact information.

8.6 Forms and Reporting Details by Regulator

8.6.1 National Energy Board

An **incident** is defined as:

Section 1 of the *Onshore Pipeline Regulations* defines an incident which is reportable to the Board as every incident relating to the construction, maintenance, operation, or abandonment of a pipeline that results in:

- The death or serious injury to a person
- A significant adverse effect on the environment
- An unintended fire or explosion
- An unintended or uncontrolled release of LVP hydrocarbons in excess of $1.5m^3$
- An unintended or uncontrolled release of gas or HVP hydrocarbons, or
- The operation of a pipeline beyond its design limits as determined under CSA Z662 or CSA Z726 or any operating limits imposed by the Board

TNPI will follow the National Energy Board (NEB) regulation for incident reporting. The guidelines state:

> For the purposes of notification under Section 52 of the OPR, the Board employs the following definition for significant adverse effects on the environment*:*
>
> *Release of any chemical or physical substance at a concentration or volume sufficient to cause an irreversible, long-term, or continuous change to the ambient environment in a manner that causes harm to human life, wildlife, or vegetation.*

Events that fall under this definition include, but are not limited to:

- Release of a toxic substance (as defined in the OPR) into a sensitive environment (e.g. Watercourse or wetland) or into a designated national/provincial area (e.g. National park, provincial park, wildlife refuge)
- *Frac outs* released directly into a watercourse during horizontal directional drilling operations
- The release of a toxic substance in an area where there is a pathway to a receptor nearby (e.g. The groundwater or surface water is used for drinking water, irrigation water, and/or is consumed by livestock)
- The destruction of critical habitat, as that term is defined in *The Species at Risk Act*

Companies are expected to apply the precautionary approach and report all occurrences that may result in a significant adverse effect on the environment. Companies will have the opportunity to demonstrate, as part of their detailed reports (see Section 10), that the occurrence did not have a significant adverse effect on the environment. In these cases, the status of the occurrence can be changed from reportable (e.g. an incident) to not reportable.

It should be noted, if adverse effects are caused by residual contamination from a historical event, it should be reported through the Secretary of the Board as a Notification of Contamination. This process is further described in the NEB Remediation Process Guide.

Online Event Reporting System (OERS)

The NEB and the Transportation Safety Board of Canada (TSB) have adopted a single window reporting approach. However, in some areas, the TSB reporting requirements are somewhat different than the NEB requirements. For additional details on the TSB reporting requirements, companies should refer to the TSB website (http://www.tsb.gc.ca/eng/incidents-occurrence/pipeline/index.asp).

The OERS website must be used for reporting of all incidents, and incidents considered to be significant must be reported verbally to the TSB, as well as through the OERS website.

The NEB requires a preliminary incident report then a detailed incident report be completed.

Section 52 of the OPR requires companies to immediately notify the Board of any incident. **Companies immediate** is defined in the Event Reporting Guidelines as within three (3) hours of the incident being discovered. The information must be reported verbally and within the OERS within this time frame

Section 52 of the OPR also requires the submission of a Pipeline Incident Report (PIR) and a Detailed Incident Report (DIR) *as soon as is practicable*. Generally, a company's initial notification of an incident will satisfy the PIR requirements. The information required for a DIR must be submitted within twelve (12) weeks of reporting an incident. For complex incidents, companies may request an extension for submission of a DIR. The Detailed Incident Report is submitted within the OERS.

8.6.2 Alberta Energy Regulator

The reporting requirements for a facility are different than that of the pipeline. Be sure to examine the requirements of reporting prior to calling the AER.

An **incident** is defined as:

An unexpected occurrence or event that requires action by emergency personnel to prevent or minimize the impacts on people, property, and the environment.

The requirements for reporting are based upon the level of the incident and are summarized in Table 65 below.

Level of Emergency	Description	Reporting
Level 1	There is no danger outside the licensee's property, there is no threat to the public, and there is minimal environmental impact. The situation can be handled entirely by licensee personnel. There will be immediate control of the hazard. There is little or no media interest	Notify local AER Field Centre. Call local authority and RHA if public or media is contacted
Level 2	There is no immediate danger outside the licensee's property or the right of way, but there is the potential for the emergency to extend beyond the licensee's property. Imminent control of the hazard is probable but there is a moderate threat to the public and/or the environment. There may be local and regional media interest in the event	Notify local AER field Centre, local authority and RHA
Level 3	The safety of the public is in jeopardy from a major uncontrolled hazard. There are likely significant and ongoing environmental impacts	Notify local AER Field Centre, local authority and RHA.

Table 65 - AER Hazard Reporting Levels

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The reporting form for notification communication to AER is completed through providing the information gathered in the First Call Communication form which is shown below in Figure 49.

Release Report

Alberta Energy Regulator

Initial verbal notification of the release to the AER is required prior to completing this release report.

General Information

AER FIS Incident no.:	CIC Reference no.:	
Date AER notified:	Time: ☐ pm ☐ am	AER contact:
Type of report: Click here for list	Projected date for final report:	
Incident date:	Time: ☐ pm ☐ am	Incident location: W
Licensee name :		
Licence no.:	Public Lands Disposition no.:	
EPEA Approval no.:	Mine/Scheme Approval no.:	Other AER Approval no.:
Form completed by:	Phone number:	

Volume Details

If volumes change from what was initially reported, then verbal notification to the AER is required.

What was released?	Volume released	Fluids recovered	Shipped to & (waste receiver)*	Licence/ Approval no.*	Location
	m^3	m^3	Click here for list		W
	m^3	m^3	Click here for list		W
Gas	10^3 m^3				
Excavated soil removed	m^3		Click here for list		W
Contaminated freshwater and/or snow removed	m^3		Click here for list		W

* Refer to ST107 for the list of AER-approved oilfield waste management (WM) facilities.

Contaminated soils storage: ☐ Yes ☐ No ☐ On site ☐ Off site – If off site, enter location: W

Release rate: | Duration of release:

Release Site Details

Land jurisdiction type: Click here for list	Environment affected: Click here for list	Area affected: m^2
☐ Within Public Lands disposition boundary	☐ Outside Public Lands disposition boundary – TFA number:	
Distance to closest water body: m	Distance to nearest town: km	Name of nearest town:
Distance to closest water well: m	Distance to nearest permanent dwelling: km	

Release Containment Details

☐ Release off lease	☐ Release on lease	
Release contained by berm: ☐ Yes ☐ No	Release contained by liner: ☐ Yes ☐ No	Liner type (Directive 055): Click here for list
Release onto land/soil: ☐ Yes ☐ No	Surface soil type: Click here for list	Subsurface soil type: Click here for list

Impacts

H_2S concentration: Unit of measurement: ☐ % ☐ ppm ☐ mol/kmol		
Wildlife/livestock affected: Click here for list		Equipment loss: Click here for list
☐ Public affected	☐ Public evacuation	Number evacuated:
☐ Landowner notified*	☐ Leaseholder notified*	
Number of injuries:	Number of fatalities:	☐ WH&S notified*

* Provide details in Additional Notifications box.

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Pipeline Incident Details (Fill in for AER licensed pipeline incident)

Pipeline is not to be returned to service without permission from the AER.

Pipeline failure type: Click here for list

Licence number:	Line number:	Start location: W	End location: W

Associated facility location: W Associated facility licence number:

☐ Test failure ☐ Retest segment ☐ Pipeline repair pretested ☐ Cathodic protection

Type of external coating: ☐ Corrosion mitigation/monitoring program:

Normal operating pressure: kPa Maximum operating pressure kPa

Date line shut in: Pipeline returned to service: ☐ No ☐ Yes Date:

Remediation Details

All releases must be remediated or managed in a matter satisfactory to the AER.

Contamination left in place: ☐ Yes ☐ No ☐ In-situ remediation implemented

Final clean-up/remediation complete date:

Remediation guidelines used (choose all applicable):
☐ Tier 1 ☐ Tier 2 ☐ SST ☐ SCARG ☐ CCME ☐ Exposure control

Method of subsurface delineation: Confirmatory samples taken: ☐ Number of samples:

Remediation certificate applied for: ☐ Yes ☐ No

Environmental contractor: Phone number:

Additional Notifications

Name of agency/landowner	Person notified / reference no.	Phone number	Date

Incident Details

Submit photos of the incident and clean-up/remediation to the AER. Fill in all text boxes below:

Detailed description of circumstances leading up to the release:

How release was identified:

Steps/procedures taken to minimize, control, or stop release:

Steps taken to contain release:

If release was on lease steps taken to ensure no migration off lease (including subsurface migration):

Description of how release volume(s) was determined and verified (include any calculations used):

How the affected area was determined (include any calculations used):

Description of environmental impact:

Clean-up operation details:

Remediation operation details:

Release cause: Click here for list

Description of root cause:

Steps/procedures taken to prevent similar future releases:

Additional comments:

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Figure 49 - AER Release Report (2 pages)

8.6.3 Environmental Agency Reporting

Notification must be made as soon as possible in the event there has been a discharge at or above the limits listed below or if the discharge will cause an adverse effect to the natural environment. Any discharge into a river, stream, lake, or navigable waterway must also be reported.

8.6.3.1 Environmental Reporting Criteria

The core of all Federal and Provincial reporting requirements are based on the ability for a product to cause or the likelihood of a product causing an adverse effect to the environment during an incident.

The definitions are different depending on the regulator having jurisdiction.

8.6.3.1.1 Environment Canada

An environmental occurrence includes the release, or the likelihood of a release, of a substance into the environment in contravention of regulations referred to in Sections 95, 169, 179 or 212 of the Canadian Environmental Protection Act, 1999 (CEPA, 1999), an environmental emergency under Section 201 of CEPA, 1999, or a deposit of a deleterious substance, in water frequented by fish, out of the normal course of events or a serious and imminent danger thereof under SubSection 38(4) of the Fisheries Act.

CEPA Part 8 allows the Minister of the Environment to require E2 Plans for toxic or other hazardous substances. The primary objective for requiring E2 planning under Sections 199 and 200 is to ensure appropriate risk management measures are adopted and implemented for all potential risks associated with the manufacture, storage, and use of toxic and hazardous substances in Canada.

Site specific plans were created using the format and structure required by Environment Canada for an E2 Emergency Plan under CEPA Section 200. This structure is based on the collection of known data for the site and surrounding exposures. The structure identifies TNPI's prevention program to reduce or eliminate incidents, preparedness to identify potential incident scenarios, and expected exposures from these incidents (air, land, and water), and an execution component dedicated to sufficient response and remediation actions. To identify and address immediate life safety hazards and ensure this information can be efficiently communicated to stakeholders and the public, refer to TNPI's Facility Specific Plans (specifically referencing Farran's Point and Toronto Airport).

For the purposes of Section 9 of the *Environmental Emergency Regulations*, environmental emergencies require:

- A verbal notification to be made by telephone as soon as possible in the circumstances to the authorities named in Column 2 of Schedule 6 of the Regulations and Appendix 6 of these Guidelines
- A written report should be made within 30 days to the relevant authorities named in Column 3 of Schedule 6 of the Regulations and Appendix 6 of these Guidelines

Verbal Notification

The verbal report should include as much of the following information as is known at the time of the report:

- The reporting person's name and telephone number at which the person can be immediately contacted
- The name of the person who owns or has the charge, management, or control of the substance immediately before the environmental emergency
- The date and time of the release
- The location of the release
- The name/UN number of the substance released
- The estimated quantity of the substance released
- The means of containment (from which the substance was released) and a description of its condition
- The number of deaths and injuries resulting from the environmental emergency
- The surrounding area/environment affected and potential impact of the release (mobility of release and weather or geographic conditions at the site)
- A brief description of the circumstances leading to the release
- The cause of the release (if known)
- Details of the actions taken or further actions contemplated (to contain, recover, clean up and dispose of the substance involved)

- The names of agencies notified or on-scene
- Other pertinent information

Written Report

The following information should be included in the written report:

- The name and address of the person who owns or has the charge, management, or control of the substance involved in the environmental emergency and the telephone number, including the area code, at which the person may be contacted
- The date, time, and exact location of the release
- The name/UN number of the substance released
- The composition of the substance released showing, with respect to each substance involved, its concentration and total weight
- The estimated quantity of the substance released and the total quantity of substance in the means of containment before the release
- The duration of the release of the substance and its release rate
- The means of containment (from which the substance was released) and a description of its condition
- The number of deaths and injuries resulting from the environmental emergency
- The surrounding area/environment affected and potential impact of release (mobility of release, weather or geographic conditions at the site, long-term environmental impacts)
- A complete sequence of events before and after the environmental emergency (including the cause of the release, if known)
- The names of agencies notified or on-scene at the time of the release
- All measures taken pursuant to CEPA 1999 paragraph 201(1)(b) and (c) (regarding protection of the environment and public safety and notification to any member of the public adversely affected by the environmental emergency)
- All measures to be taken to prevent similar releases

Notification and Reporting of Environmental Emergencies in accordance with Environment Canada.

Refer to Section 8.3 for reporting details outlining when to respond and requirements of such. Also refer to Appendix H Resources and Regional Contact Telephone Numbers.

8.6.3.1.2 Ministry of the Environment and Climate Change - Ontario

Adverse Effect means one or more of:

- Impairment of the quality of the natural environment for any use that can be made of it
- Injury or damage to property or to plant or animal life
- Harm or material discomfort to any person
- An adverse effect on the health of any person
- Impairment of the safety of any person
- Rendering any property or plant or animal life unfit for human use
- Loss of enjoyment of normal use of property
- Interference with the normal conduct of business

Notification and Reporting of Environmental Emergencies in accordance with the Ministry of the Environment and Climate Change Ontario.

The Ministry of the Environment and Climate Change considers where there is the possibility of outside contamination, the incident is reportable. Refer to Section 8.3 for reporting numbers and details outlining when to respond and requirements of such.

8.6.3.1.3 Alberta Environment and Parks

Adverse Effect means impairment of or damage to the environment, human health, or safety or property; Alberta environment has produced a guidance document which states an adverse effect may be difficult to determine,

depending on the chemical and physical characteristics of the substance released and where it was released. If you are uncertain about the potential for adverse effects, it is recommended you report the release.

Written report requirements

The Alberta Environmental Protection - Pollution Control Division requires a written report seven days following an incident. The written report must include the following information, where reasonably available:

- The date and time of the release
- The location of the point of the release
- The duration of the release and the release rate
  - The composition of the release showing with respect to each substance
  - Its concentration
- The total weight, quantity, or amount released
- A detailed description of the circumstances leading up to the release
- The steps or procedures which were taken to minimize, control, or stop the release
- The steps or procedures which will be taken to prevent similar releases

Notification and Reporting of Environmental Emergencies in accordance with Alberta Environment.

Refer to Section 8.3 for reporting numbers and details outlining when to respond and requirements of such. Also refer to Appendix H Resources and Regional Contact Telephone Numbers.

8.6.3.1.4 Ministère du Développement Durable, de l'Environnement, et de la Lutte contre les changement climatiques

No one may emit, deposit, issue, discharge, or allow the emission, deposit, issuance, or discharge into the environment of a contaminant in a greater quantity or concentration than that provided for by regulation of the Government.

The same prohibition applies to the emission, deposit, issuance, or discharge of any contaminant present in the natural environment, which is prohibited by regulation of the Government or is likely to affect the life, health, safety, welfare, or comfort of human beings, or to cause damage to or otherwise impair the quality of the soil, vegetation, wildlife, or property.

Notification and Reporting of Environmental Emergencies in accordance with the Ministère du Développement Durable, de l'Environnement, et de la Lutte contre les changements climatiques.

Refer to Section 8.3 for reporting numbers and details outlining when to respond and requirements of such. Also refer to Appendix H Resources and Regional Contact Telephone Numbers.

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9 Training

9.1 General Training

TNPI is dedicated to the training their staff to properly perform the job specific skills needed to operate safely.

Training records for each course and individual are accessible at any TNPI office that has access to Intellex are available for viewing upon request.

9.2 Evaluation and Corrective Actions

A full report based on exercise debriefs and observations of each Field Deployment and Fully Integrated exercise will be completed so as to have an ongoing evaluation of the effectiveness of the training program.

If deficiencies are identified at any time during the evaluation process, TNPI address the deficiency in a corrective action process and the training program will be modified as required.

All tracking and reporting is completed in Intelex computer tracking software. This will log the events and assign responsibilities and completion timelines.

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10 Risk Methodology and Potential Incident Scenarios

10.1 Risk Methodology for the determination of receptors requiring special consideration

The preparation of a hazard analysis and risk assessment is an important first step in the emergency planning process. The results of this research will be of value in helping TNPI staff and its contractors understand the probability and severity of emergencies that may impact the pipeline and impinge on the communities within which TNPI operates. With this knowledge, the level of preparedness can be assessed and measures taken to enhance capabilities through training and preparation of a more effective response to such occurrences. Consequently, it is felt that a rigorous hazard analysis and risk assessment process represents a valuable emergency-planning tool for TNPI.

The risk evaluation has utilized the worst case product characteristics for all products presently being transported through the TNPI system. This will ensure sufficient preparedness regardless of which material is being transported. In general the vapour pressure, flammability and toxicity of gasoline have been utilized for health and safety related topics and diesel fuel has been used for environmental factors due to its persistent characteristics.

The evaluation includes determining criteria for risk factors in four categories:

1. Life safety risk factors
2. Environmental risk factors
3. Property risk factors
4. Regulatory required emergency plans

Arbitrary ranking numbers have been assigned to each of the receptors which could be impacted by release of products across the TNPI pipeline. All data with its associated ranking have been evaluated in 1 Kilometer block increments in the directly impacted zones identified by the overland spill modeling with a safety buffer of 179 meters from each side of the center of spill. This safety buffer has been obtained from the North American Emergency Response Guidelines (EPRG Level 2).

Rating Number	Impact Description
1000	Direct human impact with potentially high exposures where isolation or evacuation will be slow/ hindered or severe disruption of life safety essential services
600	Direct human impact with potentially high exposures
333	Indirect human impact with potentially high exposures
165	Indirect human impact or indirect impacts on essential services
100	Impacts to the environment
50	Impacts to property and the normal conduct of business

Table 66 - Risk Methodology

Using the above methodology, risk associated with each receptor and assigned numerical values were identified which are shown in the following table.

Name	Detail	Description	Rank
Life Safety Hazards			
Gathering	Direct Impact	As defined under the NEB OPR	600

Name	Detail	Description	Rank
Gathering	Indirect	As defined under the NEB OPR	165
Density	Class 4	Higher population densities make it harder and more time consuming to isolate and or evacuate the public when hazardous situations occur following a pipeline incident	1000
Density	Class 3	Same as above	600
Density	Class 2	Same as above	165
Density	Class 1	Same as above	50
HCA		High Consequence Area as defined by CSA 731	50
Residential homes in Right-of-Way		Locations where the pipeline right of way crosses a residential property	1000
Non-mobile Human Exposures	Direct Impact	Sites housing individuals whom would be difficult to move or may cause harm if transported from the site. Examples: • Hospitals • Nursing homes • Retirement homes • Long term health facilities • Jails and detention facilities	1000
Non-mobile Human Exposures	Indirect	Same as above	333
First Responder Locations	Direct Impact	Location from where Municipal first responders respond; which may require isolation or evacuation limiting their ability to function as first responders. Locations include: • Municipal EOC • Fire stations • Police Stations • EMS Stations	1000
Significant Tourist Attractions	Direct Impact	Areas where the public may concentrate due to a tourist attraction which is not covered under the definition of a *gathering place*	600
Significant Tourist Attractions	Indirect	Same as above	165
Life Safety Hazards (continued)			
Highways Class 1	Direct Impact	High capacity roadway as defined under the highway traffic act Ontario	600
Highways Class 1	Indirect	Same as above	50
Rail Class 1		CN and CP rail main line	100
Rail - Short line		Short line rail off the main line	50
Rapid Transit		Provincial and municipal rapid rail transit	333

Name	Detail	Description	Rank
Subterranean Railways		Municipal Subterranean Railways	1000
Airport		Airports	100
Security Threat locations		Areas of significant threat to security access or risk	1000
Drinking water intakes		Municipal drinking water intake locations. Sites must be identified to ensure the safety of the drinking water systems in communities where TNPI transports their products	1000
Well / Aquifer	Direct Impact	Well water use for Municipal drinking water. Sites must be identified to ensure the safety of the drinking water systems in communities where TNPI transports their products	1000
Well / Aquifer	Indirect	Same as above	100
TNPI E2 site		Site storing equal to or greater than the scheduled tonnage of materials listed in the schedule require: • Notification of the site to EC • Production of a site emergency plan meeting the criteria • Testing of the plan annually	1000
TNPI NFC Site		Spill response site specific plan for flammable storage facilities meeting the standard	1000
Delivery lifting sites requiring E2		Sites TNPI delivers to which have storage capacities of fuel requiring an E2 plan	50
Delivery lifting sites requiring NFC		Sites TNPI delivers to which have storage capacities of fuel requiring a fire safety plan	50
Combined Sewer direct impact	Direct Impact	Areas where access to municipal combined sewer where fuel may gain access to residential and commercial facilities through access drains	333
Environmental Hazards			
Environmental Sensitive Area		Designated Environmental Sensitive Areas	100
Fish spawning area		Creeks and rivers that have been designated as active fish spawning locations.	100
Endangered habitat or species		Endangered habitat or species locations	100
Food bearing crop		Food bearing crop locations	100
Property			
Commercially Navigable Waterway crossing		Water crossings where large commercial vessel travel directly over the pipe	1000
Sanitary sewer	Indirect	Location where access to sanitary sewer through road access or combined sewer would allow sufficient fuel to infiltrate the system forcing the municipality to shutdown sewage treatment plants	165

Name	Detail	Description	Rank
Commercial water intakes		Facilities utilizing water in operational processes. Contamination of this source would force the stop of production and the "interruption of the normal conduct of business"	50
Commercial store front		Commercial stores which if isolated or evacuated due to an incident would cause an "interruption of the normal conduct of business"	50
Area of Cultural Significance		Area of Cultural Significance	50

Table 67 - Risk Methodology and Potential Incident Scenarios

Any areas with a rating above 1000 have been identified as requiring a *Specific Consideration*.

10.2 Identification of hazards and threats resulting in spill or release of products

In this report we have utilized hazards and/or threats previously identified in our pipeline integrity management approach. Additional hazards, identified through recent industry events and emerging issues were also considered.

The following hazards/threats were considered in this assessment:

- Corrosion/Metal Loss (Internal and External)
- Fatigue and Failure (Cracking)
- Manufacturing Defects
- Construction/Installation
- Third Party Damage
- Equipment Failure
- Operational Error
- Ground Movement/Subsidence
- Natural Disaster
- Sabotage/Act of Terrorism

A review of the identified hazards / threats resulted in the determination irrespective of the probability of occurrence the result would be the release of petroleum product to the environment. With that in mind a comprehensive modeling effort was undertaken to determine the potential areal overland impact of a release considering two outcomes; a full-bore release and a small diameter (<2" or 50 mm) penetration or failure of the pipeline.

Furthermore, the modeling was conducted utilizing the physical properties of the two most commonly shipped petroleum products; gasoline and diesel. The modeling illustrated the areal extent of the potential release under the two scenarios which was interpreted as direct impact or via vapour from pooled product from the release or its intersection and movement though bodies of water, e.g. rivers, creeks etc.

10.3 Potential Incident Scenarios

As part of TNPI's emergency plan, potential incident scenarios have been identified and associated to hazard receptors utilized within the plans. The scenarios have been identified with assistance from a Subject Matter Expert (SME) working with TNPI. These potential incident scenarios include:

Potential Scenarios					
Incident Cause					
Natural Disaster	**Power Interruption**	**Security**	**Unauthorized Activities**	**Maintenance issues**	**Operational issues**
• Severe thunderstorm • Wildfire • Earthquake • Ice storm • Soil bank collapse, etc.	• Localized • Widespread	• Bomb threat • Civil unrest • Workplace violence • Extortion • Labour unrest	• Dig • Heavy equipment transit line	• Corrosion	• Line pressure
Consequences					
Release to surface/land (no fire)	Release to surface water such as rivers, creeks and lakes (no fire)	Release to surface land areas and transport (through ditches, sewers, etc.) to surface water	Release to surface land area with resulting fire and smoke	Release to groundwater	Combination of all
Resulting Hazards					
Hydrocarbon vapours above flammable levels (risk fire/explosion)	Hydrocarbon levels above acceptable criteria (TLV/ERPG 1, 2 or 3. Risk associated to health)	Nuisance odour levels of hydrocarbon vapours	Smoke & combustion products		
Exposures					
Human	**Environmental**	**Assets**	**Reputation**		
• Non-mobile population • Residential population • Commercial population • Transportation corridor • Drinking water • Food contamination • Fuel supply interruption	• Terrestrial animals • Aquatic animal • Amphibian animals • Plants • Sensitive habitats • Agricultural lands	• Public lands • Private land • First nation land • Threats to commercial activities	• Government response • Company response • Shareholders oversight • Threat to perception of safety of pipeline operations		

Table 68 - Potential Incident Scenarios

A scenario is a combination of any number of the above from each of the levels. For example, there is a surface release (cause vandalism or unauthorized dig). The release results in contamination to the subsurface environments as well as to surface lands and waters. The hazard would be hydrocarbon vapours including areas above the LEL, and downwind areas above acceptable levels for workers and residential populations. Impacts, depending on the release location and wind and product could include: non mobile populations, residential areas, commercial areas, public spaces (parks), terrestrial animals (pets), aquatic animals, plants (e.g. grass), roadway closures, rail closures, navigation closures, fishing closures, etc.). The above scenarios have been risk ranked utilising TNPI's Risk Assessment methodology and have been ranked as high risk due to high consequence normally associated with identified scenarios.

10.3.1 Events impacting non mobile human exposure

10.3.1.1 General

Events impacting Non-Mobile Human Exposure (NMHE) are of particular concern as they increase the potential for human exposure following an incident and in many cases, hinder or eliminate the potential for evacuation if required. The list of non-mobile human exposures, which were considered in the hazard analysis include the following facilities:

- Hospitals
- Nursing homes
- Retirement homes
- Long term health facilities
- Detention centers
- Detention centres

All of the listed examples are believed to be potential areas of concern with regards to moving individuals during the course of an incident if required. The completed overland spill modeling has not yielded any direct impact on any identified facility in these categories. There is potential for indirect exposures of low concentration vapours. Each of these facilities should have plans for evacuation due to any other causes than a TNPI related incident.

10.3.1.2 Special Considerations

Description	Hazard Characteristic			Responsibility to Take Action
	Life	ENV	Property	
Action should only be taken if it is safe to do so, individuals have the appropriate PPE, individuals are trained and are competent to perform the actions and sufficient employee capacity exists to maintain safety during the action	X			TNPI Safety officer is responsible for ensuring this task will be followed
Risk of moving patients in Intensive Care or dependant on specialized equipment. Associated specialized equipment and vehicles to attempt high risk movements	X			Public First Responders/ Facility administration
Specialized equipment and vehicles required to move detainees from correctional facilities. Consideration of appropriate staff requirements and alternate facilities to accommodate them should also be considered	X			Corrections administration/ Police

Description	Hazard Characteristic			Responsibility to Take Action
	Life	ENV	Property	
Pre-planning for *shelter in place* may be considered for facilities where the risk of human movements is unsatisfactory	X			Public First Responders / Facility Administration
Implementation of Personal Protective Equipment (PPE) for TNPI staff	X			TNPI (Supply equipment, training) and ensure PPE is used according to safety plan Public First Responders/ Facility Administration (Implementation)
Industrial Hygiene surveying within affected facilities	X			TNPI will hire Consultant to provide information on personal exposure and will share with Public first responders

Table 69 - Special Considerations - Events impacting non mobile human exposure

10.3.2 Events directly impacting major transportation corridors

10.3.2.1 General

Events directly impacting major transportation corridors are defined as those with impact on sites which will be covered by refined products during a break or leak. All of the sites included in the risk hazard analysis were identified by the overland spill modeling. The transportation systems included in the risk hazard analysis are:

- Highways - Class 1
- Railways - Class 1 and short line
- Railways - Rapid transit (GO,VIA)
- Railways - Subterranean transit
- Airports

Due to the number of major transportation corridors which exist along Trans Northern's pipeline, there is a high probability that one of the identified sites will be affected during a major event. The primary concern will be the abundance of people traveling on the corridor combined with the potential for fire due to ignition sources available. The possibility of tracking and extension of spilled products will compound the scope of an event, and in the case of the included Class 1 highways; the possibility of secondary Motor Vehicle Collisions caused by the material being on the road must be anticipated.

The interruption of any of the major transportation corridor for an extended period of time will result in the disruption of the normal conduct of business for companies dependant on the transportation system. Said interruption is secondary to the life safety hazards; however, events with these types of exposures will cause responders to be under constant pressure to act and return the system back to an operations state. The expectation of high profile media coverage and the need for a strong communication plan must be considered.

10.3.2.2 Special Considerations

Description	Hazard Characteristic			Responsibility to Take Action
	Life	ENV	Property	
Action should only be taken if it is safe to do so, individuals have the appropriate PPE, individuals are trained and are competent to perform the actions and sufficient employee capacity exists to	X			TNPI Safety officer will determine the PPE requirement

Description	Hazard Characteristic			Responsibility to Take Action
	Life	ENV	Property	
maintain safety during the action				
Risk of fire due to available ignition sources for events involving Gasoline. For class one highways, closure of highway should be considered due to smoke and concern for public safety and safety of responders. The confining nature of the highway structure, if a fire was to breakout, would need to be considered	X		X	Public First Responders
Collection of refined products in mass transit stations and subterranean tunnels produces a unique challenge and the possibility of elevated occupational exposures and fire concerns due to the low collection points and confining areas. This scenario is compounded by the high density of people associated with this type of transportation system	X			Public First Responders
Secondary Motor Vehicle Collisions (MVC) due to refined products on the roadway	X		X	Public First Responders
Expansion and escalation of an incident as transportation vehicles move through the product at high speeds. It should be expected the product and its associated hazards will be tracked producing multiple secondary sites and exposures	X	X	X	Public First Responders (safety) TNPI (clean up)
All class one highways and airports will have engineered storm water collection systems which will quickly extend the spill from the road/tarmac exposure to a storm water collection system. Outfalls into rivers and lakes must be identified in the early stages of the event and containment techniques implemented to limit the extension of the spilled material and associated environmental impacts should be considered	X	X		Public First Responders (safety) TNPI (clean up)
Decontamination of mass numbers of vehicles or train rolling stock may be necessary. During an event like this the ability to secure and decontaminate all affected vehicles in a timely fashion will be a logistic concern	X			TNPI Logistic Section Chiefs and staff will assume responsibility for this task
Extended exposure of asphalt surfaces to refined products results in degradation. Any large scale incident affecting roadways or airport aprons will result in the need to reconstruct or resurface the			X	TNPI will hire contractor to perform this task

Description	Hazard Characteristic			Responsibility to Take Action
	Life	ENV	Property	
affected area				

Table 70 - Special Considerations - Events directly impacting major transportation corridors

10.3.3 Events caused by marine operations at navigable waterway crossings

10.3.3.1 General

Navigable water is defined as a water body which can be traveled by a large commercial shipping vessel. There are two locations where the pipe crosses a body of Navigable water:

- Burlington Canal
- Lake of Two Mountains

Appendix J contains Deterministic Modelling for these two locations during the winter and summer.

There are two potential incident scenarios which have been considered for these areas. The first is damage to the pipe from dredging operations within the shipping channel. This scenario is seen as a high potential as it has occurred before, and dredging operations are required from time to time to maintain the commercial shipping corridor.

The second potential incident is damage from a vessel's anchor. The potential of this scenario is very unlikely as a number of failures would have to occur for the anchor to be dropped in close proximity to the pipe.

Specific control valves have been placed to quickly isolate and control these two sections of pipe. Potential hazards and consequences will be similar to discharges to waterways.

10.3.3.2 Special Considerations

Description	Hazard Characteristic			Responsibility to Take Action
	Life	ENV	Property	
Action should only be taken if it is safe to do so, individuals have the appropriate PPE, individuals are trained and are competent to perform the actions and sufficient employee capacity exists to maintain safety during the action	X			TNPI Safety Officer
The potential hazards originating from the shipping vessel and its cargo must be evaluated and accounted for within the site safety plan	X			TNPI Safety Officer
Coast Guard should consider issuing a notice to other ships regarding the event	X		X	Coast Guard

Table 71 - Special Considerations - Events caused by marine operations at navigable waterway crossings

10.3.4 Events directly impacting High Population Density / Gathering Places

10.3.4.1 General

Along the TNPI pipe installation there are numerous gathering places which will be directly impacted by refined petroleum products following a release from the pipe. The identified impacts have been selected using overland spill modeling. In addition, each linear mile of the pipe has been evaluated using the CSA 731 standard for population density and all sections meeting the class 4 criteria have been considered in the hazard evaluation process.

Impacts of spills or releases become important when they occur in areas of high population density due to the likelihood on human health and safety due to inhalation, fire and direct contact.

Following a spill it should always be anticipated site security and isolation will be harder to setup and maintain. The ability to evacuate or isolate in place individuals affected will be more difficult to initiate and maintain.

In summary, higher population density results in more risk and greater consequence.

10.3.4.2 Special Considerations

Description	Hazard Characteristic			Responsibility to Take Action
	Life	ENV	Property	
Action should only be taken if it is safe to do so, individuals have the appropriate PPE, individuals are trained and are competent to perform the actions and sufficient employee capacity exists to maintain safety during the action	X			TNPI Safety Officer
The requirements for the logistics group within TNPI will be extensive due to the number of individuals who may be affected by an event in these areas (displaced residence housing, food, etc.)	X		X	TNPI
TNPI Finance Section Chief to consider compensation for the impacted persons			X	TNPI

Table 72 - Special Considerations - Events directly impacting High Population Density / Gathering Places

10.3.5 Events resulting in discharge to land

10.3.5.1 General

It is anticipated almost all incidents involving TNPI's pipeline will result in a discharge of refined petroleum products to land. The geography of the pipe installation is diverse, including everything from rural farmland to densely populated urban infrastructure. Each incident will have impacts to land resulting from surface discharge and permeation of products into the soil and design infrastructure.

In all cases, the containment, delineation of contamination, remediation planning and cleanup of spilled products will be key response tasks to successfully conclude any incident.

10.3.5.2 Special Considerations

Description	Hazard Characteristic			Responsibility to Take Action
	Life	ENV	Property	
Action should only be taken if it is safe to do so, individuals have the appropriate PPE, individuals are trained and competent to perform the actions, and sufficient employee capacity exists to maintain safety during the action	X			TNPI Safety Officer

Description	Hazard Characteristic			Responsibility to Take Action
	Life	ENV	Property	
Spills to land have the possibility of entering combined sewers which will be connected to gray water intakes from residential homes. This would allow product vapours to enter homes and collect in low lying areas. This poses a significant toxic inhalation and flammability concern depending on the product. Consideration should be given to shut off the power to eliminate any source of ignition	X		X	Public First responders TNPI
Risk of fire due to available ignition sources for events involving gasoline. On roadways, vehicles and machinery are a concern	X		X	Public First Responders
Motor Vehicle Collision (MVC) due to refined products on the roadways	X		X	Public First Responders
Expansion and escalation of an incident as transportation vehicles move through the product. It should be expected the product and its associated hazards will be tracked producing multiple secondary sites and exposures	X	X	X	Public First Responders (safety) TNPI (clean up)
Decontamination of mass numbers of vehicles or train rolling stock. During an event like this, the ability to secure and decontaminate all affected vehicles in a timely fashion will be a logistics concern	X			TNPI
Extended exposure of asphalt surfaces to refined products results in degradation. Any large scale incident affecting roadways or airport aprons will result in the need to reconstruct or resurface the affected area			X	TNPI

Table 73 - Special Considerations - Events resulting in discharge to land

10.3.6 Events with direct discharge to a Waterway

10.3.6.1 General

Along the TNPI pipe installation there are numerous areas with direct discharge to creeks, streams and rivers which feed large watercourses that eventually discharge into Lake Ontario and the St. Lawrence Seaway. The impacts have been identified using overland spill modeling showing the initial flow of products into these watercourses. It must also be anticipated municipal storm water collection infrastructures found throughout the pipe system will move spilled products from their areas of impact to watercourse outfalls resulting in direct impacts.

The major concern of discharges to any watercourse starts with the extension of the spill and potential direct life safety concerns from inhalation toxicity and potential fire. The direct and severe impacts on the environment must be considered and responded to in an appropriate manner.

In all cases, the preplanning and utilization of marine control points to quickly and safely contain, recover, and begin restoration will be the key to any incident with direct discharge to a waterway.

10.3.6.2 Special Considerations

Description	Hazard Characteristic			Responsibility to Take Action
	Life	ENV	Property	
Action should only be taken if it is safe to do so, individuals have the appropriate PPE, individuals are trained and are competent to perform the actions, and sufficient employee capacity exists to maintain safety during the action. It is important to note gasoline spills should not be boomed	X			TNPI Safety Officer
All of the refined products handled in TNPI's pipeline will float and as such will still liberate flammable gas. It should be noted product will float on top of water bodies and will still liberate sufficient vapour to be a flammability concern	X			Public First responders TNPI
Anytime there is a significant discharge to a watercourse, considerations should be implemented for drinking water quality assessments, river impact analysis, and fish collection and protection	X	X		TNPI

Table 74 - Special Considerations - Events with direct discharge to a Waterway

10.3.7 Events involving Security Threats

10.3.7.1 General

TNPI has a well-developed security plan that has identified key areas of concern along the pipe installation. A response to a Potential Act of Mischief or Terrorism will always begin with investigation and evidence preservation led by federal, provincial or municipal law enforcement. When the incident scene is deemed to be safe for entry and interaction, these events will be dealt with like any other refined products incident.

Potential impacts of events involving security threats must be considered to include all other potential incident scenarios as they will be in their simplest form: a release or threat of release from the pipeline caused by malicious or terrorist act. This may include some or all of the hazard factors (Life safety, Environmental, Property).

10.3.7.2 Special Considerations

Description	Hazard Characteristic			Responsibility to Take Action
	Life	ENV	Property	
Presence of primary or secondary devices intended to harm responding personnel	X			Public First Responder
Action should only be taken if it is safe to do so, individuals have the appropriate PPE, individuals are trained and are competent to perform the actions, and sufficient employee capacity exists to maintain safety during the action	X			TNPI
Evidence preservation and collection. During the response phases, it will be anticipated the responding personnel will be grouped with investigators to ensure evidence required in the investigation can be properly identified, collected and documented			X	Public First Responders

Description	Hazard Characteristic			Responsibility to Take Action
	Life	ENV	Property	
Increased media and public awareness. Since the purpose of terrorism is to evoke terror and panic, it is likely the individuals responsible will want these events to be very public in nature	X			Public First Responders PIO representatives from all involved agencies including TNPI
Additional consideration such as: • Notification to adjacent properties • Notification to other pipeline companies • Use of remote surveillance should be considered			X	

Table 75 - Special Considerations - Events involving Security Threats

10.3.8 Events caused by natural disasters

10.3.8.1 General

TNPI recognizes natural disasters have the potential to cause or negatively impact pipeline emergencies. In the event of a natural disaster, the first priority is to safely and rapidly evacuate the affected area, followed by the prompt notification to the appropriate authorities responsible for dealing with such emergencies. It is understood that typical emergency interventions may not be possible due to the unsafe environmental conditions. The natural disasters considered as potential incident sources include:

10.3.8.2 Severe Thunderstorm

Thunderstorms are a potential year round occurrence with lightning strikes being a major threat. The potential of flash flooding is also possible when one area is affected for an extended period. The possibility of pump and valve stations to be flooded or even be completely underwater must be a consideration.

10.3.8.3 Tornado / Straight Line Winds

Events involving tornados or severe straight-line winds result in the destruction of natural and property structures. It is possible to have damage to pipeline pump stations, tankage and other above ground installations which may interrupt operations or cause a release of product. Due to the fact that the majority of the pipe is underground, the exposure to this type of disaster is limited.

10.3.8.4 Earthquakes

Earthquakes are caused mostly by rupture of geological faults, but also by other events such as volcanic activity, landslides, mine blasts, and nuclear tests. These types of root causes are relatively rare in the area that TNPI pipeline operates. In an unlikely event of earthquake damage, failures to pipe and installations may result due to movement or shift of the infrastructure.

10.3.8.5 Severe Winter Storm

Cold temperatures, high winds and the deposits of accumulated ice and snow may cause conditions which make it very difficult to respond effectively during any emergency event. This is not considered to be a major cause of potential events but is considered to be a major concern in the ability to effectively respond to an event.

10.3.8.6 Special Considerations

Description	Hazard Characteristic			Responsibility to Take Action
	Life	ENV	Property	
Action should only be taken if it is safe to do so, individuals have the appropriate PPE, individuals	X			TNPI Safety Officer

are trained and are competent to perform the actions and sufficient employee capacity exists to maintain safety during the action				

Table 76 - Special Considerations - Events caused by natural disasters

10.3.9 Fire related events

10.3.9.1 General

Fire is an ever present threat to TNPI. Refined petroleum products are flammable. The products handled by TNPI range in volatility, flashpoint and composition with the most severe being the properties of Gasoline. The likelihood of a fire is dependent on a number of factors, including:

- Concentration of flammable vapour (Fuel) which is affected by product type, temperature, surface area, movement and other factors
- Available oxygen concentration (Oxygen)
- Sources of ignition (Ignition) which may include sources of lighting, static discharge, electrical short circuit, open flame, mechanical failure, radiant heat from external sources, and others

First Responders should consider all incidents as having a fire safety concern.

10.3.9.2 Special Considerations

Description	Hazard Characteristic			Responsibility to Take Action
	Life	ENV	Property	
Action should only be taken if it is safe to do so, individuals have the appropriate PPE, individuals are trained and are competent to perform the actions, and sufficient employee capacity exists to maintain safety during the action	X			TNPI Safety Officer
The flammable vapours produced by the refined products shipped at TNPI are heavier than air and will collect in low lying areas	X			TNPI
Consider positioning of equipment and personnel in an upwind, uphill, upstream manner to ensure migration of materials does not impact personnel and staging areas. Ensure a Gasoline spill is not boomed, and evacuation may be required within 800 meters in all directions	X			TNPI

Table 77 - Special Considerations - Fire related events

10.3.10 Events resulting discharge with slow migration

10.3.10.1 General

- Small low quantity leaks from the pipeline infrastructure have the ability to go undetected due to difficulty to measure loss
- Typically these leaks are detected by integrity tests, soil and vegetation decolouration and staining on the ground or sheen in watercourses
- Although the majority of these incidents are viewed as low in severity, they can still cause impacts on the safety of workers interacting with them on site, and they also can cause substantial environmental impacts
- In all cases, the containment, delineation of contamination, remediation planning and cleanup of spilled products will be key response tasks to successfully conclude any incident

10.3.10.2 Special Considerations

Description	Hazard Characteristic			Responsibility to Take Action
	Life	ENV	Property	
Action should only be taken if it is safe to do so, individuals have the appropriate PPE, individuals are trained and competent to perform the actions and sufficient employee capacity exists to maintain safety during the action	X			TNPI Safety Officer
Due to these events occurring over extended periods of time, it must be anticipated the contamination will be a mixture of all commodities shipped through the pipeline. Therefore, we must consider the worst case characteristic for each product and plan appropriately (toxicity and flammability of Gasoline, persistence of diesel fuel, etc.)	X	X	X	TNPI

Table 78 - Special Considerations -Events resulting discharge with slow migration

10.3.11 Events directly impacting Environmentally Sensitive Areas

10.3.11.1 General

Designated environmentally sensitive areas have been identified and evaluated against the potential overland spill modeling. These areas are considered to be a priority for environmental protection and should be the priority containment or deflection task following life safety based deployments.

10.3.11.2 Special Considerations

Description	Hazard Characteristic			Responsibility to Take Action
	Life	ENV	Property	
Action should only be taken if it is safe to do so, individuals have the appropriate PPE, individuals are trained and are competent to perform the actions, and sufficient employee capacity exists to maintain safety during the action	X			TNPI Safety Officer
Early activation of wildlife protection and rehabilitation services should be considered as mobilization to site may take 12-36 hours		X		TNPI consultant

Table 79 - Special Considerations - Events directly impacting Environmentally Sensitive Areas

10.3.12 Events from high volume storage sites requiring regulated plans (Environmental Emergency (E2), Fire Code)

10.3.12.1 General

There are two facilities along the pipeline where large quantity storage occurs: Farran's Point (Ingleside, Ontario), Elmbank (near Toronto International Airport) and Calgary Airport Terminal (near Calgary International Airport). In addition to these bulk storage sites, numerous clients of TNPI have installations along the pipe which feed and remove products from the pipeline system. The majority of these storage and distribution systems are required to have response plans under CEPA 200 and the National Fire Code.

The possibility of tank failure or fire at any of these facilities is low due to engineering controls and suppression systems. However, regardless of the risk of an incident, emergency preparedness for response to such events has been assembled.

Note

A detailed site emergency plan exists for both the Toronto Airport Terminal and Farran's Point terminal facilities. However, only Farran's Point facility requires E2 filing.

Possible emergencies include:

Releases

- Leaks, spills, and ruptures from flanges, fittings, valves, tank installations or other pieces of equipment are possible. The source of the leak could either be above ground or buried. Losses from this type of release will range in volume from less than a cubic meter to greater than 8000 cubic meters of refined product
    - Detection of these events would be registered within the SCADA leak detection system as well as onsite monitoring equipment

Fires

- Refined petroleum products are flammable. The products handled by TNPI range in volatility and composition with the most severe being the properties of Gasoline. The likelihood of a fire is dependent on a number of factors, including:

- Concentration of flammable vapour (Fuel) which is affected by product type, temperature, surface area, movement and other factors
- Available oxygen concentration (Oxygen)
- Sources of ignition (Ignition) which may include sources of lighting, static discharge, electrical short circuit, open flame, mechanical failure, radiant heat from external sources, and others

First Responders should consider bulk storage facilities in the Site Specific Plans as elevated consequence sites.

10.3.12.2 Special Considerations

Description	Hazard Characteristic			Responsibility to Take Action
	Life	ENV	Property	
Action should only be taken if it is safe to do so, individuals have the appropriate PPE, individuals are trained and are competent to perform the actions, and sufficient employee capacity exists to maintain safety during the action	X			TNPI Safety Officer
Evaluation of fires at a bulk storage facility. If a fire is not extinguished in a timely manner, it may evolve into a major tank or pool fire. It is possible these scenarios will overcome the available resources of the local fire department. Shifting to defensive protection of the site may be required until sufficient resources can be assembled to offensively fight the fire	X			Public First Responders
Catastrophic failure of a storage tank may fill the secondary containment system and produce a huge surface area from which evolves flammable and hazardous vapours. Use of foam or a surface covering will reduce or eliminate the surface evaporation area and substantially reduce the evolution of flammable and toxic vapours	X			Public Fires Responders
Product of combustion. Thick toxic smoke will be liberated during large fires involving refined petroleum products. The proximity of Elmbank to the Toronto International Airport and some of TNPI's clients' facilities to public and residential buildings should be considered. Evacuation and the disturbance of the normal conduct of business due to potential health and safety exposures may be required depending on wind direction and environmental factors	X		X	Public First Responders

Table 80 - Special Considerations - Events from high volume storage sites requiring regulated plans

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Appendix A Risk Assessment and Safety Data Sheets

Form 1 - Gasoline Risk Assessment

Form 2 - Diesel Fuel Risk Assessment

Form 3 - Jet A Risk Assessment

Canada has aligned the Workplace Hazardous Materials Information System (WHMIS) with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

WHMIS (Workplace Hazardous Materials Information System) makes information readily accessible to all workers concerning hazardous materials (controlled products) in the workplace. Trans Northern Pipelines requires that all individuals have completed appropriate WHMIS training, provided by a worker's employer, before entering any Trans-Northern worksite.

Employers shall; ensure that Safety Data Sheets (SDS) are available; material and products are labelled, and that workers are trained concerning the hazards involved with products or materials with which they work. When purchasing material from a supplier, insist on receiving a SDS with the material. Master copies of SDS are maintained by Trans-Northern. During an emergency involving a hazardous substance, the Line Controller will be able to retrieve a copy of the applicable SDS and send a copy to medical authorities.

Safety Data Sheets - SDSs can be found in Intelex in the Environmental Records application.

RISK ASSESSMENT - GASOLINE

Product Name:	**GASOLINE**		UN PIN	1203	Class:	3	
Physical State:	**LIQUID**	Colour: CLEAR		Odour: **CHARACTERISTIC ODOUR**			

Hazard Assessment

BLEVE Potential	Hazardous Explosive Potential	Reactive	Corrosive	pH
NO	NO	NO		N/A

Toxicity

Inhalation:	HIGH HAZARD- Gasoline fumes are harmful at low concentrations
Absorption:	LOW HAZARD - Irritation to dermal area
Ingestion:	Not Expected
Injection:	Not Expected

		Inhalation Hazards		Absorption Hazards	
Vapour Pressure:	38-300mmHg	Odour threshold:	0.001ppm		
Vapour Density:		TWAEV (TLV)	300ppm	"SKIN" product	NO
Specific Gravity:	(At 68°F) 0.72-0.76	IDLH:	ND		

Flammability

LEL	UEL	Flash Point	Auto Ignition Temperature
1%	7.6%	-45°F	250 °C

Products of combustion: CO, Oxides of Nitrogen

Required Monitoring Equipment

				Ionization Potential	
☐ pH Paper	☐ Colourmetric Tube			☒ PID	<10.6
☐ Oxidation Paper		☐ EC Toxic		☐ Temperature	
☐ Metal Oxide (MOS)	☒ EC O2	☒ Flammable LEL		☐ Other	

Incompatible Materials

Strong oxidizers such as peroxides, nitric acid, and perchlorates

Personal Protective Equipment

Respiratory	SCBA ☐	SAR ☐	APR ☒	None ☒

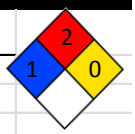
Suit Selection	Material	Fire Retardant	Break through Time:	N/A
Glove Selection	Material	Fire Retardant	Break through Time:	N/A
Boot Selection	Material	Fire Retardant	Break through Time:	N/A
Additional	Material		Break through Time:	

	SMALL SPILL (less than 200 L)			LARGE SPILL (greater than 200 L)		
Note	First ISOLATE in all directions	Then PROTECT downwind during		First ISOLATE in all directions	Then PROTECT downwind during	
		Day	Night		Day	Night
				50m	300m	

Form 1 Gasoline Risk Assessment

RISK ASSESSMENT -

Product Name:		**Diesel Fuel**		UN PIN	1202	Class:	3
Physical State:	**Liquid**	Colour:	Redish	Odour:			



Hazard Assessment

BLEVE Potential		Hazardous Explosive Potential		stability Reactive		Corrosive	pH
	No		No		No		

Toxicity

Inhalation:	*Neglegble hazard below 38C. At high concentrations irritation to throat and lungs*
Absorption:	*Slightly irritating to eyes and skin with no permenant damage*
Ingestion:	*Low Toxicity. If drawn into lungs may cause bronchopneuma or pulmonary edma*
Injection:	*No Data*

		Inhalation Hazards		Absorption Hazards	
Vapour Pressure:	0.4 mmHg	Odour threshold:			
Vapour Density:	3 settles	TWAEV (TLV)	100ppm	"SKIN" product	No
Specific Gravity:	<1 floats in water	IDLH:			

Flammability

LEL 0.6% UEL 6.5% Flash Point 52°C Auto Ignition Temperature 254-285°C

Products of combustion Carbon Dioxide, Carbon Monoxide,

Required Monitoring Equipment

						Ionization Potential	
☐	pH Paper	☐	Colourmetric Tube			☒ PID <10.6	0.9
☐	Oxidation Paper			☐	EC Toxic	☐ Temperature	
☐	Metal Oxide (MOS)	☒	EC O2	☒	Flammable LEL	☐ Other	

Incompatible Materials

Personal Protective Equipment

Respiratory SCBA ☐ SAR ☐ APR ☒ None ☐

Suit Selection	Material	Fire Retardant	Break through Time:	
Glove Selection	Material	Fire Retardant	Break through Time:	
Boot Selection	Material	Fire Retardant	Break through Time:	
Additional	Material		Break through Time:	

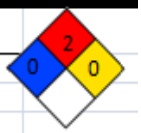
	SMALL SPILL (less than 200 L)			LARGE SPILL (greater than 200 L)		
Note	First ISOLATE in all directions	Then PROTECT downwind during		First ISOLATE in all directions	Then PROTECT downwind during	
		Day	Night		Day	Night
	50m			300m	300m	

If rail car or tank truck consider evacuating for 800m in all directions

Form 2 Diesel Fuel Risk Assessment

RISK ASSESSMENT - JET A FUEL OIL

Product Name:	JET A FUEL OIL			UN PIN	1863	Class:	3
Physical State:	LIQUID	Colour:		Odour:			



Hazard Assessment

BLEVE Potential		Hazardous Explosive Potential		Reactive		Corrosive	pH
	NO		NO		NO		N/A

Toxicity

Inhalation:	MODERATE - inhalation may cuase respiratory tract irritation
Absorption:	LOW - may cause skin irritation
Ingestion:	Not Expected
Injection:	Not Expected

		Inhalation Hazards		Absorption Hazards	
Vapour Pressure:	5.25mmHg	Odour threshold:	<1ppm		
Vapour Density:	4.5	TWAEV (TLV)	200mg/m^3	"SKIN" product	NO
Specific Gravity:		IDLH:	N/A		

Flammability

LEL	UEL	Flash Point	Auto Ignition Temperature
1%	5%	37 °C	522 °C

Products of combustion: Oxides of Carbon

Required Monitoring Equipment

						Ionization Potential	
☐	pH Paper	☒	Colourmetric Tube			☒ PID <10.6	9.24
☐	Oxidation Paper			☐	EC Toxic	☐ Temperature	
☐	Metal Oxide (MOS)	☐	EC O2	☐	Flammable LEL	☐ Other	

Incompatible Materials

Strong oxidizers, nitric acid, sulphuric acid, halogens

Personal Protective Equipment

Respiratory	SCBA ☐		SAR ☐		APR ☒	None ☒	
Suit Selection	Material	Fire Retardant				Break through Time:	N/A
Glove Selection	Material	Fire Retardant				Break through Time:	N/A
Boot Selection	Material	Fire Retardant				Break through Time:	N/A
Additional	Material					Break through Time:	

	SMALL SPILL (less than 200 L)			LARGE SPILL (greater than 200 L)		
Note	First ISOLATE in all directions	Then PROTECT downwind during		First ISOLATE in all directions	Then PROTECT downwind during	
		Day	Night		Day	Night
				50m	300m	

Form 3 Jet A Risk Assessment

Appendix B Field Operation Guidelines

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Initial Incident Commander - First On Site Checklist

Job Specific Response Field Guide

This Checklist is to be used by individuals who are responding to an incident/potential incident and will be the first on site. This Checklist will serve as a guide to ensure the safety of the individual who will be the first on site, responding to an incident/ potential incident.

Note

The document icon (left) indicates documentation that must be completed by the individual fulfilling this role.

While on route

Identify wind direction and ensure you are will be approaching from an upwind position. Look for flags, smoke or steam from industry or homes as well as tree and vegetation movement.

500M from the incident scene

Stop in a safe area and complete an initial assessment from a distance.

Are you able to identify any of the following situations:

- Visual presence of smoke or fire?
- Smell of smoke?
- Smell of Oil Products?
- Sound of fire, or metal fatigue?

