WCMRC
Western Canada Marine Response Corporation

OIL SPILL RESPONSE PLAN 2022 TO 2025

Revision: 6

Issued: May 24, 2024

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1.0 MANUAL ASSIGNMENT

1.1 Manual Assignment and Disclaimer

Copy #:
Assigned to:

Private and Confidential Disclaimer

This document and the information contained in the Response Plan is private and confidential, and is not to be released, discussed or disclosed, either directly or indirectly, with or to any person, firm, corporation, partnership, association, other business entity or government agency without the express written consent of Western Canada Marine Response Corporation.

This document may also contain trade secrets of Western Canada Marine Response Corporation. If any person or body, government or otherwise, intends to disclose this information, or any part thereof, written permission must first be obtained from Western Canada Marine Response Corporation.

1.2 Plan Update

The response organization to which a certificate of designation has been issued pursuant to subsection 169. (1) of the Canada Shipping Act, 2001(CSA, 2001) shall notify the Minister of all substantive changes to its response plan immediately after they are made and shall, at least annually, update its response plan.[1]

Annual review:

- Advise Transport Canada electronically that the plan has been reviewed and no changes are forthcoming;
- Note in the revision log that a review has taken place;
- If substantive revisions are required, follow the process for substantive changes.

Substantive plan revisions will be processed as follows:

- Discuss changes with the local Transport Canada office;
- Forward revisions to Transport Canada as follows:

  Chief Hydrocarbons, Environmental Response Program

  Transport Canada

  330 Sparks Street, Tower C, Place de Ville

  Ottawa, Ontario

  K1A 0N5

- Forward revisions electronically to Transport Canada
- Revisions will be entered in the revision log located following;
- Revisions will be sequentially numbered;
- Revisions will be detailed on a transmittal sheet identifying the revision number, date, section numbers and pages affected, and any other instructions intended to emphasize or explain the revision. Revisions will be highlighted in yellow within the document body.

1 Canada Shipping Act, 2001: Response Organizations Regulations: 9.

1.3 Distribution Log

Table 1-1: WCMRC OSRP Distribution Log

MANUAL NUMBER	NAME	AFFILIATION

1.4 Revision Log

This log is provided to record each new or revised sheets that are issued. Revisions will be accompanied by a covering instruction sheet and numbered in sequence. The registered plan holder is asked to replace the affected sheets or sections as directed and enter the date and signature next to the applicable.

Table 1-2: WCMRC Oil Spill Response Plan Revision Log

REVISION NUMBER	DATE	SIGNATURE
Rev 0	May 20, 2022	Stefan Ostrowski
Rev 1	July 20, 2022	Stefan Ostrowski
Rev 2	August 19, 2022	Stefan Ostrowski
Rev 3	August 23, 2022	Stefan Ostrowski
Rev 4	May 31, 2023	Jocelyn Gardner
Rev 5	August 21, 2023	Jocelyn Gardner
Rev 6	May 6, 2024	Jocelyn Gardner

1.5 Compliance Testing

A response organization to which a certificate of designation has been issued pursuant to subsection 169.(1) of the Act shall notify the Minister of all substantive changes to its response plan immediately after they are made and shall, at least annually, update its response plan.

Canada Shipping Act, 2001: Response Organizations Regulations: 9.

2.0 TERMS AND ABBREVIATIONS

This section provides a glossary of definitions of terms and abbreviations/acronyms used in this Oil Spill Response Plan.

2.1 Glossary of Terms

American Petroleum Institute (API)

The American Petroleum Institute is the main U.S. trade association for the oil and natural gas industry, representing about 400 corporations. One of the chief functions is establishment and certification of industry standards (referred to API Standards).

AREA Command

Area Command is an organization established to oversee the management of multiple incidents that are each being handled by an Incident Command System organization; or to oversee the management of a very large incident that has multiple Incident Management Teams assigned to it. Area command has the responsibility to set overall strategy and priorities, allocate critical resources based on priorities, ensure that incidents are properly managed, and ensure that objectives are met and strategies followed.

Area Plans

Area plans are oil spill response plans for a particular area within the geographic area of response.

Assignments

Assignments are tasks given to resources to perform within a given operational period, based upon tactical objectives in the Incident Action Plan.

Beaufort Force

The Beaufort Scale is a measure that relates wind speed to observed conditions at sea or on land. The scale runs from 0 to 12 whereby Force 0 means “calm” and Force 12 means “hurricane”.

British Columbia Emergency Response Management System (BCERMS)

The management system that coordinates and organizes provincial response and recovery to any and all emergency incidents.

Canadian Hydrographic Service (CHS)

The Canadian Hydrographic Service is Canada’s hydrographic office, with responsibility for performing hydrographic surveys and publishing paper and electronic nautical charts.

Centistokes (cSt)

A unit of measure of viscosity.

Contiguous

Contiguous is the political or geographical land divisions that, as a group, are not interrupted by other land or water is contiguous. In the United States, for example, the "48 contiguous states" excludes Hawaii and Alaska, which do not share borders with other U.S. states.

Countermeasures

A countermeasure is a measure or action taken to counter or offset another one. In oil spill response a countermeasure is a tactical solution to prevent environmental damage, e.g. pre-booming an environmentally sensitive area.

Delegation of Authority

Delegation of Authority means the delegation of certain responsibilities and authority to a subordinate(s).

Discharge

Discharge means a discharge of a pollutant from a vessel, or a discharge of oil from an oil handling facility engaged in loading to or unloading from a vessel, which directly or indirectly results in the pollutant entering the water, and includes spilling, leaking, pumping, pouring, emitting, emptying, throwing and dumping.

Dispersants

Dispersants are chemicals used to dissipate oil slicks. Dispersants are a type of spill treating agent.

Emergency Incident

In British Columbia, a situation as defined by Emergency Program Act, Environment Management Act and other provincial acts and regulations which requires saving lives, reducing suffering, protecting property and the environment and mitigating economic and social losses.

Emergency Operations Centre (EOC)

A pre-designated facility established by an agency or jurisdiction to coordinate the overall agency or jurisdictional response and support to an emergency response.

Enhanced Response Area (ERA)

An enhanced response area is a marine region designated by the Minister of Transport which does not have a Designated Port as a reference point, but which holds the same significance a Primary Area of response. Juan de Fuca Strait is the only ERA on the Pacific Coast.

Federal Incident Commander

The Canadian Coast Guard (CCG), as the Federal Lead Agency for ship source spills, will fill the role of Federal Incident