A

- Visual presence of pooling or spraying Oil Products?
- Sound of product spraying?

B

Action

If you answered yes to any of the Class A questions, call 911 and evaluate your personal safety. Keep a safe distance from the incident and secure (only if safe to do so) the incident from the public and individuals in the area.

Continue to site only after First Responders identify it is safe to do so.

100M from Incident/ Potential Incident Scene

Complete the 500M assessment again.

- Visual presence of smoke or fire?
- Smell of smoke?
- Smell of Oil Products?
- Sound of fire, or metal fatigue?

A

- Visual presence of pooling or spraying Oil Products?
- Sound of product spraying?

B

Action

If you answered yes to any of the Class A questions, call 911 and evaluate your personal safety. Keep a safe distance from the incident and secure (only if safe to do so) the incident from the public and individuals in the area.

- Turn on Gas monitor and Bump Test meter in a clean atmosphere (refer to Gas Monitoring Procedure 6.6 - Binder A). Complete initial monitoring for LEL, O_2, H_2S (VOC if Applicable) and ensure the area you are in is safe to remain in.
- Refer to Initial Incident Commander - First On Site Entry and Assessment Checklist

Initial Incident Commander - Site Entry and Assessment Checklist

Job Specific Response Field Guide

This Checklist is to be used by the Initial Incident Commander. The Initial Incident Commander may be a TNPI employee or a contractor activated to a site. This Checklist will serve as a guide to ensure safety of the individual when responding to an incident / potential incident and to assist with initial incident assessment and scene control.

Note

The document icon (left) indicates documentation that must be completed by the individual fulfilling this role. Blank ICS forms are found in Appendix E of the TNPI Emergency Response Plan.

Equipment required prior to entry and assessment

The following equipment is a **requirement** for any individual entering an incident scene.

- Personal Protective Equipment
  - Basic Safety Equipment (e.g. safety boots, hard hat, safety glasses and traffic vest)
  - Air Purifying Respirator with organic vapour cartridges (must be fit tested)
  - Fire retardant coveralls (Nomex, Proban, Other)
  - Gas monitor (LEL, O_2, H_2S, CO (VOC optional))
  - Barrier tape, stakes and rubber mallet
  - Communication device

Pre entry preparedness

- Complete First On Site Checklist if not already completed
- Complete D.E.C.I.D.E. process with the information and observations at hand. Complete the DECIDE process form
- Initiate Personal activity log to record all events and decisions in chronological order. Maintain form (ICS 214)

Action

Evaluate information in the D.E.C.I.D.E. process and ensure it is safe to enter the scene. D.E.C.I.D.E. Form found in Appendix F .

- Don appropriate PPE and assemble other equipment which may be required when on the incident scene (documentation, camera, maps, flashlight, etc.)
- Determine if people are injured or trapped. Activate First responders as appropriate.
- Evacuate anyone whom you believe is in imminent danger
- Define initial hazard zones. Complete Hazard Zoning Form
- Prior to entry, set public exclusion and cold zone markers using barrier tape and landmarks prior to entry
- Establish entry communication plan and reporting structure, especially if working alone
- Prior to entry, establish a safe point of entry and alternate evacuation route(s). Prior to entry complete applicable forms. Remember - enter upwind, uphill, upstream of the potentially affected area. Fill out Initial Approach Map (See Appendix F)

Entry and assessment

- Enter scene from the established safe entry point, following all pre-entry preparedness procedures
- Continuously evaluate changing safety conditions and evacuation routes. This includes visual inspection and atmospheric monitoring

Action

Evacuate as soon as a dangerous or potentially dangerous condition is identified

- Identify and extinguish any ignition sources
- Evacuate all bystanders and unprotected response personnel
- Complete detailed site assessment and hazard analysis by reviewing and updating D.E.C.I.D.E. and site layout forms. This will include photographs and video of the site (only if safe to use in the atmosphere)
- Revise and re-establish appropriate zones based on the site and hazard assessment

Following site assessment and hazard analysis (individual in cold zone)

- Characterize incident. Refer to Section 6.1
- Activate any additional required resources and update Management, Stakeholders and Regulators as appropriate

- Complete Incident Briefing (ICS 201) in anticipation of resources and personnel arriving on site
- Complete Incident Objectives (ICS 202) based on the information outlined in updated D.E.C.I.D.E., site layout, and monitoring results
- Delegate or assume the responsibilities of Safety Officer, Planning Section Chief, Operations Section Chief, Logistics Section Chief and Finance Section Chief

Documentation

- **Form Incident Objectives ICS 202-OS** - this form should be completed following each Planning Meeting. Include in the IAP
- **Form Organization Assignment List ICS 203-OS** - Review
- **Form Incident Organization Chart ICS 207-OS** - Review
- **Form Daily Meeting Schedule ICS 230-OS** - Review
- **Press Releases** - Review
- **IAP Incident Action Plan** - Obtain the completed IAP from the Planning Section Chief and review. If approved, sign the IAP Cover Sheet and return it to the Planning Section Chief
- **Form Unit Log ICS 214-OS** - Assign a member of your staff to complete the ICS 214. Submit to the Documentation Unit at the end of the Operational Period
- **Form Individual Log ICS 214A-OS** - Summarize your daily activities on the 214A. Submit form to the Documentation Unit at the end of each Operational Period

Meetings

Meeting	Responsibility
Initial Incident Briefing	**Facilitate**. Provide basic information regarding the incident situation and resources allocated. Use ICS 201 as the briefing outline
Command Staff Meeting	**Facilitate**. Coordinate Command Staff functions, responsibilities, and objectives. Schedule as necessary
Tactics Meeting	Command members may attend as needed
Planning Meeting	**State incident objectives and policy issues**. Approve the work plan as shown on ICS 215(s) for the next Operational Period. Prepare and approve the IAP
Operations Briefing	Endorse IAP. **Provide motivational remarks**
Command Objectives Meeting	**Review / identify & prioritize objectives** for the next Operational Period for the ICS 202 form. Objectives from the previous operational period are reviewed and any new objectives are identified
Media Briefing	Not required to attend, but usually your presence (along with assisting response organization members) will be featured to address a particular issue - under the direction of Hill Knowlton

Table 81 - Meeting Responsibilities – Initial Incident Commander

Initial Incident Phase - Timeline

See Section 5.3 for Initial Incident Phase Timeline.

Incident Characterization

See Section 6.2 for Incident Characterizations.

Incident Activation

See Section 4.1 for Incident Activation.

See Section 4.1 for TNPI Internal Activation.

Deputy Incident Commander

Job Specific Response Field Guide

This Checklist is to be used by individuals who are responding to an incident/potential incident and will be the first on site. This Checklist will serve as a guide to ensure the safety of the individual who will be the fulfilling the Deputy Incident Commander Role.

Note

The document icon (left) indicates documentation that must be completed by the individual fulfilling this role.

In the case of TNPI's structure the Deputy Incident Commander position will be utilized to fulfill the command role over the TNPI IC when an incident is organized in a unified command structure or when a full time TNPI representative is requested to be involved in a municipal Emergency Operations Center. This would allow for the IC to sit in the unified structure and the DIC to fulfill the roles within the TNPI structure under operations. Therefore all of the roles and responsibilities are identical but may vary in scope as required by the Incident Commander.

Blank ICS forms are found in Appendix E of the TNPI Emergency Response Plan.

Initial

- Review the incident briefing form completed by the Initial Incident Commander (ICS 201)
- Review the incident objectives form completed by the IC/ Unified Command (ICS 202) and associated D.E.C.I.D.E.
- Review Incident Action Plan (IAP) for the current operational period if created (ICS 1001)
- Initiate personal and unit activity logs to record all events and decisions in chronological order. Maintain form (ICS 214)
    - **Note** If support staff is mobilized under the Deputy Incident commander then each support staff member must be instructed to maintain a personal log and submit it to the Deputy Incident Commander upon completion

Documentation

- **Form Incident Objectives ICS 202-OS** - This form should be completed following each Planning Meeting. Include in the IAP
- **Form Organization Assignment List ICS 203-OS** - Review
- **Form Incident Organization Chart ICS 207-OS** - Review
- **Form Daily Meeting Schedule ICS 230-OS** - Review
- **Press Releases** - Review
- **IAP Incident Action Plan** - Obtain the completed IAP from the Planning Section Chief and review. If approved, sign the IAP Cover Sheet and return it to the Planning Section Chief
- **Form Unit Log ICS 214-OS** - Assign a member of your staff to complete the ICS 214. Submit to the Documentation Unit at the end of the Operational Period
- **Form Individual Log ICS 214A-OS** - Summarize your daily activities on the 214A. Submit form to the Documentation Unit at the end of each Operational Period

Meetings

Meeting	Responsibility
Initial Incident Briefing	**Facilitate**. Provide basic information regarding the incident situation and resources allocated. Use ICS 201 as the briefing outline
Command Staff Meeting	**Facilitate**. Coordinate Command Staff functions, responsibilities, and objectives. Schedule as necessary
Tactics Meeting	Command members may attend as needed
Planning Meeting	**State incident objectives and policy issues**. Approve the work plan as shown on ICS 215(s) for the next Operational Period. Prepare and approve the IAP
Operations Briefing	Endorse IAP. **Provide motivational remarks**
Command Objectives Meeting	**Review / identify & prioritize objectives** for the next Operational Period for the ICS 202 form. Objectives from the previous operational period are reviewed and any new objectives are identified
Media Briefing	Not required to attend, but usually your presence (along with assisting response organization members) will be featured to address a particular issue - under the direction of Hill Knowlton

Table 82 - Meeting Responsibilities – Deputy Incident Commander

Initial Incident Phase - Timeline

See Section 5.3 for Initial Incident Phase Timeline.

Incident Characterization

See Section 6.2 for Incident Characterizations.

Incident Activation

See Section 4.1 for Incident Activation.

See Section 4.1 for TNPI Internal Activation.

Environmental Unit Leader - Checklist

Job Specific Response Field Guide

This Checklist is to be used by the individual taking on the role of Environmental Section Leader for TNPI during an incident. TNPI will assign a trained manager from the area to this position, or will contract this position to QMLP, ECRC or another organisation depending on the incident requirements. If contracted, final review will occur from the TNPI IC. This Checklist will serve as a guide to ensure the duties; responsibilities and associated documentation are completed.

Note

The document icon (left) indicates documentation that must be completed by the individual fulfilling this role.

Blank ICS forms are found in Appendix E of the TNPI Emergency Response Plan.

Initial

- Review the incident briefing form completed by the Initial Incident Commander (ICS 201)
- Review the incident objectives form completed by the IC/ Unified Command (ICS 202) and associated D.E.C.I.D.E.
- Review Incident Action Plan (IAP) for the current operational period if created (ICS 1001)
- Initiate personal and unit activity logs to record all events and decisions in chronological order. Maintain ICS 214
  - **Note** If support staff is mobilized under the Environmental Section Leader then each support staff member must be instructed to maintain a personal log and submit it to the Environmental Section Leader upon completion

Throughout the incident

- Prepare environmental data and compile all information for the ICS 232 (Resources at Risk)
- In concert with the Situation Unit Leader, provide projections and estimates of the movement and behavior of the spill by combining:
  - Visual observations
  - Remote sensing information
  - Computer modeling and spill trajectory
  - Observed and predicted tidal, weather, and current information
- Coordinate the efforts of local experts and Technical Specialists
- Participate in Planning Section meetings
- Identify sensitive areas and recommend response priorities
- Determine the extent, fate, and effects of contamination
- Acquire, distribute, and provide analysis of weather forecasts
- Monitor the environmental consequences of cleanup actions
- Develop shoreline cleanup and assessment plans
- Develop disposal plans in coordination with the Disposal Group Supervisor
- Develop plan for collecting, transporting, and analyzing samples

Documentation

- **Form Resources at Risk Summary ICS 232-OS** - Ensure this form is completed with input from resource trustees. Update prior to the Planning Meeting. Forward completed form to the Planning Section Chief for possible inclusion in the IAP. Forward to the Documentation Unit as well. Ensure information is shared with other supporting staff to keep situation mapping and reporting up to date
- **Form Unit Log ICS 214-OS** - Assign a member of your staff to complete the ICS 214. Submit to the Documentation Unit at the end of the Operational Period
- **Form Individual Log ICS 214A-OS** - Summarize your daily activities on the ICS 214. Submit to the Planning Section Chief and the Documentation Unit at the end of the Operational Period

Meetings

Meeting	Responsibility
Tactics Meeting	Attend as required
Planning Meeting	Attend as required. Assist with discussions as appropriate
Operations Briefing	Assist with discussions as appropriate
Media Briefing	Attend as required

Table 83 - Meeting Responsibilities - Environmental Unit Leader

Individual Log

- **Special Note** - The optional ICS 214A-OS is a log for individual use, and ICS 214-OS is designed to log activities for an entire unit
- **Purpose** - The Individual Log, while not required, records details of each individual's activities. These logs provide a basic reference from which to extract information for inclusion in any after-action report
- **Preparation** - An Individual Log can be initiated and maintained by each member of the ICS. Completed logs are forwarded to supervisors who provide copies to the Documentation Unit
- **Distribution** - The Documentation Unit maintains a file of all individual Logs. The original of each log must be submitted to the Documentation Unit

Finance/Administration Section Chief - Checklist

Job Specific Response Field Guide

This Checklist is to be used by the individual taking on the role of Finance/Administration Section Chief for TNPI during an incident. TNPI will assign an individual from the area to this position. In smaller incidents, a specialist within the Planning Section may perform this function. This Checklist will serve as a guide to ensure the duties, responsibilities and associated documentation are completed.

Note

The document icon (left) indicates documentation that must be completed by the individual fulfilling this role.

Blank ICS forms are found in Appendix E of the TNPI Emergency Response Plan.

Initial

- Review the incident briefing form completed by the Initial Incident Commander (ICS 201)
- Review Incident Action Plan (IAP) for the current operational period if created (ICS 1001)
- 
  Initiate personal and unit activity logs to record all events and decisions in chronological order. Maintain form (ICS 214)
  - **Note** If Section leaders are mobilized under Finance/Administration Section Chief, each Section Leader must be instructed to maintain a personal log and submit it to the Finance/Administration Section Chief upon completion

Ongoing

- Assist Logistics Section and Planning Section in negotiating and monetary procurement cost
- Run cost analysis on current operations and alternative response strategies
- Manage and reconcile daily personnel and equipment costs against contracts, quotes, and incident documentation (Check In List (Equipment) ICS 211E-OS and Check In List (Personnel) ICS 211P-OS)
- 
  Provide incident cost summary (estimates) for each operational period. Complete form (ICS 229). Completed form to be sent to Planning Section Chief to be included in each operational period IAP
- Manage and maintain a current Claims Log throughout the incident. Complete form (ICS 227)
- 
  Pay out required funds to meet operations objectives as approved by TNPI Incident commander

Documentation

- **Plan Finance Operating Plan** - Develop a plan to ensure the effective operation of the Finance / Admin Section. Submit plan to Documentation Unit, all Finance Section personnel, and Logistics Section ASAP upon start-up
- **Form Incident Cost Summary ICS 229** - Complete a cost estimate as part of the IAP for each operational period. Submit to the Documentation Unit at the end of the Operational Period
- **Form Claims Log ICS 227** - Maintain current claims log for the incident. Submit to the Documentation Unit at the end of the Operational Period
- **Form Unit Log ICS 214-OS** - Assign a member of your staff to complete the ICS 214. Submit to the Documentation Unit at the end of the Operational Period
- **Form Individual Log ICS 214A-OS** - Summarize your daily activities on the ICS 214A. Submit to the Documentation Unit at the end of the Operational Period

Meetings

Meeting	Responsibility
Initial Incident Briefing	Assist with discussions as appropriate
Tactics Meeting	Assist with discussions as appropriate
Planning Meeting	Assist with discussions as appropriate

Operations Briefing	Give financial report

Table 84 - Meeting Responsibilities - Finance/Administration Section Chief

Individual Log

- **Special Note** - The optional ICS 214A-OS is a log for individual use, and ICS 214-OS is designed to log activities for an entire unit
- **Purpose** - The Individual Log, while not required, records details of each individual's activities. These logs provide a basic reference from which to extract information for inclusion in any after-action report
- **Preparation** - An Individual Log can be initiated and maintained by each member of the ICS. Completed logs are forwarded to supervisors who provide copies to the Documentation Unit
- **Distribution** - The Documentation Unit maintains a file of all individual Logs. The original of each log must be submitted to the Documentation Unit

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Liaison Officer - Checklist

Job Specific Response Field Guide

This Checklist is to be used by the individual taking on the role of Liaison Officer for TNPI during an incident. NPI will assign a trained manager from the area to this position. This checklist will serve as a guide to ensure the duties, responsibilities and associated documentation are completed.

Note

The document icon (left) indicates documentation that must be completed by the individual fulfilling this role.

Blank ICS forms are found in Appendix E of the TNPI Emergency Response Plan.

Initial

- Review the incident briefing form completed by the Initial Incident Commander (ICS 201)
- Review associated documentation completed by the Initial Incident Commander
  - Incident Objectives (ICS 202)
  - D.E.C.I.D.E.
  - Hazard Control Zones
  - Incident Diagram
- Review Incident Action Plan (IAP) for the current operational period if created (ICS 1001)
- Initiate Personal activity log to record all events and decisions in chronological order. Maintain form (ICS 214)

Through-out the response

- Identify Agency Representatives, their location, and **establish communications and schedule**
- Identify Environmental Section Leader, their location, and establish communications and schedule
- Identify Incident Investigators, their location, and establish a communications link
- **Maintain a list of assisting and cooperating agency and Stakeholder group contacts**
- Assist in establishing and coordinating inter-agency contacts
- **Keep agencies supporting the incident aware of the incident status**
- **Monitor incident operations** to identify current or potential inter-organizational issues and advise the Incident Commander as appropriate
- **Participate in planning meetings** and provide current resource status information, limitations, and capabilities of assisting agency resources
- **Provide information and support** to local government officials and stakeholder groups
- Meet with Operations and Planning Section Chiefs, Natural Resource Damage Assessment Representatives, and the Environmental Unit Leader to establish coordinated management of agencies recourses and needs

Documentation

- **List of Agency Contacts** - Agency contact information. Submit to Documentation Unit ongoing as needed (Use ERP notification lists and Regional specific plans as the base for this list)
- **Form Unit Log ICS 214-OS** - Assign a member of your staff to complete the ICS 214. Submit to the Documentation Unit at the end of the Operational Period
- **Form Individual Log ICS 214A-OS -** Summarize daily activities. Submit to Documentation Unit at the end of the Operational Period

Meetings

Meeting	Responsibility
Initial Incident Briefing	Assist with discussions as appropriate
Command Staff Meeting	Assist with discussions as appropriate
Planning Meeting	**State** contributing organization / agency considerations regarding the work plan
Operations Briefing	**Give** contributing organization / agency **reports of concern**
Agency Rep Meeting	**Facilitate** Update agency representatives on plans

Table 85 - Meeting Responsibilities - Liaison Officer

Individual Log

- **Special Note** - The optional ICS 214A-OS is a log for individual use, and ICS 214-OS is designed to log activities for an entire unit
- **Purpose** - The Individual Log, while not required, records details of each individual's activities. These logs provide a basic reference from which to extract information for inclusion in any after-action report
- **Preparation** - An Individual Log can be initiated and maintained by each member of the ICS. Completed logs are forwarded to supervisors who provide copies to the Documentation Unit
- **Distribution** - The Documentation Unit maintains a file of all individual Logs. The original of each log must be submitted to the Documentation Unit

Incident Characterization

See Section 6.2 for Incident Characterizations.

Incident Activation

See Section 4.1 for Incident Activation.

See Section 4.1 for TNPI Internal Activation.

Logistics Section Chief - Checklist

Job Specific Response Field Guide

This checklist is to be used by the individual taking on the role of Logistics Section Chief for TNPI during an incident. TNPI will assign a trained manager from the area to this position, or will contract this position to QMLP or ECRC depending on the incident requirements. If contracted, final review will occur from the TNPI IC. The following checklist will serve as a guide to ensure the duties, responsibilities and associated documentation is completed.

Note

The document icon (left) indicates documentation that must be completed by the individual fulfilling this role.

Blank ICS forms are found in Appendix E of the TNPI Emergency Response Plan.

Initial

- Review the incident briefing completed by the Initial Incident Commander (ICS 201)
- Review the incident objectives completed by the IC/ Unified Command (ICS 202) and associated D.E.C.I.D.E.
- Review Incident Action Plan (IAP) for the current operational period if created (ICS 1001)
- Review current resource accountability involved in the incident (ICS 202, 203, 204)

- Initiate personal and unit activity logs to record all events and decisions in chronological order. Maintain form (ICS 214)
    - **Note** If Section leaders are mobilized under Logistics they must be instructed to maintain a personal log and submit it to the Logistics Section Chief upon completion

Ongoing

- Create and maintain the telecommunication plan to meet the needs of the incident. Complete form (ICS 205)
- Attend tactic meetings between Operations and Planning Sections to understand the logistics requirements needed in upcoming operational periods
- Order, obtain, maintain, distribute and account for required personnel, equipment and supplies, not immediately accessible to Operations Section as triggered by form (ICS 260 RR)

- Support all incident functions and operations. This includes but is not limited to:
    - Incident Medical Resources as outlined in the Medical Plan (ICS 206). Function lead by the Medical Unit Leader
    - Food requirements. Function lead by the Food Unit Leader
    - Consumable supply requirements. Function lead by the Supply Unit Leader
    - Facility setup, maintenance and restoration. Function lead by Facility Unit Leader
    - Supporting ground transportation requirements. Function lead by Ground Support Unit Leader
    - Traffic Control and Security requirements. Function lead by Security Unit Leader

- Maintain an accurate Check-in Log for all support resources (personnel/resources). Complete form (ICS 211)

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Operations Section Chief - Checklist

Job Specific Response Field Guide

This Checklist is to be used by the individual taking on the role of Operation Section Chief for TNPI during an incident. TNPI will assign a trained manager from the area to this position or will contract this position to QMLP or ECRC depending on the incident requirements. If contracted, final review will occur from the TNPI IC. This Checklist will serve as a guide to ensure the duties, responsibilities and associated documentation is completed.

Note

The document icon (left) indicates documentation that must be completed by the individual fulfilling this role.

Blank ICS forms are found in Appendix E of the TNPI Emergency Response Plan.

Initial

- Review the incident briefing from completed by the Initial Incident Commander (ICS 201)
- Review the incident objectives form completed by the IC/ Unified Command (ICS 202) and associated D.E.C.I.D.E.
- Review Incident Action Plan (IAP) for the current operational period if created (ICS 1001)
- Initiate personal and unit activity logs to record all events and decisions in chronological order. Maintain form (ICS 214)
    - **Note** If Section Leaders are mobilized under Logistics Section Chief, each Section Leader must be instructed to maintain a personal log and submit it to the Operation Section Chief upon completion

Ongoing

- Meet with Planning and Logistics Sections to discuss detail of action required to achieve numerous Operations objectives. This will include but is not limited to the following list:
    - Discuss tactical plans and resources (people/ equipment) required to achieve the response tasks outlined in ICS 202 for each operational period. Complete form (ICS 215-OS)
      in draft. Provide updated form to Planning Section Chief for production of IAP
    - Discuss demobilization plans and timing associated with ongoing operations
    - Discuss use and management of ground transportation support units
- Assign and manage all operational branches required to complete incident objectives. Branch unit leaders will be designated to ensure appropriate scope of control
- Organize, assign and manage all resources and staging areas. These will be managed by the Staging Unit Leader or assumed by the Operations Section Chief. All resources are managed using the resource check-in form. Maintain form (ICS 211)

Documentation

- **Form Operational Planning Worksheet ICS 215-OS** - Ensure a blank poster-sized copy is displayed at the Tactics Meeting. At the Tactics Meeting, in concert with the Planning Section Chief, fill out the form with preliminary information. Finalize the information at the Planning Meeting
- **Form Assignment List ICS 204-OS** - Produce with Resources Unit Leader using the ICS 215 form. Submit to Planning Section Chief (for inclusion in the IAP), and to Documentation Unit once per Operational Period immediately after the Planning Meeting
- **Form Unit Log ICS 214-OS** - Assign a member of your staff to complete the ICS 214. Submit to the Documentation Unit at the end of the Operational Period
- **Form Individual Log ICS 214A-OS** - Summarize your daily activities on the ICS 214. Submit to the Documentation Unit at the end of the Operational Period

Meetings

Meeting	Responsibility
Initial Incident Briefing	Assist with discussions as appropriate
Tactics Meeting	**Review IAP to prepare for meeting**. Will be responsible to jointly prepare primary & alternate strategies with the Planning Section Chief. Along with the Planning Section Chief, fill out the ICS 215 - Operational Planning Worksheet with preliminary information
Planning Meeting	**State primary and alternate strategies to meet objectives with Planning Section Chief and Logistics Section Chief**. Along with the Planning Section Chief, finalize the ICS 215. Designate Branch, Division, Group boundaries and functions as appropriate using maps and ICS 215. Specify tactics for each Division noting limitations. Specify resources needed by Division / Group with Planning Section Chief and Logistics Section Chief. Plot operations facilities and reporting locations on map (Logistics Section Chief to assist). After meeting, use ICS 215 to develop Assignment Lists (ICS 204) with Resources Unit Leader
Operations Briefing	**Brief on current response actions and last shift's accomplishments**. Distribute the IAP. Summarize Division / Group and Air Operations assignments

Table 86 - Meeting Responsibilities - Operations Section Chief

Incident Activation

See Section 4.1 for Incident Activation.

Internal TNPI Contacts

See Section 4.2 for TNPI Internal Contacts.

Public Information Officer - Checklist

Job Specific Response Field Guide

This Checklist is to be used by the individual taking on the role of Public Information Officer for TNPI during an incident. The Public Information Officer will be a contracted to Hill and Knowlton Canada. This Checklist will serve as a guide to ensure the duties, responsibilities and associated documentation are completed.

Note

The document icon (left) indicates documentation that must be completed by the individual fulfilling this role.

Blank ICS forms are found in Appendix E of the TNPI Emergency Response Plan.

Initial

- Review the incident briefing form completed by the Initial Incident Commander (ICS 201)
- Review associated documentation completed by the Initial Incident Commander
  - Incident Objectives (ICS 202)
  - D.E.C.I.D.E.
  - Hazard Control Zones
  - Incident Diagram
- Review Incident Action Plan (IAP) for the current operational period if created (ICS 1001)
- Initiate Personal activity log to record all events and decisions in chronological order. Maintain form (ICS 214)
- Consult with media consulting firm to create a plan of action and scope for the incident. Submit plan to Incident Command for approval

Through-out the response

- Assist Incident Command in the creation of media statements and assembly of information for transmission to the public and stakeholders. Assist in the creation of the media statements within ICS 202
- Assist Planning officer in the creation of the media statement within Incident Action Plan 1001
- Produce Press Releases and other information as requested by Incident Command

Documentation

- **MBM - Obtain Media Briefing Materials** - The Situation Unit's Display Center will probably be the main source of information. Submit them to the Unified Command and participants in Media Briefings before Media Briefings
- **Form Unit Log ICS 214-OS** - Assign a member of your staff to complete the ICS 214. Submit to the Documentation Unit at the end of the Operational Period
- **Form Individual Log ICS 214A-OS** - Summarize daily activities. Submit to the Documentation Unit at the end of the Operational Period

Meetings

Meeting	Responsibility
Initial Incident Briefing	Assist with discussions as appropriate
Command Staff Meeting	Assist with discussions as appropriate
Planning Meeting	State media considerations regarding the work plan
Operations Briefing	Give media report
Media Briefing	**Facilitate**. Brief media & public on response situation. Provide assurance the response is being handled competently

Table 87 - Meeting Responsibilities - Public Information Officer

Individual Log

- **Special Note** - The optional ICS 214A-OS is a log for individual use, and ICS 214-OS is designed to log activities for an entire unit
- **Purpose** - The Individual Log, while not required, records details of each individual's activities. These logs provide a basic reference from which to extract information for inclusion in any after-action report
- **Preparation** - An Individual Log can be initiated and maintained by each member of the ICS. Completed logs are forwarded to supervisors who provide copies to the Documentation Unit
- **Distribution** - The Documentation Unit maintains a file of all individual Logs. The original of each log must be submitted to the Documentation Unit

Incident Activation

See Section 4.1 for Incident Activation.

Internal TNPI Contacts

See Section 4.2 for Internal TNPI Contacts.

Safety Officer - Checklist

Job Specific Response Field Guide

This Checklist is to be used by the individual taking on the role of Safety Officer for TNPI during an incident. TNPI will assign a trained safety manager from the area to this position. This Checklist will serve as a guide to ensure the duties, responsibilities and associated documentation are completed.

Note

The document icon (left) indicates documentation that must be completed by the individual fulfilling this role.

Blank ICS forms are found in Appendix E of the TNPI Emergency Response Plan.

Initial

- Review the incident briefing form completed by the Initial Incident Commander (ICS 201)
- Review associated documentation completed by the Initial Incident commander
  - Incident Objectives (ICS 202)
  - D.E.C.I.D.E.
  - Hazard control zones
  - Incident Diagram
- Review Incident Action Plan (IAP) for the current operational period, if created. (ICS 1001)
- Initiate Personal activity log to record all events and decisions in chronological order. (ICS 214)

Prior to work commencing on site

- Create Initial Site Safety Plan taking into account all needed precautions and all conditions. Complete form (ICS 208)
- Determine all associated safety plans required to complete the Initial Site Safety Plan. The number of associated Safety Plans will vary depending on the incident type, location, environmental factors and other factors, associated safety plans may include but are not limited to the following list:
  - Commodity Assessment
  - Public Protective Actions
  - Metering
  - Personal Protective Equipment
  - Site Training and Briefing
  - Decontamination
  - Fire Safety
  - Incident Medical Plan (ICS 206)
  - Traffic control and Security
- Submit completed Site Safety Plan to IC/ Unified Command for comment and approval
- Implement Site Safety Plan for all active sectors and operations

During response

- Create a Medical Plan for incidents requiring a Medical Plan due to hazard or size. Complete form (ICS 206). Discuss with Logistics Section for the implementation and management of the Site Safety Plan
- Assist Planning Section in the preparation of safe work procedures to achieve incident objectives

- Work with Operations Section to review operational action plans prior to execution of work. Assess all work on a continuous basis during site operations. Complete form (ICS 215-OS)
- Stop unsafe acts and unsafe work, including unsafe conditions
- Submit form (ICS 215-OS) to Planning Section prior to each operational meeting
- Assist Planning Section in the review of the IAP prior to submission to IC/Unified Command

- Update, Safety messages and Site Safety Plans, submit to IC/Unified Command for approval and distribute safety messages and revised Site Safety Plans as required during the incident. Complete or update form (ICS 208)

Documentation

- **Form Safety Message / Plan ICS 208** - Complete and then submit plan to the Initial Incident Commander, Operations personnel, and Documentation Unit ASAP upon start-up
- The Health & Safety Plan at a minimum should address:
  - Health and safety hazard analysis for each site, task, or operation
  - Comprehensive operations work-plan
  - Personnel training requirements
  - PPE selection criteria
  - Site specific occupational medical monitoring requirements
  - Air monitoring plan and site control measures
  - Confined space entry procedures (as necessary)
  - Pre-entry briefings (tailgate meetings) - initial and as needed
  - Pre-operations health and safety conference for all incident participants
  - Quality assurance of Health & Safety Plan effectiveness
- **Form Incident Objectives ICS 202-OS** - This form should be completed following each Planning Meeting. Include in the IAP
- **Form Assignment List ICS 204-OS** - Add Safety Message as required
- **Form Unit Log ICS 214-OS** - Assign a member of your staff to complete the ICS 214. Submit to the Documentation Unit at the end of the Operational Period
- **Form Individual Log ICS 214A-OS** - Summary of daily activities. Submit to Documentation Unit at the end of the Operational Period
- **Form Medical Plan ICS 206-OS** - Receive Medical Plan from the Medical Unit Leader (whose responsibility it is to prepare the Medical Plan) and review. Once reviewed, return form to Medical Unit Leader with signature of approval or suggested modifications. This needs to be done ASAP after the plan is submitted to you

Meetings

Meeting	Responsibility
Initial Incident Briefing	Assist with discussions as appropriate
Command Staff Meeting	Assist with discussions as appropriate
Tactics Meeting	Attend as needed
Planning Meeting	**State safety considerations** regarding the work plan
Operations Briefing	**Give safety message**

Table 88 - Meeting Responsibilities - Safety Officer

Individual Log

- **Special Note** - The optional ICS 214A-OS is a log for individual use, and ICS 214-OS is designed to log activities for an entire unit
- **Purpose** - The Individual Log, while not required, records details of each individual's activities. These logs provide a basic reference from which to extract information for inclusion in any after-action report
- **Preparation** - An Individual Log can be initiated and maintained by each member of the ICS. Completed logs are forwarded to supervisors who provide copies to the Documentation Unit
- **Distribution** - The Documentation Unit maintains a file of all individual Logs. The original of each log must be submitted to the Documentation Unit

See Appendix F for the following Forms:

- Hazard Control Zones
- Monitoring Checklist and pre-service accountability
- Monitoring Log
- Personal Protective Equipment
- Decontamination
- Fire Protection and Control Plan
- Traffic Control and Security

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Security Manager - Checklist

Job Specific Response Field Guide

This Checklist is to be used by the individual taking on the role of Security manager for TNPI during an incident. The Security Manager may be a TNPI employee or a contractor designated by TNPI. This Checklist will serve as a guide to ensure the duties, responsibilities and associated documentation are completed.

Note

The document icon (left) indicates documentation that must be completed by the individual fulfilling this role.

Blank ICS forms are found in Appendix E of the TNPI Emergency Response Plan

Initial

- Review the incident briefing form completed by the Initial Incident Commander (ICS 201)
- Review associated documentation completed by the Initial Incident commander
- Incident Objectives (ICS 202)
- D.E.C.I.D.E.
- Hazard control zones

Incident Diagram

- Review Incident Action Plan (IAP) for the current operational period, if created (ICS 1001)
- Initiate unit activity log to record all events and decisions in chronological order (ICS 214)

Prior to work commencing on site

- Establish contacts with local law enforcement agencies as required
- Request required personnel support to accomplish work assignments
- Develop Security Plan for incident facilities
- Create incident accountability and manage access to the protected zone. This may include but is not limited to;
  - Personnel Accountability form
  - Traffic control and Security (See Appendix F)

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Appendix C Definitions

Absorption

The physical process where one substance becomes incorporated with the absorbent material.

Acute Effect

An immediate illness/injury from a single exposure

Adverse Effect

Means one or more of:

- Impairment of the quality of the natural environment for any use that can be made of it
- Injury or damage to property or to plant or animal life
- Harm or material discomfort to any person
- An adverse effect on the health of any person
- Impairment of the safety of any person
- Rendering any property or plant or animal life unfit for human use
- Loss of enjoyment of normal use of property
- Interference with the normal conduct of business

Note

Where incident holds a different meaning than above, it has been specifically outlined in the plan with the alternate definition as it relates to its context.

Aromatic Hydrocarbons

Is a hydrocarbon with alternating double and single bonds between carbon atoms. The aromaticity is a chemical property in which conjugated rings of unsaturated bonds, lone pairs, or empty orbitals exhibit a stabilization stronger than would be expected by the stabilization of conjugation alone.

Auto Ignition Temperature

The minimum temperature required to initiate self-sustained combustion in the absence of an ignition source.

Bio-Degradation

Biological/Chemical process altering or transferring petroleum hydrocarbons through microbial action.

BLEVE

Boiling Liquid Expanding Vapour Explosion

Boiling Point

The temperature at which the vapour pressure of a liquid is equal to atmospheric pressure.

Carcinogen

A chemical confirmed or suspected of causing cancer in an exposed individual.

Chemical Oxidation

Transformation of petrochemical products through interaction with chemical agents that causes a loss of electrons.

Chronic Effect

Illnesses that result from repeated exposures over a long period of time.

Corrosive

A chemical that is destructive to base metals or skin; typically, pH less than 2 or more than 12.5.

Dilution

The physical reduction in concentration of material in the water column.

Dispersion

The mixing of hydrocarbon droplets into the water column.

Doff

To remove (as in clothing).

Don

To put on (as in clothing).

Drifting

Physical movement of surface refined products from one location to another due to the combined effects of wind, waves, and current.

E2 Plan[2]

The E2 Plan documents ways to prevent, prepare for, respond to and recover from environmental emergencies caused by toxic or other hazardous substances.

Emergency Management Program[3]

The Emergency Management and Civil Protection Act (EMCPA) requires municipalities, provincial ministries, and designated agencies, boards, commissions, and other branches of government to develop and implement emergency management programs consisting of emergency plans, training, exercises, public education, and any other elements prescribed by Regulation.

Environment[4]

All components of land water and air, all organic and inorganic matter and living organisms and the interacting natural systems.

Evaporation[5]

The formation of a gas (vapour) by the escape of high-energy molecules from the surface of a liquid; water molecules with sufficient energy escape from the liquid surface and enter the gas phase.

Flash Point

The minimum temperature at which a substance releases sufficient vapours in air to form a flammable mixture.

Hydrocarbon

Organic compounds consisting of hydrogen and carbon.

IDLH

Immediately dangerous to life or health - the concentration where exposure for 15 minutes will be fatal or cause irreparable health damage or cause sufficient injury to prevent self-rescue.

Incident[6]

An occurrence that results in: the death of or a serious injury to a person; a significant adverse effect on the environment; an unintended fire or explosion; an unintended or uncontrolled release of gas or hydrocarbons.

Note

Where incident holds a different meaning than above, it has been specifically outlined in the plan with the alternate definition as it relates to its context.

Incident Commander

A level of training required training to be responsible for the directing and coordinating of all aspects of the hazardous material incident.

[2] Canadian Environmental Protection Act 1999
[3] Emergency Management and Civil Protection Act
[4] SOR 99-294 – Onshore Pipeline Regulations
[5] Timberlake, K. C., (2012). Chemistry – An Introduction to General, Organic, and Biological Chemistry. Prentice Hall.
[6] Ibid.

Inorganic

Chemicals made from any element other than those of carbon compounds classified as organic.

Irritant

A substance that may cause a reversible inflammation of the skin when in contact with skin.

LEL

Lower Explosive Limit - the minimum concentration of vapours in air, which forms a flammable mixture.

Marine Control Point

Strategic points pre-determined points where containment and collection of spilled refined products can be controlled.

Pipeline[7]

A line used or to be used for the transmission of oil, gas or other commodity and the connects a province with any other province or provinces or extends beyond the limits of a province or the offshore area as defined in Section 1.2.3 of the OPR (1999), and includes all branches, extensions, tanks, reservoirs, storage facilities, pumps, racks, compressors, loading facilities, inter-station systems and communications by phone, telegraph or radio and real and personal property and works connected forthwith, but does not include a sewer or water pipeline used or proposed to be used solely for municipal purposes. For the purpose of the plan, the pipeline refers to the TNPI pipeline which conveys liquid hydrocarbon products and connects cities within a province.

Oil[8]

Crude oil both before and after it has been subjected to any refining or processing or any hydrocarbon recovered from crude oil.

Occupational Exposure Limit (OEL) The concentration in air of a known chemical that shows no effect on an unprotected worker with exposure during an 8 hr day and 40hr work week.

Operate[9]

Repair, maintain, deactivate, reactivate and decommission.

Organic

Chemicals that contain chains of two or more carbon atoms in their structure.

OT

Odour Threshold - the concentration in air detectable by the human nose (often a range).

Photo-Oxidation

Transformation of petroleum hydrocarbons through interaction of sunlight.

PPM

Parts per million - the measure of the amount of a chemical in a quantity of 1 million parts of air (mg/L).

Property

Any physical entity owned by a person or jointly by a group of people or corporation.

Public First Responder

Referring to Fire Departments, Police Departments, and Emergency Medical Services.

Reactive

A product that at normal temperature and pressure will react typically with oxygen or an oxidizing agent, causing a violent release of heat, light and or noise.

[7] Ibid.
[8] Modified from ERCB definition
[9] SOR 99-294

Refined Products

Products carried within the pipeline (gasoline, diesel, Jet A).

Regional Specific Plans

Emergency Plan Information organized by Regional Municipalities.

Release[10]

Includes - discharge, spray, spill, leak, seep, pour, emit, dump and exhaust.

Sinking / Sedimentation

Increase in density of refined products due to weathering and interaction with suspended sediments or material of biologic origin - sinking of material to the bottom of a water course.

Site Specific Plans

Detailed Emergency Response Plan focused around a high risk area determined by the risk assessment matrix.

SKIN product

A product that when in contact with the skin enter the blood stream and will cause systemic effects just as if it was inhaled or ingested.

Solubility

A value given to a chemical's ability to dissolve completely into another chemical.

Solution

A homogenous mixture in which a solute is dissolved in a solvent.

Specific Gravity (Liquid)

Ratio of density of a substance to the density of a reference substance (typically water).

Spreading

Expansion of refined products on the water's surface.

Stakeholders[11]

A party (person, group, organization, regulator or system) who affects or can be affected by an organization's actions.

Storage Facility

Means a facility constructed for the storage of oil and includes the land and other works connected with the facility.

Systemic

Where the injury from exposure is transported from contact point to target organs or other systems.

TLV[12] **- Threshold limit value**

The concentration in air of a known chemical that shows no effect on an unprotected worker with exposure during an 8 hr day and 40hr work week.

Toxic Substance[13]

A substance that enters the environment in a quantity or concentration that may - have an immediate or long-term adverse effect on the environment, constitute a danger to the environment on which human life depends, or constitute a danger to human life or health.

UEL

[10] SOR 99-294
[11] Freeman et al. 1983
[13] SOR 99-294
[13] SOR 99-294

Upper explosive limit - the maximum concentration of vapours in air, which forms a flammable mixture.

Vapour Density

The weight of a gas when compared to air at standard temperature and pressure. Air has a value of 1; all other gasses are referenced above or below. Gases that are lighter than air will have a value less than one, gasses heavier than air will have a value greater than 1.

Vapour Pressure

A measure of the tendency of a material to form a vapour. Normal atmospheric pressure is stated as 1 atmosphere or 1 ATM which is 760 mmHg or 14.7 psi. Materials with low vapour pressures tend not to give off very much vapour. Materials with high vapour pressures readily vaporize.

Viscosity

Resistance to flow.

Volatility

Is directly related to vapour pressure and is an indication of the tendency of a substance to vaporize.

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Appendix D Acronyms

AER

Alberta Energy Regulator

API Gravity

The American Petroleum Institute Gravity

APPL

Alberta Products Pipe Line

ATM

Atmospheres

BLEVE

Boiling Liquid Expanding Vapour Cloud Explosion

BP

Boiling point

CAS

Chemical Abstracts Service

CEO

Chief Executive Officer

CPR

Cardio Pulmonary Resuscitation

CSA

Canadian Standards Association

DIC

Deputy Incident Commander

DFO

Department of Fisheries and Oceans

DPC

Depute Planning Chief

ECRC

Eastern Canadian Response Corporation

EHS

Environment, Health and Safety

EL

Elmbank - Toronto System Headquarters

EMA

Emergency Management Act

EOC

Emergency Operations Centre

EPZ

Emergency Planning Zone

ER

Emergency Response

EUL

Environment Unit Lead

FP

Flash point

HAZMAT

Hazardous materials

HCA

High Consequence Area

HO

Head Office

IAP

Incident Action Plan

IC

Incident Commander

ICT

Incident Command Team

IDLH

Immediately dangerous to life or health

ICS

Incident Command System

IMS

Incident Management System

LEL

Lower explosive limit

LN

Lancaster - Montreal System Headquarters

LO

Liaison Officer

LSC

Logistics Section Chief

MmHg

Millimeters of Mercury

MNR

Ministry of Natural Resources

MOE

Ministry of the Environment and Climate Change

MT

Montreal

NEB

National Energy Board

OSC

Operations Section Chief

OT

Odor Threshold

OV

Organic Vapor

PDF

Portable Document Format

PFD

Personal Flotation Device

PID

Photo Ionization Detector

PIO

Public Information Officer

PPE

Personal Protective Equipment

PPM

Parts Per Million

PSC

Planning Section Chief

PSI

Pounds per square inch

QER

Quantum Emergency Response

QMLP

Quantum Murray Limited Partnership

RHA

Regional Health Authority

RUL

Resource Unit Lead

SAC

Spills Action Centre

SO

Safety Officer

SUL

Situation Unit Leader

TC

Transport Canada

TSB

Transportation Safety Board

TLV

Threshold Limit Value

TNPI

Trans Northern Pipeline Inc.

UC

Unified Command

UEL

Upper explosive limit

VD

Vapour Density

VP

Vapour Pressure

WCSS

Western Canada Spill Services Ltd

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Appendix E ICS Forms

Oil Spill Notification	Communications Unit Leader → Incident Reported → Line Control → Initial Incident Commander → Additional Notifications → Documentation Unit	**ICS 213 General Message**	Message Originator → Documentation Unit → Sit/Stat → All addresses, Originator
ICS 201 Incident Briefing	Initial Incident Commander → Unified Command Meeting → Documentation Unit → OSC,PSC,LSC,FSC	**ICS 214 Activity Log/Individual Log**	Individual OR Section or Unit Lead → Documentation Unit
ICS 202 Incident Objectives	Unified Command Meeting → Documentation Unit → UC,OSC,PSC,LSC, FSC,IAP	**ICS 215A Incident Safety Analysis**	Safety Officer → Documentation Unit → OSC,PSC,RUL
ICS 203 Org. Assignment List	Resource Unit Leader → Documentation Unit → Sit/Stat → UC,OSC,PSC,LSC, FSC,IAP	**ICS 215G Operational Planning Works**	Operations Section Chief → Planning Section Chief → Documentation Unit → OSC,PSC,RUL
ICS 204 Field Assignment List	Operations Section Chief → Resource Unit Leader → ✓ Approval PSC, RUL → Documentation Unit → UC,OSC,RUL,EUL,Sit/ Stat/IAP.Field	**ICS 218 Support Vehicle Inventory**	Ground Support Unit → Operations Section Chief → Documentation Unit → RU,OSC,/Ground Support
ICS 205 Radio Communications Plan	Communications Unit Leader → Documentation Unit → UC,OSC,PSC,LSC, Sit/Srat,IAP	**ICS 220 Air Operations Summary**	Air Operations → Documentation Unit → Sit/Stat → AOBD,OSD
ICS 206 Medical Plan	Medical Unit Lead → Safety Officer → Documentation Unit → UC,OSC,PSC,SO, Medical,IAP	**ICS 221 Demob. Check-Out**	Planning Section Chief & Demobilization Unit Leader → Documentation Unit → RU,OSC,/Ground Support
ICS 207 Org. Chart	Resource Unit Leader → Documentation Unit → Sit/Stat → UC,OSC,PSC,LSC, FSC,IAP	**ICS 231 Meeting Summary**	Historian → Documentation Unit → As required
ICS 208 Site Safety Plan	Safety Officer → ✓ Approval PSC, RUL → Documentation Unit → UC,OSC,PSC,SO, Medical,IAP	**ICS 232 Resources At Risk**	Environmental Unit Lead → Documentation Unit → PSC,EUL
ICS 209 Incident Status Summary	Situation Unit Leader → Documentation Unit → Sit/Stat → OSC,PSC,LSC,FSC	**ICS 232a ACP Site Index**	Environmental Unit Lead → Documentation Unit → Sit/Stat
ICS 260-RR Resource Request	Resource Requester → ✓ Approval - Section Chief → Logistics Supply Unit → Documentation Unit → Resource Unit Leader → LSC, Finance		
Decon. Plan	Environmental Unit Lead → ✓ Approval - Unified Command → Documentation Unit → OSC,PSC,EUL,IAP		
Incident Action Plan (IAP)	Planning Section Chief → Unified Command Meeting → ✓ Approval - Unified Command → Documentation Unit → UC,OSC,PSC,LSC,FBC, SITL, RESL, STAM, OPBD		
Shoreline Clean-up Plan	Environmental Unit Lead → Operations Section Chief → ✓ Approval - Unified Command → Documentation Unit → OSC,PSC,EUL,IAP		
Site Security and Traffic Plan	Security Manager → Logistics Supply Unit → Documentation Unit → OSC,PSC,LSC		
Waste Plan	Environmental Unit Lead → ✓ Approval - Unified Command → Documentation Unit → OSC,PSC,EUL,IAP		
Wildlife Plan	Environmental Unit Lead → ✓ Approval - Unified Command → Documentation Unit → OSC,PSC,EUL,IAP		

Figure 50 - ICS Document Flow Chart

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Incident Action Plan – Cover Sheet		
Incident Name	**Operational Period** to be covered by IAP (date/time)	
	From	To
Approved by		

Incident Action Plan

Prepared by	**Date / Time**

Form 4 Incident Action Plan – Cover Sheet

Incident Action Plan – Cover Sheet Instructions

Special Note - This optional form acts as a cover sheet for the completed Incident Action Plan (IAP) described below. Two versions of this cover sheet are included; either can be used. One version includes check boxes for forms included in the IAP, while the other version leaves a large blank area for user comments or graphics.

Purpose - An Incident Action Plan (IAP) contains general control objectives reflecting the overall incident strategy and specific action plans for the next operational period. The Unified Command, Command Staff, and General Staff develop the IAP. When all attachments are included, the plan:

- specifies the objectives for the next operational period
- defines the work assignments for the next operational period, including extracts of site-specific safety messages

  Note

  The Site Safety Plan is generally a stand-alone document and is not included in the IAP
- defines the resources needed to accomplish the work order
- depicts how all response personnel are to be organized
- lists radio and telephone communications for all incident personnel
- specifies a medical plan to follow in case of a responder emergency
- identifies resources at risk

Preparation - The Planning Section Chief compiles the IAP, with key tactical input from the Operations Section Chief. The Plan is to be completed following each Planning Meeting. The plan should be approved and signed by each member of the Unified Command.

Distribution - Sufficient copies of the IAP will be reproduced and given to all supervisory personnel at the Section, Branch, Division/Group, and Unit Leader levels.

All completed original forms **must** be given to the Documentation Unit.

Item Title Incident	Instructions
Incident Name	Enter the name assigned to the incident
Operational Period	Enter the time interval for which the form applies. Record the start and end date and time (24 hour clock)
Approved by	Signatures of approval must be obtained from each Unified Commander
Prepared by	Enter the name and position of the person preparing the form
Date / Time	Enter the date (month, day, year) and time (24 hour clock) the form was prepared

Table 89 - Incident Action Plan – Cover Sheet Instructions

Incident Briefing ICS 201-0S		

Map I 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 ICS 201-0S		
Initial Incident Objectives		
Life Safety		
Incident Stabilization		
Minimize Impacts		
Summary of Current Actions		
Time	Action / Note	

Current Organization

Incident Briefing ICS 201-0S

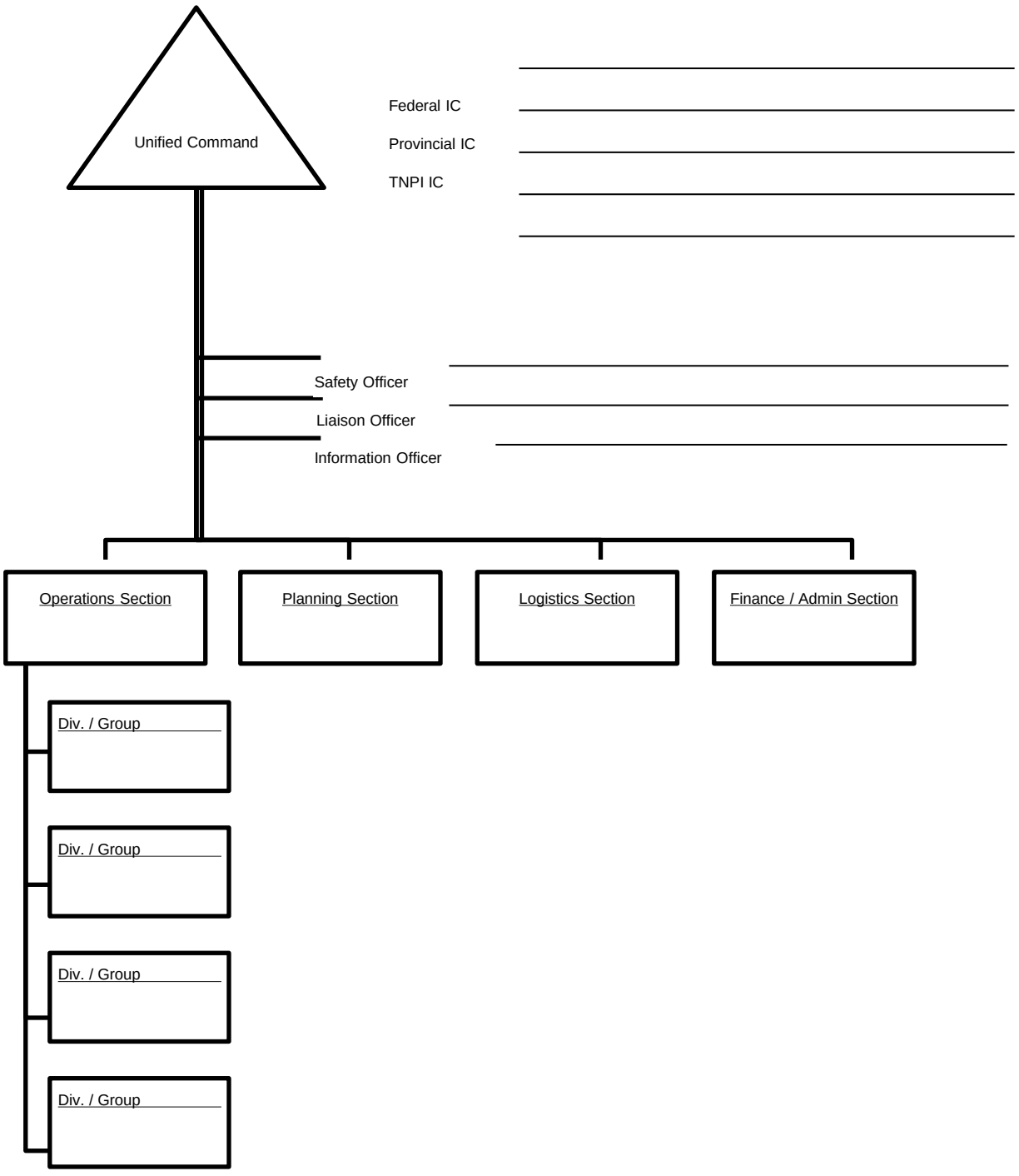

Figure 51 - Current Organization - Incident Briefing

Resources Summary

Incident Briefing ICS 201-0S					
Resources Needed	Time Ordered	Resources Identifier	ETA	On Scene? (x)	**Notes Location / Assignment / Status**

Incident Briefing ICS 201-OS

Purpose - The Incident Briefing form provides the Unified Command (and the Command and General Staffs assuming command of the incident) with basic information regarding the response situation and the resources allocated to the incident. It is also a permanent record of the initial incident response..

Preparation - This briefing form is prepared under the direction of the initial Incident Commander for presentation to the Unified Command. This form can be used for managing the response during the initial period until the beginning of the first operational period for which an Incident Action Plan (lAP) is prepared. The information from the ICS 201-0S can be used as the starting point for other ICS forms or documents.

- Page 1 (Map/Sketch) may transition immediately to the Situation Map
- Page 2 (Summary of Current Actions) may be used to continue tracking the response actions and as the initial input to the ICS 215-0S and the ICS 232-0S
- Page 3 (Current Organization) may transition immediately to the Organization List (ICS 203-0S) and/or Organization Chart (ICS 207-0S)
- Page 4 (Resources Summary) may be used to continue tracking resources assigned to the incident and as input to individual T-Cards (ICS 219) or other resource tracking system

Distribution - After the initial briefing of the Unified Command and General Staff members, the Incident Briefing form is duplicated and distributed to the Command Staff, Section Chiefs, Branch Directors, Division/Group Supervisors, and appropriate Planning and Logistics Section Unit Leaders. The sketch map and summary of current action portions of the briefing form are given to the Situation Unit while the Current Organization and Resources Summary portion are given to the Resources Unit.

All completed original forms **must** be given to the Documentation Unit.

Item Title	Instructions
Incident Name	Enter the name assigned to the incident
Prepared by **Date / Time**	Enter the name of the and position of the person preparing the form. Enter the date (month, day, year) and time prepared (24 hour clock)
Map/Sketch	Show the total Area of Operations, the incident site, overflight results, trajectories, impacted shorelines, or other graphics depicting situation and response status on a sketch or attached map
Initial Incident Objectives	Enter short, clear, concise statements of the objectives for managing the initial response
Summary of Current Actions	Enter the actions taken in response to the incident, including the time, and note any significant events or specific problem areas
Current Organization	Enter, on the organization chart, the names of the individuals assigned to each position. Modify the chart as necessary, using additional boxes in the space provided under the Sections. Two blank lines are provided in the Unified Command section for adding other agencies or groups participating in the Unified Command and/or for multiple Responsible Parties
Resources Summary	Enter the following information about the resources allocated to the incident
Resource Needed	Description of the resource needed (e.g., open water boom, skimmer, vac truck, etc.)t
Time Ordered	Time ordered (24-hour clock)

Item Title	Instructions
Resources Identifier	Identifier for the resource (e.g., radio call-sign, vessel name, vendor name, license plate, etc.)
ETA	Estimated time for the resource to arrive at the staging area
On-Scene	"X" upon the resource's arrival
Location/Assignment/Status	Location of the resource, the actual assignment, and the status of the resource (if other than working)

Note

Additional pages may be added to ICS form 201-0S if needed.

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Incident Objectives ICS 202-OS

Incident Name	**Operational Period (Date / Time)** From	To

Overall Incident Objective(s)

- ☐ Ensure the safety of the public and response personnel.
- ☐ Control the source of the spill.
- ☐ Manage a coordinated response effort.
- ☐ Maximize the protection environmentally sensitive areas.
- ☐ Contain and recover the spilled oil/material.
- ☐ Recover and rehabilitate injured wildlife.
- ☐ Remove oil from impacted shoreline areas.
- ☐ Minimize economic impacts
- ☐ Keep stakeholders informed of response activities.
- ☐ Keep the public informed of response activities.

Objectives for specified Operational Period

Safety Message for specified Operational Period

Approved Site Safety Plan Located at:

Weather — See Attached Weather Sheet

Tides / Currents — See Attached Tide / Current Data

Time of Sunrise	Time of Sunset

Attachments (mark 'X' if attached)

- ☐ Organization List (ICS 203-OS)
- ☐ Medical Plan (ICS 206-OS)
- ☐ Resource at Risk Summary (ICS 232-OS)
- ☐ Assignment List (ICS 204-OS)
- ☐ Incident Map(s)
- ☐ _____
- ☐ Communications List (ICS 205-OS)
- ☐ Traffic Plan
- ☐ _____

_____

Prepared by (Planning Section Chief)	**Date / Time**

Form 6 Incident Objectives ICS 202-OS

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Organization Assignment List ICS 203-OS

Incident Name	Operational Period (Date / Time)	
	From	To

Overall Incident Objective(s)

Incident Commander and Staff	Primary	Deputy
RO		
Ld. Agency		
RP(s)		
Safety Officer		
Info. Officer		
Liaison Officer		

Agency Representatives	
Agency	Name

Planning Section	
Chief	
Deputy	
Resources Unit	
Situation Unit	
Environmental Unit	
Documentation Unit	
Demobilization Unit	
Technical Specialists	

Logistics Section	
Chief	
Deputy	
Support Branch	
Director	
Supply Unit	
Facilities Unit	
Transportation Unit	
Vessel Support Unit	
Ground Support Unit	
Service Branch	
Director	
Communications Unit	
Medical Unit	
Food Unit	

Operations Section	
Chief	
Deputy	
Recovery and Protection Brand I – Division / Groups	
Branch Director	
Deputy	
Division / Group	
Division / Group	
Division / Group	
Division / Group	
Division / Group	
Division / Group	
Wildlife Branch II – Division / Groups	
Branch Director	
Deputy	
Division / Group	
Division / Group	
Division / Group	
Division / Group	
Division / Group	
Division / Group	
_____ Branch III – Division / Groups	
Branch Director	
Deputy	
Division / Group	
Division / Group	
Division / Group	
Division / Group	
Division / Group	
Division / Group	
Air Operations Branch	
Air Operations Branch Dir.	
Air Tactical Supervisor	
Air Support Supervisor	
Helicopter Coordinator	
Fixed Wing Coordinator	
Finance / Administration Section	
Chief	
Deputy	
Accounting Unit	
Audit Unit	
Administration Unit	
Time Unit	

Prepared by	Date / Time

Original » Resources Unity **Copies** » (2) Plan Development Unity (3) Documentation Unit (4) Command)

Form 7 Organization Assignment List ICS 203-OS

Organization Assignment List ICS 203-OS

Purpose - The Organization Assignment List provides ICS personnel with information on the units that are currently activated and the names of personnel staffing each position/unit. It is used to complete the Incident Organization Chart (ICS 207-OS) which is posted on the Incident Command Post display. An actual organization will be event-specific. Not all positions need to be filled. The size of the organization is dependent on the magnitude of the incident and can be expanded or contracted as necessary.

Preparation - The Resources Unit prepares and maintains this list under the direction of the Planning Section Chief.

Distribution - The Organization Assignment List is duplicated and attached to the Incident Objectives form (ICS 202-OS) and given to all recipients of the Incident Action Plan.

All completed original forms **must** be given to the Documentation Unit.

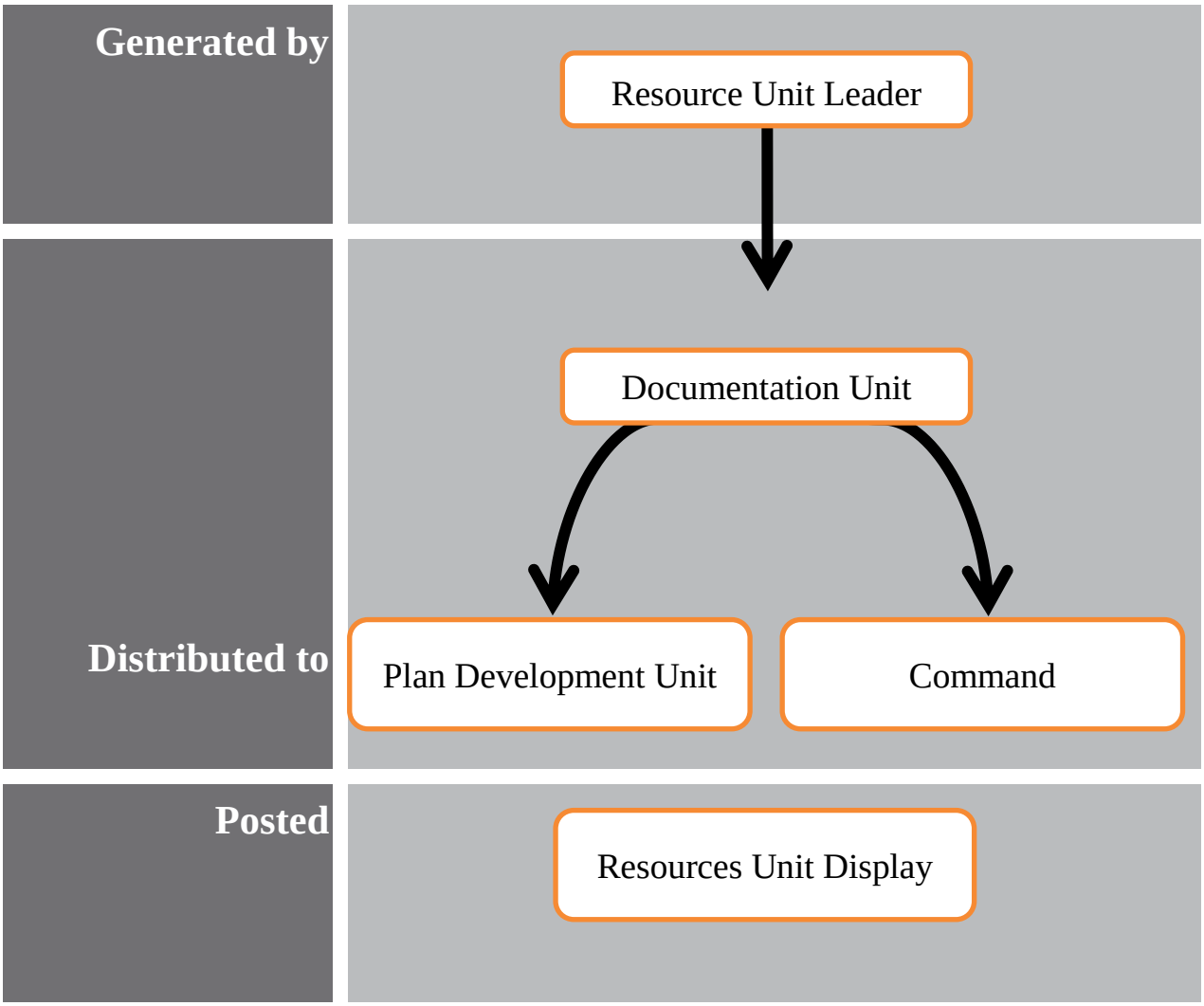

Figure 52 - Distribution of Organization Assignment List ICS 203-OS

Assignment List ICS 204-OS			
Incident Name		**Operational Period (Date / Time)**	
		From	To
Branch		**Division / Group**	

Operations Personnel	Name	Affiliation	Contact Number(s)
Operations Section Chief			
Branch Director			
Division / Group Supervisor			

Resources Assigned this Period — x indicates 204A attachment with special instructions

Strike Team / Task Force / Resource Identifier	Leader	Contact Info #	# of Persons	Notes	X

Assignments

Special Instructions for Division / Group

Communications (radio and / or phone contact numbers needed for this assignment)

Name / Function	Radio – Frequency / System / Channel	Phone	Pager

Emergency Communications

Medical		Evacuation		Other	

Prepared by (Resource Unit Leader) **Date / Time**	**Approved by** (Planning Section Chief) **Date / Time**

Form 8 Assignment List ICS 204-OS

Assignment List (ICS 204-OS)

Special Note - The Assignment List, ICS 204-OS submits assignments at the level of Divisions and Groups. The Assignment List Attachment, ICS 204A-OS shows more specific assignment information, if needed. The need for an ICS 204A-OS is determined by the Planning and Operations Section Chiefs during the Operational Planning Worksheet (ICS 215-OS) development.

Purpose - The Assignment List(s) informs Division and Group supervisors of incident assignments. Once the assignments are agreed to by the Unified Command and General Staff, the assignment information is given to the appropriate Divisions and Groups.

Preparation - The Assignment List is normally prepared by the Resources Unit, using guidance from the Incident Objectives (ICS 202-OS), Operational Planning Worksheet (ICS 215-OS), and the Operations Section Chief. The Assignment List must be approved by the Planning Section Chief. When approved, it is included as part of the Incident Action Plan (IAP). Specific instructions for individual Task Forces / Strike Teams may be entered on an ICS 204A-OS for dissemination to the field, but not included in the IAP.

Distribution - The Assignment List is duplicated and attached to the Incident Objectives and given to all recipients of the Incident Action Plan. In some cases, assignments may be communicated via radio/telephone/fax.

All completed original forms **must** be given to the Documentation Unit.

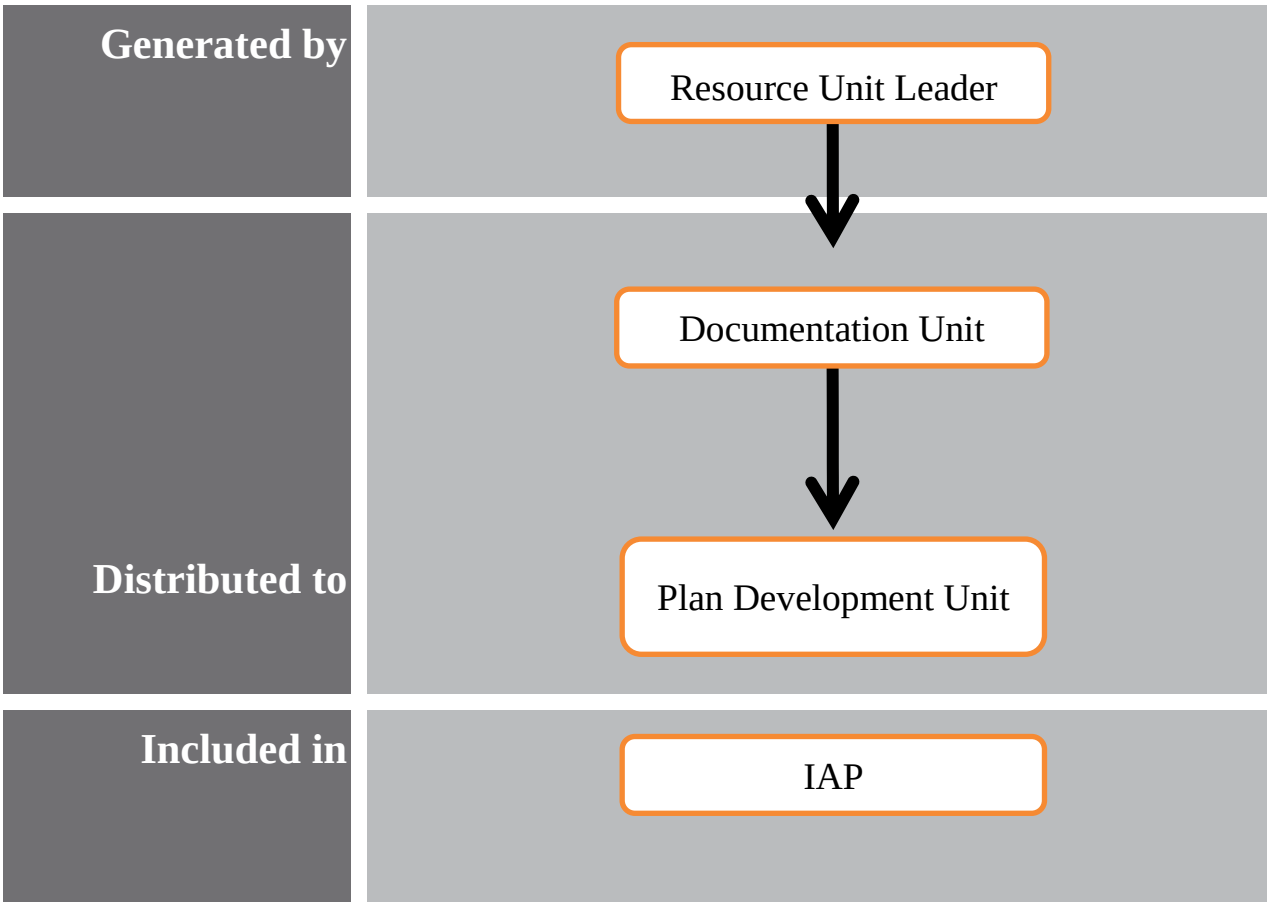

Figure 53 - Distribution of Assignment List ICS 204-OS

Assignment List Attachment ICS 204A-OS		
Incident Name	**Operational Period (Date / Time)**	
	From	To
Branch	**Division / Group**	
Strike Team / Task Force / Resource Identifier	**Leader**	**Assignment Location**
Work Assignment Special Instructions (if any)		**[Ops]**
Special Equipment / Supplies Needed for Assignment (if any)		**[Ops]**
Special Environmental Conditions (if any)		**[P.S.C.]**
Special Site – Specific Safety Considerations (if any)		**[S.O]**
Approved Site Safety Plan Located at:		
Other Attachments (if needed)		**[P.S.C.]**
☐ Map ☐ Weather Forecast	☐ Shoreline Cleanup Assessment Team Report ☐ Tides	☐ _____ ☐ _____
Prepared by	**Date / Time**	

Form 9 Assignment List Attachment ICS 204A-OS

Assignment List Attachment (ICS 204A-OS)

Special Note - This form is an optional attachment, which can be used in conjunction with the Assignment List, ICS 204-OS. The ICS 204-OS is used to give assignments to Divisions and Groups; the ICS 204A-OS provides more specific assignment information, when needed. If there is a check, then there will be one ICS 204A-OS for each Strike Team / Task Force / Resource Identifier listed in Item 6 of ICS 204-OS and marked with a check (•) in the last column. The need for an ICS 204A-OS is determined by the Planning and Operations Section Chiefs during the Operational Planning Worksheet (ICS 215-OS) development.

Purpose - The Assignment List Attachment informs field personnel of specific incident assignment information. Once the Unified Command and General Staff agree to the Group / Division assignments, the specific assignment information is given to the appropriate Strike Team or Task Force Leaders.

Preparation - The Assignment List Attachment form is normally prepared by the Resources Unit under the direction of the Planning and Operations Section Chiefs using guidance from the Incident Objectives (ICS 202-OS) and the Operational Planning Worksheet (ICS 215-OS).

Distribution - The Assignment List Attachment is duplicated and distributed to the Group or Division supervisor for communication to individual Task Forces and Strike Teams. In some cases, assignments may be communicated via radio, phone, or computer.

All completed original forms **must** be given to the Documentation Unit.

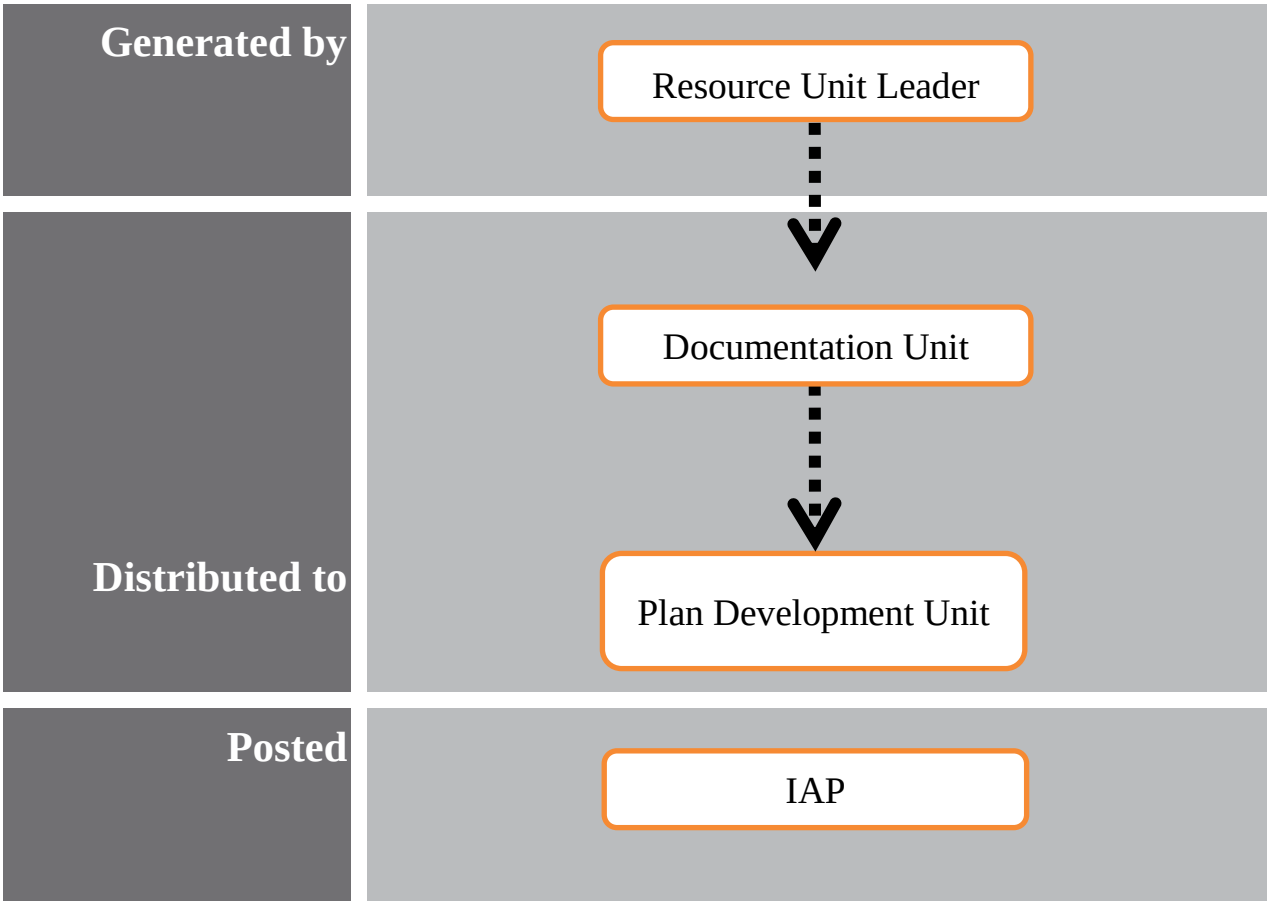

Figure 54 - Distribution of Assignment List Attachment ICS 204A-OS

Incident Radio Communications Plan ICS 205-OS					
Incident Name				**Operational Period (Date / Time)**	
				From	To
Basic Radio Channel Use					
System / Cache	**Channel**	**Function**	**Frequency**	**Assignment**	**Remarks**
Prepared by (Communications Unit)				**Date / Time**	

Form 10 Incident Radio Communications Plan ICS 205-OS

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Communications List ICS 205A-OS		
Incident Name	**Operational Period (Date / Time)**	
	From	To
Basic Local Communications Information		
Assignment	Name	Methods of Contact (radio frequency, phone, pager, cell #(s), etc.)
Prepared by (Communications Unit)	**Date / Time**	

Form 11 Communications List ICS 205A-OS

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Medical Plan ICS 206-OS

Incident Name	Operational Period (Date / Time)	
	From	To

Medical Aid Stations

Name	Location	Contact #	Paramedics On Site? Y / N

Transportation

Ambulance Service	Address	Contact #	Paramedics On Board? Y / N

Hospitals

Hospital Name	Address	Contact #	Travel Time		Burn Center?	Heli Pad?
			Air	*Ground*		

Special Medical Emergency Procedures

Prepared by (Medial Unit Leader)	**Date / Time**

Form 12 Medical Plan ICS 206-OS

Medical Plan ICS 206-OS

Purpose - The Medical Plan provides information on incident medical aid stations, transportation services, hospitals, and medical emergency procedures.

Preparation - The Medical Plan is prepared by the Medical Unit Leader and reviewed by the Safety Officer.

Distribution - The Medical Plan may be attached to the Incident Objectives (ICS 202-OS), or information from the plan pertaining to incident medical aid stations and medical emergency procedures may be taken from the plan and noted on the Assignment List (ICS 204-OS) or on the Assignment List Attachment (ICS 204A-OS).

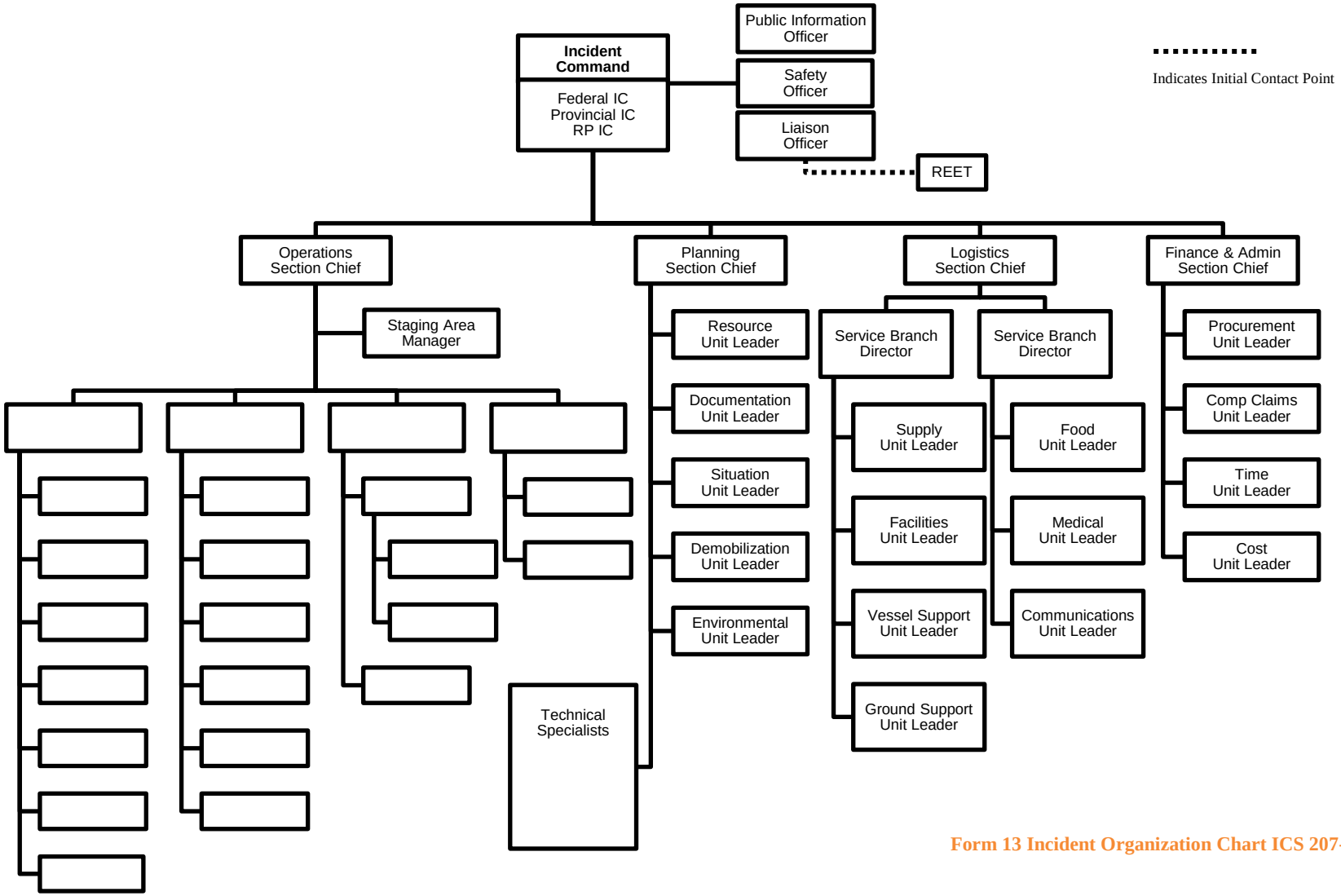
All completed original forms **must** be given to the Documentation Unit.

Item Title	Instructions
Name Operational	Enter the name assigned to the incident
Period	Enter the time interval for which the form applies. Record the start and end date and time
Medical Aid Stations	Enter name, location, and telephone number of the medical aid station(s) (i.e. Cajon Staging Area, Cajon Camp Ground) and indicate if paramedics are located at the site
Transportation	List name and address of ambulance services. Provide phone number and indicate if ambulance company has paramedics
Hospitals	List hospitals that could service this incident. Enter hospital name, address, phone number, the travel time by air and ground from the incident to the hospital, and indicate if the hospital has a Burn Center and/or a Heli Pad
Medical Emergency Procedures	Note any special emergency instructions for use by incident personnel
Prepared by **Date / Time**	Enter the name of the Medical Unit Leader preparing the form. Enter the date (month, day, year) and time prepared (24 hour clock)
Reviewed by **Date / Time**	Enter the name of the Safety Officer who must review the plan. Enter the date (month, day, year) and time reviewed (24 hour clock)

Table 90 - Medical Plan ICS 206-OS Instructions

Incident Organization Chart ICS 207-OS

Incident Name	Operational Period (Date / Time)	
	From	To



Form 13 Incident Organization Chart ICS 207-OS

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Safety Message / Plan ICS 208		
Incident Name	**Operational Period (Date / Time)**	
	From	To
Purpose of Form	☐ Safety Message ☐ Safety Plan (insert location, if possible)	
Prepared by	**Date / Time**	
Attachments (check if applicable)		
☐ Separate Safety Plan	☐ _____	

Form 14 Safety Message / Plan ICS 208

Safety Message / Plan ICS 208

Purpose - The Safety Message/Plan (ICS 208) is a generic template that can be used by the Safety Officer and/or other ICS personnel as a Safety Message or Safety Plan.

If the user would like to use this form for more than one of the above purposes (e.g. as a Safety Message and Safety Plan) they have the option of a) using an additional form for each unique purpose, or b) including all content on a single form. In both cases, the appropriate boxes should be checked, indicating the purpose(s) of the ICS 208.

Preparation - The ICS 208 is an optional form that may be included and completed by the Safety Officer as an attachment for the Incident Action Plan (IAP), or stand-alone form.

Distribution - The ICS 208 or content from the ICS 208 may be reproduced with the IAP and given to all recipients as part of the IAP. All completed original forms must be given to the Documentation Unit.

Note

- The ICS 208 may serve (optionally) as part of the IAP
- Use additional copies for continuation sheets as needed, and indicate pagination as used

Item Title	Instructions
Incident Name	Enter the name assigned to the incident
Date / Time Prepared	Enter the date prepared (month, day, year) and time prepared (24 hour clock)
Operational Procedure	Enter the time interval for which the form applies. Record the start time and the end time with dates
Safety Message **Safety Plan**	Enter clear, concise statements for safety message(s), priorities, and key command emphasis/decisions/directions. Enter information such as known safety hazards and specific precautions to be observed during this operational period. If needed, additional safety message(s) should be referenced and attached
Prepared by **Date / Time**	Enter the name and position of the person completing the form (usually the Safety Officer, if activated). Enter the date (month, day, year) and time prepared (24 hour clock)
Attachments	If required- attach any other documents to this ICS 208 (existing site safety plans, other safety plans, etc.)

Table 91 - Safety Message / Plan Instructions

Incident Summary Status ICS 209-OS

Incident Name

Operational Period (Date / Time)

From | To

Spill Status (estimated, in barrels) [Ops & EUL/SSC]

Source Status	Remaining Potential (bbl)	
☐ Secured	Rate of Spillage (bbl/hr)	
☐ Unsecured	Since Last Report	Total
Volume Spilled		
Mass Balance / Oil Budget		
Recovered Oil		
Evaporation		
Natural Dispersion		
Chemical Dispersion		
Burned		
Floating, Contained		
Floating, Uncontained		
Onshore		
Total spilled oil accounted for		

Waste Management (estimated) [Ops & Disposal]

	Recovered	Stored	Disposed
Oil (bbl)			
Oily Liquids (bbl)			
Liquids (bbl)			
Oily Solids (tons)			
Solids (tons)			

Shoreline Impacts (estimated, kms) [PSC / EUL]

Degree of Oiling	Affected	Cleaned	To Be Cleaned
Light			
Medium			
Heavy			
Total			

Wildlife Impacts [Ops & Wildlife Branch]

Numbers in ( ) indicated subtotal that are threatened / endangered species					Died in Facility	
	Captured	Cleaned	Released	DOA	Euth.	Other
Birds						
Mammals						
Reptiles						
Fish						
Total						

Safety Status [Safety Officer]

	Since Last Report	Total
Responder Injury		
Public Injury		

Equipment Resources [RUL]

Description	Ordered	Available / Staged	Assigned	Out of Service
Spill Resp. Vsls				
Fishing Vessels				
Tugs				
Barges				
Other Vessels				
Skimmers				
Boot (ft.)				
Sbnt.Snr Bm. (ft.)				
Vacuum Trucks				
Helicopters				
Fixed Wing				

Personnel Resources [RUL]

Description	People in Cmd. Post	People in the Field	Total People on Scene
Federal			
Provincial			
Local			
RO			
Contract Personnel			
Volunteers			
Total Response Personnel from all Organizations			

Special Notes

Prepared by
(Situation Unit Leader)

Date / Time

Form 15 Incident Summary Status ICS 209-OS

Incident Status Summary ICS 209-OS

Purpose - The Status Summary:

- Is used by Situation Unit personnel for posting information on Status Boards
- Is duplicated and provided to Command Staff members, giving them basic information for planning for the next operational period
- Provides information to the Information Officer for preparing news media releases
- Summarizes incident information for local and off-site coordination centers

Preparation - The Status Summary is prepared by the Situation Unit. Resources information should be obtained from the Resources Unit. It may be scheduled for presentation to the Planning Section Chief and other General Staff members prior to each Planning Meeting and may be required at more frequent intervals by the Unified Command or Planning Section Chief. Suggested sources of information are noted in brackets.

Note

The values on the ICS 209-OS are the best available estimates at the Time of Report. This form is usually in high demand and should be filled out early and often. A suggested source within the ICS organization is noted in brackets [ ] at the top right of each section of the form. All fields need not be completed in order to distribute the form.

Distribution - When completed, the form is duplicated and copies are distributed to the Unified Command and staff, and all Section Chiefs, Planning Section Unit Leaders, and the Joint Information Center. It is also posted on a status board located at the ICP.

All completed original forms **must** be given to the Documentation Unit.

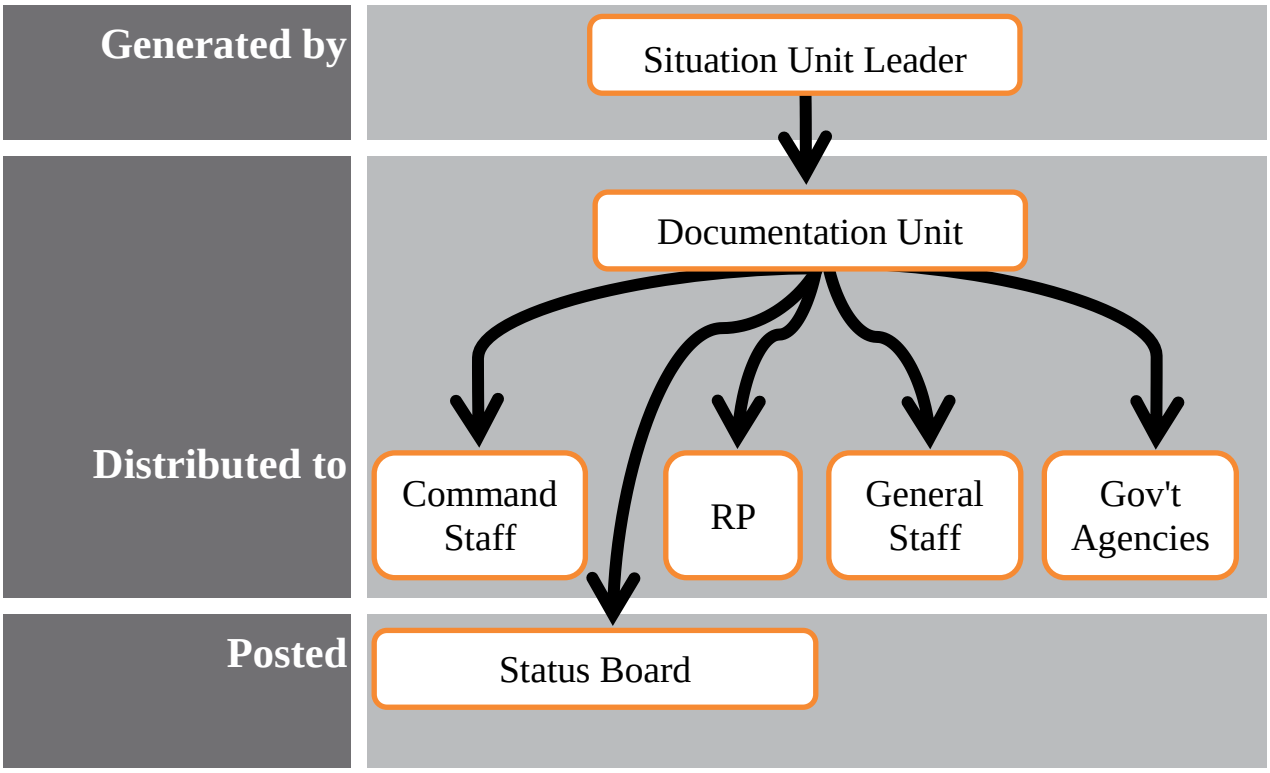

Figure 55 - Distribution of Incident Status Summary ICS 209-OS

Check In List (Equipment) ICS 211E-OS

Incident Name	Operational Period (Date / Time)	
	From	To

Check in Location ☐ Command Post ☐ Staging Area _____ ☐ Other _____

Equipment Check In Information				Initial Incident Check In?		Time	
Equipment Description	Equipment Identifier	Supplier / Owner	Assignment	Contact Information	(X)	In	Out
					☐		
					☐		
					☐		
					☐		
					☐		
					☐		
					☐		
					☐		
					☐		
					☐		

Prepared by Date / Time	Date / Time Sent to Resources Unit

Form 16 Check In List (Equipment) ICS 211E-OS

Check In List Equipment ICS 211E-OS

Special Note – This form is used for equipment check in only.

Purpose - Equipment arriving at the incident can check in at various incident locations. Check-in consists of reporting specific information that is recorded on the form.

Preparation - The Check-In List is initiated at a number of incident locations including staging areas, base, camps, helibases, and ICP. Managers at these locations record the information and give it to the Resources Unit as soon as possible.

Distribution - Check-In Lists are provided to both the Resources Unit and the Finance/Administration Section. The Resources Unit maintains a master list of all equipment and personnel that have reported to the incident.

All completed original forms **must** be given to the Documentation Unit.

Item Title	Instructions
Incident Name	Enter the name assigned to the incident
Operational Period	Enter the time interval for which the form applies. Record the start and end date and time (24 hour clock)
Check In Location	Check the box for the location where the equipment was checked in
Equipment Description	Enter a description of the equipment (e.g. 36" open water boom, skimmer, vac truck, etc.)
Equipment Identifier	Enter the Identifier for the equipment (e.g. radio call-sign, vessel name, vendor name, license plate, etc.)
Supplier / Owner	Enter the supplier/owner of the equipment
Assignment	Work assignment, if known. Arriving equipment may not have an assignment at time of check in
Contact Information	Enter the contact information for the person operating equipment
Initial Incident Check In?	Check if this is the first time the equipment has been checked in
Time in / Out	Enter the time the equipment is checked in and/or out (24 hour clock)
Prepared by **Date / Time**	Enter the name and position of the person completing the form (usually the Safety Officer, if activated). Enter the date (month, day, year) and time prepared (24 hour clock)
Date / Time Sent to Resources Unit	Enter the date (month, day, year) and time prepared (24 hour clock) The form is sent to the Resources Unit

Table 92 - Check In List (Equipment) ICS 211E-OS Instructions

Check In List (Personnel) ICS 211P-OS

Incident Name	Operational Period (Date / Time)	
	From	To

Check in Location ☐ Command Post ☐ Staging Area _____ ☐ Other _____

Personnel Check In Information				Initial Incident Check In?	Time	
Name	Company / Agency	ICS Section / Assignment / Quals	Contact Information	(X)	In	Out
				☐		
				☐		
				☐		
				☐		
				☐		
				☐		
				☐		
				☐		
				☐		
				☐		

Prepared by Date / Time	Date / Time Sent to Resources Unit

Form 17 Check In List (Personnel) ICS 211P-OS

Check In List Personnel ICS 211P-OS

Special Note – This form is used for personnel check in only.

Purpose - Personnel arriving at the incident can check in at various incident locations. Check-in consists of reporting specific information that is recorded on the form.

Preparation - The Check-In List is initiated at a number of incident locations including staging areas, base, camps, helibases, and ICP. Managers at these locations record the information and give it to the Resources Unit as soon as possible.

Distribution - Check-In Lists are provided to both the Resources Unit and the Finance/Administration Section. The Resources Unit maintains a master list of all equipment and personnel that have reported to the incident.

All completed original forms **must** be given to the Documentation Unit.

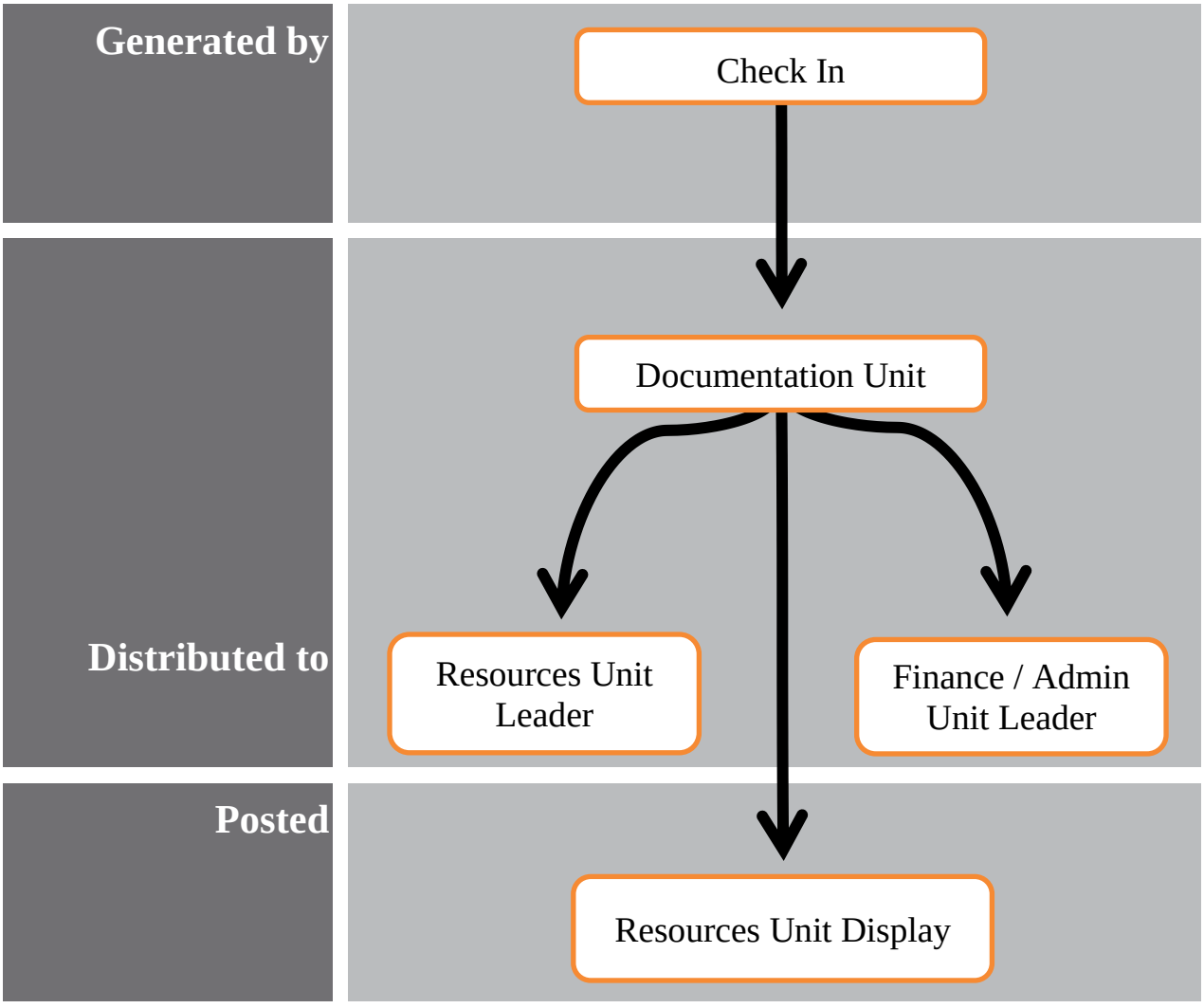

Figure 56 - Distribution of Check In List Personnel ICS 211P-OS

General Plan ICS 212-OS

Incident Name	**Operational Period (Date / Time)**	
	From	To
Prepared by	**Date / Time Prepared**	
Notification (Date / Time Completed)	**Response Initiation** (Date / Time Completed)	

Plan Item Timeframe (Enter days or weeks) →																					
Site Characterization, Forecasts, and Analysis																					
Site Safety																					
Site Security																					
Source Stabilization, Salvage, and Lightering																					
Surveillance																					
On Water Containment and Recovery																					
Sensitive Areas / Resources at Risk																					
Alternative Response Technology																					
Shoreline Protection and Recovery																					
Wildlife Protection and Rehabilitation																					
Logistics Support																					
Response Organization																					
Communications																					
Public Information																					
Financial Management and Cost Documentation																					
NRDA and Claims																					
Training																					
Information Management																					
Restoration / Mitigation																					
Waste Management																					
Demobilization																					

Form 18 General Plan ICS 212-OS

General Plan ICS 212-OS

Purpose - The General Plan form displays the progress and planned start and end dates for various incident response activities. Some standard activities have been listed on the form and blank lines are provided at the bottom of the form for planning and tracking additional incident-specific activities.

Preparation - The Planning Section completes the General Plan form when requested by the Unified Command.

Distribution - The General Plan form will be given to the Unified Command and all General Staff as part of the incident summary.

All completed original forms **must** be given to the Documentation Unit.

Item Title	Instructions
Incident Name	Enter the name assigned to the incident
Prepared by	Enter the name of the Planning Section Chief completing the form
Date / Time	Enter the date (month, day, year) and time (24 hour clock) the form was prepared
Operational Period	Enter the time interval for which the form applies. Record the start and end date and time (24 hour clock)
Notification	Enter the date and time that required notifications were completed
Response Initiation	Enter the date and time that the Response Initiation is completed
Plan Item and Timeframe	Enter specific dates, or day number or week number in the top row to indicate the timeframe being covered by this form. Then enter either descriptive text or shading to the right of each activity to indicate the beginning and estimated end for that activity during this incident response

Table 93 - General Plan ICS 212-OS Instructions

Unit Log ICS 214-OS

Incident Name	**Operational Period (Date / Time)**	
	From	To
Unit Name / Designators		
Unit Leader (name and ICS position)		

Personnel Assigned

Name	ICS Position	Home Base

Activity Log (continue on reverse)

Time	Major Events

Prepared by (Resources Unit)	**Date / Time**

Record all Unit activity » Supervisor at end of shift » Documentation Unit

Unit Log ICS 214-OS (continued)

Incident Name	**Operational Period (Date / Time)**	
	From	To

Activity Log (continuation sheet)

Time	Major Events

Prepared by	**Date / Time**

Record all Unit activity » Supervisor at end of shift » Documentation Unit

page 2 of 2

Form 19 Unit Log ICS 214-OS

Unit Log ICS 214-OS

Special Note - ICS 214-OS is used to log activities for an entire unit, whereas the ICS 214A-OS is designed for individual use.

Purpose - The Unit Log records details of unit activity, including strike team activity. These logs provide the basic reference from which to extract information for inclusion in any after-action report.

Preparation - A Unit Log is initiated and maintained by Command Staff members, Division/Group Supervisors, Air Operations Groups, Strike Team/Task Force Leaders, and Unit Leaders. Completed logs are submitted to supervisors who forward them to the Documentation Unit.

Distribution - The Documentation Unit maintains a file of all Unit Logs.

All completed original forms **must** be given to the Documentation Unit.

Item Title	Instructions
Incident Name	Enter the name assigned to the incident
Operational Period	Enter the time interval for which the form applies. Record the start and end date and time (24 hour clock)
Unit Name / Designators	Enter the title of the organizational unit or resource designator (e.g. Facilities Unit, Safety Officer, Strike Team)
Unit Leader	Enter the name and ICS Position of the individual in charge of the Unit
Personnel Assigned	List the name, position, and home base of each member assigned to the unit during the operational period
Activity Log	Enter the time and briefly describe each significant occurrence or event (e.g. task assignments, task completions, injuries, difficulties encountered, etc.)
Prepared by	Enter the name of the Planning Section Chief completing the form
Date / Time	Enter the date (month, day, year) and time (24 hour clock) the form was prepared

Table 94 - Unit Log ICS 214-OS Instructions

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Individual Log ICS 214A-OS			
Incident Name		**Operational Period (Date / Time)**	
		From	To
Individual Name	**ICS Section**	**Assignment / Location**	

Activity Log	
Time	Major Events

Prepared by	**Date / Time**

Record all Unit activity » Supervisor at end of shift » Documentation Unit

Form 20 Individual Log ICS 214A-OS

Individual Log ICS 214A-OS

Special Note - This optional ICS 214A-OS is a log for individual use, and ICS 214-OS is designed to log activities for an entire unit.

Purpose - The Individual Log, while not required, records details of each individual's activities. These logs provide a basic reference from which to extract information for inclusion in any after-action report.

Preparation - An Individual Log can be initiated and maintained by each member of the ICS. Completed logs are forwarded to supervisors who provide copies to the Documentation Unit.

Distribution - The Documentation Unit maintains a file of all Individual Logs.

All completed original forms **must** be given to the Documentation Unit.

Item Title	Instructions
Incident Name	Enter the name assigned to the incident
Operational Period	Enter the time interval for which the form applies. Record the start and end date and time (24 hour clock)
Individual Name	Enter the name of the individual
ICS Section	Enter the ICS Section to which the individual is assigned
Assignment / Location	Enter the assignment or location for the individual
Activity Log	Enter the time and briefly describe each significant occurrence or event (e.g. task assignments, task completions, injuries, difficulties encountered, etc.)
Prepared by	Enter name and title of the person completing the log. Provide log to immediate supervisor, at the end of each operational period
Date / Time	Enter the date (month, day, year) and time (24 hour clock) the form was prepared

Table 95 - Individual Log ICS 214A-OS Instructions

Operational Planning Worksheet ICS 215-OS

Incident Name	Operational Period (Date / Time)	
	From	To
Prepared by	**Date / Time Prepared**	

Division / Group or Location	Work Assignments	Resources / Equipment															Notes / Remarks	Reposting Location	Requested Arrival Time	'X' if a 204A is needed
		Resources																		
		Req.																		
		Have																		
		Need																		
		Req.																		
		Have																		
		Need																		
		Req.																		
		Have																		
		Need																		
		Req.																		
		Have																		
		Need																		
		Req.																		
		Have																		
		Need																		
		Req.																		
		Have																		
		Need																		
		Req.																		
		Have																		
		Need																		
	Total Resources Required																			
	Total Resources on Hand																			
	Total Resources Needed																			

Form 21 Operational Planning Worksheet ICS 215-OS

Operational Planning Worksheet ICS 215-OS

Purpose - This form communicates to the Resources Unit the resources needed as a result of decisions made during the Tactics and Planning meetings. The Worksheet is used by the Resources Unit to complete the Assignment List (ICS 204-OS) and by the Logistics Section Chief for ordering resources. The worksheet may also be used by the Resources Unit Leader to complete the Assignment List Attachment(s) (ICS 204A-OS), if the Operations and Planning Section Chiefs deem it necessary.

Preparation - This form is initiated at the Tactics Meeting and modified and finalized at the Planning Meeting. For ease of use, the form should be enlarged to poster size. This form is principally crafted by the Operations and Planning Section Chiefs. When decisions are reached, the appropriate resource information should be recorded on the form. Use additional sheets, as needed.

Distribution - When the work assignments and accompanying resource allocations are agreed to, the form is distributed to the Resources Unit to help prepare Assignment Lists (ICS 204-OS) and any needed Assignment List Attachment(s) (ICS 204A-OS). The Planning Section will use a copy of this worksheet for preparing resource requests for the next operational period.

All completed original forms **must** be given to the Documentation Unit.

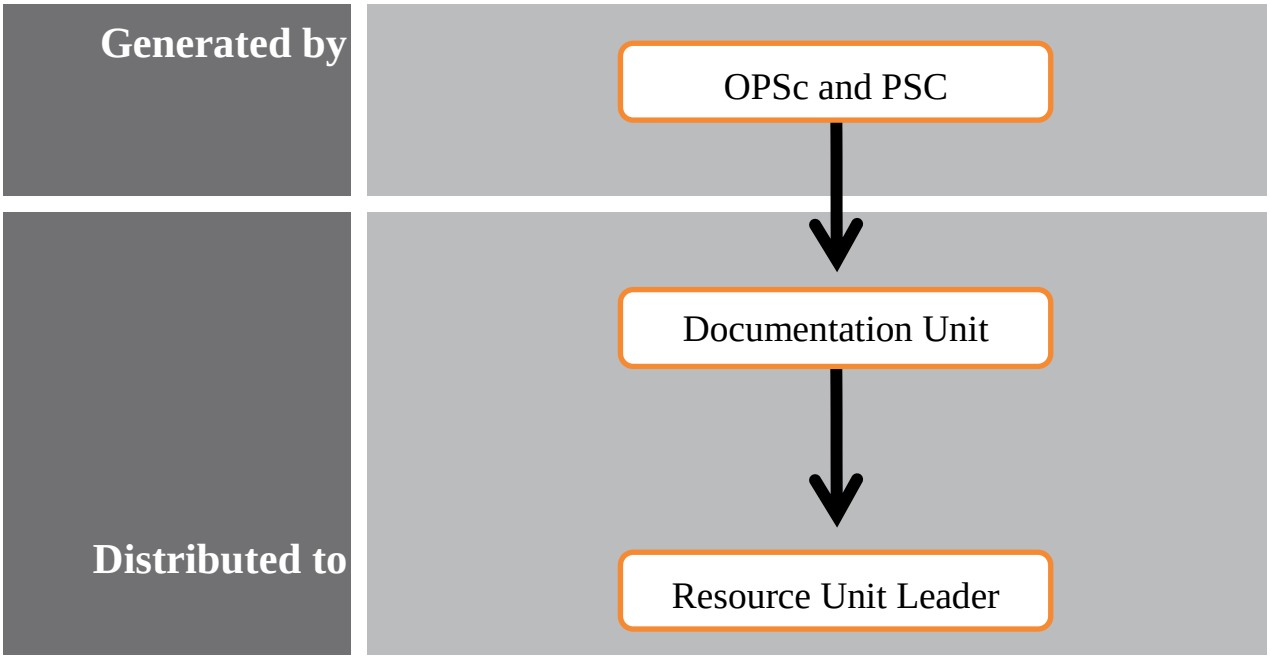

Figure 57 - Distribution of Operational Planning Worksheet ICS 215-OS

Radio Requirements Worksheet ICS 216												
Incident Name						**Operational Period (Date / Time)**						
						From		To				
Branch			**Agency**			**Tactical Frequency**						
Division Group			**Division Group**			**Division Group**			**Division Group**			
Agency			**Agency**			**Agency**			**Agency**			
Agency	ID No.	Radio Rqmts.	Agency	ID No.	Radio Rqmts.	Agency	ID No.	Radio Rqmts.	Agency	ID No.	Radio Rqmts.	
Prepared by				**Date / Time Prepared**					*Page*			

Form 22 Radio Requirements Worksheet ICS 216

Radio Requirements Worksheet ICS 216

Purpose - The Radio Requirements Worksheet is used to develop the total number of personal portable radios required for each Division/Group and Branch. It provides a listing of all units assigned to each Division, and thus depicts the total incident radio needs.

Initiation of Form - The worksheet is prepared by the Communications Unit for each operational period and can only be completed after specific resource assignments are made and designated on Assignment Lists. This worksheet need not be used if the Communications Unit Leader can easily obtain the information directly from Assignment Lists.

Distribution - The worksheet is for internal use by the Communications Unit and therefore there is no distribution of the form.

Item Title	Instructions
Incident Name	Enter the name assigned to the incident
Operational Period	Enter the time interval for which the form applies. Record the start and end date and time (24 hour clock)
Branch	Enter the Branch number (I, II, etc.) for which radio requirements are being prepared
Agency	Enter the three-letter designator of the agency staffing the Branch Director position (e.g. VNC, CDF, ANF, LFD, etc.)
Tactical Frequency	Enter the radio frequency to be used by the Branch Director to communicate with each Division/Group Supervisor in the Branch
Division / Group	Enter for each Division/Group in the Branch the Division/Group identifier (A, B, etc.) and the agency assigned (e.g. LAC, VNC, etc.)
Agency / ID no. / Radio Requirements	List all units assigned to each Division/Group. Record the agency designator, unit or resource identification, and total number of radios needed for each unit or resource
Prepared by	Enter name and title of the person completing the log. Provide log to immediate supervisor, at the end of each operational period
Date / Time	Enter the date (month, day, year) and time (24 hour clock) the form was prepared

Table 96 - Radio Requirements Worksheet ICS 216 Instructions

Radio Frequency Assignment Worksheet ICS 217

Incident Name	Operational Period (Date / Time)	
	From	To

Radio Data: Source	Function	CH#	Frequency	Incident Organization: Branch	Division	Division	Division	Branch	Division	Division	Division	Branch	Division	Division	Division	Incident Commander	Safety Officer	Operations section Chief	Air Operations	Air Tactical Supervisor	Planning Section Chief	Ground Support Unit	Base Unit				Command Centre	Total by Req.
Agency: ID			CH#	Frequency																								
Total Radios Required																												

Prepared by	Date / Time Prepared

Form 23 Radio Frequency Assignment Worksheet ICS 217

Radio Frequency Assignment Worksheet ICS 217

Purpose - The Radio Frequency Assignment Worksheet is used by the Communications Unit Leader to assist in determining frequency allocations.

Initiation of Form - Cache radio frequencies available to the incident are listed on the form. Major agency frequencies assigned to the incident should be added to the bottom of the worksheet.

Distribution - The worksheet, prepared by the Communications Unit, is for internal use.

Item Title	Instructions
Incident Name	Enter the name assigned to the incident
Operational Period	Enter the time interval for which the form applies. Record the start and end date and time (24 hour clock)
Incident Organization	List frequencies allocated for each channel for each organizational element activated, record the number of radios required to perform the designated function on the specified frequency
Radio Data	For each radio cache and frequency assigned, record the associated function. Functional assignments are: a. Command b. Support c. Division tactical d. Ground-to-air
Agency	List the frequencies for each major agency assigned to the incident. Also list the function and channel number assigned.
Total Radios Required	Totals for each row and column are calculated automatically. This provides the number of radios required by each organizational unit and the number of radios using each available frequency.
Prepared by	Enter name and title of the person completing the log. Provide log to immediate supervisor, at the end of each operational period
Date / Time	Enter the date (month, day, year) and time (24 hour clock) the form was prepared

Table 97 - Radio Frequency Assignment Worksheet ICS 217 Instructions

Support Vehicle Inventory ICS 218

Incident Name	Operational Period (Date / Time)	
	From	To

Vehicle Information – use a separate sheet for each vehicle category

Type	Make	Capacity / Size	Agency / Owner / Rental Company	ID Number	Location	Released To	Time Out	Time Returned

Prepared by (Ground Support Unit)	Date / Time Prepared	*Page*

Form 24 Support Vehicle Inventory ICS 218

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Air Operations Summary ICS 220-OS

Incident Name	Operational Period (Date / Time)	
	From	To
Distribution ☐ Fixed Wing Bases ☐ Helibase	**Remarks** (Special Instructions, Safety Notes, Hazards, Priorities)	

Personnel and Communications

	Air Operations Director	Air / Air Frequency	Air / Ground Frequency
Air Operations Director			
Air Tactical Supervisor			
Air Support Supervisor			
Helicopter Coordinator			
Fixed Wing Coordinator			

Location / Function	Assignment	Fixed Wing		Helicopter		Time		Aircraft Assigned	Operating Base
		Number	Type	Number	Type	Available	Commence		
	Totals								

Prepared by	Date / Time Prepared	Air Operation Support Equipment

Form 25 Air Operations Summary ICS 220-OS

Air Operations Summary ICS 220-OS

Purpose - The Air Operations Summary provides the Air Operations Branch with the number, type, location, and specific assignments of aircraft.

Preparation - The summary is completed by the Operations Section Chief or the Air Operations Branch Director during each Planning Meeting. General air resource assignment information is obtained from the Operational Planning Worksheet (ICS 215-OS). Specific designators of the air resources assigned to the incident are provided by the Air and Fixed-Wing Support Groups.

Distribution - After the summary is completed by Air Operations personnel (except Aircraft Assigned), the form is given to the Air Support Group Supervisor, who completes the form by indicating the designators of the helicopters and fixed-wing aircraft assigned missions during the specified operational period. This information is provided to Air Operations personnel who, in turn, give the information to the Resources Unit.

All completed original forms **must** be given to the Documentation Unit.

Item Title Incident	Instructions
Incident Name	Enter the name assigned to the incident
Operational Period	Enter the time interval for which the form applies. Record the start and end date and time (24 hour clock)
Distribution	Check the block and enter the time and date when ICS 220-OS and attachments were sent to all fixed-wing bases and helibases supporting the incident
Personnel and Communications	List the names of those assigned to each position, and the air-air and air-ground frequencies to be used
Remarks	Enter the special instructions or information, including safety notes, hazards, and priorities for Air Operations personnel
Location / Function	Enter the assigned location and function of the aircraft
Assignment	Enter the scope of work the aircraft is assigned to complete
Fixed Wing	Indicate the number and type of fixed-wing aircraft available for this Location / Function
Helicopters	Indicate the number and type of helicopters available for this Location / Function
Time	Indicate when aircraft will be available for use and when operations commence (24 hour clock)
Aircraft Assigned	Enter the designators of the aircraft assigned. Gather information from Resources Unit, helibases, and fixed-wing bases
Operating Base	Enter the base (helibase, helispot, fixed-wing base) from which each air resource is expected to initiate operations
Totals	Enter the total number of fixed-wing and helicopter aircraft assigned to the incident in the Number columns. Enter the total number of each type of aircraft assigned in the Type columns
Air Operations Support Equipment	List the designators and location of other support resources assigned to Air Operations
Prepared by	Enter name and title of the person completing the log. Provide log to immediate supervisor, at the end of each operational period
Date / Time	Enter the date (month, day, year) and time (24 hour clock) the form was prepared

Table 98 - Air Operations Summary ICS 20-OS Instructions

Demob Check Out ICS 221-OS		
Incident Name	**Operational Period (Date / Time)**	
	From	To
Unit / Personnel Released	**Release Date / Time**	
Unit Personnel		

You and your resources have been released, subject to signoff from the following: (Demob. Unit Leader 'X' appropriate box(es))
Logistics Section
☐ Supply Unit
☐ Communications Unit
☐ Facilities Unit
☐ Ground Unit
Planning Section
☐ Documentation Unit
Finance / Admin Section
☐ Time Unit
Other
☐
☐
☐
Remarks

Prepared by	**Date / Time**

Form 26 Demob Check Out ICS 221-OS

Demob Check Out ICS 221-OS

Purpose - This form provides the Planning Section information on resource releases from the incident.

Preparation - The Demobilization Unit Leader or the Planning Section initiates this form. The Demobilization Unit Leader completes the top portion of the form after the resource supervisor has given written notification that the resource is no longer needed.

Distribution - The individual resource will have the unit leader initial the appropriate box(es) in item 5 prior to release from the incident. After completion, the form is returned to the Demobilization Unit Leader or the Planning Section.

All completed original forms **must** be given to the Documentation Unit.

Item Title	Instructions
Incident Name	Enter the name assigned to the incident
Operational Period	Enter the time interval for which the form applies. Record the start and end date and time (24 hour clock)
Strike Team / Unit / Personnel Released	Enter name of Strike Team, Unit or personnel being released
Release Date / Time	Enter date (month, day, year) and time (24-hour clock) of anticipated release
Strike Team / Unit / Personnel	Demobilization Unit Leader will enter an 'X' in the box to the left of those units requiring check-out. Identified Unit Leaders are to initial to the right to indicate release **Note** Blank boxes are provided for any additional unit requirements as needed, (e.g. Safety Officer, Agency Rep., etc.)
Remarks	Enter any additional information pertaining to demobilization or release (e.g. transportation needed, destination, etc.)
Prepared by	Enter name and title of the person completing the log. Provide log to immediate supervisor, at the end of each operational period
Date / Time	Enter the date (month, day, year) and time (24 hour clock) the form was prepared

Table 99 - Demob Check Out ICS 221-OS Instructions

Claims Log ICS 227

Incident Name	**Operational Period (Date / Time)**	
	From	To

Time	Claim	Property Owner	Location on Incident	Claims Form Initiated	Org. Reps. Advised	Property Owner Contacted	Investigation Started	Claims Form Completed	Status

Prepared by (Compensation / Claims Unit Leader)	**Approved by** (Finance / Admin Section Chief)
Date / Time	**Date / Time**

Form 27 Claims Log ICS 227

Claims Log ICS 227

Purpose - The Claims Log is used to provide a summary of information related to the tracking of incident-related claims.

Preparation - Completed by the Claims Unit Leader.

Distribution - The Claims Unit maintains a file of logs.

All completed original forms **must** be given to the Documentation Unit.

Item Title	Instructions
Incident Name	Enter the name assigned to the incident
Operational Period	Enter the time interval for which the form applies. Record the start and end date and time (24 hour clock)
Time	Enter the time of notification of accident and/or injury (24-hour clock)
Claim	Enter the nature of claim (e.g. damaged fence, dislocated shoulder, etc.)
Property Owner	Enter the property owner's name if property is involved
Location on Incident	Enter the general location in order to assist with follow-up
Claims Form Initiated	Initial when a claims form has been initiated
Agency Reps. Advised	Initial when an Organization Rep from an employing organization is advised
Property Owner Contacts	Initial when the property owner has been contacted (if property is involved)
Investigation Started	Initial if an investigation is started
Claims Form Completed	Initial when claims form is completed
Status	Report status of log entry at completion of operational period (e.g. pending, dropped, completed, etc.)
Prepared by	Enter the name and position of the person completing the form (usually the Compensation / Claims Unit Leader)
Approved by	Enter the name and position of the person approving the form (usually the Finance / Admin Section Chief)
Date / Time	Enter the date (month, day, year) and time (24 hour clock) the form was prepared

Table 100 - Claims Log ICS 227 Instructions

Incident Cost Summary ICS 229			
Incident Name		**Operational Period (Date / Time)**	
		From	To
Mission / Task			**Cost**
A			

B		
C		
D		
E		
F		
G		
H		
I		
J		
K		
L		
M		
	Estimated Operational Period Total	
	Estimated Incident Total	

Prepared by (Cost Unit Leader)	**Date / Time**

Form 28 Incident Cost Summary ICS 229

Incident Cost Summary ICS 229

Purpose - The Incident Cost Summary (ICS 227) is used to provide a summary of incident costs for a given operational period. It may also be used for collective incident costs, or individual organization costs.

Preparation - The Incident cost Summary is completed by the Cost Unit Leader.

Note
Unless specific totals are available, all entries are best estimates at the time the form is completed. A more compressive Incident Cost Summary version may be used for incidents that involve many resources or are long in duration.

Distribution - The Cost Unit maintains a file of Incident Cost Summary forms.

All completed original forms **must** be given to the Documentation Unit.

Item Title	Instructions
Incident Name	Enter the name assigned to the incident
Operational Period	Enter the time interval for which the form applies. Record the start and end date and time (24 hour clock)
Mission / Task	Enter the specific mission/tasking for which a cost-estimated will be included for this operational period (e.g. debris removal, perimeter control, reception centre setup, etc)
Cost	Enter the estimated cost corresponding to specific mission/tasks in the Mission/Task column
Estimated Operational Period Total	Enter the estimated total of all costs for this operational period
Estimated Incident Total	Enter the estimated total of all costs for the entire incident. For incidents with a single operational period, this will be the same as for the 'Estimated Operational Period Total'. For incidents with multiple Operational Periods, this section will only be completed at the end of the incident
Prepared by	Enter the name and position of the person completing the form (usually the Cost Unit Leader)
Date / Time	Enter the date (month, day, year) and time (24 hour clock) the form was prepared

Table 101 - Incident Cost Summary ICS 229 Instructions

Daily Meeting Schedule ICS 230-OS

Incident Name	Operational Period (Date / Time)	
	From	To

Meeting Schedule (commonly-held meetings are included)

Date / Time	Meeting Name	Purpose	Attendees	Location
	Tactics Meeting	Develop primary and alternate Strategies to meet Incident Objectives for the next Operational Period	PSC, OPS, LSC, EUL, RUL & SUL	
	Planning Meeting	Review status and finalize strategies and assignments to meet Incident Objectives for the next Operational Period	Determined by the IC/UC	
	Operations Briefing	Present IAP and assignments to the Supervisors / Leaders for the next Operational Period	IC/UC, Command Staff General Staff, Branch Directors, Div. Sups., Task Force/Strike Team Leaders and Unit Leaders	
	Unified Comment Objectives Meeting	Review / identify objectives for the next Operational Period	Unified Command members	

Prepared by (Situation Unit Leader)	**Date / Time**

Form 29 Daily Meeting Schedule ICS 230-OS

Daily Meeting Schedule ICS 230-OS

Purpose - The Daily Meeting Schedule records information about the daily scheduled meeting activities.

Preparation - This form is prepared by the Situation Unit Leader and coordinated through the Unified Command for each operational period or as needed. Commonly-held meetings are already included in the form. Additional meetings, as needed, can be entered onto the form in the spaces provided. Time and location for each meeting must be entered. If any of these standard meetings are not scheduled, they should be crossed out on the form.

Distribution - After coordination with the Unified Command, the Situation Unit Leader will duplicate the schedule and post a copy at the Situation Status Board and distribute to the Command Staff, Section Chiefs, and appropriate Unit Leaders.

All completed original forms **must** be given to the Documentation Unit.

Item Title	Instructions
Incident Name	Enter the name assigned to the incident
Operational Period	Enter the time interval for which the form applies. Record the start and end date and time (24 hour clock)
Meeting Schedule	For each scheduled meeting, enter the date/time, meeting name, purpose, attendees, and location. **Note** Commonly-held meetings are included in the form. Additional meetings, as needed, can be entered onto the form in the spaces provided. Time and location for each meeting must be entered. If any of the standard meetings are not scheduled, they should be deleted from the form (normally the Situation Unit Leader)
Prepared by	Enter name and title of the person preparing the form, normally the Situation Unit Leader
Date / Time	Enter the date (month, day, year) and time (24 hour clock) the form was prepared

Table 102 - Daily Meeting Schedule ICS 230-OS Instructions

Meeting Summary ICS 231-OS	
Incident Name	**Meeting (Date / Time)**
Meeting Name	
Meeting Location	
Facilitator	
Attendees	
Notes (with summary of decisions and action items)	
Prepared by (Situation Unit Leader)	**Date / Time**

Form 30 Meeting Summary ICS 231-OS

Meeting Summary ICS 231-OS

Purpose - The Meeting Summary provides more detailed information concerning the attendees and notes from a particular meeting.

Preparation - This form is prepared under the direction of the facilitator of the meeting and coordinated through the Unified Command.

The following lists the usual facilitator for each meeting:

- Unified Command Meeting - Facilitated by a member of the Unified Command
- Initial Incident ICS 201 Briefing - Facilitated by the initial Incident Commander
- Tactics Meeting - Facilitated by the Planning Section Chief
- Planning Meeting - Facilitated by the Planning Section Chief
- Operations Briefing - Facilitated by the Planning Section Chief
- Command Staff Meeting - Facilitated by a member of the Unified Command
- Business Management Meeting - Facilitated by a member of the Unified Command
- Agency Representative Meeting - Facilitated by the Liaison Officer
- Press Briefing - Facilitated by the Information Officer

Distribution - After completion and approval by Unified Command, the Situation Unit Leader will distribute a copy of the Meeting Summary to the attendees and post it at the Situation Display.

All completed original forms **must** be given to the Documentation Unit.

Item Title	Instructions
Incident Name	Enter the name assigned to the incident
Meeting Date / Time	Enter date and time of meeting (24 hour clock)
Meeting Name	Enter name of meeting
Meeting Location	Enter location of meeting
Facilitator	Enter the name and position of the meeting facilitator
Attendees	List the personnel who need to attend the meeting
Notes	List a summary of decisions and action items addressed in the meeting
Prepared by	Enter name and title of the person preparing the form
Date / Time	Enter the date (month, day, year) and time (24 hour clock) the form was prepared

Table 103 - Daily Meeting Schedule ICS 231-OS Instructions

Resources at Risk Summary ICS 232-OS			
Incident Name		**Operational Period (Date / Time)**	
		From	To
Environmentally Sensitive Areas and Wildlife Issues			
Site #	Priority	Site Name and / or Physical Location	Site Issues
Narrative			
Site #	Priority	Site Name and / or Physical Location	Site Issues
Narrative			
Prepared by (Environmental Unit Leader)		**Date / Time**	

Form 31 Resources at Risk Summary ICS 232-OS

Resources at Risk Summary ICS 232-OS

Purpose - The Resources at Risk Summary provides information about sites in the incident area which are sensitive due to environmental, archaeo-cultural, or socio-economic resources at risk, and identifies incident-specific priorities and issues. The information recorded here may be transferred to ICS 232A-OS, which acts as a key to the Area Contingency Plan (ACP) or Geographic Response Plan (GRP) site numbers shown on the Situation Map.

Preparation - The Environmental Unit Leader, with input from resource trustees, will complete this form for each operational period. It should be updated prior to the Planning Meeting.

Distribution - This form must be forwarded to the Planning Section Chief for possible inclusion in the IAP.

All completed original forms **must** be given to the Documentation Unit.

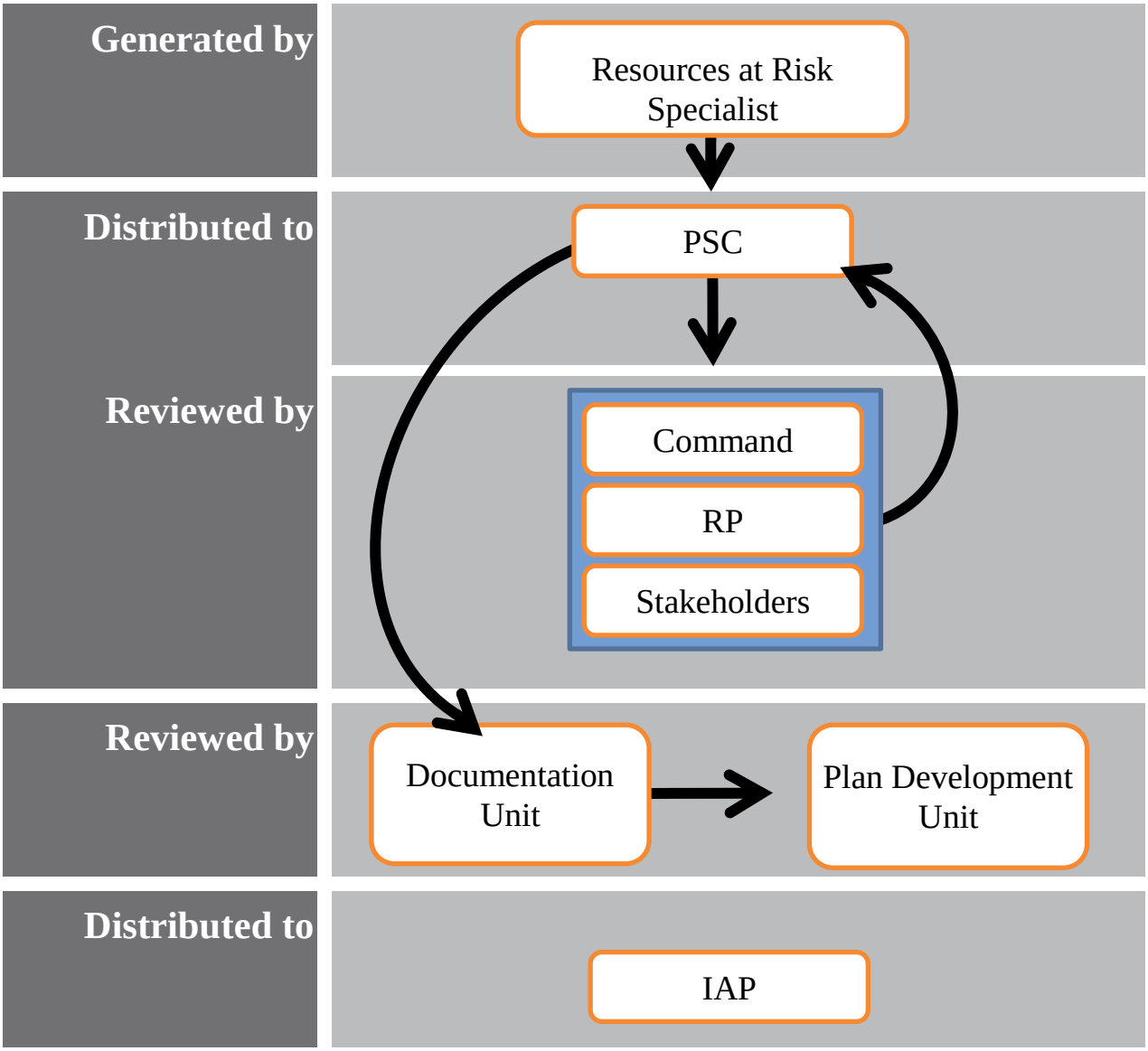

Figure 58 - Distribution of Resources at Risk Summary ICS 232-OS

Incident Open Action Tracker ICS 233-OS

Incident Name

No.	Item	For / POC	Briefed POC (x)	Start Date	Status	Target Date	Actual Date
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

Form 32 Incident Open Action Tracker ICS 233-OS

Incident Open Action Tracker ICS 233-OS

Purpose - Open Actions Tracker: is used by the Incident Commander/Unified Command (IC/UC) to assign and track tasks/actions to IMT personnel that do not rise to the level of being an Incident Objective; is duplicated and provided to Command and General Staff members, giving them the open tasks/actions needing to be completed and a means to track the open tasks/actions they have been assigned.

Note

This form may also be used by Command and General Staff for tracking tasks/actions within a Section/Staff element.

Preparation - The Planning Section Chief (PSC) is responsible for maintaining the Open Actions Tracker for the IC/UC and typically utilizes the Documentation Unit Leader (DOCL) to assist in this forms development and updating. The PSC should ensure all Command and General Staff are prepared to discuss their assigned tasks/actions during the Command and General Staff and Planning Meetings.

Distribution - When completed, the form is duplicated and copies are distributed to the Unified Command and Command and General Staff. It is also posted on a status board located at the ICP

All completed original forms **must** be given to the Documentation Unit.

Item Title Incident	Instructions
Incident Name	Enter the name assigned to the incident
Incident Name	Enter the name assigned to the incident
No.	Enter number of task in sequential order (1, 2, 3, …)
Item	Enter short descriptive of the task/action to be completed. Tasks/Actions are important to be completed but are not an Incident Objective which are documented on the ICS-202 form
For/POC	Enter the Point of Contact (POC), the responsible person/section
Briefed to POC	Enter 'X', when the task/action has been briefed to the POC/responsible person. This is to ensure that tasks/actions identified outside of the POC's presence (during Unified Command Meeting for example) are briefed to and acknowledged by the identified POC
Start Date	Enter the date the task/action was initially assigned under 'Start Date'
Status	Enter status of item. For example; 'Awaiting LE Gear', 'Update needed', 'Awaiting Feedback'. When the item is completed, the word 'completed' is entered and if working in MS Excel, the task is cut and pasted into the worksheet labeled 'COMPLETED'
Target Date	Enter deadline task/action should be completed. In the Excel Worksheet, there is a hidden formula that shows green, yellow and red blocks. When the target date is one day away, the block turns yellow. When it is overdue it turns red. When the block is yellow, it serves as a reminder to the UC/POC that the target date is nearing and the POC needs to complete the task or the target date needs to be updated
Actual Date	Enter actual date task/action completed

Table 104 - Incident Open Action Tracker ICS 233-OS Instructions

Note

In order to ensure the red and yellow reminders work for new tasks, the user simply copies a task line, inserts it into the worksheet and overtypes the new task information.

Work Analysis Matrix ICS 234-OS		
Incident Name	**Operational Period (Date / Time)**	
	From	To

Operation's Objectives	Optional Strategies	Tactics / Work Assignments
Desired Outcome	How	Who, What, Where, When

Prepared by (Operations Section Chief)	**Date / Time**
	REV 03-12 page _____ of _____

Form 33 Work Analysis Matrix ICS 234-OS

Work Analysis Matrix ICS 234-OS Instructions

Purpose - The Work Analysis Matrix is designed to help select the best strategies and tactics to achieve the operational objectives. This optional form assists staff in carrying out incident objectives by outlining the who, what, where, when, and how of the response. The tactics from this form carry forward to the 'Work Assignment' on the ICS-215. Another purpose of the ICS-234 is that it presents alternative (or what-if) strategies and tactics to respond to bad weather, sudden changes in operational conditions, etc. This form is simply a formalized version of how most OSCs tend to think in order to turn objectives into tactical field work.

Preparation - The Work Analysis Matrix, if used, is usually completed by the Operations Section Chief and Planning Section Chief prior to the Tactics Meeting.

Distribution - All completed original forms **must** be given to the Documentation Unit.

Item Title	Instructions
Incident Name	Enter the name assigned to the incident
Operational Period	Enter the time interval for which the form applies. Record the start and end date and time (24 hour clock)
Operational Objectives	Enter the relevant Operational Objectives from the ICS 202, with numbers
Operational Strategies	Enter all strategies that could be used to meet the objective (how)
Tactics / Work / Assignments	Enter details, including as much as possible, who, what, where, and when, of work assignments to carry out Operational Strategies
Prepared by	Enter the name and position of the person preparing the form
Date / Time	Enter the date (month, day, year) and time (24 hour clock) the form was prepared

Table 105 - Work Analysis Matrix ICS 234-OS Instructions

Resource Request ICS 260-RR

Incident Name	**Priority**	☐ 0-2 hrs	☐ 2-4 hrs	☐ 5-11 hrs	☐ 12+ hrs
	Requestor				
Date/Time Prepared	**Request Number**				

Requestor / Operations

Request Information (use separate forms for dissimilar resources, priorities, delivery locations, supply sources)

Quantity	Kind	Type	Additional Resource Details: (additional specifications related to Kind/Type)	Requested Arrival Date / Time

Acceptable alternate and/or suggested sources

Requested Delivery/Reporting Location			
Location Contact Name		Location Contact Number	

Action (check and complete)

☐ Operations Section to Fill:	Operations Section Chief Approval *Date / Time*
☐ Logistics Section to Acquire:	

Finance

Financial Notes

Finance/Admin Chief Approval *Date / Time*

Plan

Situation Unit Notes	Resource Unit Notes

Documentation Unit Notes

Requestor notified of results via	☐ Radio	☐ Fax	☐ Email	☐ Phone	☐ _____
Requestor was notified by		Date / Time of Notification			

Logistics

Logistics Response to Request Information

Estimated Delivery Date / Time	Unit Cost	Extended

	Subtotal	
	Tax	
	Total	

Logistics Order Number	
Date / Time Received	
Supplier Name / Address / Contact	
Logistics Notes	
Ordered Date/Time	
Ordered by (and contact info)	
Logistics Chief Approval *Date / Time*	
Purchase Inventory Input by	
Purchase Inventory Number	
Vendor Number	
Sub-Category	
Index Code	

Form 34 Resource Request ICS 260-RR

Resource Request ICS 260-RR

Purpose - The Resource Request ICS 260-RR is used to request and track resources that are required for an incident.

Preparation - Generally, ICS 260-RR is initiated by the Requestor and submitted to the EOC Liaison, who in turn, submits the document to the EOC Logistics Section. The EOC Logistics Section will assign the resource request to the appropriate Branch and Unit Supply Facilities, to fill the request either from its inventories or by exercising its purchasing authority. ICS 260 must be approved by the Operations Section Chief and circulated to the Logistics, Finance and Admin, and Planning Sections to complete their respective portions.

Distribution - Completed forms are distributed to appropriate Branches and Units within the Logistics Section (generally the Supply Unit or Facilities Unit).

Resource Request ICS 260-RR Instructions		
Priority	Indicate the priority of the resources request by checking the appropriate box (Immediate, Urgent, Critical, and Scheduled)	
Incident Name	Print the name assigned to the incident	
Requestor	Print the name, position and contact info of the person making the request	
Request Number	Enter the number of the Resource Request (if applicable)	
Date/Time Prepared	Enter the date prepared (YYYY/MM/DD) and time (24-hour clock)	
Request Info	Quantity	Enter the quantity of resources being ordered
	Kind	Enter the 'kind' of the resources being ordered
	Type	Enter the 'type of resources being ordered
	Additional Resource Details	Enter a concise description of the item being ordered. The item description may include specification, size, capacity, support required, with operator, packaging, commodity/service codes (if applicable), kind and type
	Requested Arrival Date/Time	Enter the requested Arrival/Delivery date (YYYY/MM/DD) and time (24-hour clock). Enter the estimated Arrival/Delivery date (YYYY/MM/DD) and time (24-hour clock), if feasible
Acceptable alternate and/or suggested sources	Enter information on any acceptable alternate or suggested sources for resources	
Requested Delivery/Reporting Location	Enter information regarding the requested Delivery/Reporting Location, noting specific details as required (e. Staging Area No., or EOC Location)	
Location Contact Name	Include the name of the contact person at the Delivery/Reporting location, so the resources can be checked in	
Location Contact Phone No.	Include the contact number of the contact person at the Delivery/Reporting location, so the resources can be checked in	
Action	Check the appropriate box indicating whether the action will be filled by the Operations Section or routed to the Logistics section to acquire. Include additional details as required (e.g. the specific Operations Branch filling the request)	
Operations Chief Approval	Resource requests must be approved and signed-off by the Operations Section Chief. Include the date (YYYY/MM/DD) and time (24-hour clock)	
Logistics Response to Request Info	The Logistics section is to enter the Estimated Delivery Date/Time, Unit Cost and Extended Cost (as applicable), including appropriate Sub Totals, Taxes and Totals in the sub-column below	
Logistics Order No.	Enter the Logistics Order Number and the date (YYYY/MM/DD) and time (24-hour clock) received	
Date/Time Received	Enter the date and time the ICS 260-RR was received by logistics	
Supplier Name, Address, Contact Info	Enter the name, address and contact info of the supplier from which the resource is being sourced	
Logistics Notes	The Logistics Section is to enter any additional notes, as required	
Ordered Date and Time:	Enter the date (YYYY/MM/DD) and time (24-hour clock) the resource is ordered	
Ordered By	Enter the name and contact information of the person completing the order	
Logistics Chief Approval	Resource requests must be approved and signed-off by the Logistics Section Chief. Include the date (YYYY/MM/DD) and time (24-hour clock)	
Purchase Inventory Input By	Enter the name of the individual who enters the Purchase Inventory No (if applicable for your organization) including the date (YYYY/MM/DD) and time (24-hour clock)	
Purchase Inventory No.	Enter the Purchase Inventory number, if a purchase inventory control system is used by your organization. If a Purchase Inventory Number is not used by your organization, Resource Order Number may be used in its place	
Vendor No.	Enter the vendor number, if applicable	
Index Code	Enter the index code related to the purchase inventory number (if applicable for your organization)	
Sub-Category	Enter the sub-category related to the purchase inventory number (if applicable for your organization)	
Finance Notes	The Finance Section is to enter any additional notes, as required	
Finance/Admin Chief Approval	Resource requests should be approved and signed-off by the Finance/Admin Section Chief. Include the date (YYYY/MM/DD) and time (24-hour clock)	
Situation Unit Notes	The Situation Unit should sign off on all resource requests. Include the date (YYYY/MM/DD) and time (24-hour clock)	
Resource Unit Notes	The Resource Unit should sign off on all resource requests. Include the date (YYYY/MM/DD) and time (24-hour clock)	
Documentation Unit Notes	The Documentation Unit should sign off on all resource requests. Include the date (YYYY/MM/DD) and time (24-hour clock)	
Requestor notified of results via	Indicate the method by which the person making the resource request was notified	
Request notified by	Include the position, name, contact info of the person that notified the requestor	
Date/Time of Notification	Enter the date (YYYY/MM/DD) and time (24-hour clock) that the requestor was notified	

Table 106 - Resource Request ICS 260-RR Instructions

Health and Safety

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

A wide range of crude oils pass through the pipeline, including both sweet and sour crudes. However, many crude oils (including 'sweet' crudes) can emit potentially dangerous levels of H2S, so vapour monitoring is essential, especially early in a response. Crude oils can also emit potentially-dangerous levels of Benzene, Toluene, Ethyl Benzene and Zylene (BTEXs), which must also be monitored.

Many crude oils have low flash points (around -40°F), especially during the initial hours after being spilled. In all of these cases, the risk of accidental ignition and/or the inhalation of toxic vapours must be mitigated, and a detailed site assessment 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 vapours will diminish with time, due to reduced vapour production as the lighter components volatize, and vapours disperse. There are exceptions to this however; i.e. in some cases, where crude oil pools into thick layers, a skin may develop on the surface, trapping vapours. Later, if the skin is broken and the oil disturbed, the oil might emit vapours normally associated with freshly-spilled oil. In all cases, the results of the initial site assessment should be used to develop a Safety and Health Plan.

An Initial Site Health & Safety Plan 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 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.

Safety Guidelines

Skin Contact

The accidental absorption of toxins through skin/eye contact can be greatly reduced by the wearing of oil-resistant Personal Protective Equipment (PPE). These include:

- Approved Fire-Resistant Coveralls
- Hard Hats
- Chemical-resistant 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 Station (in the Warm Zone) to ensure that contamination is not spread into the cold zone

Inhalation of Vapours

The need for respiratory protection will be determined by the Safety Officer after a review of the SDS and vapour monitoring data retrieved from the initial site assessment. If toxic vapour levels are determined to exceed safe working limits, it might be possible for responders to work while wearing full-face respirators fitted with organic vapour cartridges. In this case, on-going vapour monitoring is essential to ensure that vapour levels do not exceed safe working limits.

Fire/Explosion

All hydrocarbon products are capable of ignition if certain conditions are met. Some crudes have low flash points (around -40° F), and pose fire and explosion risks. It is important to review the SDS to determine the flash point of the material spilled and to perform vapour monitoring (for LEL). However, the SDS does not replace the need for vapour monitoring. Whenever vapour levels exceed 10% of the LEL for any spilled crude, responders must leave the area immediately.

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.

Initial Health and Safety Plan

Incident Particulars

Incident Name				Date/Time	
Command Post Location				Site Phone Number	
Product		Estimated Volume		MSDS Available	☐ Yes ☐ No
ICS 201 Form Initiated	☐ Yes ☐ No	Person Responsible			
Internal/ External Notifications Made	☐ Yes ☐ No	Person Responsible			

Site Characterization

☐ Pipeline	☐ Storage Facility	☐ Truck	☐ Land	☐ Water	☐ Other (please specify)

Site Security & Access Points

Description

Site Hazards

☐ Fire/Explosion	☐ Equipment Operations	☐ Trenching/Excavation	☐ Fatigue	☐ Slips, Trips, and Falls
☐ Chemicals	☐ Motor Vehicles	☐ Confined Spaces	☐ Heat Stress	☐ Restricted Work Area
☐ Electrical	☐ Boat Operations	☐ UV Radiation	☐ Cold Stress	☐ Heavy Lifting
☐ Steam/Hot Water	☐ Helicopter Operations	☐ Overhead/Buried Utilities	☐ Weather	☐ Drum Handling
☐ Noise	☐ Shore Line Operations	☐ Pumps and Hoses	☐ Visibility	☐ Plants/Wildlife
				☐ Other

Atmospheric Monitoring – Initial Reading

O^2	%	LEL	%	Other (specify)
H_2S	ppm	Benzene	ppm	

Note - Additional results to be recorded in 'Event/ Safety Watch Log'

Control Measures

☐ Source of Release Secured	
☐ Site Secured	
☐ Valve(s) Closed	
☐ Energy Sources Locked/Tagged Out	
☐ Facility Shut Down	
☐ Other	
☐ First Aider _____	
☐ Safety Watch _____	
☐ Evacuation Plan	
☐ Fire Plan	

Site Setup

Communications Established	☐ Yes ☐ No
Work Zones Established	☐ Yes ☐ No
Fire Extinguisher Accessible	☐ Yes ☐ No
Decontamination Stations Established	☐ Yes ☐ No
First Aid Stations Established	☐ Yes ☐ No
Illumination Equipment Provided	☐ Yes ☐ No
Medical Surveillance Provided	☐ Yes ☐ No
Sanitation Facilities Provided	☐ Yes ☐ No

Muster Point _____

Hot Zone PPE Requirements

General	Other	Respiratory

Initial Health and Safety Plan

☐ Hard Hat ☐ FR Clothing ☐ Steel Toes ☐ Safety Glasses	☐ Face Shield ☐ Tinted Lens ☐ Impact Goggles ☐ Chemical Res. Clothing ☐ Leather Gloves ☐ Nitrile Gloves ☐ FR Rain Gear	☐ Rubber Boots ☐ High Vis. Vests ☐ PFDs ☐ Safety Harness ☐ Rubber Gloves ☐ Hearing Protection ☐ FR Tyvek	☐ SABA/Air Line w/Esc ☐ SCBA to be worn ☐ SCBA to be avail # ___ ☐ Air Purifying (full mask)	☐ Air Purifying (half mask) ☐ Cartridge Type ____ OV ☐ Cartridge Type ____ P(M) 100 ☐ Cartridge Type ____ P(M) 100/OV

Warm Zone PPE Requirements

General	Other		Respiratory	
☐ Hard Hat ☐ FR Clothing ☐ Steel Toes ☐ Safety Glasses	☐ Face Shield ☐ Tinted Lens ☐ Impact Goggles ☐ Chemical Res. Clothing ☐ Leather Gloves ☐ Nitrile Gloves ☐ FR Rain Gear	☐ Rubber Boots ☐ High Vis. Vests ☐ PFDs ☐ Safety Harness ☐ Rubber Gloves ☐ Hearing Protection ☐ FR Tyvek	☐ SABA/Air Line w/Esc ☐ SCBA to be worn ☐ SCBA to be avail # ___ ☐ Air Purifying (full mask)	☐ Air Purifying (half mask) ☐ Cartridge Type ____ OV ☐ Cartridge Type ____ P(M) 100 ☐ Cartridge Type ____ P(M) 100/OV

Training and Review

Hazwoper Training Records Verified for USA Operations	☐ Yes ☐ No
All Responders Have Reviewed This Plan	☐ Yes ☐ No

Completed by

page 2 of 2

Form 35 Initial Health and Safety Plan

Health and Safety Plan

This document is intended to facilitate the rapid development of a written Site Health and Safety Plan (SHSP). It is intended to address all health and 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.

Health and Safety Plan

Incident Particulars

Incident Name				Date/Time	
Command Post Location				Site Phone Number	
Product		Estimated Volume		MSDS Available	☐ Yes ☐ No
ICS 201 Form Initiated		☐ Yes ☐ No	Person Responsible		
Internal/ External Notifications Made		☐ Yes ☐ No	Person Responsible		

Site Characterization

☐ Land	☐ Water	☐ Other (please specify)		

Impacted Assets

☐ Pipeline	☐ Storage Facility	☐ Truck	☐ Other (please specify)

Weather

☐ Clear	☐ Cloudy	☐ Fog
☐ Rain	☐ Freezing Rain	☐ Hail
☐ Snow	☐ Lightening	

Wind

☐ Calm (0.5 km/hr; 0.3 mi./hr)
☐ Light (5-15 km/hr; 3-10 mi./hr)
☐ Moderate (15-30 km/hr; 10-20 mi./hr)
☐ Strong (30+ km/hr; 20+ mi./hr)

Site Security & Access Points

Description

Site Hazards

☐ Fire/Explosion	☐ Equipment Operations	☐ Trenching/Excavation	☐ Fatigue	☐ Slips, Trips, and Falls
☐ Chemicals	☐ Motor Vehicles	☐ Confined Spaces	☐ Heat Stress	☐ Restricted Work Area
☐ Electrical	☐ Boat Operations	☐ UV Radiation	☐ Cold Stress	☐ Heavy Lifting
☐ Steam/Hot Water	☐ Helicopter Operations	☐ Overhead / Buried Utilities	☐ Weather	☐ Drum Handling
☐ Noise	☐ Shore Line Operations	☐ Pumps and Hoses	☐ Visibility	☐ Plants/Wildlife
				☐ Other

Atmospheric Monitoring – Initial Reading

O^2	%	LEL	%	Other (specify)
H_2S	ppm	Benzene	ppm	

Note - Additional results to be recorded in 'Event/ Safety Watch Log'

Control Measures	Site Setup	
☐ Source of Release Secured	Communications Established	☐ Yes ☐ No
☐ Site Secured	Work Zones Established	☐ Yes ☐ No
☐ Valve(s) Closed	Fire Extinguisher Accessible	☐ Yes ☐ No
☐ Energy Sources Locked/Tagged Out	Decontamination Stations Established	☐ Yes ☐ No
☐ Facility Shut Down	First Aid Stations Established	☐ Yes ☐ No
☐ Other	Illumination Equipment Provided	☐ Yes ☐ No
	Medical Surveillance Provided	☐ Yes ☐ No

General Site Requirements

Health and Safety Plan

- Personnel entering the site must Sign-in at the Field Command Post or designated area, and must Sign-out before leaving the site
- 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
- The spill site has a No Smoking policy - Security at the Field Command Post will give directions to the designated Smoking Area
- Cameras and other electronic devices are not permitted on the Site unless approval has been given by the Health and Safety Department
- All Injuries or Unsafe Activities/ Conditions shall be immediately reported to the Work Leader or the Safety Watch
- 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
- 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 Meetings

- 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
- 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

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)

Health and Safety Plan

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	

Toxicological Hazards

☐ Inhalation ☐ Ingestion ☐ Skin

Substance		PEL / TLV		IDLH	
Substance		PEL / TLV		IDLH	
Substance		PEL / TLV		IDLH	

Future weather conditions that may affect Incident Site

Personnel Protection Requirements

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 2. FR Clothing 3. Steel toes 4. Safety Glasses 5. Face Shield 6. Tinted Lens 7. Splash Goggles 8. Chemical resistant clothing 9. Rubber boots 10. High Vis vests 11. PFDs 12. Flame Resistant or normal work clothing	13. FR rain gear 14. Leather Gloves 15. Nitrile gloves 16. Rubber Gloves 17. Hearing Protection 18. FR Tyvek 19. SABA/ air lines w/Esc	20. SCBA to be worn 22. SCBA to be avail. #____ 23. Air Purifying (full mask) 24. Air Purifying (half mask) 25. Cartridge Type ___OV 26. Cartridge Type ___ P(M) – 100 27. Cartridge Type ___ P(M)-100/ OV
	Flame Resistant or Coated Tyvex	Flame Resistant or Coated Tyvex				
	Chemical resistant steel toe boots	Chemical resistant steel toe boots	Eye & face protection			
	Chemical resistant gloves	Chemical resistant or leather gloves	Protective footwear			
		Eye protection	Gloves			
		Hard hat				

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

Health and Safety Plan

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 201form

General Diagram Instructions

- Site Diagram should include the following:
  - Sketch with major feature locations (buildings, drainage paths, roads, etc.)
  - Hazardous substance location
  - Work zones (exclusion, contamination reduction, support)
  - Command center and decontamination area
  - Access and access restrictions
  - Routes of entry
  - Wind direction
  - Emergency evacuation routes
  - Assembly points
  - First aid locations
  - Communication system

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

Health and Safety Plan			
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			
Other types of training			

Included Attachments
Amendment form
Tailgate meeting form
☐ Bites, stings & poisonous plant
☐ Boat operation

Health and Safety Plan
☐ Thermal Stress (Cold & Hypothermia)
☐ Confined Space Entry
☐ Cranes & mechanical lifting equipment
☐ Manual lifting
☐ Organic solvents
☐ Hydrogen sulfide
☐ Helicopter safety
☐ PPE
☐ Sanitation requirement
☐ Traffic safety guidelines
☐ Action levels
☐ MSDS
☐ Medical Monitoring Form
☐ Bites, stings & poisonous plant
Note - Air Monitoring Results, and Hot Zone Personnel Tracking **must** be documented

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

Health and Safety 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

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**	

Form 36 Health and Safety Plan (7 pages)

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Appendix F TNPI Forms

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Leak / Spill Activation Report

Trans-Northern

LEAK / SPILL ACTIVATION REPORT

For - All Line Leak Reports, Suspected or Actual
- All Spills over 10 Litres

CALL RECEIVED

Date: _____ Time: _____ Received By: _____

CALLER

Ask Caller: ARE YOU CALLING FROM A SAFE PLACE? ☐ Yes ☐ No (If no, ask to move to a safe location asap)

Name: _____ Telephone #: _____

Home Address: _____

Which Province? ☐ Quebec; ☐ Ontario; ☐ Alberta

Emergency Locate – Quebec, Alberta or Ontario **One Call Ticket #** _____

DESCRIPTION OF SITUATION:

Is there an odour present? ☐ Yes ☐ No Is there product evident? ☐ Yes ☐ No
Is there product evident on : ☐ Ground ☐ Water Is product gasoline or oil? ☐ Gas ☐ Oil
Has anyone hit/damaged Pipeline ☐ Yes ☐ No Is there a fire? ☐ Yes ☐ No
Can quantity be estimated? If yes, what scale? (i.e. size of a car, small truck, bus, No. of litres, etc.) _____

Detailed Description: _____

LOCATION OF INCIDENT:

Address: _____

Lot: _____ Concession: _____ Twp: _____ County: _____

Nearest road or intersection: _____

Name and Telephone Number of Person on Site (if different from above) _____ _____

TNPI Reference:

Map: _____ R/W: _____ Milepost:: _____ Chainage: _____

INDICATE (time) – TO WHOM CALL WAS PASSED:

Position	Name	Phone Number	Date-Time
TNPI Incident Commander			
TNPI Technical Advisor			
Other			

INVESTIGATION & RESPONSE (Response Level – Alert 1, 2 or 3):

Degree of Response: (___)

Result: **Date-Time:**

Limited Response: _____ _____
Investigation: _____ _____
Emergency Declared: _____ _____

Intelex Form # 005951
Form #810-Ver. 5

Rev. January 23, 2017.
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Trans-Northern

LEAK / SPILL ACTIVATION REPORT

EXTERNAL CONTACTS MADE:

Contact	Name	Phone	Time	Made by
Original Caller				
Comments:				
Fire				
Comments:				
Police				
Comments:				
EMS				
Comments:				
Municipality				
Comments:				
N.E.B. / E.R.C.B.				
Comments:				
T.S.B.				
Comments:				
Environment				
Comments:				
Land Owner				
Comments:				
Other Pipelines				
Comments:				
Product Owner				
Comments:				

INTERNAL CONTACTS MADE:

	When First Notified		When Results Reported	
CONTACT	**TIME**	**MADE BY**	**TIME**	**MADE BY**
Line Controller 905-770-3353				
TNPI Incident Commander				
TNPI Technical Advisor				
President				

Intelex Form # 005951
Form #810-Ver. 5

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Figure 59 - Leak / Spill Activation Report (2 pages)

Hazard Control Zoning Form

Hazard Control Zones

Important

Re-establish proper Hazard Control Zones if first responders do not have proper zones established upon TNPI's arrival.

Draw Protective Action Zone.

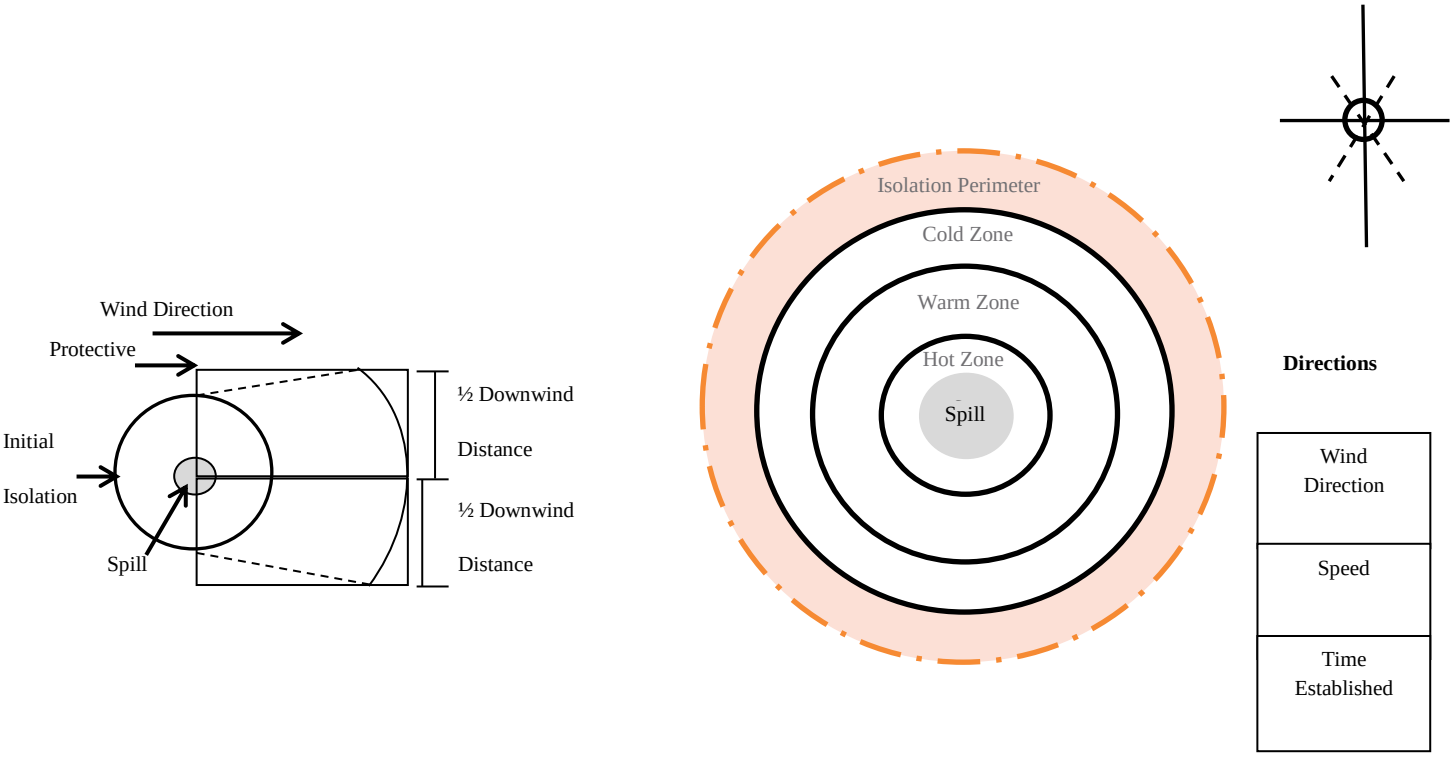

Figure 60 - Hazard Control Zones

Determine direction (north, east, south, west) and determine wind direction and speed. Draw Protective Action Zone as well as location of command post, staging area, decontamination corridor, perimeter security points as well as buildings, obstacles and other structures.

Zone Description	Distance from Inner to Outer Perimeter
Hot Zone (Initial Isolation) Distance Determine the Hot Zone Distance (Initial Isolation Distance) from results of direct reading instrumentation based on the products hazardous characteristics. If this cannot be completed use the recommended distance under the Public Safety Section (orange) or the Table of Initial Isolation Section (green) of the ERG 2008. The hot zone is the area immediately surrounding the incident which extends far enough to prevent adverse effects to personnel outside the zone	
Protective Action Zone Distance Draw the Protective Action Zone downwind of the initial isolation zone (example above). Determine the distance of the Protective Action Zone by measuring downwind exposures with a direct reading instrument. Also referencing the Protective Action Distance Section (green) of the NAERG 2008. If no distance is recommended in green Section, use recommended distance under the Public Safety Section (orange)	
Warm Zone Distance Determine UPWIND control zone where personnel and equipment decontamination and hot zone support take place. It includes control points for the access corridor, helping to prevent the spread of contamination. Must not be located within the Protective Action Zone	
Cold Zone Distance Determine UPWIND safety control zone that contains the command post and other support functions required to control the incident. The public is not permitted in this zone. Must not be located within the Protective Action Zone	
Isolation Perimeter Distance Determine the UPWIND crowd control line surrounding the hazard control zone. Must not be located within the Protective Action Zone	

Table 107 - Zone Description

Important

Public Protective Actions must be implemented for the general public located within the Protective Action Zone (see Hazard Control Zones). Usually, locations within 1,000 feet of the incident are a primary concern (especially for flammable or toxic gases drifting downwind). High-occupancy structures such as hospitals, schools, day cares, senior homes or high-rise complexes should be given first priority. Quantum Murray does not have jurisdictional authority to implement Public Protective Actions (recommend only).

Protective Action Zone	
Public situated inside the Protective Action Zone?	☐ **Yes** ☐ **No**
Distance to nearest residence	
Distance to nearest school	
Distance to nearest hospital	
Distance to nearest day care centre	
Distance to nearest senior citizen home	
Distance to nearest prison	
Distance to other	
Distance to other	

Shelter-In-Place

Conditions justifying Shelter-In-Place:

- Hazardous Material has been totally released from its container and is dissipating
- The released material becomes a migrating plume pattern (i.e. vapour cloud)
- A fast-moving vapour cloud will quickly overrun exposed people
- Short-duration solid or liquid leaks are present
- Migrating vapour clouds of known low toxicity and quantity are occurring
- Leaks can be rapidly controlled at their source by either engineered suppression or mitigation systems

Evacuation

There are four critical sectors to consider:

1. Alerting
2. Transportation
3. Relocation
4. Information

Ensure you check if there is a community evacuation plan is place

Limited Scale Evacuation

Evacuation of both industrial and fixed facility personnel and the general public in an attempt to avoid their exposure to any quantity of the released hazardous material. Under good conditions, evacuation will remove these individuals from any exposure to the released hazmat for a given length of time. Most incidents only require limited-scale evacuation. This typically involves one or two buildings.

- Whenever the building is on fire or the hazmat is leaking inside the building
- Whenever explosives or reactive materials are involved and can detonate or explode
- Whenever there are leaks involving toxics that cannot be controlled and are expected to continue leaking

Full Scale Evacuation

Full-scale evacuations are difficult at best; the life safety of the people and expense must be considered. The location of the general population and the time of day should always be a factor. Studies indicate that on any given weekday, 40% of the community is in their home while 60% are at work or in school. In contrast, the nighttime Figures are roughly reversed. The time required to warn 90% of the public door-to-door is 2.5 to 3 hours.

Conditions which justify a full-scale evacuation include:

- Large leaks involving flammable and/or toxic gases from large-capacity storage containers and process units
- Large quantities of materials which could detonate or explode, damaging structures in the immediate area
- Leaks and releases that are difficult to control and could increase in size or duration
- Whenever the IC determines the release cannot be controlled and the public are at risk

Table 108 - Protective Action Zone

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D.E.C.I.D.E.

D — Detect the Presence Of Hazardous Materials

- Review the information the reporting caller has provided
- Review the occupancy, location, and local planning documents for indications of hazardous materials
- Look for and record container shapes indicating hazardous materials, their locations, surrounding conditions, bodies of water, population areas, and weather
- Look for and record placards and labels and other markings or colour indicating hazardous materials
- Review shipping papers for hazardous materials entries
  - Determine and record the type of container for each hazardous material
  - Determine and record the hazardous material in each container
  - Obtain and record the name, TDG identification number, or placard applies for each hazardous material
  - Identify the hazardous material(s) released, their form, and their point of release from their container(s)
  - Sketch the position and orientation of each container and any visible damage to it not already recorded
  - Verify all information

E — Estimate the Harm Likely Without Intervention

- What stresses are affecting or may affect the material's container system, what sort of breach is likely to occur or has occurred, and what type of release will occur as a result
- Where will the hazardous materials and/or the container go when it escapes or is released? What path will it follow?
- Why is the hazardous material and/or container likely to follow that path?
- How will the hazardous material and/or container likely to follow that path?
- When will the hazardous material and/or container likely to follow that path?
- What harm will hazardous material and/or container do along the path?
  - What are the material's inherent properties and quantity?
  - What are the container's built in characteristics?
  - What are the natural laws of physics and chemistry?
  - What is the environment, including the physical surroundings and the conditions?
  - How will the situation change over time?

C — Choose Response Objectives

- Protection of responders
- Protection of the public
- Protection of the environment
- Protection of property
- Relative severity of hazards

I — Identify Action Options

D — Do the Best Option

E — Evaluate Progress

Instruction
Based on the preliminary incident assessment of commodity, container type, shipping documents, hazard data and size-up of the incident situation, determine and define the overall response tasks (to favorably change or influence the outcomes of fatalities, injuries, property and environmental damage, and system disruption). Discuss and define the order of priority for each task from high to low priority. Provide as much detail from the start of response implementation to conclusion. For each line item, consider supplemental tasks if initial plans fail.

Response Objectives	**Priority**
Special Resources Required:	
Special Resources Required:	
Special Resources Required:	
Special Resources Required:	
Special Resources Required:	
Special Resources Required:	
Special Resources Required:	
Special Resources Required:	
Special Resources Required:	

Under PRIORITY, write H = HIGH Priority / M = MEDIUM Priority / L = LOW Priority

D.E.C.I.D.E. – Response Objectives (Specific)
Instruction
Based on the general response tasks, specifically define a prioritized list of response tasks. The task list should be

detailed in chronological sequence for assignment to appropriate response personnel. This list will be a "living document" throughout the course of the response. Note the time task was initiated and completed as well as who is responsible to complete the task.

Formal Response Objectives

Sequence	Response Task	Status
		Assigned To:
		Time Initiated:
		Time Completed:
		Assigned To:
		Time Initiated:
		Time Completed:
		Assigned To:
		Time Initiated:
		Time Completed:
		Assigned To:
		Time Initiated:
		Time Completed:
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		Time Completed:
		Assigned To:
		Time Initiated:
		Time Completed:
		Assigned To:
		Time Initiated:
		Time Completed:

Table 109 - D.E.C.I.D.E. (3 pages)

Initial Approach Map

Draw a ROAD MAP of the incident based on the information relayed by first responders – detail location of roadways, highways, rail lines, junctions, interSections, nearby communities, etc. Indicate wind direction and best approach.

	Wind
Incident Address (Legal Land Description)	
Directions	
GPS Coordinates	
Approach	
Adjacent Road, Highway or Junction	
Single Lane or Twin?	
Incident Direction (Location) Adjacent to Road or Highway	
Wind Direction	
Approach From (Direction)	
Approach From (Road or Highway No.)	
Positioning	
Product Name	
Initial Isolation Distance **Position vehicles outside this distance. Approach UPWIND	

Table 110 - Initial Approach Map

PPE Decision Making Form Set

Level B

- ☐ The types of atmospheric concentration of materials have been identified and require a high level of respiratory protection, but less skin protection; 'Splash'; protection only
- ☐ The atmosphere contains less than 19.5 percent oxygen
- ☐ The presence of incompletely identified vapors or gases is indicated by a direct-reading organic vapor detection instrument, but vapors and gases are not suspected of containing high levels of chemicals harmful to skin or capable of being absorbed through the skin

Note

This involves atmospheres with IDLH concentrations of specific substances that present severe inhalation hazards and that do not represent a severe skin hazard; or that do not meet the criteria for use of air-purifying respirators

Level C

- ☐ The atmosphere contaminants, liquid splashes, or other direct contract will not adversely affect or be absorbed through and exposed skin
- ☐ The types of air contaminants have been identified, concentrations measures, and an air-purifying respirator is available that can remove the contaminants
- ☐ All criteria for the use of air-purifying respirators are met including oxygen levels greater than 19.5%

Level D

- ☐ The atmosphere contains no known hazard
- ☐ The work functions preclude splashes, immersion, or the potential for unexpected inhalation of or contact with hazardous levels of any chemicals

PPE Selection Decision Process

Detail the decision process used to select PPE. Factors such as chemical contact probability (low, moderate, high), probable exposure (residual, light, moderate, heavy), probable exposure length (compared to breakthrough time), and type of respiratory protection required

Note

If other hazardous products are present a separate evaluation must be completed as this guide may not be sufficient. At all stages of an incident consider responder safety from the product and the PPE itself. During the initial incident a higher level of PPE may be required but in the subsequent stages we may be able to reduce the level of PPE if the risk allows.

	PPE Specification	Hot Zone	Warm Zone	Decontamination
Hazard	Chemical			
	Primary Hazard			
	IDLH			

	Protection Level			
Protective Clothing	Protective Clothing Type			
	Manufacturer			
	Construction Material			
	Encapsulation (Yes / No)			
	Vapor Protection			
	Last Inspection Date			
	Breakthrough Time			
	Probable Exposure Time			
	Permeation Rate			
	Cooling Accessory			
Respiratory Protection	Respiratory Protection Type			
	Manufacturer			
	Air Supply (Minutes)			
	Air Supply Line			
	APR Cartridge Type			
	HEPA Particulate Filter			
Hand Protection	Primary Glove Type			
	Manufacturer			
	Construction Material			
	Degradation Rating			
	Breakthrough Time (Min.)			
	Inner Glove Type			
General Safety	Head Protection			
	Eye Protection			
	Foot Protection			
	Fall Protection			
	Visibility Clothing			
	Other			
	Other			
Down-Grading Details	*Throughout the course of the incident, it may be prudent to downgrade PPE as chemical exposures are reduced. Detail the time and extent of which PPE is down-graded*			
Notes	Explain the basis of the decision for protection level and PPE selection. Detail accessories added to PPE ensembles, etc.			

Table 111 - PPE Decision Making Form Set (2 pages)

Meter Selection Criteria - TNPI

Flammable Properties			X	X	
Toxic Properties		X	X		
Oxygen Content	X				

Metering Technology Meter Response Specific/Broad Range Cross Sensitivity	Electro Chemical (Oxygen) % of Oxygen Specific (Oxygen) NO	Electro Chemical (Toxic) ppm of Toxic Substance Specific (Toxic) YES	Photo Ionization units (VOC) Broad Range (VOC) YES	Catalytic Bead %LEL Broad Range (Flammables) YES	
Potential for Sensor Poisoning	High Oxygen	High toxic readings	NO	Silicon/Silicone products	
Calibration Frequency	Monthly	Monthly	Every Use	Monthly	
Sensors stocked-Echelon	Oxygen	Hydrogen Sulfide Carbon Monoxide	10.6 eV bulb	N/A	
Max Sensor Reaction Time	<90 sec.	<90 sec.	<1 min.	<15 sec.	
Sensor Information	Only accurate between 18-24%. Large doses will use up sensor potential and increase result error.	Watch for cross sensitive products. Large doses will use up sensor potential increase result error.	Unless reading Isobutylene numbers are nonspecific. Correction factors if a single product is involved. Product must have an ionization potential of less than 10.6 eV	Unless reading Pentane results are considers to be non specific. Correction factors available for other flammable gases. Above 100% LEL meter is shut off. Must have sufficient oxygen to be accurate.	

100 ppm Toxic Gas Sample

	CO Carbon Monoxide	H2S Hydrogen Sulfide	SO2 Sulfur Dioxide	NO Nitric Oxide	NO2 Nitrogen Dioxide	Cl2 Chlorine
CO	100	<10	<10	<30	<15	<10
SO2	0	0	100	0	*-120	<5
NO	0	*35	*5	100	<40	0
H2S	<10	100	<20	0	*-20	*-20
O3	0	*-30	0	0	*-50	*-90
NO2	0	*-20	*0.5	0	100	*90
NH3	0	*130	*70	*20	0	*-50

SENSOR Gas Being Sampled

100 ppm Toxic Gas Sample

	H2 Hydrogen	HCN Hydrogen	HCL Hydrogen	C2H4 Ethylene	C2H2 Acetylene
CO	<60	<15	<3	*75	*150
SO2	0	<50	0	0	*140
NO	0	0	<15	0	<1
H2S	<5	0	0	0	<1
O3	0	0	0	0	-
NO2	0	<1	0	0	<1
NH3	0	*30	*-5	0	*5

Sampling Techniques:

With an understanding of chemical characteristics as well as knowing metering capabilities, we can start to develop good monitoring protocols.

- Perform a proper risk assessment to determine the metering needed and related acceptable concentration values.
- Bump Test the meter before beginning any investigation.
- Sample at 2 meters intervals on a vertical axis and at 1 meter intervals and any pockets on a horizontal axis.
- **Allow 2 to 5 minutes sensor response time at each sampling point.**
- Log all meter usage, testing and service.

Typically, atmospheric monitoring is done to assure some aspect of life safety, therefore misuse or misunderstanding of the device can have grave consequences.

Flammable gas compatibility chart:

Calibration Gas

	Acetone	Acetylene	Butane	Hydrogen	Methane	Pentane	Propane
Acetone	**1.0**	**1.3**	**1.0**	**1.7**	**1.7**	**0.9**	**1.1**
Acetylene	0.8	1.0	0.7	1.3	1.3	**0.7**	**0.8**
Benzene	1.1	1.5	1.1	1.9	1.9	1.0	1.2
Butane	1.0	1.4	1.0	1.8	1.7	0.9	1.1
Ethane	0.8	1.0	0.8	1.3	1.3	0.7	0.8
Ethanol	0.9	1.1	0.8	1.5	1.5	0.8	0.9
Ethylene	0.8	1.1	0.8	1.4	1.3	0.7	0.9
Hexane	1.4	1.8	1.3	2.4	2.3	1.2	1.4
Hydrogen	0.6	0.8	0.6	1.0	1.0	0.5	0.6
Isopropanol	1.2	1.5	1.1	2.0	1.9	1.0	1.2
Methane	0.6	0.8	0.6	1.0	1.0	0.5	0.6
Methanol	0.6	0.8	0.6	1.1	1.1	0.6	0.7
Pentane	**1.2**	**1.5**	**1.1**	**2.0**	**1.9**	**1.0**	**1.2**
Propane	1.0	1.2	0.9	1.6	1.6	**0.8**	**1.0**
Styrene	1.3	1.7	1.3	2.2	2.2	1.1	1.4
Toluene	1.3	1.6	1.2	2.1	2.1	1.1	1.3
Xylene	1.5	2.0	1.5	2.6	2.5	1.3	1.6
	-	-	-	-	-		-

Figure 61 - Meter Selection Criteria

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Monitoring Checklist and Pre-Service Accountability

Direct-Reading Instruments			
Instrument Type	**Hazard Monitored**		**Manufacturer**
☐ Combustible Gas Indicator			
☐ Oxygen Monitor			
☐ Photo-Ionization Detector (PID)			
Combustible Gas Indicator (CGI)			
Last Calibrated (Date)		Calibration Gas	
Response Curve Calculation	1%LEL = X%LEL, X=		
Oxygen Level[14]			
Anticipated Reading			
Photo Ionization Detector (PID)			
Last Calibrated (Date)		Lamp eV Rating	
Setting (Chemical Name)			
Chemical Ionization Potential[15]			
Anticipated Reading			

Table 112 - Monitoring Checklist and Pre-Service Accountability

Note

If other hazardous products are present a separate evaluation must be completed as this guide may not be sufficient.

[14] Oxygen enriched or oxygen deficient atmosphere levels will affect CGI readings.
[15] Chemical Ionization Potential (IP) found in the NIOSH *Pocket Guide to Chemical Hazards.*

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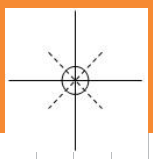
Monitoring Log

Draw a general overview of the incident scene with special detail on sampling points (e.g. sampling includes use of direct reading instruments, soil samples, water samples, etc.). Use as much detail as possible to define sampling depth, distance, area, and the hazard control zone of which the sample is acquired. Number the sampling point and record Time and Reading on the Sampling Log (page 2 of 2 of this form). For samples submitted to laboratory, record the sample point number on the sample label – use proper sample preparedness techniques and a Chain of Custody for all sample submissions



Wind

Instruction

Sampling should be undertaken with a specific objective in mind, such as the objectives listed above. The objective will help to define the sampling procedure (which needs to be developed for the incident/site specifically. Generally, sampling begins downwind from the source and working along the wind's axis until reaching the point where safety becomes a factor, and then sampling across the wind's axis, to the plume's width.
When dealing with unknown situations, personnel should initially try to determine if IDLH concentrations are present and to confirm or refute the existence of specific hazards.
The priority for monitoring is: 1 - flammability, 2 - oxygen, and 3 - toxicity.

Evaluation of Results

1. **Flammability** - IDLH is 10%LEL for an indoor release, 20%LEL for an outdoor release
2. **Oxygen** - IDLH is 19.5% O_2 or lower or 23% O_2 or higher
3. **Toxicity** - The STEL or IDLH values for the respective chemical should be used

Hazard Control Zones

Hot Zone - monitoring readings above STEL or IDLH exposure values

Warm Zone - monitoring readings equal to or greater than TLV/TWA or PEL exposures

Cold Zone - monitoring readings less than TLV/TWA or PEL exposure values

Sample Objective

1. Verification of hazardous materials type

2. Determination of required PPE

3. Define Hazard Protection Zones

Sample Point #	Instrument Type Sample Type	Sample Objective	Time / Reading[16] :	:	:	:	:	:

Sample Objective
1. Verification of hazardous materials type
2. Determination of required PPE
3. Define Hazard Protection Zones
4. Delineate environmental impact
5. Vapour suppression integrity assurance
6. Other -

Table 113 - Monitoring Log (2 pages)

Decontamination

Pre-plan checklist
Hazardous Material(s) Involved and Immediate Health Effects of Exposure
☐ Gasoline ☐ Diesel ☐ Jet A
Decontamination Personnel

[16] When recording readings, indicate the unit of measurement (e.g. %LEL, pH, ppm, etc.). Ensure readings are taken at foot, waist and head level.

Effects of Hazardous Materials on Clothing and Equipment

Decon Site Selection

- ☐ Decon area located in the Warm Zone at the exit from Hot Zone
- ☐ Decon area position based upon ground contour and wind direction (i.e. uphill, location of drains, wind direction, etc.)
- ☐ Decon area level or sloped towards entrance

Decon Resource Requirements

- ☐ Water supply established, if necessary
- ☐ Sufficient amount of decon solution and supporting equipment available
- ☐ Sufficient respiratory protective devices available (i.e. APR cartridges, etc.)
- ☐ Personal showering requirements and facilities established

Decon Site Set-Up

- ☐ Decon station is well marked and designated
- ☐ Run-off considerations (recheck location of sewers and draining near decon station)
- ☐ Containment basins setup within containment area
- ☐ Water flow established
- ☐ Sufficient disposal containers available and in place for contaminated clothing and equipment drop-off
- ☐ Decon solution mixed
- ☐ Entry and exit points are well marked
- ☐ EMS personnel are advised and prepared

Decon Pre-Entry Checklist

- ☐ All decon / cleaning equipment is in position
- ☐ Decon team in protective clothing
- ☐ Entry team briefed on decon procedures

Decon Procedures

- Personnel enter the decon area (drop tools, confirm the entry personnel are okay and air supply is adequate)
- Remove contaminants (step into containment basin, PPE examined for cuts and breaches, scrub entry personnel)
- Remove / Replace respiratory protection
- Remove PPE (remove taping, unzip PPE and remove (turning inside out), undress entry crew, dispose of used PPE)
- Remove personal clothing (if necessary)
- Remove undergarments and shower (if required)
- Dry-off and re-dress into clean clothing
- EMS evaluation

Decon Termination

- ☐ Disposal containers are isolated, bagged, and placed into approved containers or plastic bags
- ☐ Re-usable PPE items are bagged for future decon
- ☐ All containers are sealed, marked and isolated
- ☐ All equipment cleaned and accounted for
- ☐ Does equipment require isolation for further analysis or decontamination? ☐ Yes ☐ No
- ☐ Has all sub-contractor equipment been decontaminated? ☐ Yes ☐ No Specify:
- ☐ Decon personnel cleaned

Notes

Decontamination Methods

- ☐ Dilution (Brushing and Scrubbing)
- ☐ Absorption or Adsorption (Soaking up of Chemical)
- ☐ Isolation and Disposal (PPE Removal and Disposal)
- ☐ Chemical Degradation (Altering Chemical Structure)
- ☐ Solidification
- ☐ Evaporation (Positive Pressure Ventilation)

Details

Decontamination Equipment

☐ Containment Pools	☐ Scissors (for Clothing Removal)	☐ Absorbent Pads and Rags
☐ Tarps and 6 mm Plastic Sheeting	☐ Towels and Blankets	☐ Chairs
☐ Sawhorse or Support Structures	☐ Duct Tape	☐ Drinking Water or Gatorade
☐ Water Supply	☐ Pylons and Barricade Tape	☐ Portable Shower
☐ Brushes and Sponges	☐ Decon. Solution and Reagents	☐ Clean Disposal Coveralls
☐ Pails and Buckets	☐ Solution Applicator (Sprayer)	
☐ Drums and Plastic Bags (Disposal)	☐ Positive Pressure Ventilation Fan	

Other Equipment and Supplies

Consider reactivity of contaminant before using any decontamination solution.

Decontamination Formulas

Contaminant (Chemical Group)	Primary Decontamination Method[17]	Decontamination Solution		
		A	B	C
☐ Fuels (Gasoline, Diesel, etc.)	Dilution (Brushing and Scrubbing)	X	X	X
☐ Grease	Dilution (Brushing and Scrubbing)	X	X	X
☐ Oils	Dilution (Brushing and Scrubbing)	X	X	X

Solution A (Caustic Solution) - 5% Sodium Carbonate and 5% Trisodium Phosphate (4 lbs. of each per 10 gal. water)
Solution B (Mild Caustic Solution) - 5% Trisodium Phosphate (4 lbs. per 10 gal. water)
Solution C (Soap and Water Solution) - Use liberal amount of soap or detergent in water

Table 114 - Decontamination (2 pages)

Note

If other hazardous products are present a separate evaluation must be completed as this guide may not be sufficient.

Data Sheet for Collected Dead, Oiled Wildlife

Adapted from Alaska RRT Wildlife Protection Guidelines for Alaska

Fill out one of these Data Sheets for each oiled carcass collected.

[17] Primary Decontamination Method is usually followed by washing, brushing and scrubbing with a soap and water solution.

Date:	**Control Number:**	
Oil Spill Incident:		
Location Animal Found (Specific): **Latitude/Longitude:**		
Species Found:		
Is Specimen Obviously Oiled? (circle one):	**Yes**	**No**
Was Specimen Scavenged? (circle one):	**Yes**	**No**
Collected by: **Printed Name:** _____ **Signature:** _____ **Date:** _____ **Telephone Number:** _____ **Affiliation:** _____		
Relinquished to: **Printed Name:** _____ **Signature:** _____ **Date:** _____ **Telephone Number:** _____ **Affiliation:** _____		
Remarks:		

Figure 62 - Data Sheet for Collected Dead, Oiled Wildlife

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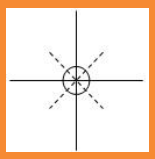
Traffic Control and Security

Draw a general overview of the incident scene with special detail on highways, roadways, streets, interSections and other public access points. Note the location of traffic control signage (◊), electronic signing, flag persons (F), road closures, traffic detours, emergency vehicles, pilot vehicles, police, security personnel, crowd control and any other security or traffic control measures. Review Saskatchewan Highways protocols and ensure compliance. Ensure drawing is to scale with notations of distance.



Wind

Road Closed (Date/Time)	**Road / Highway No.(s)**
Road Opened (Date/Time)	**Posted Speed Limit**

						
MW	**LC**	**FP**	**RC**	**NP**	**SL**	**X**

Signage Type	Distance[18]	**No. Required**[19]

[18] Determine correct distance by referring to proper provincial legislation.
[19] In most cases, 2 signs will be required for signal lane highways and 1 for twinned highways.

☐ Men Working Sign	Distance -	metres before work zone	No. Required -
☐ Flag Person Sign	Distance -	metres before work zone	No. Required -
☐ Flag Person Positioning	Distance -	metres before work zone	No. Required -
☐ Lane Change Sign	Distance -	metres before work zone	No. Required -
☐ Passing Prohibited Sign	Distance -	metres before work zone	No. Required -
☐ Speed Limit Sign	Distance -	metres before work zone	No. Required -
☐ Reduced Speed Ahead Sign	Distance -	metres before work zone	No. Required -
☐ End of Work Area Sign	Distance -	metres before work zone	No. Required -
☐ Electronic Message Sign	Distance -	metres before work zone	No. Required -
☐ Arrow Board (Fixed or Vehicle)	Distance -	metres before work zone	No. Required -
☐ Highway Road Flares	Distance -	metres before work zone	No. Required -

Safety Checklist	
☐ Emergency vehicles positioned properly	☐ Advanced warning signs placed
☐ Arrow board vehicles positioned properly	☐ Transition area (taper) established
☐ High visibility vests (ANSI 107) worn by ALL personnel	☐ Traffic cones positioned (max. 20 feet intervals)
☐ Flag person stationed at proper distance (70 – 150 m)	☐ Buffer space established
☐ Flag persons dressed in white coveralls (with vests)	☐ Termination area established
☐ Traffic control personnel equipped with radios	☐ Provincial Highway Authority Notified
☐ Air horn devices issued to all traffic control personnel	☐ RCMP or local police notified
☐ Proper STOP/SLOW paddles assigned to all flag persons	☐ Night hazards evaluated

Table 115 - Traffic Control and Security (2 pages)

Fire Protection and Control Plan

NFPA 70 – NEC[20] Hazardous Classifications	
Class	
☐ Class I	Flammable gases or vapours sufficient to produce explosive or igniTable mixtures
☐ Class II	Concentrations of combustible dusts may be present (e.g. coal or grain dust)
☐ Class III	Areas concerned with the presence of easily igniTable fibres or flyings
Group	
☐ Group A	Acetylene
☐ Group B	1,3-butadiene, ethylene oxide, formaldehyde (gas), hydrogen, propylene, propyl nitrate, allyl glycidyl ether, *n*-butyl glycidyl ether
☐ Group C	Acetaldehyde, diethyl ether, ethylene, hydrazine, hydrogen sulphide, nitropropane, carbon monoxide, spichlorohydrin, ethylene glycol, hydrogen cyanide, methylacetylene, tetraethyl lead, dicyclopentadiene, ether acetate, ethyl mercaptan, hydrogen selenide, monoethyl ether, tetrahydrofuran
☐ Group D	Acetone, ammonia, butane, dichlorethane, ethylene glycol, hexane, methyl alcohol, naphtha, vinyl chloride, acetonitrile, aniline, chlorobenzene, ethane, fuel oils, LPG, methyl ethyl ketone, propane, xylene, acrylonitrile, benzene, cyclohexane, ethyl alcohol, gasoline, methane, monomethyl ether, styrene
☐ Group E	Conductive Dusts - atmospheres containing metal dusts, including aluminium, magnesium, and their commercial alloys, and other metals of similarly hazardous characteristics
☐ Group F	Semi-Volatile Dusts -atmospheres containing carbon black, coal, or coke dust with more than 8% volatile material
☐ Group G	Non-Conductive Dusts -atmospheres containing flour, starch, grain, carbonaceous, chemical thermoplastic, thermosetting, and molding compounds
Division	
☐ Division 1	Location where the vapours, dust, or fibres are continuously generating and released. The only element necessary for a hazardous situation is a source of ignition
☐ Division 2	Location where the vapours, dusts, or fibres are generated and released as a result of an emergency or failure in the containment system

Fire Extinguishing Agent	Notes
Will the hazardous material react with water?	
Fire Extinguisher Type and Size Indicate the number of fire extinguishers, size and class	
Water Stream Type (Solid, Narrow Fog, Fog 45° - 90°)	
Water Supply (Contractor / ETA)	
Foam Type and Concentration	
Standby Fire Fighting Foam Requirement (Fire Incident) • Is fuel involved a *hydrocarbon* or *polar solvent*? • Determine the surface area (length x width) • Application rate should be minimum 0.20 gpm/feet^2 [21] • Foam Application = Area x 0.20 gpm/feet^2 • Foam Application therefore equals _____ gpm • Determine the duration of foam applications (use 15 minutes[22]) Required Foam Solution = Foam Application x 15 Minutes Required Foam Solution (Water) = _____ gallons • Determine quantity of foam concentrate required Required Foam Concentration = Required Foam Solution x 3/6%	Example – surface spill of gasoline (on fire) Hydrocarbon 50 ft. x 50 ft. = 2,500 feet^2 2,500 ft^2 x 0.20 gpm/feet^2 Foam Application therefore = 500 gpm 500 gpm x 15 minutes Required Foam Solution (Water) = 7,500 gallons 7,500 Gallons x 3% = 225 gallons of concentrate
Foam Concentration Calculations (Vapour Suppression) Apply foam blanket in sufficient concentration and quantity to achieve the lowest %LEL possible (readings taken directly above foam level). Take frequent readings to ensure integrity of foam blanket. Record readings and time intervals under Incident Monitoring	

Draw a general overview of the incident scene with special detail of fire control points. Indicate the location of fire extinguishers (F) , fire hydrants (♦), water reservoirs, fire department apparatus and pumpers, fire hose and booster lines, master stream devices (MS), foam applicators, as well as the location of all personnel dedicated to fire control. Draw the likely path of fire control run-off based on topography. Note the location of storm sewers and catch basins. Note the location of run-off dikes and pumping equipment

[20] The National Electric Guide
[21] NFPA 11 recommends 0.20 gpm/feet^2 for polar solvents and possibly as low as 0.16 gpm/feet^2 hydrocarbon spills – use 0.20 gpm/feet^2 minimum in all cases to be safe. The POK Handy Foam application rate is standard 0.20 gpm. Value states are U.S. gallons or 3.28 Litres.
[22] Application rate of 15 minutes recommended by NFPA 11 for flammable liquid spills. See NFPA 11 for other situations.

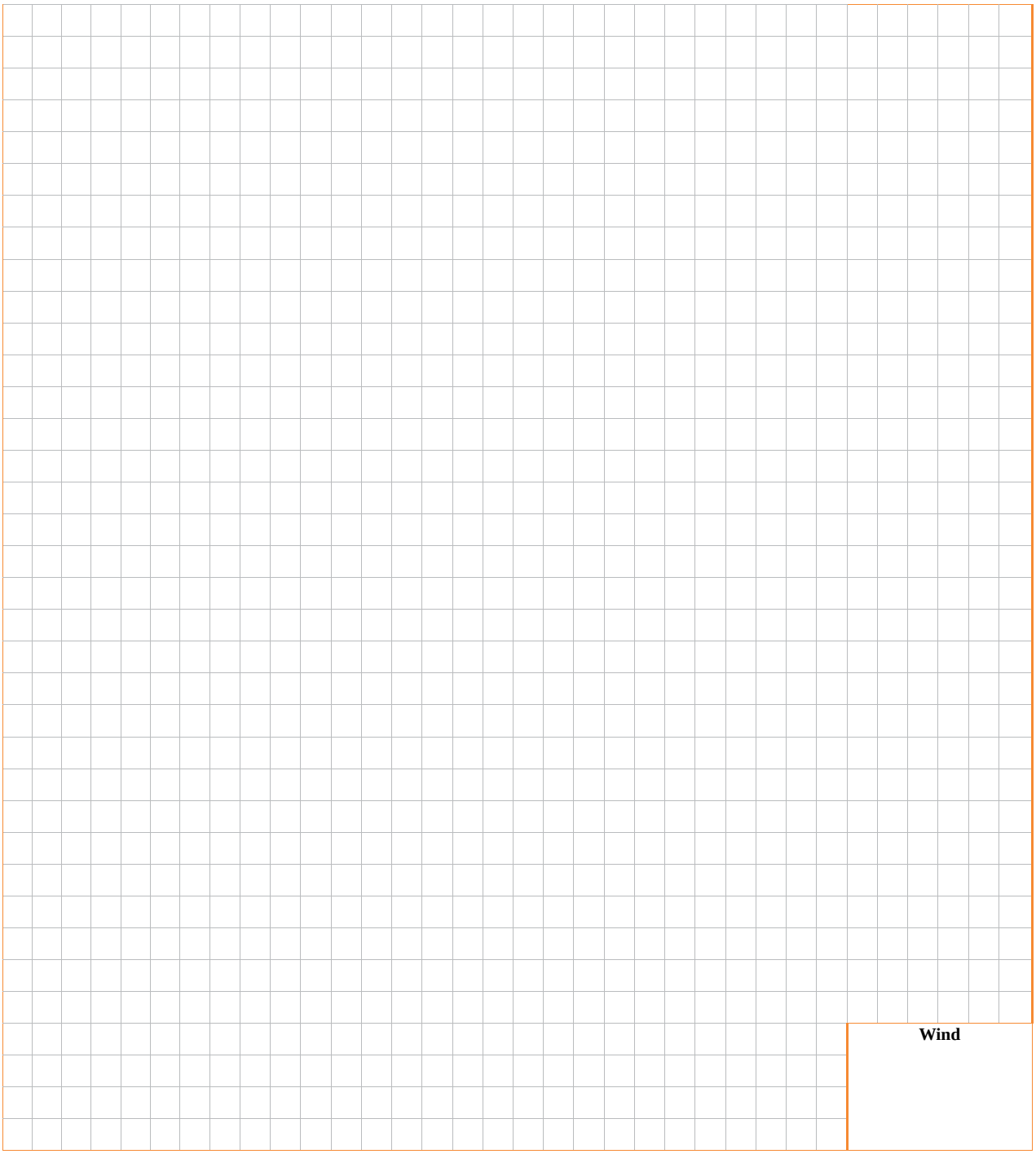


Table 116 - Fire Protection and Control Plan (2 pages)

Appendix G Emergency Response Trailer Contents

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Manuals & Documents							
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Pumping [redacted]							
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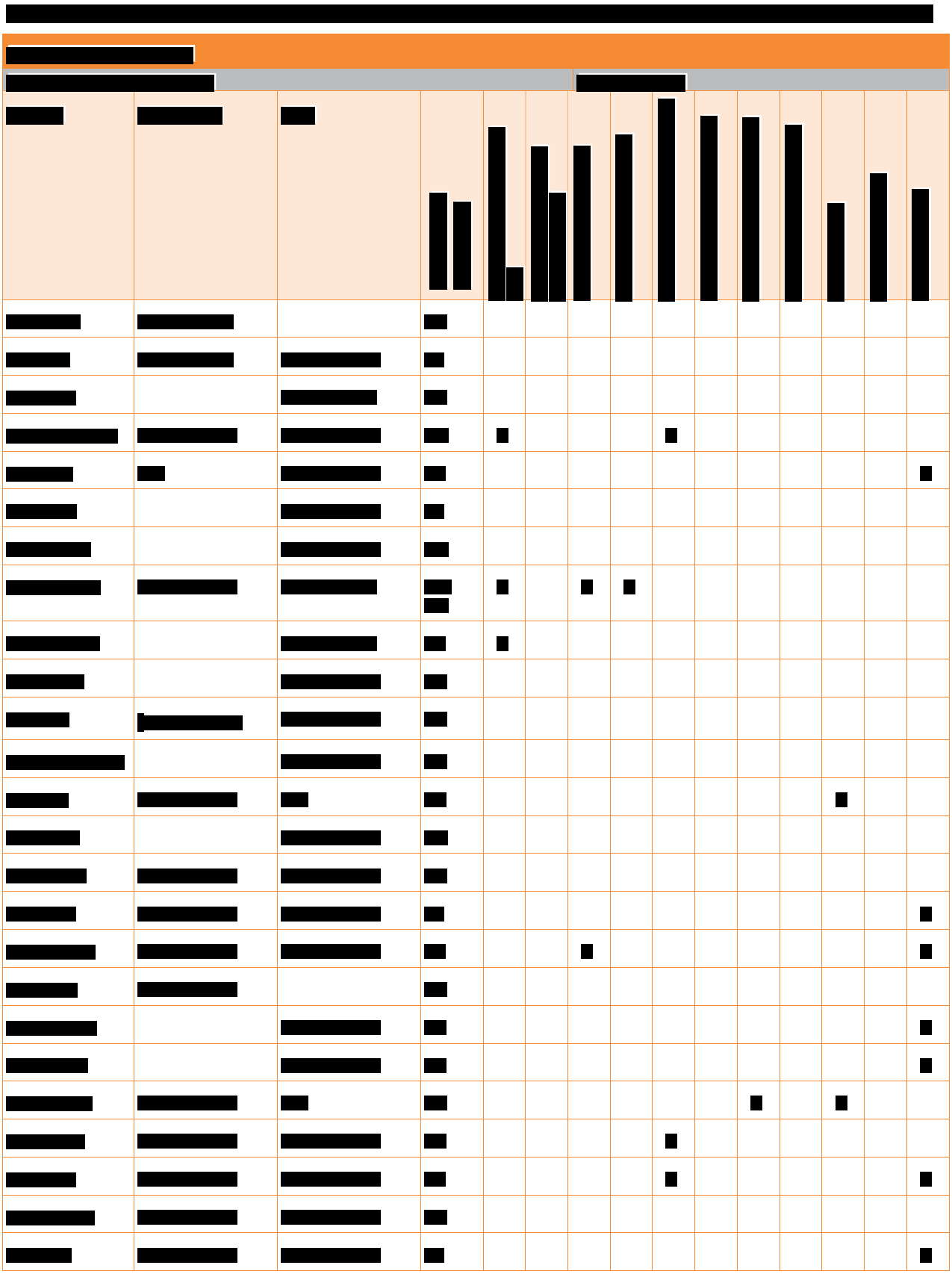
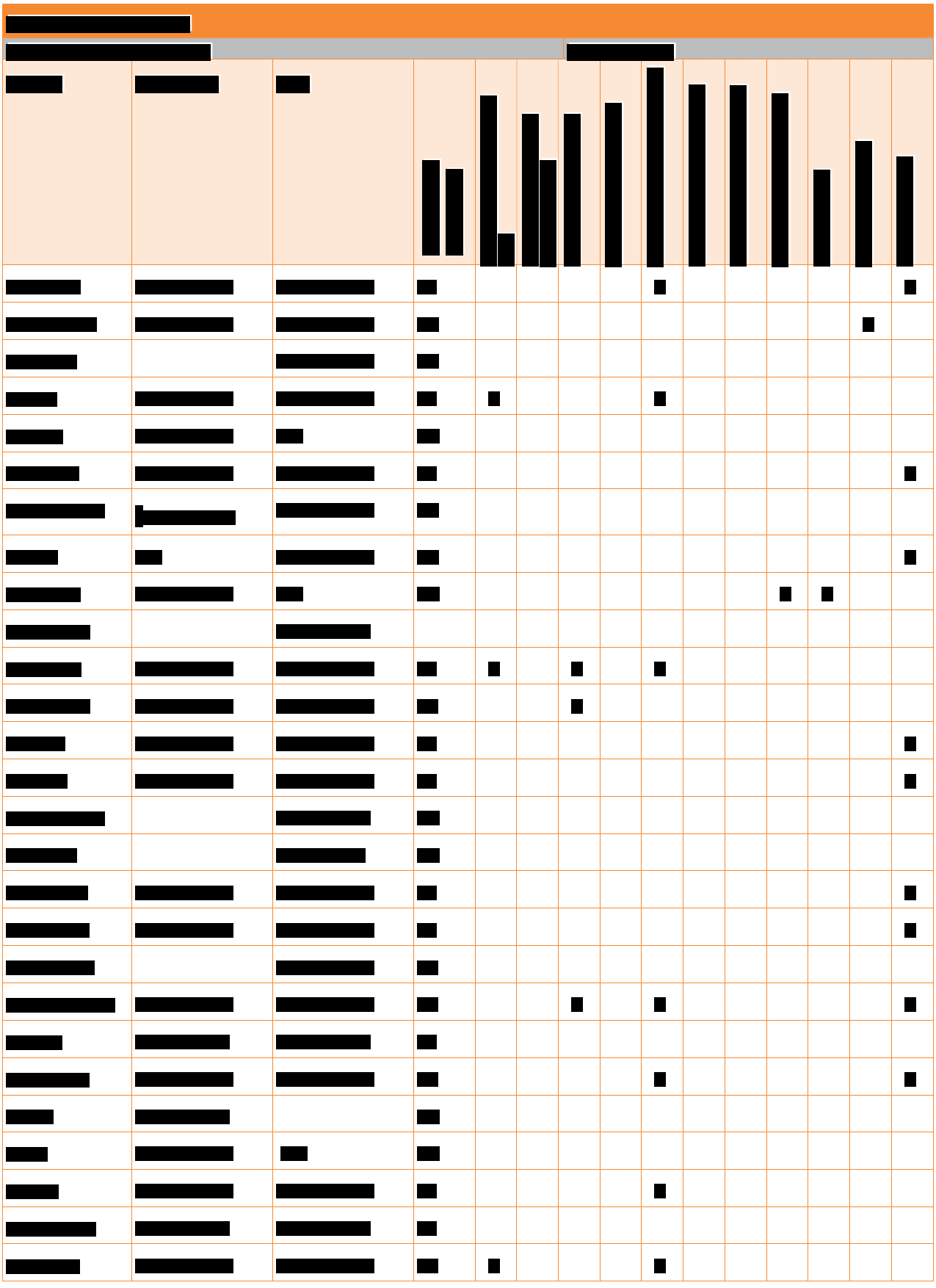
		EAST			WEST		

OSCR = Oil Spill Containment & Recovery Trailer

Table 117 - Emergency Response Trailer Contents

Appendix H Resources and Regional Contacts





TNPI Activation Chart

Internal TNPI Employees						ICS Positions								
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Table 118 - Activation Chart - Internal TNPI Employees

Legend	
MT	Montreal

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External Resources			
Names	**Response Plan Function**	**Primary Activation Number**	**Alternate Number**
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External Resources			
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Tomlinson Environmental [redacted]	[redacted]	[redacted]	[redacted]
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External Resources			
Names	**Response Plan Function**	**Primary Activation Number**	**Alternate Number**
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Regulatory Reporting	
Federal Contacts	
National Energy Board / Transportation Safety Board of Canada *Pipeline Incidents & Emergency Reporting*	1-819-997-7887
Environment Canada *National Environmental Emergency*	1-800-268-6060 Ontario 1-866-283-2333 Quebec 1-800-222-6514 Alberta
Canadian National Railway	Emergency (CN Police) 1-800-465-9239 Head Office 1-888-888-5909
Canadian Pacific Railway	Emergency (CP Police) 1-800-716-9132 Head Office 1-888-333-6370
Canadian Coast Guard	613-993-0999
Canadian Coast Guard – Report Marine Pollution (24 hours) Fisheries and Oceans Canada - *Emergency*	1-800-265-0237 Ontario 1-800-363-4735 Quebec 1-800-889-8852 Alberta
Fisheries and Oceans Canada – *Non Emergency*	905-336-4999 Ontario 418-648-2239 Quebec 855-852-8320 Alberta
Transportation Safety Board	1-800-387-3557
Ontario	
Ontario Ministry of the Environment and Climate Change Single Window Notification - *Spills Action Centre*	1-800-268-6060 in Ontario 416-325-3000 all other areas
Canadian Coast Guard - *Marine Pollution Incident*	1-800-265-0237
Parks Canada - *Non Emergency*	705-750-4900
Fisheries and Oceans Canada - *Non Emergency*	1-866-290-3731
Ontario Ministry of Natural Resources - *Non Emergency*	1-800-667-1940
Ontario Resource Agency - *Emergency Management Ontario*	1-866-314-0472
Quebec	
Ministère du Développement durable, de l'Environnement **et de la Lutte contre les changements climatiques**	1-866-694-5454
Canadian Coast Guard - *Incident de Pollution Marine*	1-800-363-4735
Parks Canada - *Non Urgence*	613-283-5170
Fisheries and Oceans Canada - *Non Urgence*	418-648-2239
L'Organisation de la Sécurité Civile du Québec	418-643-3256 1-866-776-8345
National Environmental Emergencies Center Environment Canada - Québec	514-283-2333 1-866-283-2333
Alberta	

Alberta Energy Regulator - Single Window Notification ***Includes Environment and Parks (AEP)***	1-800-222-6514 780-422-4505 (outside of AB)
AER Field Office in Edmonton South	780-460-3800
AER Field Office Red Deer - Central Alberta	403-340-5454
AER Field Office Midnapore - Calgary North	403-297-8303
AER Community and Aboriginal Relations (CAR) available through any field office.	
Alberta Security & Strategic Intelligence Support Team, Alberta Sheriff (Critical Infrastructure Security Incidents)	780-655-2680

Table 121 - Regulatory Reporting Contacts

Regional Contact List

Region	Organization	Non Emergency	Emergency
[redacted]	[redacted]	[redacted]	
[redacted]	[redacted]	[redacted]	
[redacted]	[redacted]	[redacted]	
Cornwall	Cornwall Community Police Services	613-932-2110	
Cornwall	Cornwall Fire Service	613-930-2787	
Cornwall	Cornwall SD&G Emergency Medical Services	613-930-2787	
Cornwall	Eastern Ontario Health Unit City of Cornwall	613-933-1375	
Cornwall	Emergency Management Ontario Capital Sector Chief	613- 634-8616	
Cornwall	Emergency Services Police, Fire, and EMS		911
Cornwall	Ontario Ministry of the Environment and Climate Change Cornwall Area Office	613-933-7402 1-800-860-2760	
Cornwall	Ontario Ministry of Transportation Eastern Region Office - Kingston	613- 544-2220	
Cornwall	Raisin River Conservation Authority	613-938-3611	
Cornwall	Royal Canadian Mounted Police O Division, NE District Cornwall RTF.	613-937-2800	
Cornwall	South Nation Conservation Authority	613-984-2948	
Cornwall	St. Lawrence Seaway Management Corp.	613-932-5170	
Deux Montagnes	CN Police Communications Centre	1-800-465-9239	
Deux Montagnes	Director of Public Works	450-473-4688	
Deux Montagnes	Environment Canada - Quebec	1-800-463-4311	
[redacted]	[redacted]	[redacted]	
Deux Montagnes	Saint Eustache – Multi Service	450-974-5000	
Deux Montagnes	Local Police Dispatch	450-974-4686	

Regional Contact List			
Region	**Organization**	**Non Emergency**	**Emergency**
Deux Montagnes	Ministry of Natural Resources - Quebec	418-646-3512	
Deux Montagnes	Ministry of the Environment - Quebec	418-643-4595	1-866-694-5454
[redacted]	[redacted]	[redacted]	
Deux Montagnes	Police, Fire and Ambulance Emergency Services		911
Deux Montagnes	Saint Eustache - Police, Fire and Ambulance Emergency Services		911 450-974-5300 (outside city limits
Durham	Central Lake Ontario Conservation Authority	905-579-0411	
Durham	City of Oshawa Emergency Manager	905-668-7711	
Durham	City of Oshawa Fire Department	905-433-1238	
Durham	City of Oshawa Policing	905-579-1520	911
Durham	City of Oshawa PUC Networks Inc.	905-723-4623	
[redacted]	[redacted]	[redacted]	
Durham	City of Pickering Engineering & Works Dept.	905-683-7575	
Durham	City of Pickering Fire Department	905-839-9968	
[redacted]	[redacted]	[redacted]	[redacted]
Durham	Durham Region Catholic District School Board	1-877-482-0722	
Durham	Durham Region District School Board	905-666-5500	
Durham	Durham Region Emergency Management	905-430-2792	1-800-372-1102
Durham	Durham Region Public Health	905-668-7711	
Durham	Durham Region Works Dept.	905-668-7711	905-576-9991 1-800-372-1104
Durham	Durham Regional Police	905-579-1520	
Durham	Emergency Services Police, Fire, and EMS		911
Durham	Municipality of Clarington Emergency Manager	905-623-5126	

Regional Contact List			
Region	**Organization**	**Non Emergency**	**Emergency**
Durham	Municipality of Clarington Engineering & Works Dept	905-623-3379 x. 2308	
Durham	Municipality of Clarington Fire Department	905-623-5126	
Durham	Municipality of Clarington Policing	905-579-1520 x 1687	911
Durham	Ontario Ministry of the Environment and Climate Change OMOE York-Durham District Office	416- 376-4547	1-800-427-5600
Durham	Ontario Ministry of Transportation Central Region Office - Toronto	416-235-5412	
Durham	Toronto & Region Conservation Authority	416-661-6600	
Durham	Town of Ajax Emergency Manager	905-683-3050	
Durham	Town of Ajax Fire Department	905-683-3050	
Durham	Town of Ajax Ops & Environmental Services		905-683-2951
Durham	Town of Ajax Policing	905-579-1520	911
Durham	Town of Whitby Public Works	905-430-4307	
Durham	Town of Whitby Fire & Emergency Services	905-668-3312	
Durham	Town of Whitby Policing	905-579-1520	911
Durham	Town of Whitby Water & Wastewater	905-668-7711	
Haldimand County	Emergency Services Police, Fire, and EMS		911
Haldimand County	Grand River Conservation Authority	519-621-2761	
Haldimand County	Haldimand County Emergency Manager		905-318-0159
Haldimand County	Haldimand County Emergency Services Division	905-318-0159	
Haldimand County	Haldimand County Utilities (Taken Over by Hydro One)	1-877-955-1155	
Haldimand County	Haldimand Norfolk Health Unit - Caledonia	905-318-5367	
Haldimand County	Imperial Oil - Nanticoke Refinery	519-587-7019	(519) 587-7000
Haldimand County	Ontario Ministry of the Environment and Climate Change OMOE Hamilton District Office	905-521-7640	1-800-668-4557

Regional Contact List			
Region	**Organization**	**Non Emergency**	**Emergency**
Haldimand County	Ontario Ministry of Transportation Western Region Office - London	519- 873-4100	
Haldimand County	Ontario Provincial Police (OPP) Caledonia Detachment	905-772-3322	1-888-310-1122 911
Halton	Burlington/Oakville Appleby Fire Dispatch Centre		905-637-8253
Halton	City of Burlington Emergency Manager	905-333-0772	
Halton	City of Burlington Engineering Dept.	905-335-7694	
Halton	City of Burlington Fire Department	905-637-8207 905-333-0772	
Halton	City of Burlington Policing	905-825-4777	
Halton	Emergency Management Ontario Golden Horseshoe Sector Chief	905-812-7602	
Halton	Emergency Services Police, Fire, and EMS		911
Halton	Halton Region Community Emergency Management Coordinator	905-825-6167	
Halton	Halton Region Conservation Authority	905-336-1158	
Halton	Halton Region Public Health	905-825-6000	
Halton	Halton Region Public Works	905-825-6000	
Halton	Halton Regional Police Service	905-825-4777	
Halton	Joseph Brant Hospital	905-632-3730	
Halton	Ontario Ministry of the Environment and Climate Change OMOE Halton-Peel District Office	905-319-3847	1-800-335-6060
Halton	Ontario Ministry of Transportation Central Region Office - Toronto	416-235-5412	
Halton	Suncor Oakville/Mississauga Facilities	905-847-4100	
Halton	Town of Oakville Emergency Manager	905-845-7114	
Halton	Town of Oakville Fire Department	905- 845-7114	
Halton	Town of Oakville Harbours Bronte Harbour (Bronte Crk) Oakville Harbour (16Mile Creek)	905-338-4172 905-845-6601 x3110	

Regional Contact List			
Region	**Organization**	**Non Emergency**	**Emergency**
Halton	Town of Oakville Policing (Halton Region)	905-825-4777	
Halton	Town of Oakville Public Works	905-845-6601	905-845-6606
Hamilton	ArcelorMittal Dofasco Hamilton	905- 548-7200	
Hamilton	Burlington Canal Lift Bridge - Public Works and Government Services Canada	905-544-3836	
Hamilton	City of Hamilton Fire Dept.	905-318-3333	
Hamilton	City of Hamilton Police Services	905-546-4772	
Hamilton	City of Hamilton Public Health	905-546-3500	
Hamilton	City of Hamilton Public Works	905-546-2489	
Hamilton	Emergency Management Ontario Golden Horseshoe Sector Chief	905-812-7602	
Hamilton	Emergency Services Police, Fire, and EMS		911
Hamilton	Hamilton Conservation Authority	905-525-2181	
Hamilton	Hamilton Emergency Management Coord.	905-546-2424	
Hamilton	Hamilton Port Authority	905-525-4330	
Hamilton	Hamilton-Wentworth Catholic District School Board	905-525-2930	
Hamilton	Hamilton-Wentworth Public School Board	905-527-5092	
Hamilton	Niagara Peninsula Conservation Authority Binbrook Conservation	905-788-3135	
Hamilton	Ontario Ministry of the Environment and Climate Change OMOE Hamilton District Office	905-521-7640	1-800-668-4557
Hamilton	Ontario Ministry of Transportation Western Region Office - London	519- 873-4100	
Hamilton	Ontario Provincial Police (OPP) Highway Safety Detachment	905-681-2511	1-888-310-1122 911
Hastings	Cataraqui Region Conservation Authority	613- 546-4228	
Hastings	City of Belleville Emergency Manager	613- 968-6481	
Hastings	City of Belleville Fire Department	613-962-2010	

Regional Contact List			
Region	**Organization**	**Non Emergency**	**Emergency**
Hastings	City of Belleville Police Service	613- 966-0882	
Hastings	City of Belleville Enviornemnt & Operational Services Department	613-967-3275	
Hastings	City of Quinte West Emergency Manager	613-392-2841	
Hastings	City of Quinte West Fire & Emergency Services Chief	613-392-2841	
Hastings	City of Quinte West Police Service (OPP) Quinte West Detach	613-392-3561	
Hastings	City of Quinte West Public Works & Environmental Services	613-392-2841 x 4406	
Hastings	Emergency Management Ontario Loyalist/Seaway Sector Chief		613- 634-8616
Hastings	Emergency Services Police, Fire, and EMS		911
Hastings	Hastings & Prince Edward Counties Public Health Unit	613-966-5500	
Hastings	Hastings County Emergency Manager	613-966-1311	
Hastings	Lower Trent Conservation Authority	613-394-4829	613-848-4883
Hastings	Ontario Ministry of the Environment Belleville Area Office	613- 962-9208 1-800-860-2763	
Hastings	Ontario Ministry of the Environment Peterborough District Office	705-755-4300 1-800-558-0595	
Hastings	Ontario Ministry of the Environment Kingston District Office	613-549-4000 1-800-267-0974	
Hastings	Ontario Ministry of Transportation Eastern Region Office - Kingston	613- 544-2220	
Hastings	Ontario Ministry of Transportation Port Hope Field Operations	905- 885-6381	
Hastings	Ontario Provincial Police (OPP) Napanee Detach	613-354-3369	
Hastings	Ontario Provincial Police (OPP) Quinte West Detach	613-392-3561	
Hastings	Ontario Provincial Police (OPP) (excludes City of Belleville)		911 1-888-310-1122
Hastings	Quinte Conservation Authority	613-968-3434 -613- 354-3312	

Regional Contact List			
Region	**Organization**	**Non Emergency**	**Emergency**
Hastings	Royal Canadian Mounted Police O Division, NE District Kingston Detach.	613-384-7201	
Hastings	Town of Deseronto Public Works	613-396-3433	
Hastings	Town of Deseronto Emergency Manager	613-396-2440	
Hastings	Town of Deseronto Fire Department	613-396-2325	
Hastings	Town of Deseronto Police Service (OPP) Napanee Detach.	613-354-3369	
Hastings	Twp. of Tyedinaga Emergency Manager	613-396-1944	
Hastings	Twp. of Tyedinaga Fire Department	613-396-1660	
Hastings	Twp. of Tyedinaga Police Service (OPP) Napanee Detach.	613-354-3369	
Hastings	Twp. of Tyedinaga Road Dept. Roads Supervisor	613-396-6562	
Kingston	Cataraqui Region Conservation Authority	613- 546-4228	
Kingston	City of Kingston Fire Services	613-548-4001 x5220	
Kingston	City of Kingston Police Force	613-549-4660	
[redacted]	[redacted]	[redacted]	
Kingston	Emergency Management Ontario Loyalist/Seaway Sector Chief	613- 634-8616	
Kingston	Emergency Services Police, Fire, and EMS		911
Kingston	Fortis Properties	905-871- 0330	
Kingston	Kingston, Frontenac, Lennox & Addington Public Health Unit	613-549-1232	
Kingston	Ontario Ministry of the Environment and Climate Change Kingston District Office	613-549-4000	1-800-267-0974
Kingston	Ontario Ministry of Transportation Eastern Region Office - Kingston	613- 544-2220	
Kingston	Royal Canadian Mounted Police O Division, NE District Kingston Detach.	613-384-7201	

Regional Contact List			
Region	**Organization**	**Non Emergency**	**Emergency**
Kingston	St. Lawrence Seaway Management Corp.	613-932-5170	
Laval	Canada Coast Guard Dept. Fisheries and Oceans	613-925-2865	1-800-265-0237
Laval	Canadian National Railway	1-800-465-9239	
Laval	Canadian Pacific Railway	1-800-551-2553	
Laval	CN Police Communications Centre	1-800-465-9239	
Laval	Commission scolaire de Laval		450 662-7000
Laval	Correctional Service of Canada Leclerc Institution	(514) 598 2263	
Laval	Department of Fisheries and Oceans	613-993-0999	
Laval	Direction de la protection de la faune de l'Estrie-Montréal-Montérégie (Wildlife)	819-820-3883	
Laval	Environment Canada - Quebec	1-800-463-4311	
Laval	Greak lakes Pilotage Authority	1-613-933-2991	
Laval	Laval en santé Le CSSS de Laval	450- 975-5560	811
Laval	Laval Fire Chief of Operations / Community Emergency Management Coordinator	450-978-6888 x 4446	
Laval	Les Bureaux Regionaux Du Centre De Controle Environnemental Du Quebec	450-661-2008	1-866-694-5454
Laval	Ministry of Natural Resources - Quebec	418-646-3512	
Laval	Ministry of the Environment - Quebec	416-643-4595	1-866-694-5454
Laval	Municipal / Environmental Line Public Works	450-978-8000	
Laval	Police, Fire and Ambulance Emergency Services		911
Laval	Sir Wilfid Laurier School Board (Eng)	451 621-5600	
Laval	St. Lawrence Seaway Authority	1-613-932-5170	
Laval	Transportation Safety Board of Canada	819-997-7887	
Laval	Ville de Laval Emergency Measures & Public Security - Social Emergencies		514-233-1433 (sécurité civile)

Regional Contact List			
Region	**Organization**	**Non Emergency**	**Emergency**
Laval	Ville de Laval Police Services	450-662-4242	
Laval	Ville de Laval Service de Sécurité Incendie Fire Services	450-662-4450	
Leeds & Grenville	Cataraqui Region Conservation Authority	613- 546-4228	
[redacted]	[redacted]	[redacted]	
Leeds & Grenville	Emergency Services Police, Fire, and EMS		911
Leeds & Grenville	Frontenac Arch Biosphere Reserve	613-659-4824	
Leeds & Grenville	Leeds, Grenville and Lanark District Health Unit		613-345-5685 (after hours)
Leeds & Grenville	Leeds, Grenville and Lanark District Health Unit Town of Brockville	613-345-5685	
Leeds & Grenville	Leeds, Grenville and Lanark District Health Unit Town of Gananoque	613-382-4231	
Leeds & Grenville	Nation River Conservation Authority	613-984-2948	
Leeds & Grenville	Ontario Ministry of the Environment Kingston Distrcit Office	613-549-4000 1-800-267-0974	
Leeds & Grenville	Ontario Ministry of Transportation Eastern Region Office - Kingston	613- 544-2220	
Leeds & Grenville	Ontario Provincial Police (OPP)		911 1-888-310-1122
Leeds & Grenville	Ontario Provincial Police (OPP) Brockville Detach.	613-345-1790	
Leeds & Grenville	Ontario Provincial Police (OPP) Landsdown Detach.	613-659-5200	
Leeds & Grenville	Ontario Provincial Police (OPP) Prescott Detach.	613-925-4221	
Leeds & Grenville	Royal Canadian Mounted Police O Division, NE District Kingston Detach.	613-384-7201	
Leeds & Grenville	St. Lawrence Seaway Management Corp.	613-932-5170	
Leeds & Grenville	Town of Brockville Emergency Manager		
Leeds & Grenville	Town of Brockville Fire Services	613- 498-1261 x2501	
Leeds & Grenville	Town of Brockville Police Service	613- 342-0127 x4235	

Regional Contact List			
Region	**Organization**	**Non Emergency**	**Emergency**
Leeds & Grenville	Town of Brockville Public Works	613-342-8772 x 8205	613-498-1362
Leeds & Grenville	Town of Gananoque Emergency Manager	613-382-2149	
Leeds & Grenville	Town of Gananoque Ambulance	613-544-5555	
Leeds & Grenville	Town of Gananoque Fire Department	613-382-3334	
Leeds & Grenville	Town of Gananoque Police Service	613-382-4422 613-382-4509	
Leeds & Grenville	Town of Gananoque Public Works	613-382-4360	
[redacted]	[redacted]	[redacted]	
Leeds & Grenville	Town of Prescott Fire Dept.	613-925-4777	
Leeds & Grenville	Town of Prescott Police Services (OPP) Prescott Detach.	613-925-4221	
Leeds & Grenville	Town of Prescott Public Works Dept.	613-925-4312	
Leeds & Grenville	Townnship of Augusta Emergency Manager	613- 925-4231	
Leeds & Grenville	Township of Augusta Fire Dept.	613-348-3455	
Leeds & Grenville	Township of Augusta Police Services (OPP) Brockville Detach.	613-345-1790	
Leeds & Grenville	Township of Augusta Public Works	613- 926-2002	
Leeds & Grenville	Township of Edwardsburg-Cardinal Police Services (OPP) Prescott Detach.	613-925-4221	
Leeds & Grenville	Township of Edwardsburg-Cardinal Emergency Manager (Debra McKinstry)	613-658-3055	
Leeds & Grenville	Township of Edwardsburg-Cardinal Fire Services	613-349-4541	
Leeds & Grenville	Township of Edwardsburg-Cardinal Public Works	613-349-9296	
[redacted]	[redacted]	[redacted]	
Leeds & Grenville	Twp. of Elizabethtown-Kitley Fire Dept.	613-498-2460	
Leeds & Grenville	Twp. of Elizabethtown-Kitley Police Service (OPP) Brockville Detach.	613-345-1790	

Regional Contact List			
Region	**Organization**	**Non Emergency**	**Emergency**
Leeds & Grenville	Twp. of Elizabethtown-Kitley Public Works	613-275-2277 613-275-2459	
Leeds & Grenville	Twp. of Front and Yonge Emergency Manager	613 923-2251	
Leeds & Grenville	Twp. of Front and Yonge Fire Services	613- 923-2251	
Leeds & Grenville	Twp. of Front and Yonge Police Service (OPP) Landsdown Detach.	613-659-5200	
Leeds & Grenville	Twp. of Front and Yonge Public Works	613- 923-5074	
Leeds & Grenville	Twp. of Leeds & 1000 Islands Police Service (OPP) Landsdown Detach.	613-659-5200	
Leeds & Grenville	Twp. of Leeds & 1000 Islands Fire Services	613-386-3762	
Leeds & Grenville	Twp. of Leeds & 1000 Islands Emergency Manager	613-659-2415	
Leeds & Grenville	United Counties of Leeds & Grenville Public Works	613-342-3840 ext. 2412	
[redacted]	[redacted]	[redacted]	
Lennox / Addington	Cataraqui Region Conservation Authority	613- 546-4228	
[redacted]	[redacted]	[redacted]	
Lennox / Addington	Emergency Services Police, Fire, and EMS		911
Lennox / Addington	Kingston, Frontenac, Lennox & Addington Public Health Unit	613-354-3357	
Lennox / Addington	Lennon & Addington County Chief Emergency Services		613-354-6998
Lennox / Addington	Loyalist Twp - Roads Dept.	613-386-7351 x 116	
[redacted]	[redacted]	[redacted]	
Lennox / Addington	Loyalist Twp Fire Services	613-386-3762	
Lennox / Addington	Loyalist Twp Police Service (OPP) Odessa Detach.	613-386-8601	
Lennox / Addington	Ontario Ministry of the Environment and Climate Change Belleville Area Office	613- 962-9208 1-800-860-2763	

Regional Contact List			
Region	**Organization**	**Non Emergency**	**Emergency**
Lennox / Addington	Ontario Ministry of the Environment and Climate Change Kingston District Office	613-549-4000 1-800-267-0974	
Lennox / Addington	Ontario Ministry of the Environment and Climate Change Peterborough District Office	705-755-4300	1-800-558-0595
Lennox / Addington	Ontario Ministry of Transportation Eastern Region Office - Kingston	613- 544-2220	
Lennox / Addington	Ontario Ministry of Transportation Port Hope Field Operations	905-885-6381	
Lennox / Addington	Ontario Provincial Police (OPP)		911 1-888-310-1122
Lennox / Addington	Ontario Provincial Police (OPP) Odessa Detach.	613-386-8601	
Lennox / Addington	Ontario Provincial Police (OPP) Napanee Detach.	613-354-3369	
Lennox / Addington	Quinte Conservation Authority	613-968-3434 613- 354-3312	
Lennox / Addington	Royal Canadian Mounted Police O Division, NE District Kingston Detach.	613-384-7201	
Lennox / Addington	Town of Greater Napanee Emergency Manager	613-354-3415	
Lennox / Addington	Town of Greater Napanee Fire & Emergency Services	613-354-3415	
Lennox / Addington	Town of Greater Napanee Police Service (OPP) Napanee Detach	613-354-3369	
Lennox / Addington	Town of Greater Napanee Public Works & Environmental Services	613- 354-8863 613-354-3415 (Holidays & After Hrs)	
Mohawks of the Bay of Quinte	Aboriginal Affairs and Northern Development Canada Environmental Officer	1-800-567-9604	
Mohawks of the Bay of Quinte	Health Canada - First Nations and Inuit Health Environmental Health Officer	613-957-7701	
Mohawks of the Bay of Quinte	Mohawks of the Bay of Quinte Fire Department	613-968-7985	
[redacted]	[redacted]	[redacted]	

Regional Contact List			
Region	**Organization**	**Non Emergency**	**Emergency**
Mohawks of the Bay of Quinte	Mohawks of the Bay of Quinte Community Infrastructure Director	613-396-3424 x 134	
Mohawks of the Bay of Quinte	Mohawks of the Bay of Quinte Police Service (OPP) Napanee Detach.	613-354-3369	
Montreal	Canada Coast Guard Dept. Fisheries and Oceans	613-925-2865	1-800-265-0237
Montreal	Canadian National Railway	1-800-465-9239	
Montreal	Canadian Pacific Railway	1-800-551-2553	
Montreal	CN Police Communications Centre	1-800-465-9239	
Montreal	Commission Scolaire de Montreal (Fr)	514-596-6000	
Montreal	Department of Fisheries and Oceans	613-993-0999	
Montreal	Direction de la protection de la faune de l'Estrie-Montréal-Montérégie (Wildlife)	819-820-3883	
Montreal	Enbrdige Distribution Inc.		1-888-447-4911
Montreal	English Montreal School Board (Eng)	514-483-7200	
Montreal	Environment Canada - Quebec	1-800-463-4311	
Montreal	La Securite Civile a Montreal Emergency Manager	514-280-4040	514-837-4040
Montreal	Les Bureaux Regionaux Du Centre De Controle Environnemental Du Quebec • Montreal	514-873-3636	
Montreal	Lester B. Pearson School Board (Eng)	514-422-3000	
Montreal	Ministry of Natural Resources - Quebec	418-646-3512	
Montreal	Ministry of the Environment - Quebec	418-643-4595	1-866-694-5454
Montreal	Montreal Fire Chief / Community Emergency Management Coordinator		514-872-3761
Montreal	Municipal / Environmental Line Public Works		514-872-0311
Montreal	Pierrefonds-Roxboro Borough Public Security	514-630-6300	
Montreal	Police, Fire and Ambulance Emergency Services		911

Regional Contact List			
Region	**Organization**	**Non Emergency**	**Emergency**
Montreal	Royal Canadian Mounted Police Dispatch - Quebec		514-939-8300
Montreal	Santé Montreal	514-286-6500	
Montreal	Service de Police de la Ville de Montreal	514-280-0900 (Est / East) 514-280-0800 (Nord / North) 514-280-0700 (Sud / South) 514-280-0600 (Ouest / West) 514-280-2222	514- 280-2121 or 911
Montreal	Service de Police de: Riviere-des-Prairies #45 Detachment Anjou #46 Detachment Montreal Nord #39 Detachment Ahuntsic - Cartierville #10 /27 Detachment Pierrefonds-Roxboro #03 Detachment Montreal Est #49 Detachment Dorval #5 Detachment	 514 280-0145 514 280-0146 514 280-0139 514 280-0110 / 0127 514 280-0103 514-280-0149 514-280-0105	911
Montreal	Service de sécurité incendie de Montréal (& Dorval) Montréal Est Fire Services	514-280-1211 514-280-1225	311
Montreal	St. Lawrence Seaway Authority	1-613-932-5170	
Montreal	TransCanada Transmission - Quebec	450-452-2131	
Montreal	Transportation Safety Board of Canada		819-997-7887
Montreal	Ville de Dorval Public Works	514-633-4040	
Montreal	Ville de Montreal Est - Water & Wastewater	514 241-6277	
Montreal	Ville de Montreal Est Information & Industrial Liaison	514-645-8181	
Montreal	Ville de Montreal Public Works		311
Northumberland	Baltimore Fire Department	905-372-9891	
Northumberland	Bewdley Fire Department	905-797-2361	
[redacted]	[redacted]	[redacted]	
Northumberland	Emergency Services Police, Fire, and EMS		911

Regional Contact List			
Region	**Organization**	**Non Emergency**	**Emergency**
Northumberland	Ganaraska Region Conservation Authority	905-885-8173	
Northumberland	Haliburton, Kawartha & Pine Ridge Public Health	866-888-4577	
Northumberland	Hamilton Public Works Director of Public Works	905-342-2810	
Northumberland	Hardwood Fire Department	905-342-2934	
[redacted]	[redacted]		[redacted]
Northumberland	Municipality of Brighton Fire Service Fire Chief	613-475-1744	
Northumberland	Municipality of Brighton Policing (OPP)	905-372-5421	
Northumberland	Municipality of Brighton Public Works	613-475-1162 x102	
Northumberland	Northumberland County Emergency Manager		905-372-3329
Northumberland	Ontario Ministry of the Environment Peterborough Distric Office	705-755-4300	1-800-558-0595
Northumberland	Ontario Ministry of the Environment and Climate Change Belleville Distric Office	613- 962-9208	1-800-860-2763
Northumberland	Ontario Ministry of Transporation Eastern Region Office - Kingston	613-544-2220	
Northumberland	Ontario Ministry of Transporation Port Hope Field Operations	905-885-6381	
Northumberland	Ontario Provincial Police (OPP) (excludes Towns of Cobourg and Port Hope)	905-372-5421	911 1-888-310-1122
[redacted]	[redacted]		[redacted]
Northumberland	Port Hope Fire & Emergency Services	905-885-5323	
Northumberland	Port Hope Police Services	905-885-8123	
Northumberland	Port Hope Works and Engineering Director of Works and Engineering	905-885-2431	
Northumberland	Royal Canadian Mounted Police O Division, NE District Kingston Detach	613-384-7201	
[redacted]	[redacted]		[redacted]
Northumberland	Town of Cobourg Fire Service	905-372-9789	

Regional Contact List			
Region	**Organization**	**Non Emergency**	**Emergency**
Northumberland	Town of Cobourg Police Service	905-372-2243	
Northumberland	Town of Cobourg Public Works Roads & Sewers	905- 372-9971	
[redacted]	[redacted]	[redacted]	
[redacted]	[redacted]	[redacted]	
Northumberland	Twp of Alnwick/Haldimand Policing (OPP)	905-372-5421	
Northumberland	Twp of Alnwick/Haldimand Public Works Superintendant	905-349-2700	
Northumberland	Twp of Cramahe Emergency Manager	905-355-2821	
Northumberland	Twp of Cramahe Fire Service Fire Chief	905-355-2821 x 225	
Northumberland	Twp of Cramahe Operations-Public Works	905-355- 2821	
Northumberland	Twp of Cramahe Policing (OPP)	905-372-5421	
Northumberland	Twp of Hamilton Emergency Manager	609-890-3560	
Northumberland	Twp of Hamilton Policing (OPP)	905-372-5421	
Northumberland	Ontario Ministry of the Environment and Climate Change Peterborough District Office	705-755-4300 1-800-558-0595	
Ottawa	City of Ottawa Fire Service	613-580-2860	
Ottawa	City of Ottawa Police Service	613-236-1222	
Ottawa	City of Ottawa Public Works	613-580-2424	
Ottawa	City of Ottawa, Emergency Management	613-580-2424 x 29436	
[redacted]	[redacted]	[redacted]	
Ottawa	Emergency Services Police, Fire, and EMS		911
Ottawa	National Capital Commission	613-239-5353	
Ottawa	Ontario Ministry of the Environment and Climate Change Ottawa District	613- 521-3450	1-800-860-2195

Regional Contact List			
Region	**Organization**	**Non Emergency**	**Emergency**
	Office		
Ottawa	Ontario Ministry of Transportation Eastern Region Office - Kingston	613- 544-2220	
Ottawa	Ottawa Public Health	613-580-2400 311	
Ottawa	Rideau Valley Conservation Authority	613-938-3571	
Ottawa	Royal Canadian Mounted Police O Division, NE District Cornwall RTF	613-937-2800	
Ottawa	South Nation Conservation Authority	613-984-2948	
Peel	Emergency Management Ontario Golden Horseshoe Sector Chief	905-812-7602	
Peel	Emergency Services Police, Fire, and EMS		911
Peel	Greater Toronto Airport Authority Lester B. Pearson International Airport	416-776-3000	416-776-3033
Peel	Ontario Ministry of the Environment and Climate Change Halton-Peel District Office	905-319-3847	1-800-335-5906
Peel	Ontario Ministry of Transportation Central Region Office - Toronto	416-235-5412	
Peel	Peel Public Health	905-799-7700	
Peel	Peel Regional Police Service	905-453-3311	
Peel	Region of Peel CEMC	905-791-7800 ext. 4444	
Peel	Region of Peel Public Works Roads	905-791-7800 x4409	
Peel	Region of Peel Public Works Wastewater	905-791-7800	
Peel	Region of Peel Public Works Water	905-791-7800	
Peel	Region of Peel Public Works Spills	905-791-7800	
Peel	Suncor Petro-Canada Clarkson	905-822-4222	

Regional Contact List			
Region	**Organization**	**Non Emergency**	**Emergency**
Peel	Suncor Petro-Canada Rebecca Str Oakville	905-847-4100	
Peel	Toronto & Region Conservation Authority	416-661-6600	
Stormont, Dundas & Glengarry	Catholic District School Board of Eastern Ontario	613-258-7757	
Stormont, Dundas & Glengarry	Eastern Ontario Health Unit City of Cornwall	613-933-1375	
[redacted]	[redacted]	[redacted]	
Stormont, Dundas & Glengarry	Emergency Services Police, Fire, and EMS		911
Stormont, Dundas & Glengarry	Ontario Ministry of the Environment and Climate Change Cornwall Area Office	613-933-7402 1-800-860-2760	1-800-268-6060 Spills Action Centre
Stormont, Dundas & Glengarry	Ontario Ministry of Transportation Eastern Region Office - Kingston	613- 544-2220	
Stormont, Dundas & Glengarry	Ontario Provincial Police (OPP)		911 1-888-310-1122
Stormont, Dundas & Glengarry	Ontario Provincial Police (OPP) Morrisburg Detach.	613-543-2949	
Stormont, Dundas & Glengarry	Ontario Provincial Police (OPP) Lancaster Detach.	613-347-2449	
Stormont, Dundas & Glengarry	Ontario Provincial Police (OPP) Long Sault Detach.	613-534-2223	
Stormont, Dundas & Glengarry	Raisin River Conservation Authority	613-938-3611	
Stormont, Dundas & Glengarry	Royal Canadian Mounted Police O Division, NE District Cornwall RTF.	613-937-2800	
Stormont, Dundas & Glengarry	South Nation Conservation Authority	613-984-2948	
Stormont, Dundas & Glengarry	St. Lawrence Seaway Management Corp.	613-932-5170	
Stormont, Dundas & Glengarry	Twp of South Glengarry Infrastructure Services	613-347-1166 x 228	
Stormont, Dundas & Glengarry	Twp of South Glengarry Police Services (OPP) Lancaster Detach.	613-347-2449	

Regional Contact List			
Region	**Organization**	**Non Emergency**	**Emergency**
[redacted]	[redacted]	[redacted]	
Stormont, Dundas & Glengarry	Twp. of North Dundas Fire Services Chesterville Stn.	613-448-2865	
Stormont, Dundas & Glengarry	Twp. of North Dundas Fire Services Morewood Stn.	613-448-3091	
Stormont, Dundas & Glengarry	Twp. of North Dundas Fire Services Mountain Stn.	613-229-0478	
Stormont, Dundas & Glengarry	Twp. of North Dundas Fire Services Winchester Stn.	613-774-3344	
Stormont, Dundas & Glengarry	Twp. of North Dundas Police Services (OPP) Winchester Detach.	613-774-2603	
Stormont, Dundas & Glengarry	Twp. of North Dundas Public Works / Roads	613-774-2105	
[redacted]	[redacted]	[redacted]	
Stormont, Dundas & Glengarry	Twp. of South Dundas Fire Services	613-543-2333	
Stormont, Dundas & Glengarry	Twp. of South Dundas Police Services (OPP) Morrisburg Detach.	613-543-2949	
Stormont, Dundas & Glengarry	Twp. of South Dundas Public Works	613-535-2673	613-652-4028 (after hours)
Stormont, Dundas & [redacted]	[redacted]	[redacted]	
Stormont, Dundas & Glengarry	Twp. of South Glengarry Fire Services	613-347-1166	
[redacted]	[redacted]	[redacted]	[redacted]
Stormont, Dundas & Glengarry	Twp. of South Stormont Fire Services Long Sault	613-551-8649	
Stormont, Dundas & Glengarry	Twp. of South Stormont Police Services (OPP) Long Sault Detach.	613-534-2223	
Stormont, Dundas & Glengarry	Twp. of South Stormont Public Works	613-534-8889	
Stormont, Dundas & Glengarry	United Counties of Stormont, Dundas and Glengarry Roads Dept.	613-932-1515	
Stormont, Dundas & Glengarry	United Counties of Stormont, Dundas and Glengarry Emergency Management	613-932-1515	

Regional Contact List			
Region	**Organization**	**Non Emergency**	**Emergency**
Stormont, Dundas & Glengarry	Upper Canada District School Board of Eastern Ontario	613-342-0371	
Thérèse de Blainville	Environment Canada - Quebec	1-800-463-4311	
Thérèse de Blainville	Ministry of Natural Resources - Quebec	418-646-3512	
Thérèse de Blainville	Ministry of the Environment - Quebec	416-643-4595	1-866-694-5454
Thérèse de Blainville	Mirabel Airport	514-633-3333	
Thérèse de Blainville	Municipal / Environmental Line Public Works	450-437-4620	
Thérèse de Blainville	Police, Fire and Ambulance Emergency Services		911
Thérèse de Blainville	Thérèse de Blainville Local Police Dispatch	N/A	
Thérèse de Blainville	Transportation Safety Board of Canada		819-997-7887
Toronto	City of Toronto Office of Emergency Management	416-392-4554	
Toronto	City of Toronto Fire Service North Command (North York)	416-338-9150	
Toronto	City of Toronto Fire Service Chief	416-338-9050	
Toronto	City of Toronto Fire Service (West Command)	416-338-9450	
Toronto	City of Toronto Police Service	416-808-2222	
Toronto	City of Toronto Police Service Critical Infrastructure	416-808-4925	
Toronto	City of Toronto Police Service Public Safety & Emergency Management Unit	416-808-4900	
Toronto	City of Toronto Water Water / Environmental Emergencies		416-338-8888
[redacted]	[redacted]	[redacted]	
Toronto	Emergency Services Police, Fire, and EMS		911

Regional Contact List			
Region	**Organization**	**Non Emergency**	**Emergency**
Toronto	Greater Toronto Airport Authority Lester B. Pearson International Airport	416-776-3055	416-776-3033
Toronto	Imperial Oil North Toronto / Finch Terminal	416-736-2850	
Toronto	Ontario Ministry of the Environment OMOE Metro Toronto District Office	416- 326-6700	1-800-810-8048
Toronto	Ontario Ministry of Transportation Central Region Office - Toronto	416-235-5412	
[redacted]	[redacted]		[redacted]
Toronto	Suncor Energy Products North Toronto / Finch Terminal	416- 661-7805	
Toronto	Toronto & Region Conservation Authority	416-661-6600	
Toronto	Toronto Catholic District School Board	416-222-8282	
Toronto	Toronto District School Board	416-397-3000	
Toronto	Toronto Public Health	311	
Vaudreuil-Soulanges	Canada Coast Guard Dept. Fisheries and Oceans	613-925-2865	1-800-265-0237
Vaudreuil-Soulanges	Canadian National Railway	1-800-465-9239	
Vaudreuil-Soulanges	Canadian Pacific Railway	1-800-551-2553	
Vaudreuil-Soulanges	CN Police Communications Centre	1-800-465-9239	
Vaudreuil-Soulanges	Department of Fisheries and Oceans	613-993-0999	
Vaudreuil-Soulanges	Environment Canada - Quebec	1-800-463-4311	
[redacted]	[redacted]	[redacted]	
[redacted]	[redacted]	[redacted]	
Vaudreuil-Soulanges	Local Police Dispatch	n/a	
Vaudreuil-Soulanges	Ministry of Natural Resources - Quebec	418-646-3512	
Vaudreuil-Soulanges	Ministry of the Environment - Quebec	418-643-4595	1-866-694-5454
Vaudreuil-Soulanges	Municipal / Environmental Line Public Works	450-455-7636	

Regional Contact List			
Region	**Organization**	**Non Emergency**	**Emergency**
Vaudreuil-Soulanges	Municipal / Environmental Line Public Works	450 455-3371	
Vaudreuil-Soulanges	Police, Fire and Ambulance Emergency Services		911
Vaudreuil-Soulanges	Regional Community Emergency Management Coordinator	450-455-9480 x3424	
Vaudreuil-Soulanges	Transportation Safety Board of Canada		819-997-7887

Table 122 - Regional Contact List

Regional Contact List -West			
Region	**Organization**	**Non Emergency**	**Emergency**
Alberta	STARS– Shock Trauma Air Rescue Service – Air Ambulance	403-295-1811	1-888-888-4567
Alberta	Alberta Health Services		1-844-755-1788
Airport	Calgary Airport Authority - YYC	403-735-1200	9-1-1
Airport	Edmonton Airport Authority-YEG	780-890-8382	780-890-7911
Airport	Edmonton International Airport (RCMP)	780-890-4333	
City of Calgary	Emergency Management	403-268-5300	
City of Calgary	Fire Services (CFS)	403 264-1022	9-1-1
City of Calgary	Police Service	403-266-1234	9-1-1
City of Calgary	Emergency Medical Services (EMS)/ Ambulance	403-261-4000	9-1-1
City of Calgary	Peter Lougheed Hospital	403-943-4555	
City of Calgary	South Health Campus (Hospital)	403-956-1111	
City of Edmonton	Emergency Management	780-944-6462	

Regional Contact List -West			
Region	**Organization**	**Non Emergency**	**Emergency**
City of Edmonton	Fire Services	780-496-3844	9-1-1
City of Edmonton	Police Service (EPS)	780-423-4567	9-1-1
City of Edmonton	Emergency Medical Services (EMS)/ Ambulance	780-426-3232	9-1-1
City of Edmonton	Grey Nuns Hospital	780-735-7000	
City of Leduc	Emergency Management		9-1-1
City of Leduc	Fire Services	780-980-7275	9-1-1
City of Leduc	Police Service (Leduc RCMP)	780-980-7200	9-1-1
City of Leduc	Emergency Medical Services (EMS)/ Ambulance		9-1-1
City of Leduc	Leduc Community Hospital	780-986-7711	
City of Red Deer	Emergency Management	403-342-8258	
City of Red Deer	Fire Services	403-783-5511	9-1-1
City of Red Deer	Police Service (Red Deer City RCMP)	403-406-2300	9-1-1
City of Red Deer	Emergency Medical Services (EMS)/ Ambulance	403-346-5511	9-1-1
City of Red Deer	Red Deer Regional Hospital Centre	403-343-4422	
County of Wetaskiwin No 10	Emergency Management		9-1-1
County of Wetaskiwin No 10	Fire Services		9-1-1
County of Wetaskiwin No 10	Police Service (Wetaskiwin RCMP)	780-312-7200	9-1-1
County of Wetaskiwin No 10	Emergency Medical Services (EMS)/ Ambulance	780-352-4155	9-1-1
County of Wetaskiwin No 10	Wetaskiwin Hospital and Care Centre	780-361-7100	
Lacombe County	Emergency Management	(403) 782-8959	
Lacombe County	Fire Services		9-1-1
Lacombe County	Police Service (Blackfalds RCMP)	403-885-3300	9-1-1

Regional Contact List -West			
Region	**Organization**	**Non Emergency**	**Emergency**
Lacombe County	Emergency Medical Services (EMS)/ Ambulance		9-1-1
Lacombe County	Lacombe Hospital and Care Centre	403-782-3336	
Leduc County, including Nisku Industrial Park	Emergency Management		
Leduc County, including Nisku Industrial Park	Fire Services		9-1-1
Leduc County, including Nisku Industrial Park	Police Service (Leduc RCMP)	780-980-7200	9-1-1
Leduc County, including Nisku Industrial Park	Emergency Medical Services (EMS)/ Ambulance		9-1-1
Leduc County, including Nisku Industrial Park	Leduc Community Hospital	780-986-7711	
Mountain View County	Emergency Management	780-955-3555	
Mountain View County	Fire Services		9-1-1
Mountain View County	Police Service (Olds RCMP) Didsbury RCMP)	403-556-3324 403-335-3382	9-1-1
Mountain View County	Emergency Medical Services (EMS)/ Ambulance	403-556-1160	9-1-1
Mountain View County	Olds Hospital and Care Centre	403-556-3381	
Mountain View County	Didsbury District Health Services Building	403-335-9393	
Ponoka County	Emergency Management	403 783-3333	
Ponoka County	Fire Services		9-1-1
Ponoka County	Police Service (Ponoka RCMP)	403-783-4472	9-1-1
Ponoka County	Emergency Medical Services (EMS)/ Ambulance	403-783-3363	9-1-1
Ponoka County	Ponoka Hospital and Care Centre	403-783-3341	

Regional Contact List -West			
Region	**Organization**	**Non Emergency**	**Emergency**
Red Deer County	Emergency Management	403-350-2150	
Red Deer County	Police Service Blackfalds RCMP Innisfail RCMP	403-885-3300 403-227-3342	9-1-1
Red Deer County	Fire Services		9-1-1
Red Deer County	Emergency Medical Services (EMS)/ Ambulance	403-227-5094	9-1-1
Red Deer County	Innisfail Health Centre	403-227-7800	
Rocky View County	Emergency Management	403-230-1401	
Rocky View County	Fire Services		9-1-1
Rocky View County	Police Service (Airdrie RCMP) (Strathmore RCMP)	403-945-7200 403-934-3968	9-1-1
Rocky View County	Emergency Medical Services (EMS)/ Ambulance		9-1-1
Rocky View County	Didsbury District Health Services Building	403-335-9393	
Strathcona County, including Hamlet of Sherwood Park	Emergency Management	780-410-8550	
Strathcona County, including Hamlet of Sherwood Park	Fire Services	780-467-5216	9-1-1
Strathcona County, including Hamlet of Sherwood Park	Police Service (Strathcona County RCMP)	780-467-7749	9-1-1
Strathcona County, including Hamlet of Sherwood Park	Emergency Medical Services (EMS)/ Ambulance	780-467-5216	9-1-1
Strathcona County, including Hamlet of Sherwood Park	Strathcona Community Hospital	780-449-5380	

Table 123 - Regional Contact List - West

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Appendix I Region Specific Plans

This Section replaces Trans-Northern's 2012 Binder B which included hard copies of all receptor maps, region and municipal contact numbers and control point response data.

The pipeline is split into regions, each region is supplied with a copy of TNPI's contact information and the contact information for the region, also detailed receptor maps outlining the overland flow and stream tracing impacts in the event of a rupture are included. This information is used for planning and response purposes. The Control Point data has detailed response information specific to each individual control point.

The information is provided to the region on CDs or with a secure log on to the TNPI website, this information replaces the former Binder B and hard-copy documentation.

The attached information is provided to each region with a request for confidentiality.

Our regional Emergency Response plans contain the names and contact information for contacting the sensitive receptors in the EPZ. Contact information is updated annually and Receptor Map and Control Point Data is updated every 5 years unless significant changes that would impact response are required.

Section Intentionally Left Blank

Receptor Map and Control Point Data Instructions

[redacted]

[redacted]

[redacted]

- [redacted]
- [redacted]
- [redacted]
- [redacted]

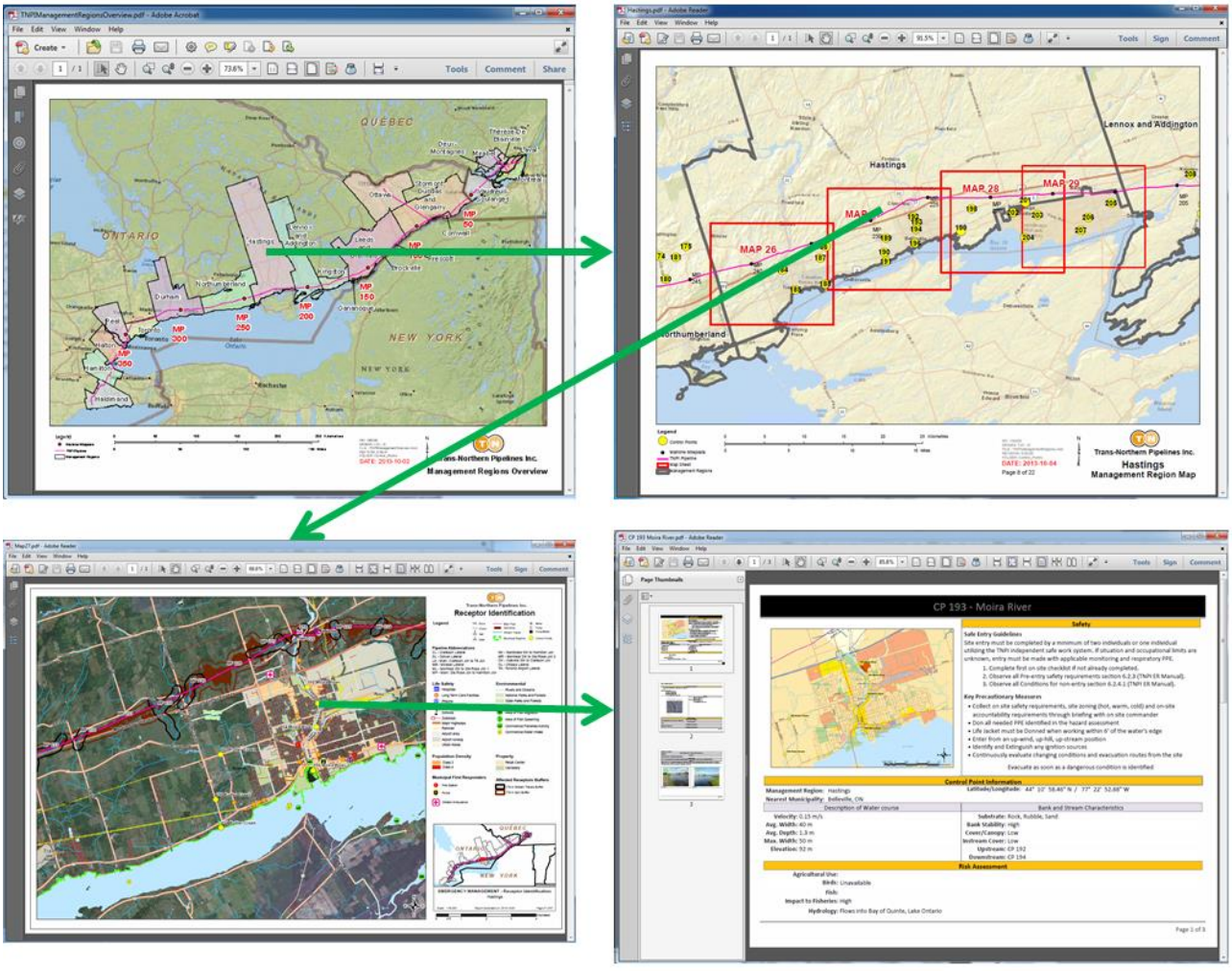


Figure 63 - Hyperlinked PDFs

Usage Tips

- Hold the Ctrl (Cmd) key while scrolling your mouse wheel to zoom in or out
-  Use the hand tool (shown left) to pan around the map. If this tool is not visible, turn it on using the View menu shown below

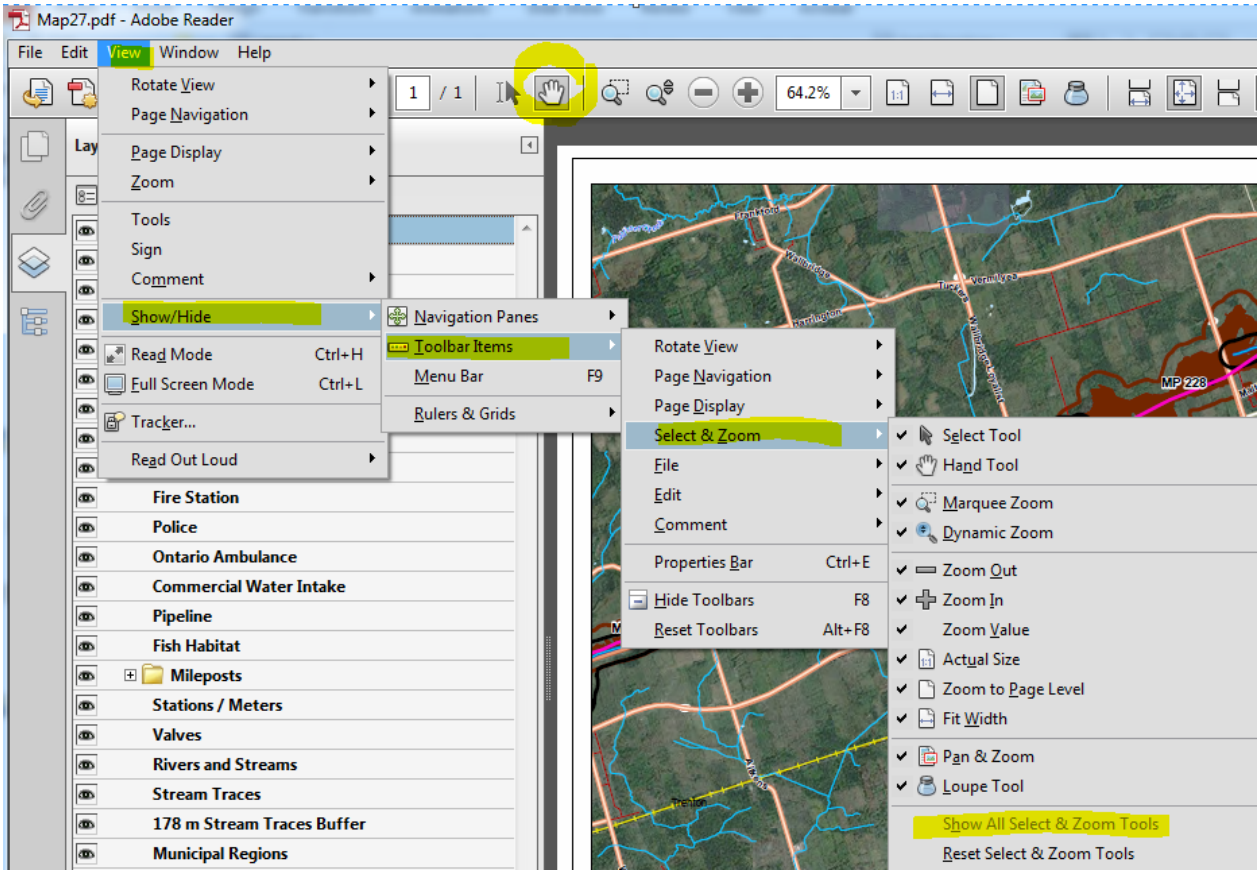


Figure 64 - Adobe Reader View Menu

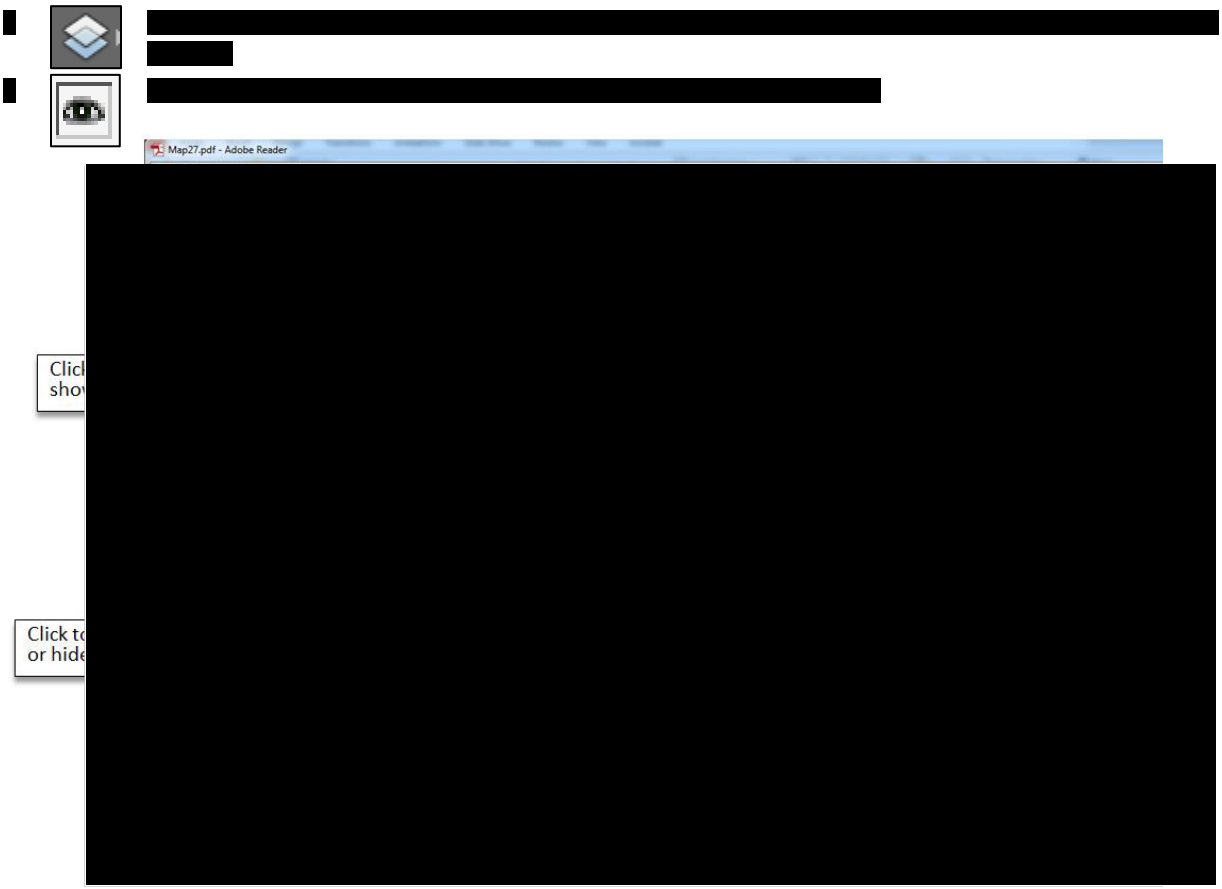


Figure 65 - Adobe Acrobat Layers

Appendix J Deterministic Modelling

1 Summary

The objective of the study was to identify and predict the possible geographic reach of fuel (diesel and gasoline) in the event of an accidental plausible maximum spill from a TNPI pipeline during two different seasons (winter and summer).

This report presents the results of the deterministic model-predicted fate analysis for a fuel spills located at Burlington Canal (43.298°N, 79.792°W) and Lake of Two Mountains (45.450°N, 74.060°W). Eight release scenarios were simulated, one for each of the two desired seasons (per location) and one for each spilled product (for each location). OILMAP's trajectory and fate models were applied to each spill scenario and run for a duration period of up to 4 days.

2 Introduction

Deterministic modelling is a technique that is commonly used when determining possible future outcomes that may be expected to occur, based on computed assimilation and analyses of numerous inputs. Deterministic modelling is not an absolute science, rather a valuable tool that can assist in a decision-making or planning process, such as the identification of reasonable mitigation to prevent or minimize the risk of an incident occurring, or the practical allocation of resources to be able to effectively respond to an incident.

EmergWest used the world-wide industry standard spill prediction software OILMAP for the modeling simulations. OILMAP is a computer-based oil spill model and response system developed by Applied Sciences Associates that has been used internationally since the early 1990s by the major oil companies, governments, universities and research organizations (OILMAP Section at the end of this Appendix).

OILMAP data inputs include shoreline definition (i.e. product retention capability), area circulation features (i.e. ocean currents), wind-time series data, spill location and product properties. The OILMAP model output then predicts the path of the spilled product over the water surface and shoreline areas likely to be affected by such a spill. The simulations provide valuable insight into the probable behavior of potential spills under the meteorological, ocean and river conditions expected to occur in a study area.

Computer models inherently rely on multiple assumptions and approximations that affect predictive outcomes. These include the model algorithms used to calculate a product's transport and weathering, the environmental conditions of an area, and the physical and chemical characteristics of the product itself. Although model simulations use the best available data, results should be regarded as best estimates of a product's likely spread and fate, based on the specific model inputs selected, and not as absolute truths.

OILMAP's standard requirements for a deterministic study of trajectory/fates (weathering) of spill releases include:

- A good description of the local geography (e.g. land and water boundaries)
- A description of the major hydrodynamic circulation features of the water body
- Wind data

The purpose of the study was determine the potential probable paths of spills in the two study locations, and the approximate time frame over which response techniques, such as containment

(booming) and recovery (skimming) might be possible. As a result, the models were run either until essentially all of the spilled product had evaporated, or had spread to a sheen thickness that was no longer observable, and where response activities would no longer be effective/appropriate.

It should be noted that each of the models included in this report represent the projected path and fate based on a single set of parameters. While the parameters were chosen based on the best-available data, and the environmental conditions which are predominately present, the models are limited to those conditions chosen. They are not designed to represent all of the possible scenarios that could occur.

A description of the study area and data used as input to the model scenarios, is presented in Section 3. Results of the deterministic simulations are presented in Section 4. Conclusions are provided in Section 5, and references are included in Section 6.

3 Study Location and Model Data

Study Locations

The study included two release source locations:

- Burlington Canal
- Lake of Two Mountains

Figure 66 - Burlington Canal Study Area

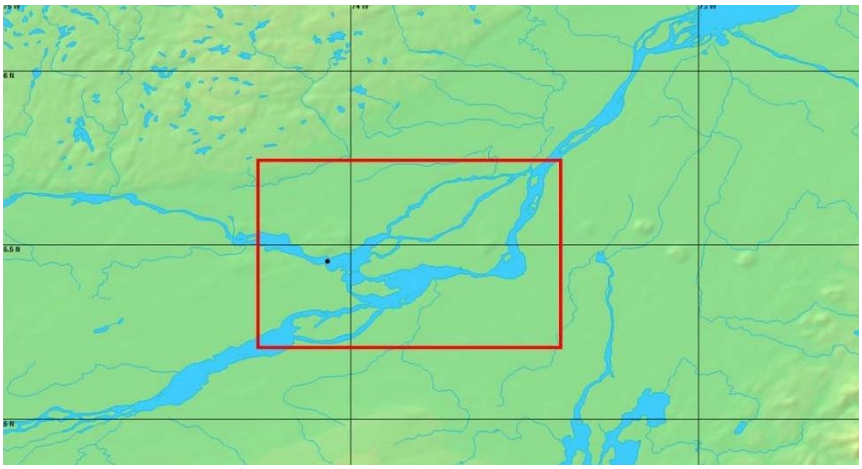


Figure 67 - Lake of Two Mountains Study Area

Hydrodynamic Data

The hydrodynamic data used in the study was acquired from numerous sources including the Canadian Hydrographic Service, the Ottawa River Regulation Planning Board, Environment Canada, and HYCOM (NCEP) data which is hybrid coordinate version of MICOM. While primarily isopycnic, HYCOM allows coordinate surfaces to locally deviate from local isopyncnals, where they fold, outcrop, or generally provide inadequate vertical resolution.

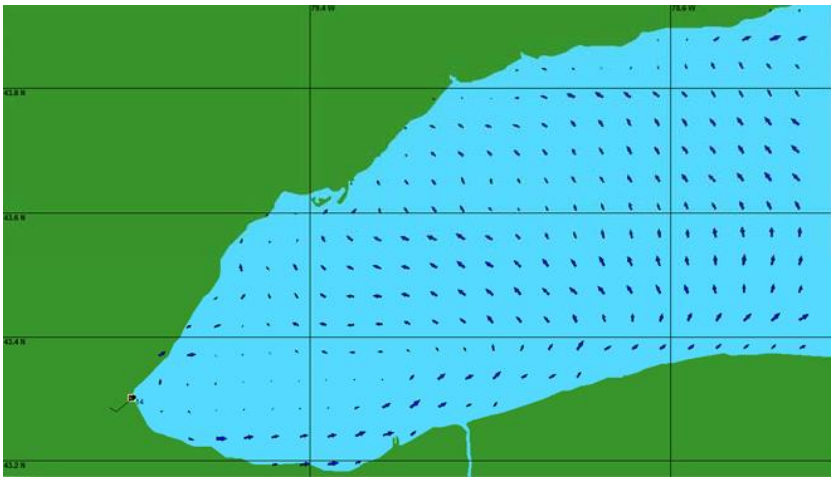


Figure 68 - Example HYCOM (NCEP) Currents

Wind Data

As the study incorporated two distinct seasons (winter and summer), historical wind data was derived from the Canadian Wind Atlas. Historical wind data was based on the mean wind speeds and wind roses (depicting the most likely wind directions for each of the seasons modelled in the study).

Location	Season	Mean Wind Speed (m/s)
Burlington Channel	Summer	4.74
	Winter	7.04
Lake of Two Mountains	Summer	5.08
	Winter	5.85

Table 124 - Mean Wind Speeds by Season and Location

Historical wind data, shown as *Wind Roses* (see Figure 69 through Figure 72 below) depict the historical wind probabilities for the two seasons for each of the two study locations.

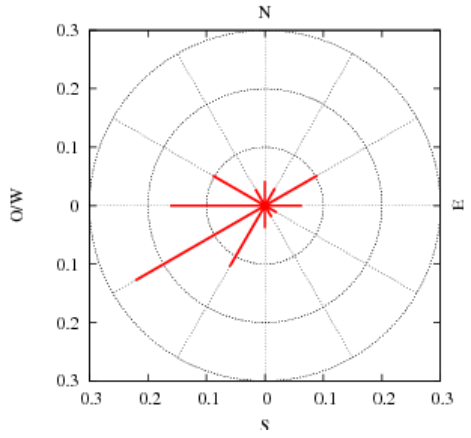


Figure 69 - Winter Wind Rose - Burlington Canal

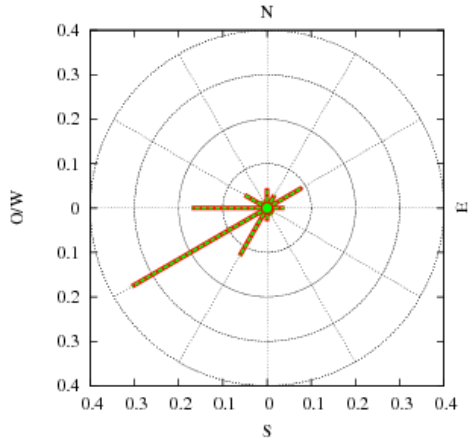


Figure 70 - Summer Wind Rose - Burlington Canal

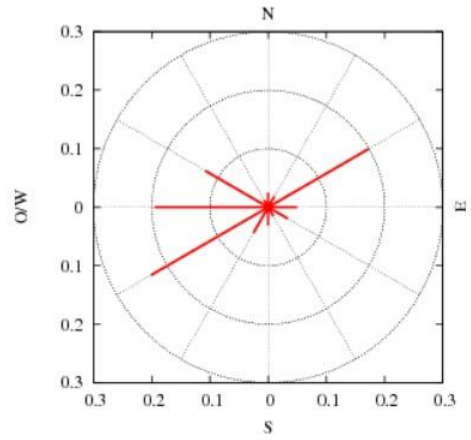


Figure 71 - Winter Wind Rose - Lake of Two Mountains

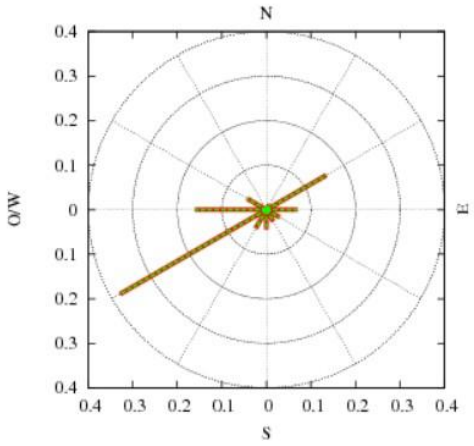


Figure 72 - Summer Wind Rose - Lake of Two Mountains

Water Temperature/Ice Cover

Water temperature plays an important role in the evaporation of spilled oils. Water temperature data was derived from various sources including the Canadian Hydrographic Service. Since the source of spilled oil, in both scenarios, was a sub-marine pipeline, any released oil would pool under any areas where solid ice cover was present, slowing its spread. As a result, to better understand the spread the physical spreading for the winter scenarios, conditions were chosen where cold water was present (and winter winds were used), but there was no solid ice cover.

Characterization of Spilled Products

The model uses the fuel's physical characteristics to calculate a number of processes:

- Spreading
- Evaporation
- Dispersion

The characteristics of the two fuels used in the study scenarios are shown in Figure 73 and Figure 74.

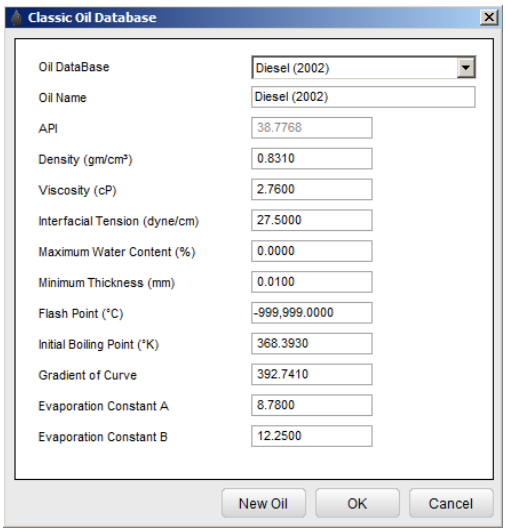


Figure 73 - Diesel Characteristics

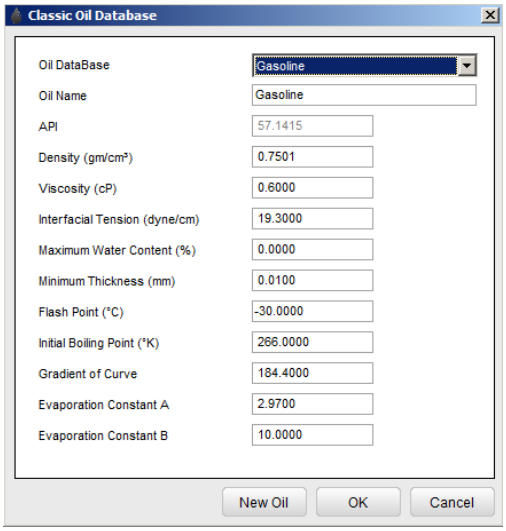


Figure 74 - Gasoline Characteristics

Spill Scenario Volumes

Spill volumes (see Table 124) were calculated on the maximum reasonable spill volume of a release, based on elevation profiles, pipe diameters, flow rates, and valve locations.

4 Model Results

OILMAP was used to simulate surface water trajectories for eight individual spill releases.

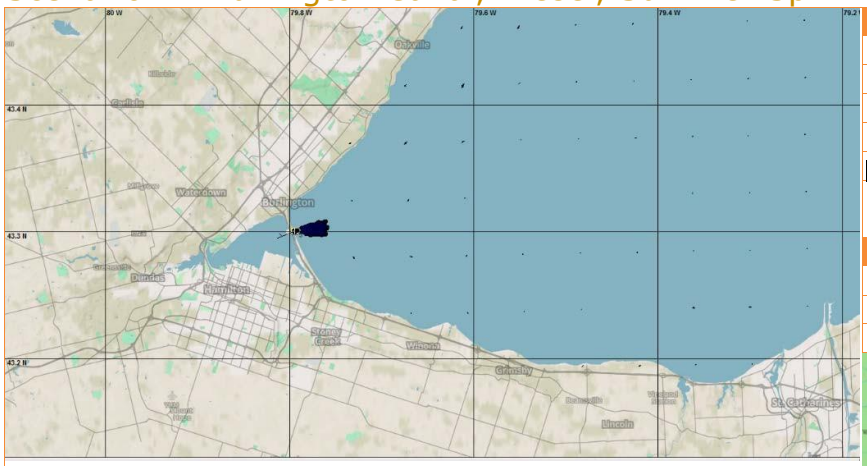
Scenario	Spill Location	Season	Product Type	Water Surface Temp (°C)	[redacted]	Release Duration (hours)
1	Burlington Canal	Summer	Diesel	24	[redacted]	4
2	Burlington Canal	Winter	Diesel	3	[redacted]	4
3	Burlington Canal	Summer	Gasoline	24	[redacted]	4
4	Burlington Canal	Winter	Gasoline	3	[redacted]	4
5	Lake of Two Mountains	Summer	Diesel	23	[redacted]	4
6	Lake of Two Mountains	Winter	Diesel	4	[redacted]	4
7	Lake of Two Mountains	Summer	Gasoline	23	[redacted]	4
8	Lake of Two Mountains	Winter	Gasoline	4	[redacted]	4

Table 125 - Model Scenarios

These results of the eight model scenario runs are shown in Figure 75 through Figure 136, which display:

- Probable path of the spilled product
- Probable shoreline impacts
- The fate (evaporation) of the spilled product
- The thickness of the spilled product

Scenario 1 - Burlington Canal, Diesel, Summer Spill Trajectories



Scenario Information	
Season	Summer
Water Surface Temp (°C)	24
Release Duration	4 Hours
Model Run Duration	72 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76

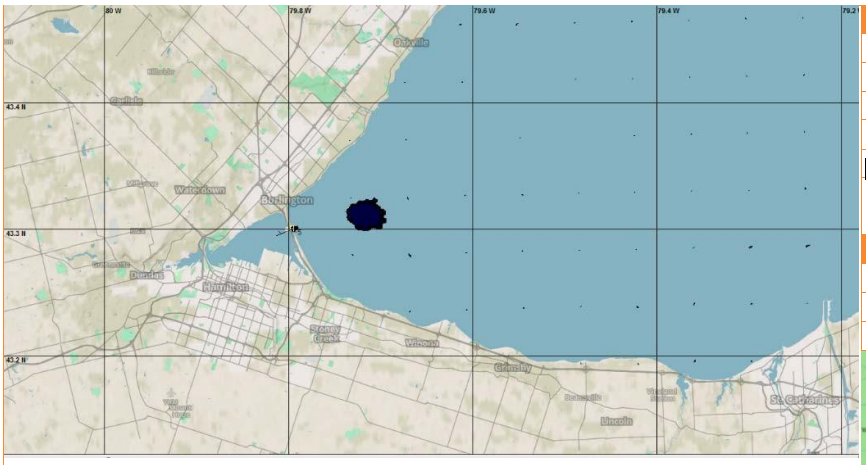
Scenario Name: Burlington Canal - Summer - Diesel

Figure 75 - Scenario 1 - After 6 Hours

Scenario Information	
Season	Summer
Water Surface Temp (°C)	24
Release Duration	4 Hours
Model Run Duration	72 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76

Scenario Name: Burlington Canal - Summer - Diesel

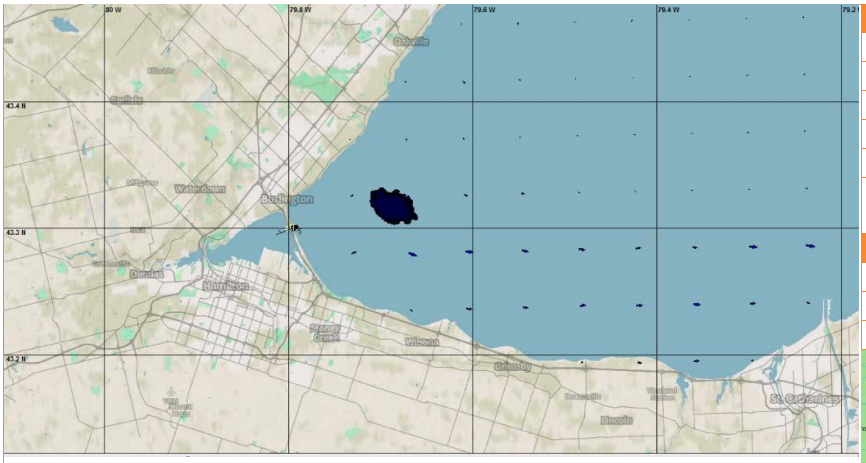
Figure 76 - Scenario 1 - After 12 Hours



Scenario Information	
Season	Summer
Water Surface Temp (°C)	24
Release Duration	4 Hours
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76

Scenario Name: Burlington Canal - Summer - Diesel

Figure 77 - Scenario 1 - After 18 Hours



Scenario Information	
Season	Summer
Water Surface Temp (°C)	24
Release Duration	4 Hours
Model Run Duration	72 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76

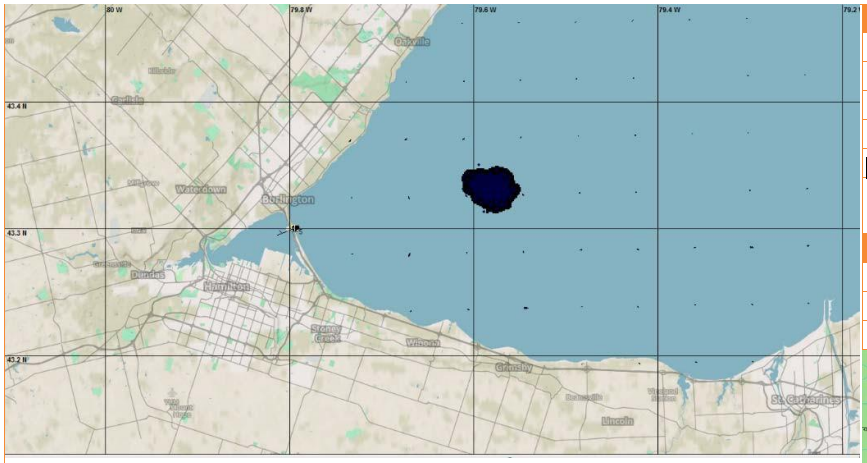
Scenario Name: Burlington Canal - Summer - Diesel

Figure 78 - Scenario 1 - After 24 Hours

Scenario Information	
Season	Summer
Water Surface Temp (°C)	24
Release Duration	4 Hours
Model Run Duration	72 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76

Scenario Name: Burlington Canal - Summer - Diesel

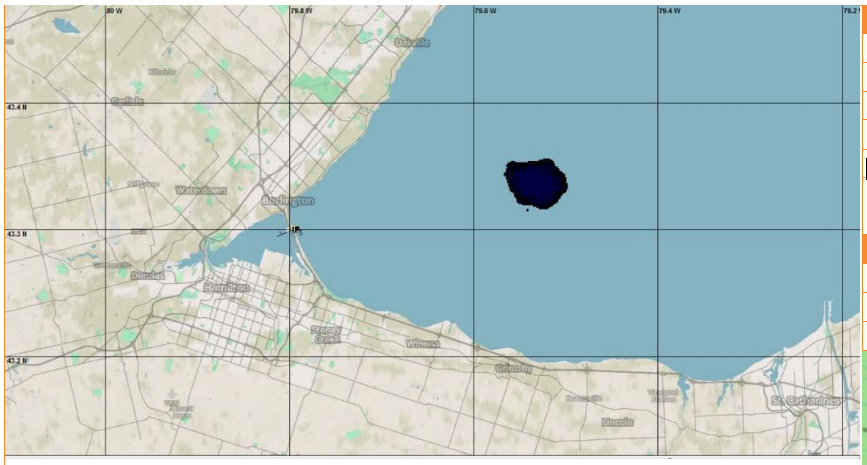
Figure 79 - Scenario 1 - After 36 Hours



Scenario Information	
Season	Summer
Water Surface Temp (°C)	24
Release Duration	4 Hours
Model Run Duration	72 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76

Scenario Name: Burlington Canal - Summer - Diesel

Figure 80 - Scenario 1 - After 48 Hours

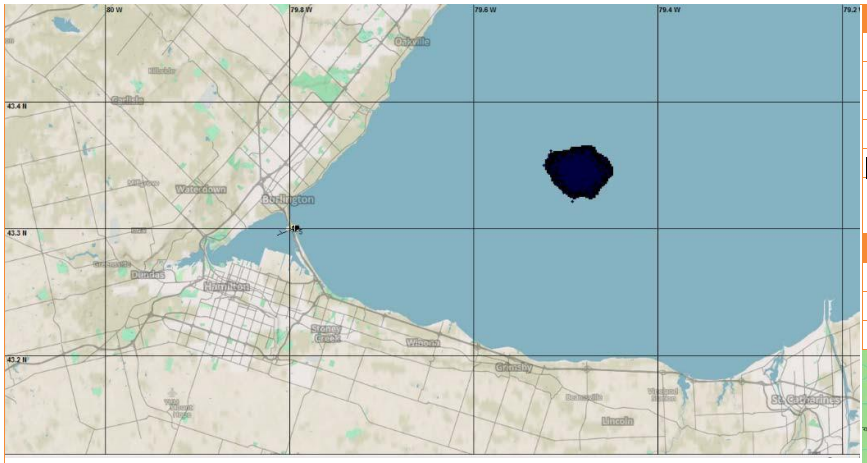


Scenario Information	
Season	Summer
Water Surface Temp (°C)	24
Release Duration	4 Hours
Model Run Duration	72 Hours
[redacted]	[redacted]
[redacted]	[redacted]

Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76

Scenario Name: Burlington Canal - Summer - Diesel

Figure 81 - Scenario 1 - After 60 Hours



Scenario Information	
Season	Summer
Water Surface Temp (°C)	24
Release Duration	4 Hours
Model Run Duration	72 Hours
[redacted]	[redacted]
[redacted]	[redacted]

Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76

Scenario Name: Burlington Canal - Summer - Diesel

Figure 82 - Scenario 1 - After 72 Hours

Scenario 1 - Burlington Canal, Diesel, Summer Spill Fate and Thickness

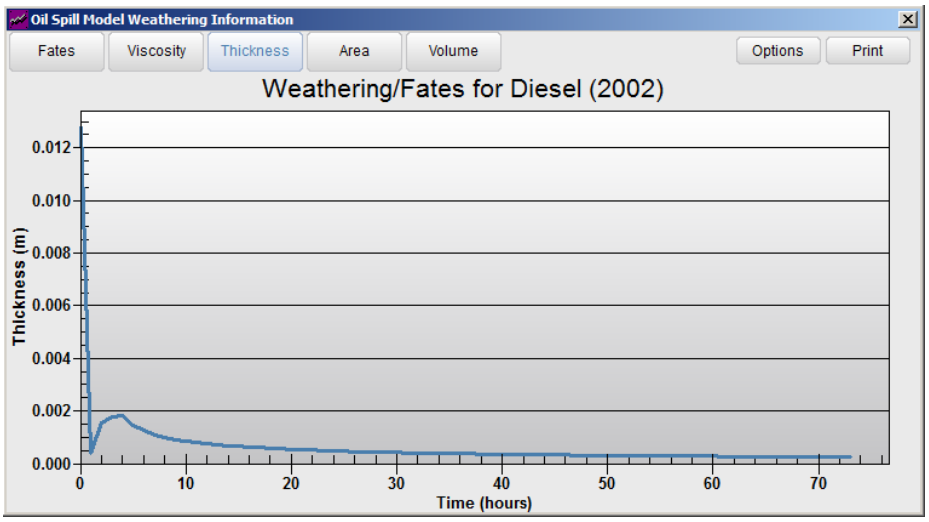


Figure 83 - Diesel Oil Fates

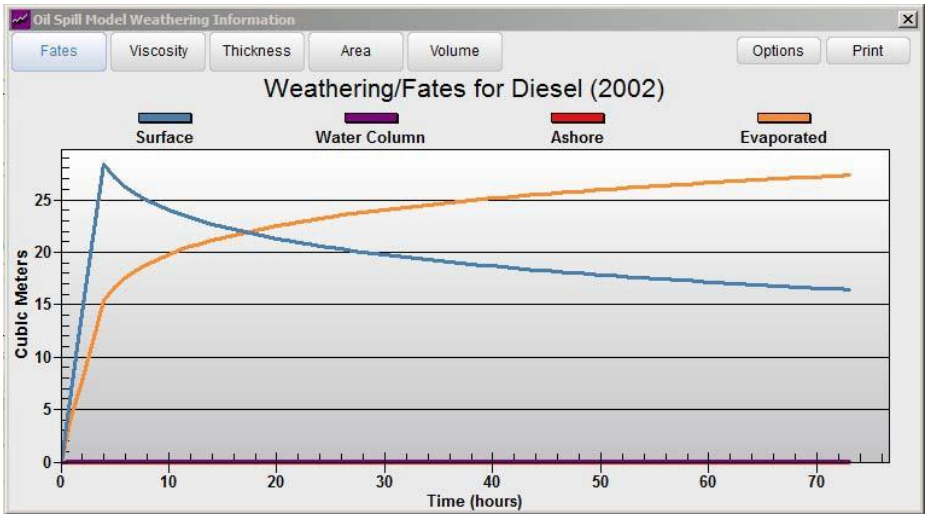


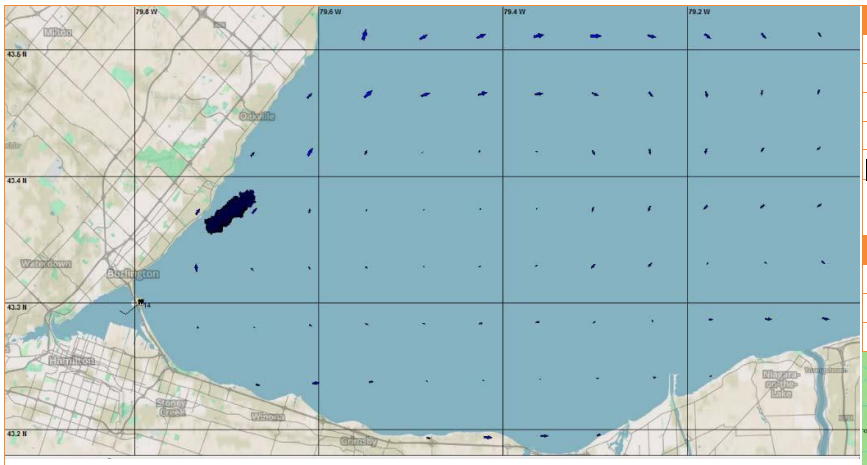
Figure 84 - Diesel Oil Thickness

Scenario 2 - Burlington Canal, Diesel, Winter Spill Trajectories

Scenario Information	
Season	Winter
Water Surface Temp (°C)	3
Release Duration	4 Hours
Model Run Duration	36 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76

Scenario Name: Burlington Canal - Winter - Diesel

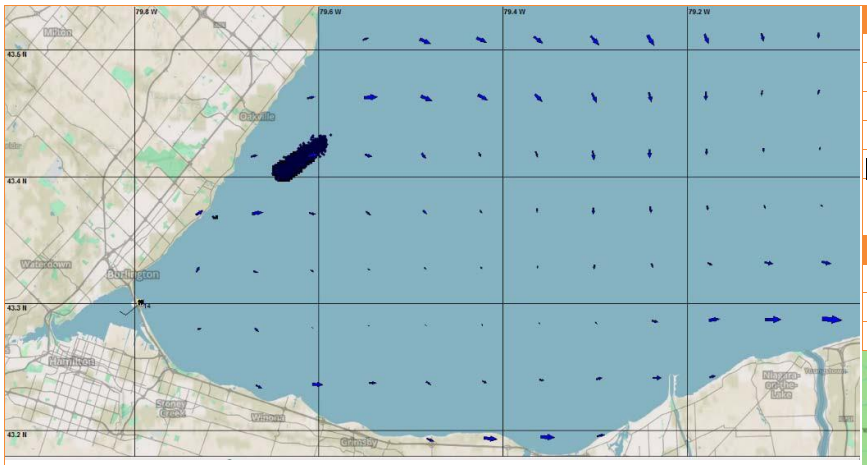
Figure 85 - Scenario 2 - After 6 Hours



Scenario Information	
Season	Winter
Water Surface Temp (°C)	3
Release Duration	4 Hours
Model Run Duration	36 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76

Scenario Name: Burlington Canal - Winter - Diesel

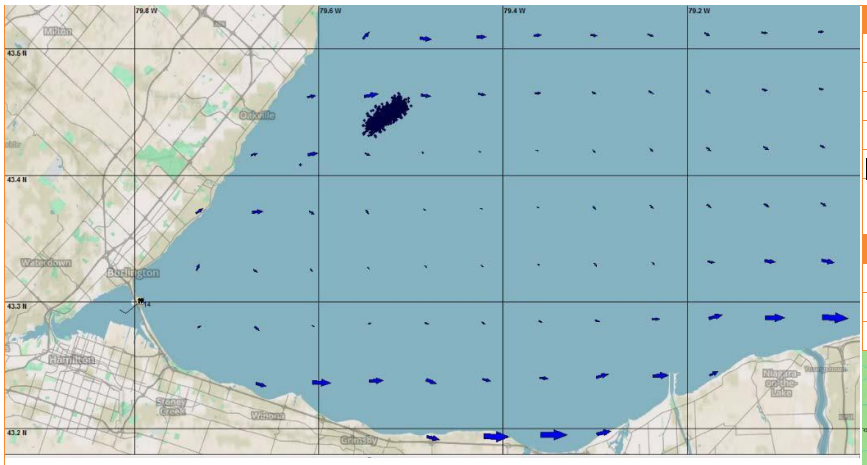
Figure 86 - Scenario 2 - After 12 Hours



Scenario Information	
Season	Winter
Water Surface Temp (°C)	3
Release Duration	4 Hours
Model Run Duration	36 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76

Scenario Name: Burlington Canal - Winter - Diesel

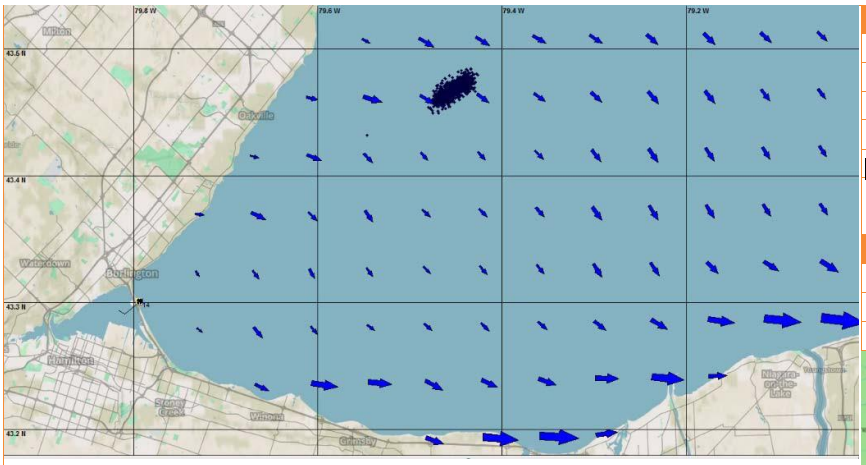
Figure 87 - Scenario 2 - After 18 Hours



Scenario Information	
Season	Winter
Water Surface Temp (°C)	3
Release Duration	4 Hours
Model Run Duration	36 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76

Scenario Name: Burlington Canal - Winter - Diesel

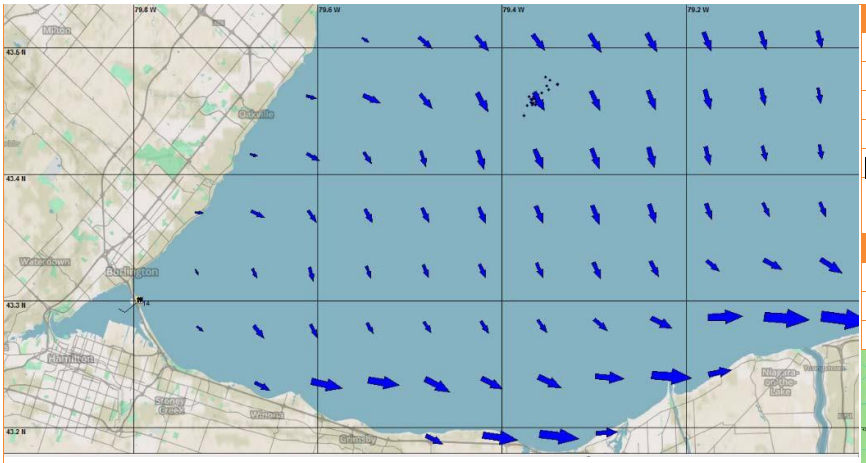
Figure 88 - Scenario 2 - After 24 Hours



Scenario Information	
Season	Winter
Water Surface Temp (°C)	3
Release Duration	4 Hours
Model Run Duration	36 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76

Scenario Name: Burlington Canal - Winter - Diesel

Figure 89 - Scenario 2 - After 30 Hours



Scenario Information	
Season	Winter
Water Surface Temp (°C)	3
Release Duration	4 Hours
Model Run Duration	36 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76

Scenario Name: Burlington Canal - Winter - Diesel

Figure 90 - Scenario 2 - After 36 Hours

Scenario 2 - Burlington Canal, Diesel, Winter Spill Fate and Thickness

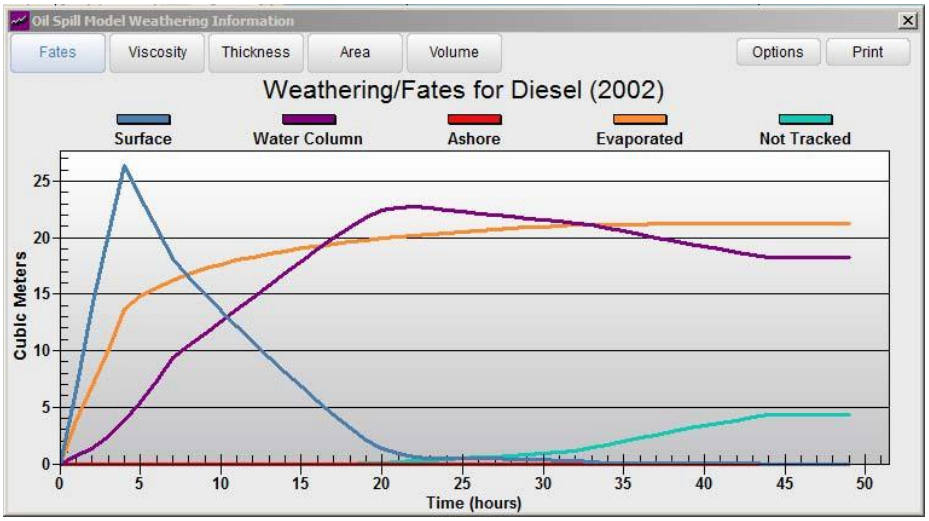


Figure 91 - Diesel Oil Fates

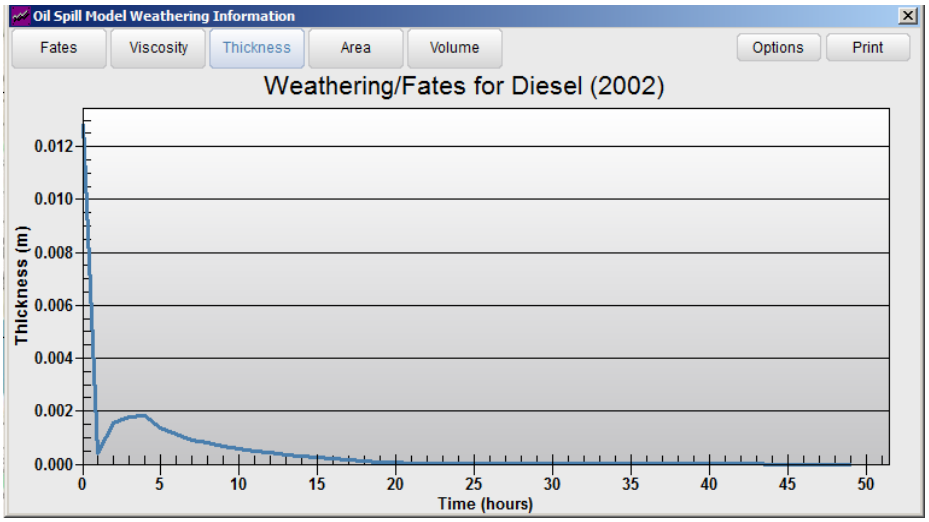


Figure 92 - Diesel Oil Thickness

Scenario 3 - Burlington Canal, Gasoline, Summer Spill Trajectories

Scenario Information	
Season	Summer
Water Surface Temp (°C)	24
Release Duration	4 Hours
Model Run Duration	9 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Gasoline
Density @ 15°C (g/cm^3)	0.750
Viscosity @ 25°C (cP)	0.60

Scenario Name: Burlington Canal - Summer - Gasoline

Figure 93 - Scenario 3 - After 3 Hours

Scenario Information	
Season	Summer
Water Surface Temp (°C)	24
Release Duration	4 Hours
Model Run Duration	9 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Gasoline
Density @ 15°C (g/cm^3)	0.750
Viscosity @ 25°C (cP)	0.60

Scenario Name: Burlington Canal - Summer - Gasoline

Figure 94 - Scenario 3 - After 6 Hours

Scenario Information	
Season	Summer
Water Surface Temp (°C)	24
Release Duration	4 Hours
Model Run Duration	9 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Gasoline
Density @ 15°C (g/cm^3)	0.750
Viscosity @ 25°C (cP)	0.60

Scenario Name: Burlington Canal - Summer - Gasoline

Figure 95 - Scenario 3 - After 9 Hours

Scenario 3 - Burlington Canal, Gasoline, Summer Spill Fate and Thickness

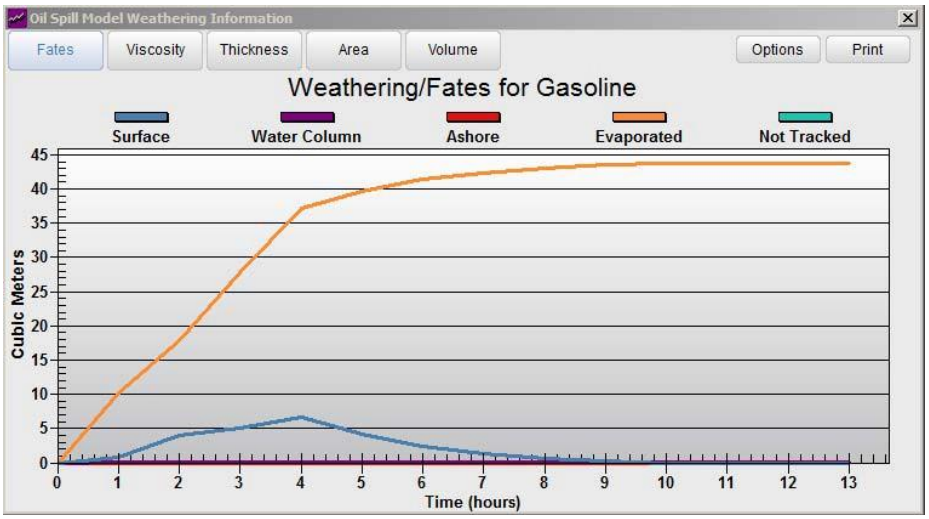


Figure 96 - Gasoline Oil Fates

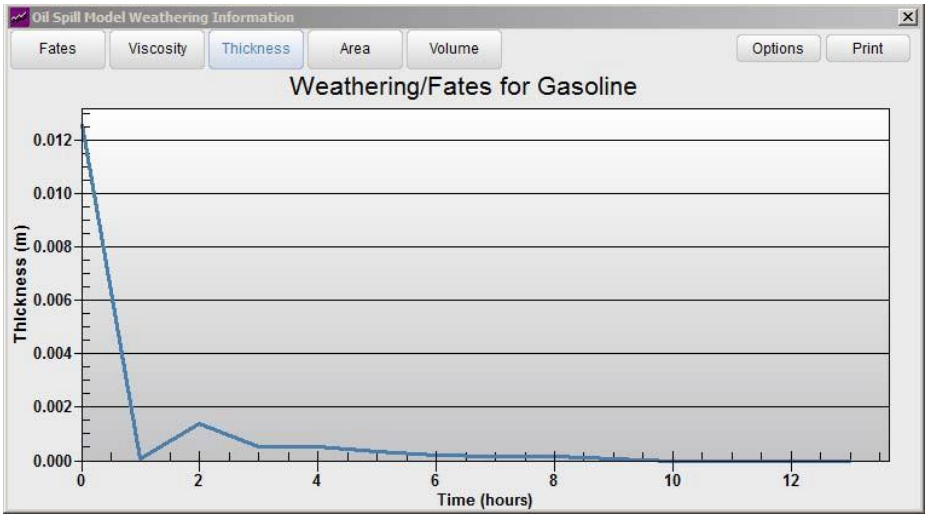


Figure 97 - Gasoline Oil Thickness

Scenario 4 - Burlington Canal, Gasoline, Winter Spill Trajectories

Scenario Information	
Season	Winter
Water Surface Temp (°C)	3
Release Duration	4 Hours
Model Run Duration	10 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Gasoline
Density @ 15°C (g/cm^3)	0.750
Viscosity @ 25°C (cP)	0.60

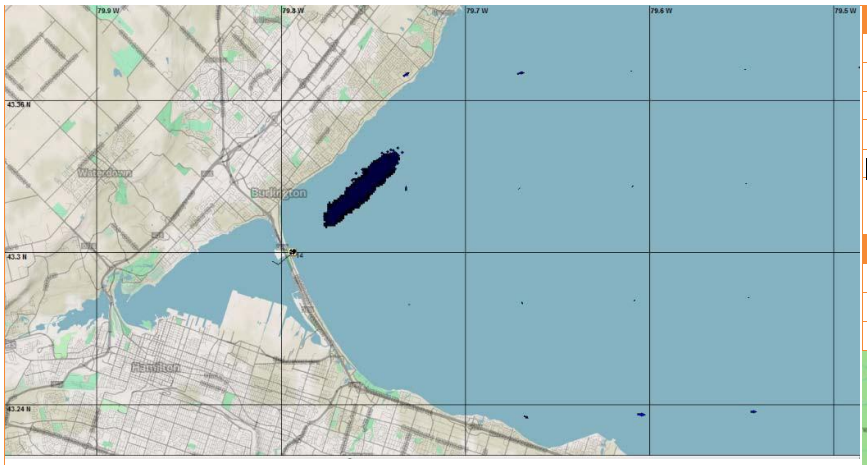
Scenario Name: Burlington Canal - Winter - Gasoline

Figure 98 - Scenario 4 - After 2 Hours

Scenario Information	
Season	Winter
Water Surface Temp (°C)	3
Release Duration	4 Hours
Model Run Duration	10 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Gasoline
Density @ 15°C (g/cm^3)	0.750
Viscosity @ 25°C (cP)	0.60

Scenario Name: Burlington Canal - Winter - Gasoline

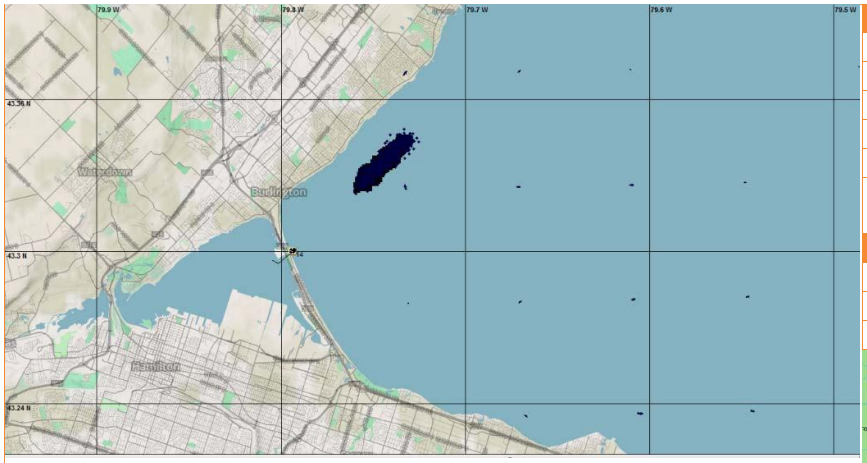
Figure 99 - Scenario 4 - After 4 Hours



Scenario Information	
Season	Winter
Water Surface Temp (°C)	3
Release Duration	4 Hours
Model Run Duration	10 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Gasoline
Density @ 15°C (g/cm^3)	0.750
Viscosity @ 25°C (cP)	0.60

Scenario Name: Burlington Canal - Winter – Gasoline

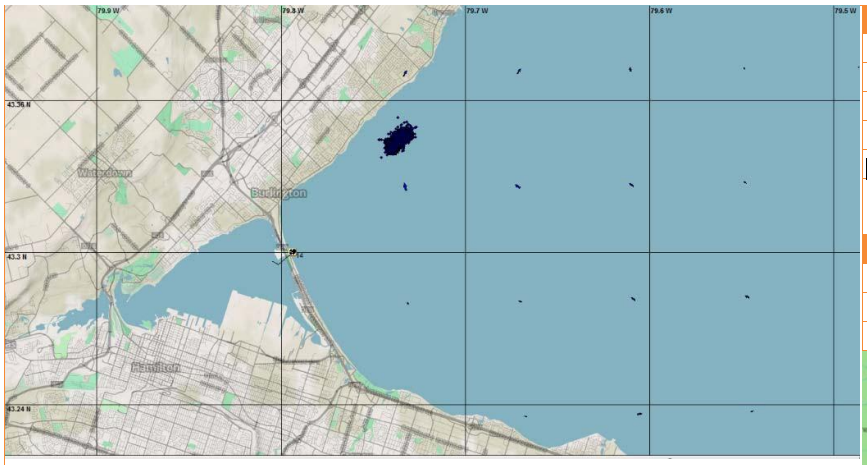
Figure 100 - Scenario 4 - After 6 Hours



Scenario Information	
Season	Winter
Water Surface Temp (°C)	3
Release Duration	4 Hours
Model Run Duration	10 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Gasoline
Density @ 15°C (g/cm^3)	0.750
Viscosity @ 25°C (cP)	0.60

Scenario Name: Burlington Canal - Winter – Gasoline

Figure 101 - Scenario 4 - After 8 Hours



Scenario Information	
Season	Winter
Water Surface Temp (°C)	3
Release Duration	4 Hours
Model Run Duration	10 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Gasoline
Density @ 15°C (g/cm^3)	0.750
Viscosity @ 25°C (cP)	0.60

Scenario Name: Burlington Canal - Winter – Gasoline

Figure 102 - Scenario 4 - After 10 Hours

Scenario 4 - Burlington Canal, Gasoline, Winter Spill Fate and Thickness

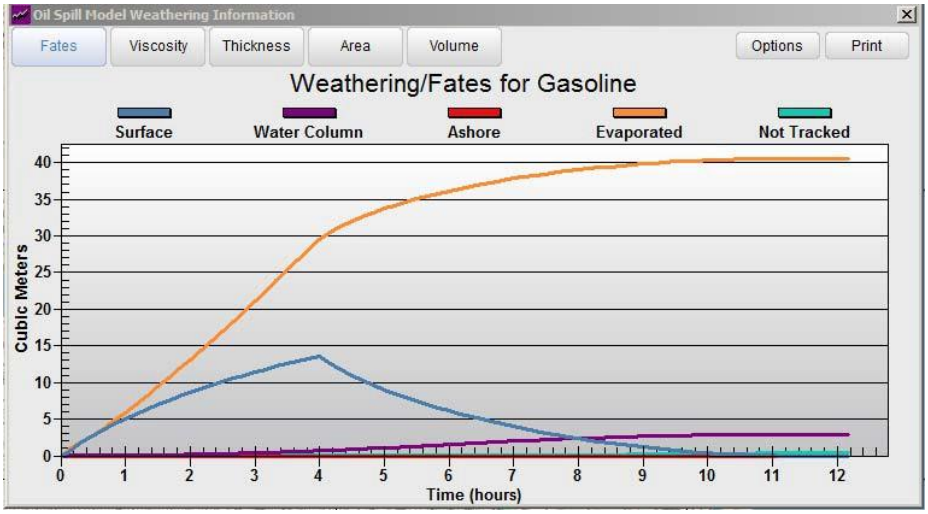


Figure 103 - Gasoline Oil Fates

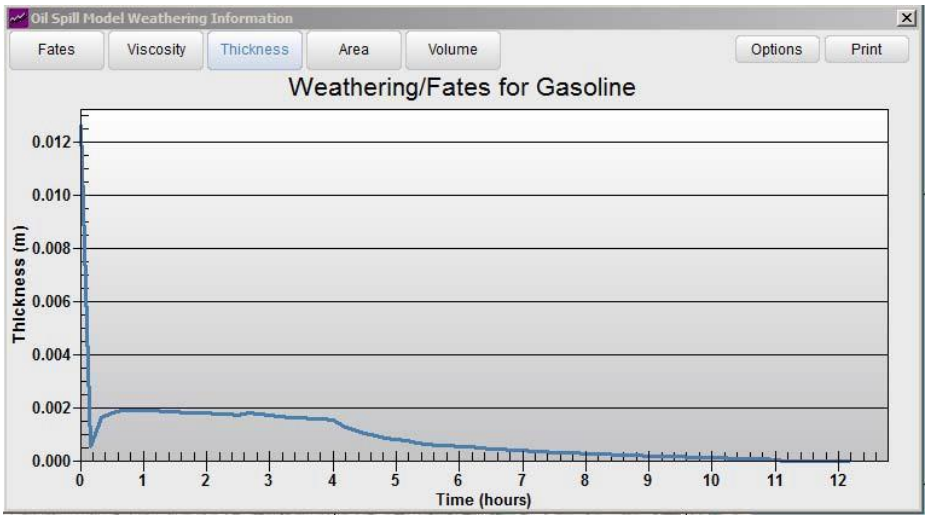
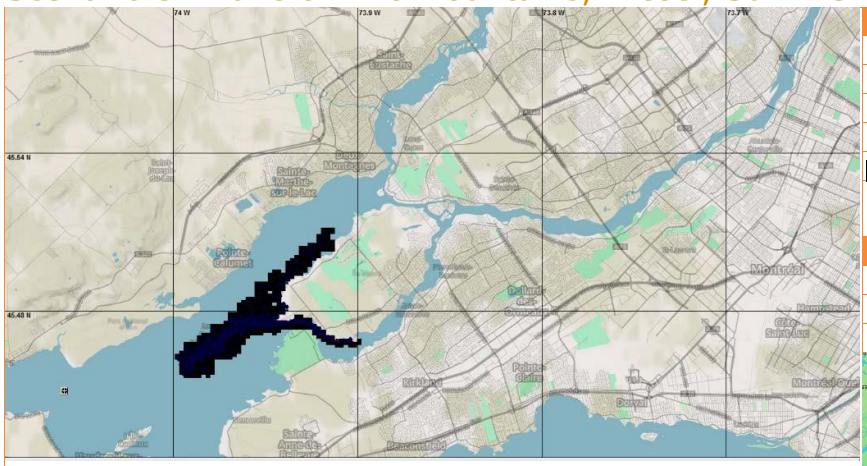
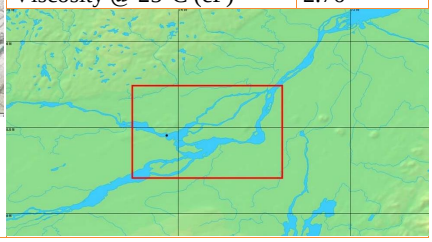


Figure 104 - Gasoline Oil Thickness

Scenario 5 - Lake of Two Mountains, Diesel, Summer Spill Trajectories



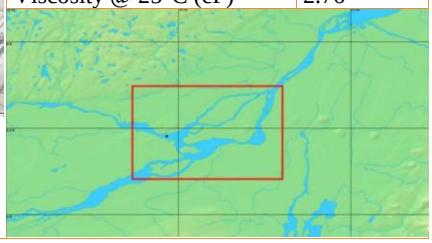
Scenario Information	
Season	Summer
Water Surface Temp (°C)	23
Release Duration	4 Hours
Model Run Duration	48 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76



Scenario Name: Lake of Two Mountains - Summer - Diesel

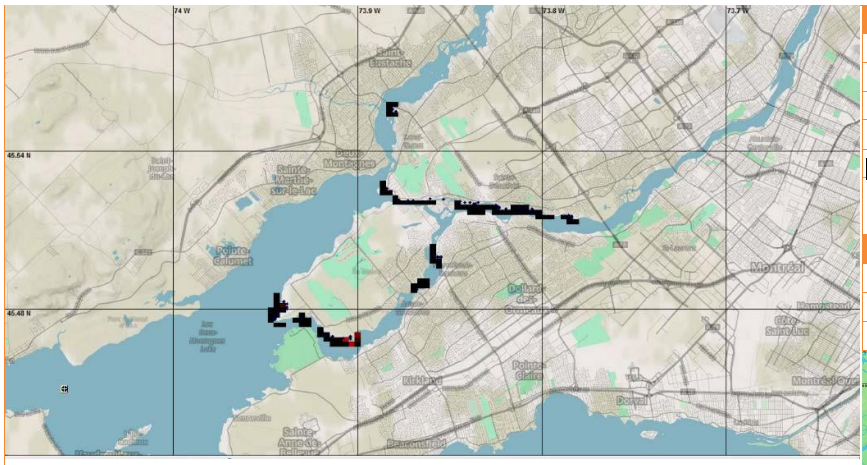
Figure 105 - Scenario 5 - After 6 Hours

Scenario Information	
Season	Summer
Water Surface Temp (°C)	23
Release Duration	4 Hours
Model Run Duration	48 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76

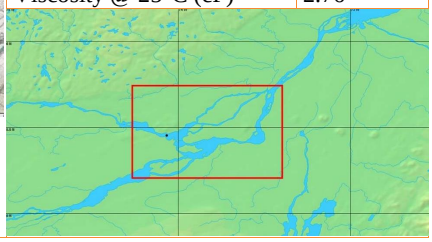


Scenario Name: Lake of Two Mountains - Summer - Diesel

Figure 106 - Scenario 5 - After 12 Hours



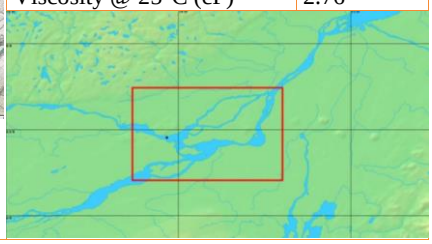
Scenario Information	
Season	Summer
Water Surface Temp (°C)	23
Release Duration	4 Hours
Model Run Duration	48 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76



Scenario Name: Lake of Two Mountains - Summer - Diesel

Figure 107 - Scenario 5 - After 18 Hours

Scenario Information	
Season	Summer
Water Surface Temp (°C)	23
Release Duration	4 Hours
Model Run Duration	48 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76

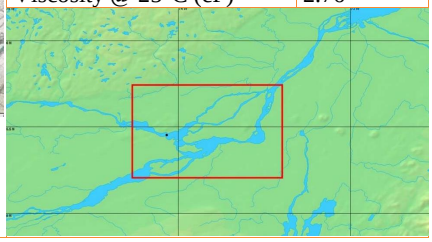


Scenario Name: Lake of Two Mountains - Summer - Diesel

Figure 108 - Scenario 5 - After 24 Hours

Scenario Information	
Season	Summer
Water Surface Temp (°C)	23
Release Duration	4 Hours
Model Run Duration	48 Hours
[redacted]	[redacted]
[redacted]	[redacted]

Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76

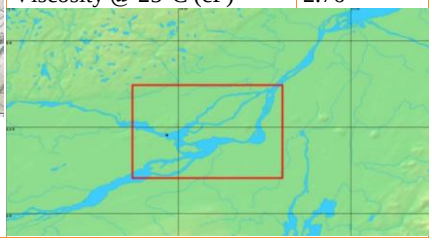


Scenario Name: Lake of Two Mountains - Summer - Diesel

Figure 109 - Scenario 5 - After 36 Hours

Scenario Information	
Season	Summer
Water Surface Temp (°C)	23
Release Duration	4 Hours
Model Run Duration	48 Hours
[redacted]	[redacted]
[redacted]	[redacted]

Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76



Scenario Name: Lake of Two Mountains - Summer - Diesel

Figure 110 - Scenario 5 - After 48 Hours

Scenario 5 - Lake of Two Mountains, Diesel, Summer Spill Fate and Thickness

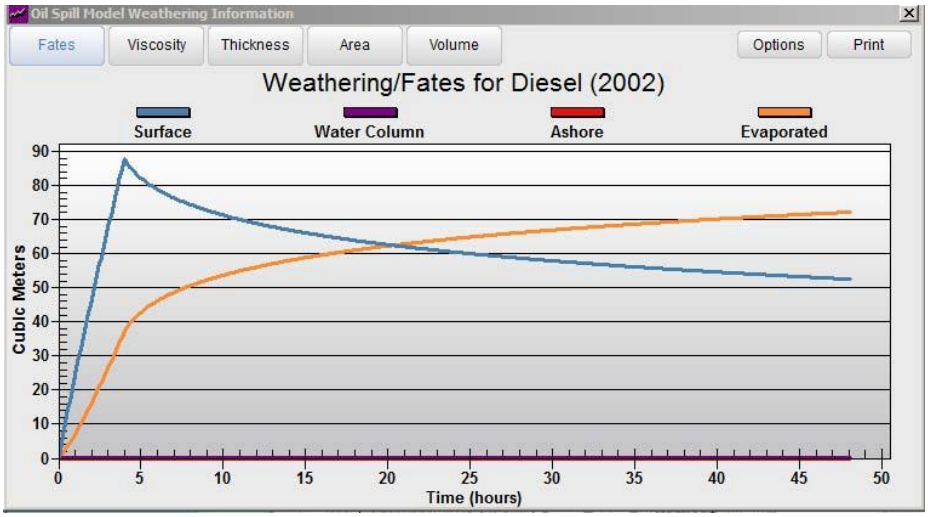


Figure 111 - Diesel Oil Fates

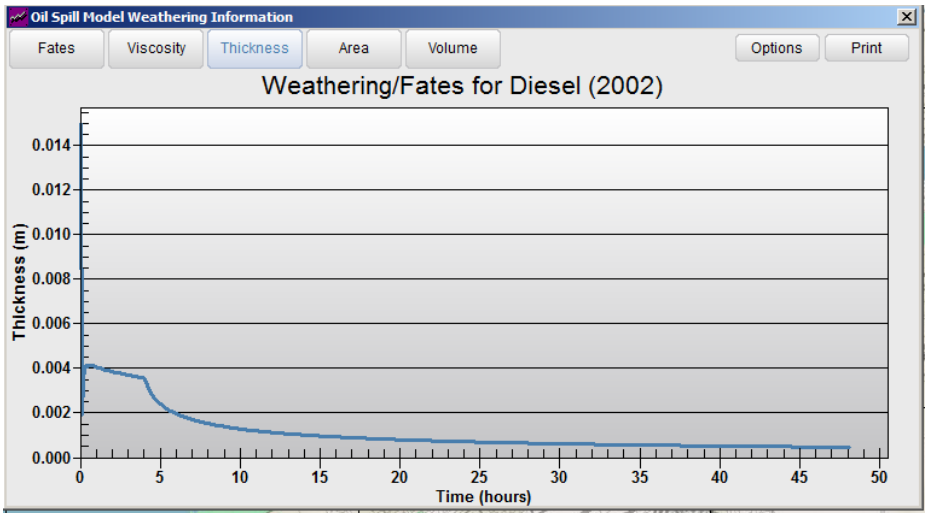
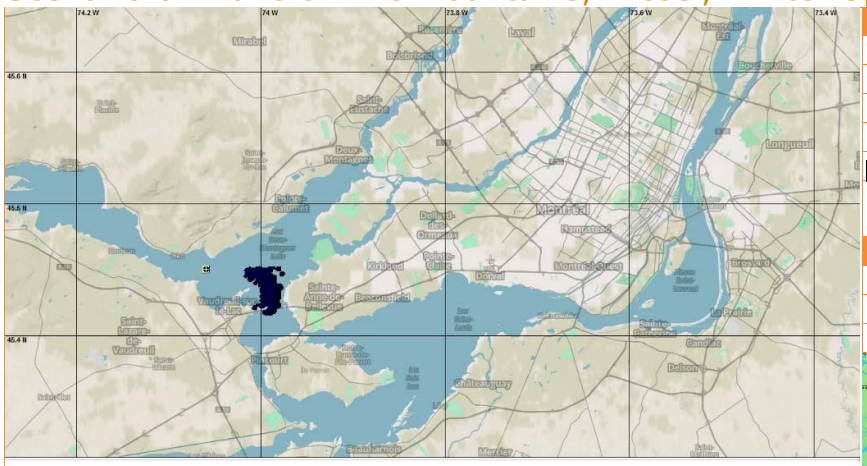
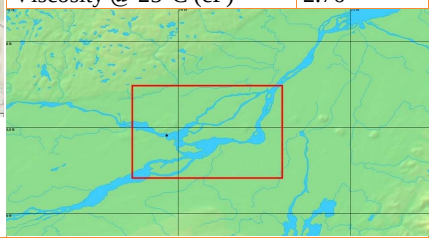


Figure 112 - Diesel Oil Thickness

Scenario 6 - Lake of Two Mountains, Diesel, Winter Spill Trajectories

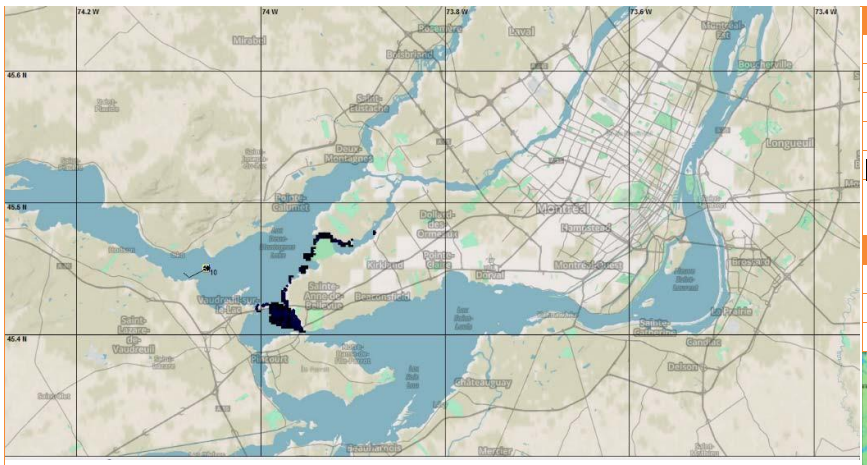


Scenario Information	
Season	Winter
Water Surface Temp (°C)	4
Release Duration	4 Hours
Model Run Duration	48 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76

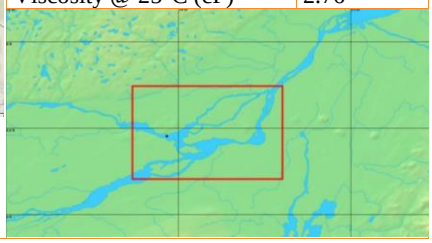


Scenario Name: Lake of Two Mountains - Winter - Diesel

Figure 113 - Scenario 6 - After 6 Hours



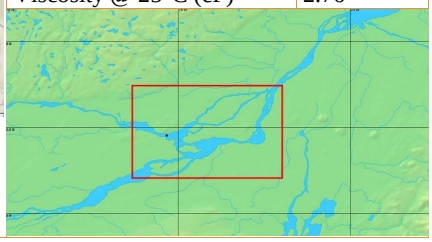
Scenario Information	
Season	Winter
Water Surface Temp (°C)	4
Release Duration	4 Hours
Model Run Duration	48 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76



Scenario Name: Lake of Two Mountains - Winter - Diesel

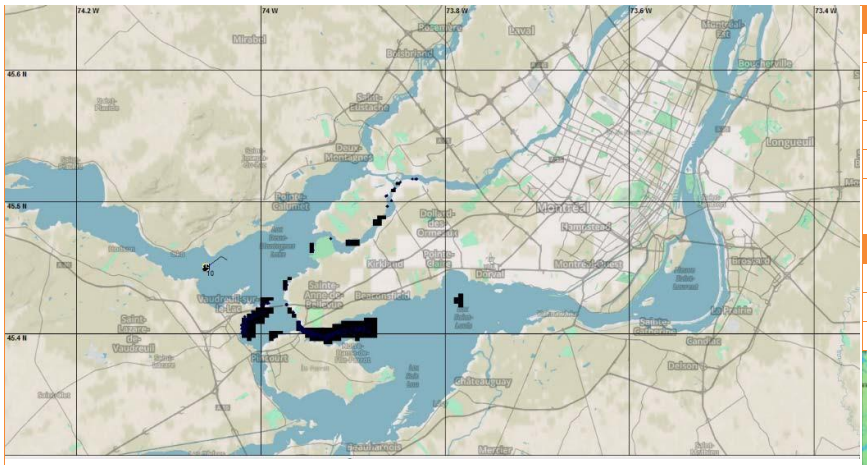
Figure 114 - Scenario 6 - After 12 Hours

Scenario Information	
Season	Winter
Water Surface Temp (°C)	4
Release Duration	4 Hours
Model Run Duration	48 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76

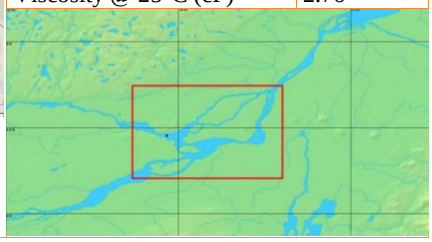


Scenario Name: Lake of Two Mountains - Winter - Diesel

Figure 115 - Scenario 6 - After 18 Hours

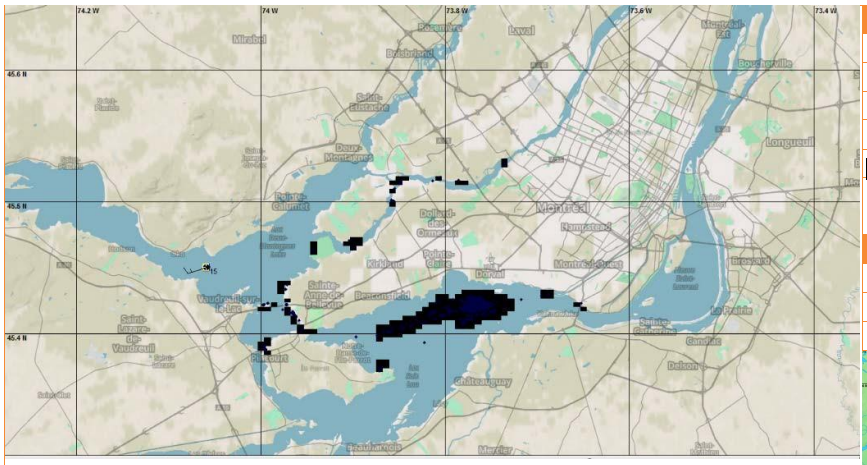


Scenario Information	
Season	Winter
Water Surface Temp (°C)	4
Release Duration	4 Hours
Model Run Duration	48 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76

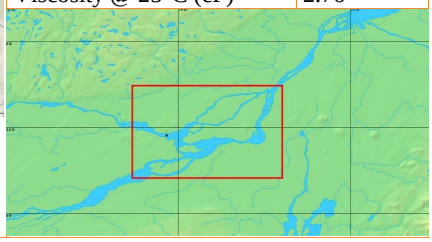


Scenario Name: Lake of Two Mountains - Winter - Diesel

Figure 116 - Scenario 6 - After 24 Hours

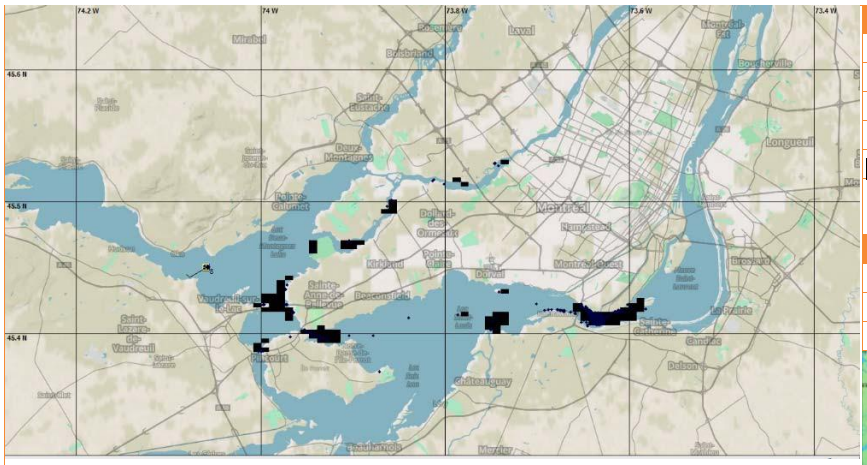


Scenario Information	
Season	Winter
Water Surface Temp (°C)	4
Release Duration	4 Hours
Model Run Duration	48 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76

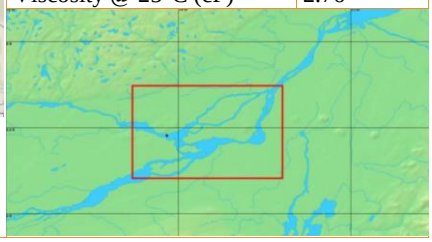


Scenario Name: Lake of Two Mountains - Winter - Diesel

Figure 117 - Scenario 6 - After 36 Hours



Scenario Information	
Season	Winter
Water Surface Temp (°C)	4
Release Duration	4 Hours
Model Run Duration	48 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Diesel
Density @ 15°C (g/cm^3)	0.8310
Viscosity @ 25°C (cP)	2.76



Scenario Name: Lake of Two Mountains - Winter - Diesel

Figure 118 - Scenario 6 - After 48 Hours

Scenario 6 - Lake of Two Mountains, Diesel, Winter Spill Fate and Thickness

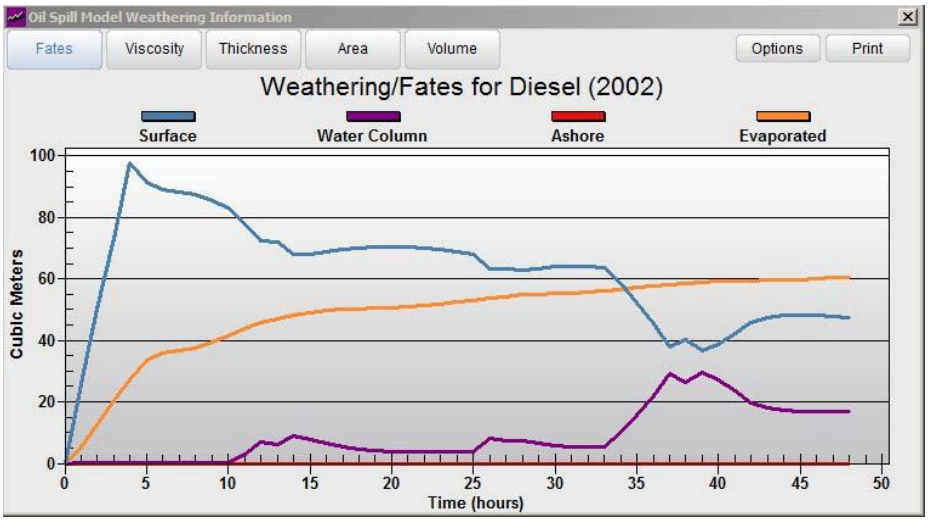


Figure 119 - Diesel Oil Fates

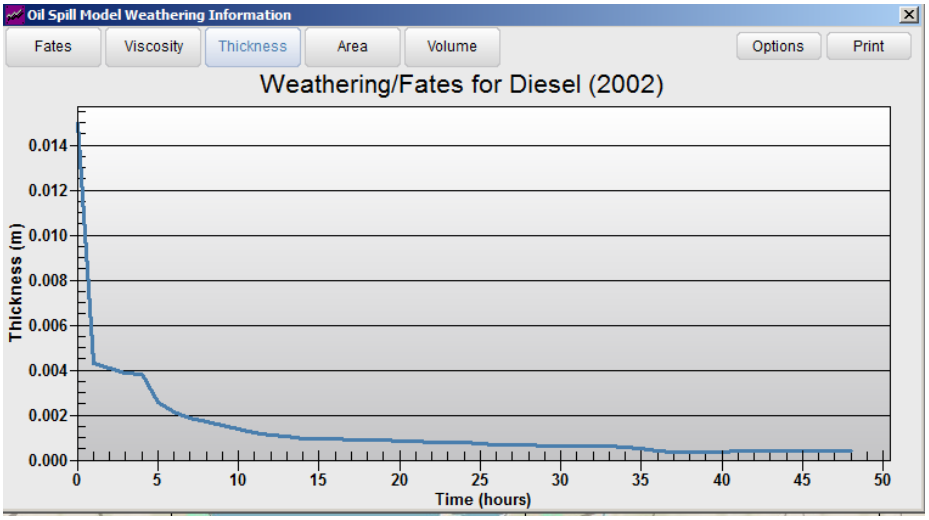
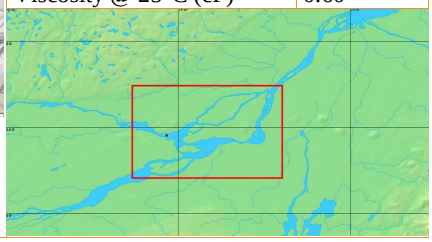


Figure 120 - Diesel Oil Thickness

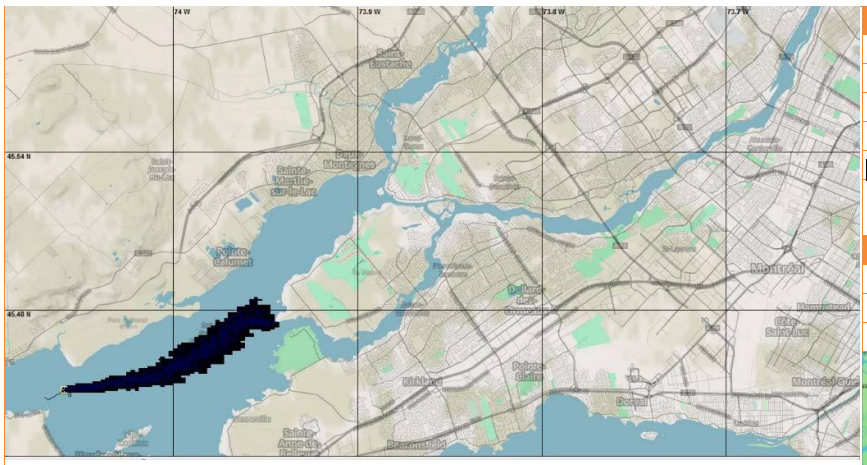
Scenario 7 - Lake of Two Mountains, Gasoline, Summer Spill Trajectories

Scenario Information	
Season	Summer
Water Surface Temp (°C)	23
Release Duration	4 Hours
Model Run Duration	12 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Gasoline
Density @ 15°C (g/cm^3)	0.750
Viscosity @ 25°C (cP)	0.60

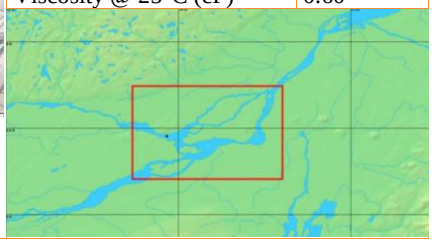


Scenario Name: Lake of Two Mountains - Summer - Gasoline

Figure 121 - Scenario 7 - After 2 Hours

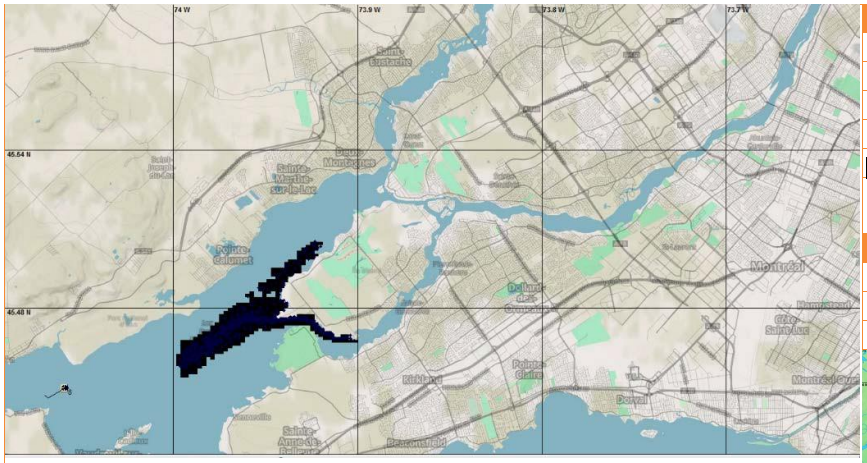


Scenario Information	
Season	Summer
Water Surface Temp (°C)	23
Release Duration	4 Hours
Model Run Duration	12 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Gasoline
Density @ 15°C (g/cm^3)	0.750
Viscosity @ 25°C (cP)	0.60

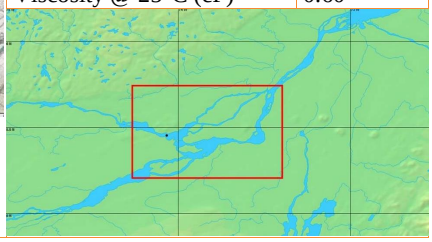


Scenario Name: Lake of Two Mountains - Summer - Gasoline

Figure 122 - Scenario 7 - After 4 Hours

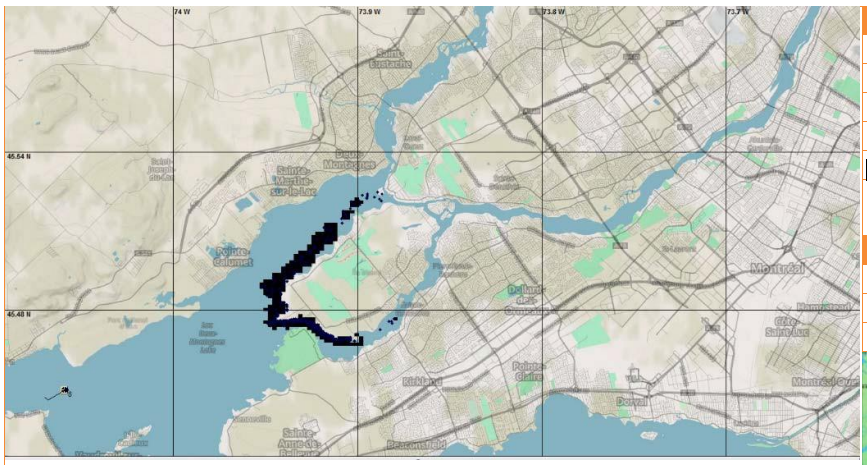


Scenario Information	
Season	Summer
Water Surface Temp (°C)	23
Release Duration	4 Hours
Model Run Duration	12 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Gasoline
Density @ 15°C (g/cm^3)	0.750
Viscosity @ 25°C (cP)	0.60

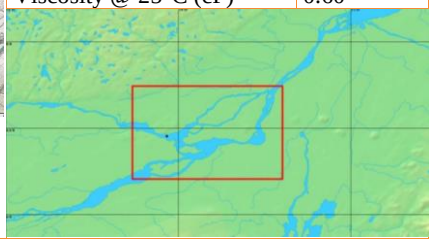


Scenario Name: Lake of Two Mountains - Summer - Gasoline

Figure 123 - Scenario 7 - After 6 Hours

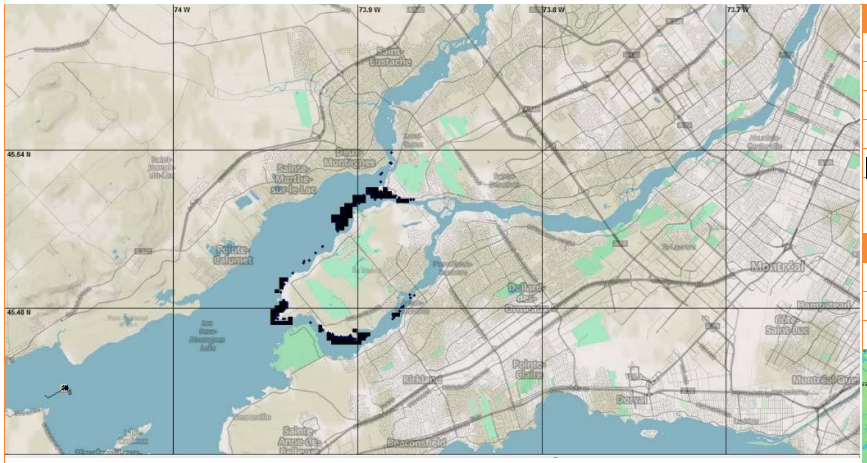


Scenario Information	
Season	Summer
Water Surface Temp (°C)	23
Release Duration	4 Hours
Model Run Duration	12 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Gasoline
Density @ 15°C (g/cm^3)	0.750
Viscosity @ 25°C (cP)	0.60

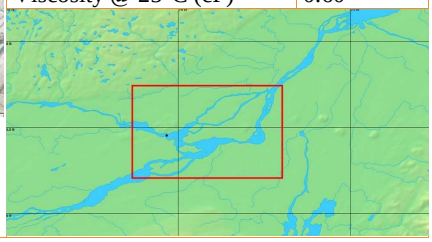


Scenario Name: Lake of Two Mountains - Summer - Gasoline

Figure 124 - Scenario 7 - After 8 Hours



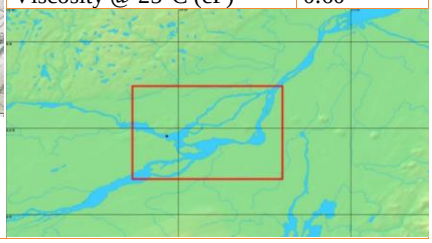
Scenario Information	
Season	Summer
Water Surface Temp (°C)	23
Release Duration	4 Hours
Model Run Duration	12 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Gasoline
Density @ 15°C (g/cm^3)	0.750
Viscosity @ 25°C (cP)	0.60



Scenario Name: Lake of Two Mountains - Summer - Gasoline

Figure 125 - Scenario 7 - After 10 Hours

Scenario Information	
Season	Summer
Water Surface Temp (°C)	23
Release Duration	4 Hours
Model Run Duration	12 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Gasoline
Density @ 15°C (g/cm^3)	0.750
Viscosity @ 25°C (cP)	0.60



Scenario Name: Lake of Two Mountains - Summer - Gasoline

Figure 126 - Scenario 7 - After 12 Hours

Scenario 7 - Lake of Two Mountains, Gasoline, Summer Spill Fate and Thickness

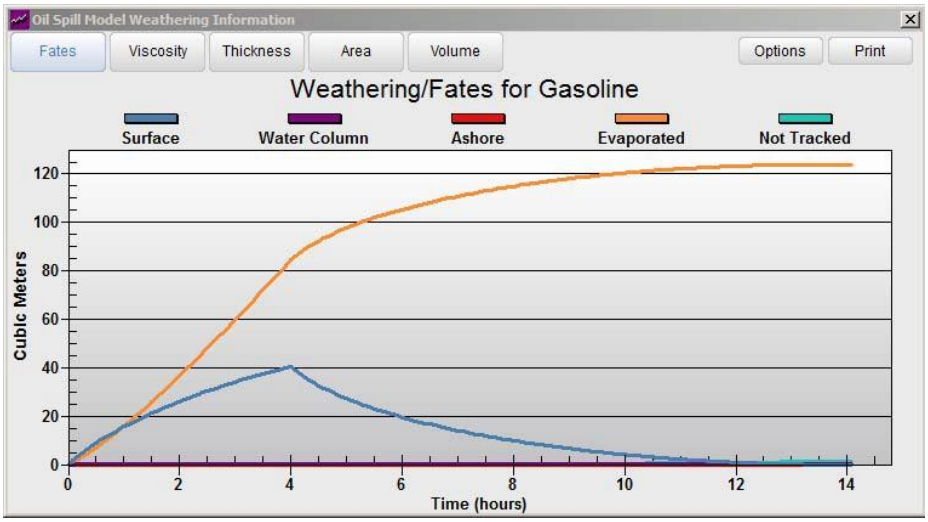


Figure 127 - Gasoline Oil Fates

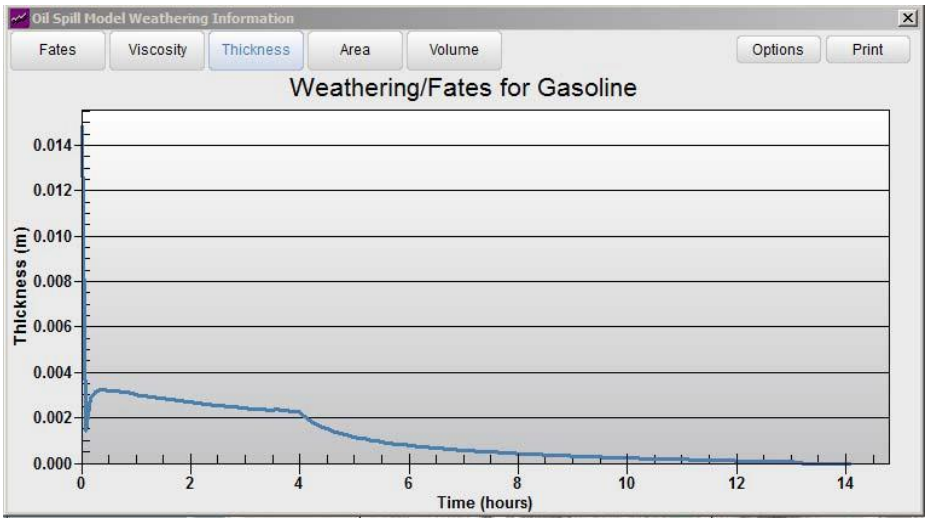
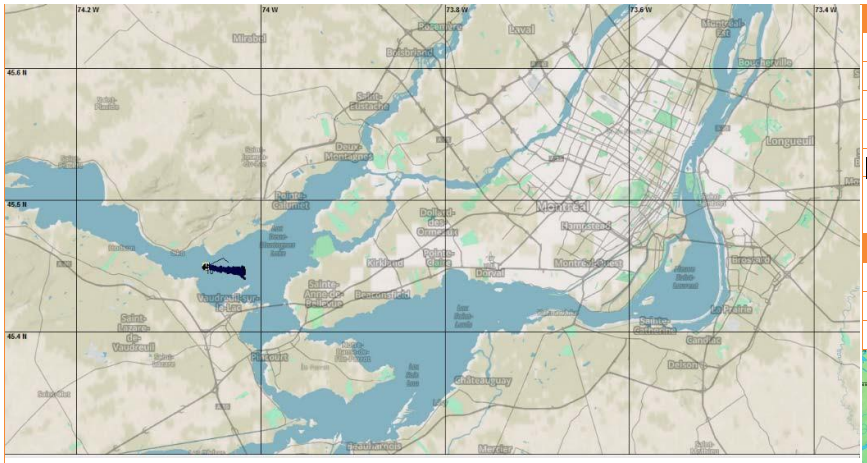
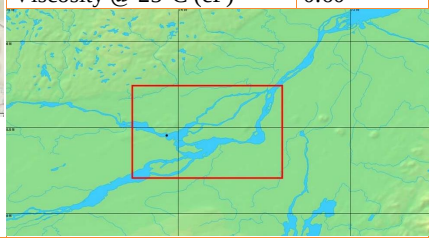


Figure 128 - Gasoline Oil Thickness

Scenario 8 - Lake of Two Mountains, Gasoline, Winter Spill Trajectories

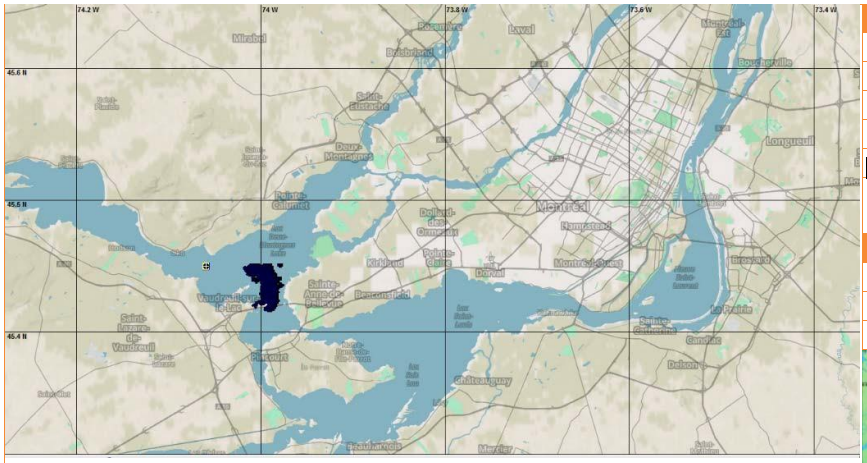


Scenario Information	
Season	Winter
Water Surface Temp (°C)	4
Release Duration	4 Hours
Model Run Duration	22 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Gasoline
Density @ 15°C (g/cm^3)	0.750
Viscosity @ 25°C (cP)	0.60

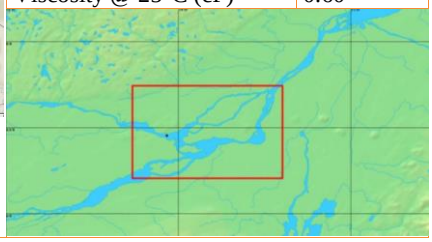


Scenario Name: Lake of Two Mountains - Winter - Gasoline

Figure 129 - Scenario 8 - After 2 Hours

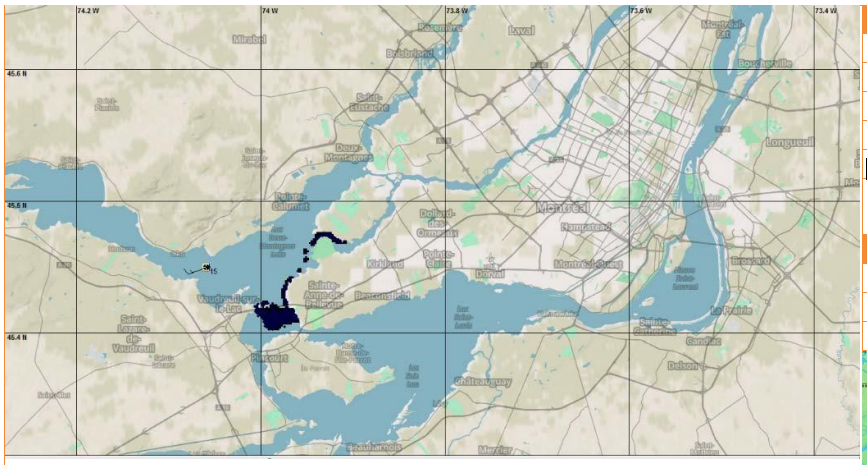


Scenario Information	
Season	Winter
Water Surface Temp (°C)	4
Release Duration	4 Hours
Model Run Duration	22 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Gasoline
Density @ 15°C (g/cm^3)	0.750
Viscosity @ 25°C (cP)	0.60

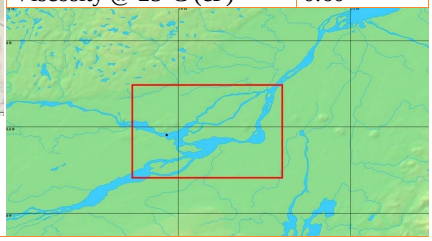


Scenario Name: Lake of Two Mountains - Winter - Gasoline

Figure 130 - Scenario 8 - After 6 Hours

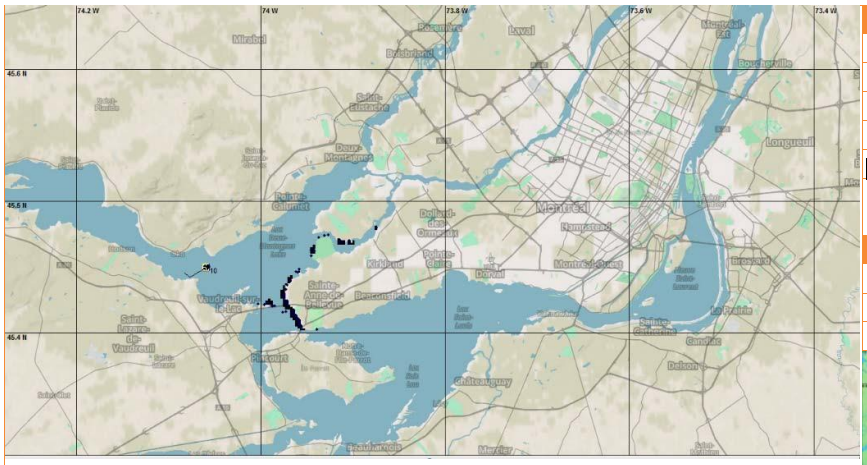


Scenario Information	
Season	Winter
Water Surface Temp (°C)	4
Release Duration	4 Hours
Model Run Duration	22 Hours
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Gasoline
Density @ 15°C (g/cm^3)	0.750
Viscosity @ 25°C (cP)	0.60

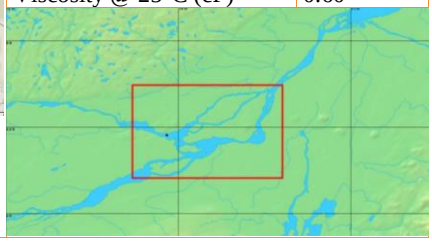


Scenario Name: Lake of Two Mountains - Winter - Gasoline

Figure 131 - Scenario 8 - After 10 Hours



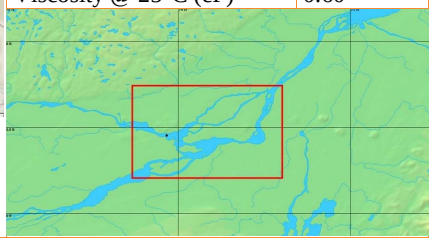
Scenario Information	
Season	Winter
Water Surface Temp (°C)	4
Release Duration	4 Hours
Model Run Duration	22 Hours
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Gasoline
Density @ 15°C (g/cm^3)	0.750
Viscosity @ 25°C (cP)	0.60



Scenario Name: Lake of Two Mountains - Winter - Gasoline

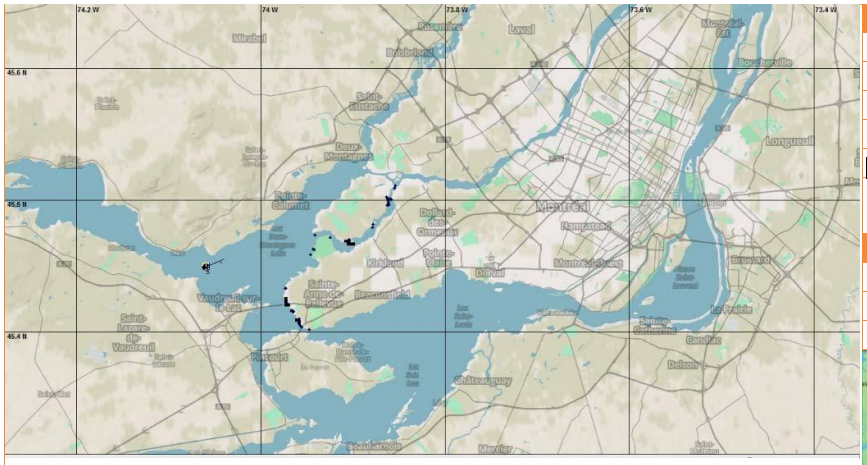
Figure 132 - Scenario 8 - After 14 Hours

Scenario Information	
Season	Winter
Water Surface Temp (°C)	4
Release Duration	4 Hours
Model Run Duration	22 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Gasoline
Density @ 15°C (g/cm^3)	0.750
Viscosity @ 25°C (cP)	0.60

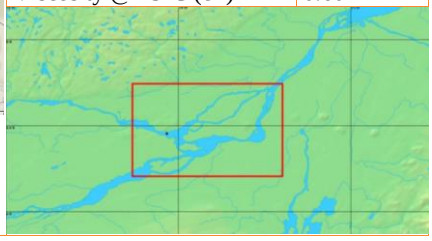


Scenario Name: Lake of Two Mountains - Winter - Gasoline

Figure 133 - Scenario 8 - After 18 Hours



Scenario Information	
Season	Winter
Water Surface Temp (°C)	4
Release Duration	4 Hours
Model Run Duration	22 Hours
[redacted]	[redacted]
[redacted]	[redacted]
Product Properties	
Name	Gasoline
Density @ 15°C (g/cm^3)	0.750
Viscosity @ 25°C (cP)	0.60



Scenario Name: Lake of Two Mountains - Winter - Gasoline

Figure 134 - Scenario 8 - After 22 Hours

Scenario 8 - Lake of Two Mountains, Gasoline, Winter Spill Fate and Thickness

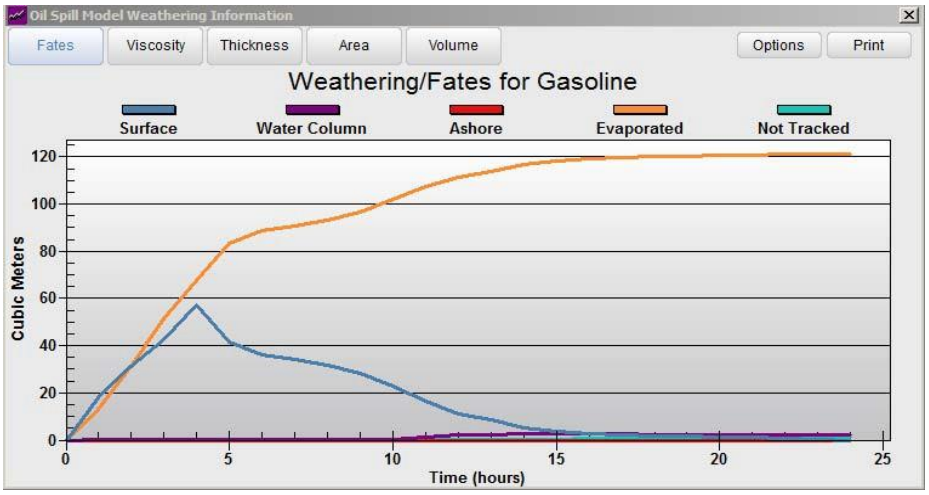


Figure 135 - Gasoline Oil Fates

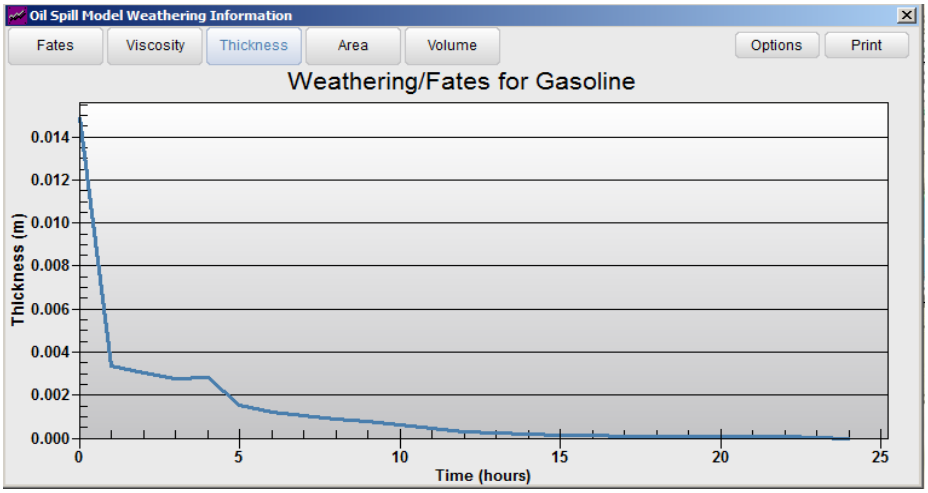


Figure 136 - Gasoline Oil Thickness

5 Conclusions

The modelling results show that for the most part, due to the volatility of diesel and gasoline (especially during the warmer months), a relatively high evaporation rate (Mackay et al., 1980, 1982) results in a short duration (typically a few days) before essentially all of the product has either evaporated, or spread to a sheen that is neither observable or recoverable.

In each location, the spills persist longer in colder conditions, due to the reduced evaporation rates, thus staying on the surface for longer periods.

For the most part, gasoline spills will evaporate to un-observable sheen thicknesses within 10-12 hours, while diesel spill could persist as observable sheens for up to 48 hours (in colder water).

6 References

Delvigne, G.A.L., and C.E. Sweeney. 1988. Natural dispersion of oil, Oil and Chemical Pollution 4:281-310.
Mackay, D., S. Paterson, and K. Trudel, 1980. A mathematical model of oil spill behavior, Department of Chemical Engineering, University of Toronto, Canada, 39 pp.

Mackay, D., W. Shui, K. Houssain, W. Stiver, D. McCurdy, and S. Paterson, 1982. Development and calibration of an oil spill behavior model, Report No. CG-D027-83, US Coast Guard Research and Development Center, Groton, CT.

OILMAP

OILMAP is a state-of-the-art, personal computer based oil spill response system applicable to oil spill contingency planning and real time response and applicable for any location in the world (Jayko and Howlett, 1992; Spaulding et al., 1992a,b). OILMAP was designed in a modular fashion so that different types of spill models could be incorporated within the basic system, as well as a suite of sophisticated environmental data management tools, without increasing the complexity of the user interface. The model system employs a Windows based graphics user interface that extensively utilizes point and click and pull down menu operation. OILMAP is configured for operation on standard Pentium PCs and can be run on laptop and notebook computers to facilitate use in the field.

The OILMAP suite includes the following models: a trajectory and fates model for surface and subsurface oil, an oil spill response model, and stochastic and receptor models. The relevant models are described in more detail below.

The trajectory and fates model predicts the transport and weathering of oil from instantaneous or continuous spills. Predictions show the location and concentration of the surface and subsurface oil versus time. The model estimates the temporal variation of the oil's areal coverage, oil thickness, and oil viscosity. The model also predicts the oil mass balance or the amount of oil on the free surface, in the water column, evaporated, on the shore, and outside the study domain versus time. The fate processes in the model include spreading, evaporation, entrainment or natural dispersion, and emulsification. As an option OILMAP can also estimate oil-sediment interaction and associated oil sedimentation. A brief description of each process algorithm is presented here. ASA (1997) provides a more detailed description for the interested reader. The oil sedimentation algorithm is described in French et al. (1994), ASA (1996) and Kirstein et al. (1985). Spreading is represented using the thick slick portion of Mackay et al.'s (1980, 1982) thick-thin approach. Evaporation is based on Mackay's analytic formulation parameterized in terms of evaporative exposure (Mackay et al., 1980, 1982). Entrainment or natural dispersion is modeled using Delvigne and Sweeney's (1988) formulation which explicitly represents oil injection rates into the water column by droplet size. The entrainment coefficient, as a function of oil viscosity, is based on Delvigne and Hulsen (1994). Emulsification of the oil, as function of evaporative losses and changes in water content, is based on Mackay et al. (1980, 1982). Oil-shoreline interaction is modeled based on a simplified version of Reed et al. (1989) which formulates the problem in terms of a shore type dependent holding capacity and exponential removal rate.

For the subsurface component, oil mass injection rates from the surface slick into the water column are performed by oil droplet size class using Delvigne and Sweeney's (1988) entrainment formulation. The subsurface oil concentration field is predicted using a particle based, random walk technique and includes oil droplet rise velocities by size class.

The vertical and horizontal dispersion coefficients are specified by the user. Resurfacing of oil droplets due to buoyant effects is explicitly included and generates new surface slicks. If oil is resurfaced in the vicinity of surface spillets the oil is incorporated into the closest surface spillet. A more detailed presentation of the subsurface oil transport and fate algorithm is given in Kolluru et al. (1994).

The basic configuration of the model also includes a variety of graphically based tools that allow the user to specify the spill scenario, animate spill trajectories, currents and winds, import and export environmental data, grid any area within the model operational domain, generate mean and/or tidal current fields, enter and edit oil types in the oil library, enter and display data into the embedded geographic information system (GIS) and determine resources impacted by the spill.

The GIS allows the user to enter, manipulate, and display point, line, poly line, and polygon data geographically referenced to the spill domain. Each object can be assigned attribute data in the form of text descriptions, numeric fields or external link files.

OILMAP has been applied to hindcast a variety of spills. These hindcasts validate the performance of the model. Hindcasts of the Amoco Cadiz, Ixtoc and Persian Gulf War spills and an experimental spill in the North Sea by Warren Springs Laboratory are reported in Kolluru et al. (1994). Spaulding et al. (1993) also present a hindcast of the Gulf War spill. Spaulding et al. (1994) present the application of the model to the Braer spill where subsurface transport of the oil was critical to understanding the oil's movement and impact on the seabed. Recently Spaulding et al. (1996a) have applied the model to hindcast the surface and subsurface transport and fate of the fuel oil spilled from the North Cape barge. Integration of OILMAP with a real time hydrodynamic model and the hindcast of the movement of oil tracking buoys in Narragansett Bay are presented in Spaulding et al (1996b).

OILMAP References

Applied Science Associates, Inc. (ASA), 1999. OILMAP Technical and Users' Manual Applied Science Associates, Inc., Narragansett, RI.

Delvigne, G.A.L., and C.E. Sweeney. 1988. Natural dispersion of oil, Oil and Chemical Pollution 4:281-310.

Delvigne, G.A.L., and L.J.M. Hulsen, 1994. Simplified laboratory measurement of oil dispersion coefficient - Application in computations of natural oil dispersion. Proceedings of the Seventeenth Arctic and Marine Oil Spill Program, Technical Seminar, June 8-10, 1994, Vancouver, British Columbia, Canada, pp. 173-187.

French, D., E. Howlett, and D. Mendelsohn, 1994. Oil and chemical impact model system description and application, 17th Arctic and Marine Oil Spill Program, Technical Seminar, June 8-10, 1994, Vancouver, British Columbia, Canada, pp. 767-784.

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Jayko, K. and E. Howlett, 1992. OILMAP an interactive oil spill model, OCEANS 92, October 22-26, 1992, Newport, RI.

Kirstein, B., J.R. Clayton, C. Clary, J.R. Payne, D. McNabb, G. Fauna, and R. Redding, 1985. Integration of suspended particulate matter and oil transportation study, Mineral Management Service, Anchorage, Alaska.

Kolluru, V., M.L. Spaulding, and E. Anderson, 1994. A three dimensional subsurface oil dispersion model using a particle based technique, 17th Arctic and Marine Oil Spill Program, Technical Seminar, June 8-10, 1994, Vancouver, British Columbia, Canada, pp. 767-784.

Mackay, D., S. Paterson, and K. Trudel, 1980. A mathematical model of oil spill behavior, Department of Chemical Engineering, University of Toronto, Canada, 39 pp.

Mackay, D., W. Shui, K. Houssain, W. Stiver, D. McCurdy, and S. Paterson, 1982. Development and calibration of an oil spill behavior model, Report No. CG-D027-83, U.S. Coast Guard Research and Development Center, Groton, CT.

Reed, M., E. Gundlach, and T. Kana, 1989. A coastal zone oil spill model: development and sensitivity studies, Oil and Chemical Pollution 5:411-449.

Spaulding, M. L., E. Howlett, E. Anderson, and K. Jayko, 1992a. OILMAP a global approach to spill modeling. 15th Arctic and Marine Oil Spill Program, Technical Seminar, June 9-11, 1992, Edmonton, Alberta, Canada, pp. 15-21.

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Spaulding, M.L., E.L. Anderson, T. Isaji and E. Howlett, 1993. Simulation of the oil trajectory and fate in the Arabian Gulf from the Mina Al Ahmadi Spill, Marine Environmental Research 36(2):79-115.

Spaulding, M. L., V. S. Kolluru, E. Anderson, and E. Howlett, 1994. Application of three dimensional oil spill model (WOSM/OILMAP) to hindcast the Braer spill, Spill Science and Technology Bulletin 1(1):23-35.

Spaulding, M.L., T. Opishinski, E. Anderson, E. Howlett, and D. Mendelsohn, 1996a. Application of OILMAP and SIMAP to predict the transport and fate of the North Cape spill, Narragansett, RI. 19th Arctic and Marine Oil Spill Program, Technical Seminar, June 12-14, 1996, Calgary, Alberta, Canada, pp. 745-776.

Spaulding, M.L., T. Opishinski, and S. Haynes, 1996b. COASTMAP: An integrated monitoring and modeling system to support oil spill response, Spill Science and Technology Bulletin 3(3):149-169.

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Appendix K Revisions

Section #	Rev #	Date	Author/ Approver	Changes Made
0	10	02 Mar 2018	[redacted]	Intelex Number Updated
Table of Contents	10	02 Mar 2018	[redacted]	Added Redaction Notes
4.2.1	10	02 Mar 2018	[redacted]	[redacted]
Multiple	10	02 Mar 2018	[redacted]	MSDS switched to SDS
2	10	02 Mar 2018	[redacted]	Updated Figure 7.
6.7.2.3	10	02 Mar 2018	[redacted]	[redacted]
8	10	02 Mar 2018	[redacted]	Updated Reporting Information
Appendix H	10	02 Mar 2018	[redacted]	Updated contact numbers and names, added Western Contacts
0	9	25 Sept 2017	[redacted]	Updated contact information
4.2.1	9	25 Sept 2017	[redacted]	[redacted]
6.7.2.3	9	25 Sept 2017	[redacted]	[redacted]
Appendix H	9	25 Sept 2017	[redacted]	Updated contact numbers and names.
0	8	1 Feb 2017	[redacted]	Table of Contents updated for Rev. 8
1.12	8	1 Feb 2017	[redacted]	Removed reference to Appendix K - Overpressure Response.
1.3	8	1 Feb 2017	[redacted]	Renamed Appendix L to Appendix K with the removal of old Appendix K - Overpressure Response.
2.1.2	8	1 Feb 2017	[redacted]	[redacted]
2.2.3	8	1 Feb 2017	[redacted]	Added reference to consider closing highways
2.2.5	8	1 Feb 2017	[redacted]	Updated from 37 to 22 regions

Section #	Rev #	Date	Author/ Approver	Changes Made
3.1 & throughout manual	8	1 Feb 2017		Updated OEM with new title Ontario Ministry of the Environment and Climate Change. Updated Ministere du Développement durable, de l'Environnement, de la Faune et des Parcs with new title Développement durable,Environnement, et Lutte contre les changement climatiques Updated Alberta Environment with new title Alberta Environment and Parks
4.1	8	1 Feb 2017	[redacted]	Per NEB 4.5 updated to include location of Control Room shutdown procedure
4.2	8	1 Feb 2017	[redacted]	Updated Chart 2 and removed Kelly Bradshaw's name from Potential ICs
6.6	8	1 Feb 2017	[redacted]	Per NEB 5.4 reference made to plans prepared after IAP
6.6.1	8	1 Feb 2017	[redacted]	Added Calgary Airport Terminal
6.6.1.4	8	1 Feb 2017	[redacted]	Updated title from Product-Specific Response Plans to Factors
6.6.7	8	1 Feb 2018	[redacted]	Per NEB 7.3 added reference and location of Security Management Standard
6.7.1.1	8	1 Feb 2017	[redacted]	Per NEB 7.2 Added PIMS/FIMS and other relevant Intelex document #s
6.7.2.3	8	1 Feb 2017	[redacted]	Removed [redacted]
6.7.3.2	8	1 Feb 2017	[redacted]	Removed [redacted] section
7.1	8	1 Feb 2017	[redacted]	Removed Communications overview title only
7.3	8	1 Feb 2017	[redacted]	Referenced Security Management Standards in Intelex.

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7.10.2	8	1 Feb 2017	[redacted]	Per NEB 4.6 updated reference to stand-down procedure
Appendix A	8	1 Feb 2017	[redacted]	Per NEB 6.1 Added location of SDS sheets
Appendix D	8	1 Feb 2017	[redacted]	Added EPZ to list
Appendix G	8	1 Feb 2017	[redacted]	Added Safe Work Permit book and WSIB to list. Per NEB 9.1 added trailer locations
Appendix H	8	1 Feb 2017	[redacted]	Updated Resource listing
Appendix I	8	1 Feb 2017	[redacted]	Per NEB 10.2 Made reference to location of contacts for EPZ
Appendix K	8	1 Feb 2017	[redacted]	Removed Appendix K – Overpressure Response. The activity is non- emergency response based and is contained in the Line Control ERP. As a result, Appendix L now becomes Appendix K
0	7	28 Mar 2016	[redacted]	Table of Contents updated for Rev. 7
1.1	7	28 Mar 2016	[redacted]	Added reference to new Appendix K
1.3	7	28 Mar 2016	[redacted]	Updated for Rev. 7
2.1.2	7	28 Mar 2016	[redacted]	Administrative change – Reference Appendix H
5.2.1.1	7	28 Mar 2016	[redacted]	Added requirement for IC to provide update to EOC
5.2.6.4	7	28 Mar 2016	[redacted]	Allow Operation Section Chief position to be contracted out
5.2.7.4	7	28 Mar 2016	[redacted]	Removed reference to contractor name
5.3.3.2	7	28 Mar 2016	[redacted]	Update Calgary EOC Address & map
6.2	7	28 Mar 2016	[redacted]	Update references from ERCB to AER
7.6	7	28 Mar 2016	[redacted]	Remove Coordination of

Section #	Rev #	Date	Author/ Approver	Changes Made
				Monitoring Activities to TNPI Comms Plan
7.7	7	28 Mar 2016	[redacted]	Remove Sharing and Evaluating Coverage to TNPI Comms Plan
7.8, 7.9, 7.10	7	28 Mar 2016	[redacted]	Updated Section numbers to 7.6, 7.7, 7.8 no change to content
7.11	7	28 Mar 2016	[redacted]	Updated Section number for section to 7.9
7.11.4	7	28 Mar 2016	[redacted]	Remove Hot Line Inquiry set up only to TNPI Comms Plan old section 7.9.4
7.11.6	7	28 Mar 2016	[redacted]	Remove part of Section covering Media Line Inquiry set up and media distribution to TNPI Comms Plan old section 7.9.6
7.11.9	7	28 Mar 2016	[redacted]	Remove social media password and setup to TNPI Comms Plan old section 7.9.9
7.12, 7.13,7.14	7	28 Mar 2016	[redacted]	Updated Section numbers to 7.10, 7,11, 7.12
8.6	7	28--Mar 2016	[redacted]	Updated AER Release Report
Appendix B	7	28-Mar-2016	[redacted]	Minor grammar update to Liaison Officer Booklet
Appendix H	7	28-Mar-2016	[redacted]	Updates to contact numbers and names added Red Deer County - EMO
Appendix J	7	28-Mar-2016	[redacted]	Changed Oilmap reference Appendix A to Attachment A
Appendix K	7	28-Mar-2016	[redacted]	NEW Over Pressure Response Process & Flowchart
0	6	31-Aug-2015	[redacted]	Table of Contents updated for Rev. 6
1.3	6	31-Aug-2015	[redacted]	Update for Rev. 6
2.1	6	31-Aug-2015	[redacted]	Update regarding Facility Specific Plans

Section #	Rev #	Date	Author/ Approver	Changes Made
2.2	6	31-Aug-2015	[redacted]	Defined HCA
4.2	6	31-Aug-2015	[redacted]	Correct numbering sequence and contact information
5.2	6	31-Aug-2015	[redacted]	Correct numbering sequence
6.2	6	31-Aug-2015	[redacted]	Updated ERCB to AER, u/d wildlife demobilization responsibilities
6.7	6	31-Aug-2015	[redacted]	Update to reference CSA Leak Detection standards
7.11	6	31-Aug-2015	[redacted]	Deleted duplicate lines in Table
10	6	31-Aug-2015	[redacted]	Reference to Deterministic Modelling added
Appendix B	6	31-Aug-2015	[redacted]	Updated Safety Officer & Environmental Unit Leader's guides
Appendix C	6	31-Aug-2015	[redacted]	Removed blank pages/update 2 definitions
Appendix D	6	31-Aug-2015	[redacted]	Removed ERCB and added AER and HCA
Appendix H	6	31-Aug-2015	[redacted]	Updated contact phone numbers
0	5	15-June-2015	[redacted]	Table of Contents Updated for Rev 5
1.1	5	15-June-2015	[redacted]	Minor grammatical changes
1.3	5	15-June-2015	[redacted]	Minor grammatical changes
2.1	5	15-June-2015	[redacted]	Minor grammatical changes
2.2	5	15-June-2015	[redacted]	Policy Update and exercise update
4.1	5	15-June-2015	[redacted]	Minor grammatical changes
5.2	5	15-June-2015	[redacted]	Text added ". . . .Waste Plan and obtain waste disposal permit from local government"
5.3	5	15-June-2015	P[redacted]	Text added: "TNPI as a member of CEPA, has participated in development of 'Response Time Standards'

Section #	Rev #	Date	Author/ Approver	Changes Made
				and the following table is reviewed and the times identified are within the acceptable and recommended ranges by CEPA."
6.1	5	15-June-2015	[redacted]	Updated Critical Tasks using 2014 risk matrix
Removed duplicate information				
6.7	5	15-June-2015	[redacted]	Updated response resource list
7.2	5	15-June-2015	[redacted]	Addition of the role of 'Social Media'. Removed role of 'Employee & Shareholder/Relations' now Emergency Support Group role (ESG)
7.3	5	15-June-2015	[redacted]	Reference role of Emergency Support Group (ESG), and addition of Social Media Community Manager role description; remove role of Employee Shareholder Relations
7.4	5	15-June-2015	[redacted]	Removed reference to Employee Shareholder Relations
7.8	5	15-June-2015	[redacted]	Added reference to Legal Review
7.11	5	15-June-2015	[redacted]	Added reference to ESG being responsible to communicate with employees and shareholders. Removed reference to employee & shareholder role, under PIO, strengthened link between PIO and Liaison Officer. Added responsibilities and instructions for TNPI website updates and social media updates
8.3	5	15-June-2015	[redacted]	Updated contact details and reporting flow (NEB-TSB)
8.4	5	15-June-2015	[redacted]	Clarified resources available from agencies

Section #	Rev #	Date	Author/ Approver	Changes Made
8.6	5	15-June-2015	[redacted]	Updated to include NEB OERS
10.0	5	15-June-2015	[redacted]	Potential Scenarios updated and reference to special considerations updated
Appendix H	5	15-June-2015	[redacted]	Updated contact information
Appendix J	5	15-June-2015	[redacted]	Added – Deterministic Modelling high risk areas
0	4	30-April-2014	[redacted]	Table of Contents Updated for Rev 4
1.1	4	30-April-2014	[redacted]	Updated with new Appendices
1.3	4	30-April-2014	[redacted]	Added updates for Rev 4
2.1	4	30-April-2014	[redacted]	Update to include new App H (Resource Tel. #s)
2.2	4	30-April-2014	[redacted]	Updated to current EHSS policy
2.3	4	30-April-2014	[redacted]	Minor wording change
4.1	4	30-April-2014	[redacted]	Update to Activation Chart & removed French Emergency phone number
4.2	4	30-April-2014	[redacted]	Added Activation flow chart, updated internal roles & moved contact information to new Appendix H
5.1	4	30-April-2014	[redacted]	Minor updates to Agencies in chart
5.2	4	30-April-2014	[redacted]	Updates to reference new App H
5.3	4	30-April-2014	[redacted]	Updated to state Operational Period = 24 hrs
6.1	4	30-April-2014	[redacted]	Flash points, LEL and reference to App E updated
7.14	4	30-April-2014	[redacted]	NEW – Script for answering service during incident
7.2	4	30-April-2014	[redacted]	PIO Team Figure updated
8.2	4	30-April-2014	[redacted]	Update ERCB to AER

Section #	Rev #	Date	Author/ Approver	Changes Made
8.3	4	30-April-2014	[redacted]	Streamlined reporting table
8.6	4	30-April-2014	[redacted]	Updated forms and reference from ERCB to AER
10	4	30-April-2014	[redacted]	Updated reference to CSA 731 and statement that TNPI's Risk Methodology & Scenarios are high risk
Appendix E	4	30-April-2014	[redacted]	Updated ICS forms
Appendix G	4	30-April-2014	[redacted]	Updated to include Alberta's inventory and added columns for inventory checks
Appendix H	4	30-April-2014	[redacted]	NEW – All resources & contact numbers in App H
Appendix I	4	30-April-2014	[redacted]	NEW - Regional Specific plans moved from Binder B to electronic format
0	3	27-June-2013	[redacted]	Table of Contents Updated for Rev 3
1.1	3	27-June-2013	[redacted]	Addition of Section 10 and App G Removal of navigation graphic
1.2	3	27-June-2013	[redacted]	ERCB change to AER
2.1	3	27-June-2013	[redacted]	Clarification of Response Regions in Ontario, Quebec and Alberta
2.2	3	27-June-2013	[redacted]	ER Exercise & Consultation frequency added
2.3	3	27-June-2013	[redacted]	U/d reference to Regional Plans versus Municipal Plans
3.1	3	27-June-2013	[redacted]	U/d reference to name change for NEB OPR & AER, added CSA standards Z246
3.2	3	27-June-2013	[redacted]	3.2.1 NEB Safety Officer designation and Unified command, 3.2.3 ERCB to

Section #	Rev #	Date	Author/ Approver	Changes Made
				AER as part of Unified Command, 3.2.5 Ont. MOE as part of Unified Command
4.1	3	27-June-2013	[redacted]	4.1.1 u/d process to include ICS added 4.1.2 Characterization of Incident (moved from 6.1)
4.2	3	27-June-2013	[redacted]	U/d TNPI Activation Table 2 & 4.2.2 External Resources table updated to include Air Quality Monitoring
5.1	3	27-June-2013	[redacted]	ICS to align with full ICS – Single and Unified Structure overview
5.2	3	27-June-2013	[redacted]	ICS responsibilities updated to clarify meeting order, correct forms, and ability to contract position. 5.2.5.4 Safety Officer cannot be contracted out. Added Section for Resources and Situation Unit Leader
5.3	3	27-June-2013	[redacted]	ICS in field update to align with full ICS
6.1	3	27-June-2013	[redacted]	Previous Incident Assessment Section moved to Section 4.1.2, New Section 6.1 covers Responder Health and Safety removal of all references to Contractors being allowed safety oversight. Section 6.1.3 provides detail on Critical Task Analysis and risk ranking
6.2	3	27-June-2013	[redacted]	Change from 25% LEL to 10% LEL threshold Page 2 and 11 only
6.4	3	27-June-2013	[redacted]	6.4.1 u/d to include calibration requirements. Minor changes in 6.4.2

Section #	Rev #	Date	Author/ Approver	Changes Made
6.6	3	27-June-2013	[redacted]	Page 1 update to plan description Region, Municipality and Control Points, Pages 2, 56,74 u/de LEL from 25 to 10%
6.7	3	27-June-2013	[redacted]	U/d to 6.7.1.2 reference to CSA, 6.7.1.3 u/d TNPI equipment resources, 6.7.2.2. u/d to include P. Sacco as authorized individual for mobilization
10.1	3	27-June-2013	[redacted]	New Section – Risk Ranking and Scenarios, references made is all scenarios to IH monitoring as a TNPI responsibility
Appendix G	3	27-June-2013	[redacted]	Added Emergency Response Trailer Inventory
All Sections	2	21 Dec 2012	[redacted]	Format & contact update to manual – all sections updated
New Manual	1	18 May 2012	[redacted]	New Manual

u/d = updated

Table 126 - Revisions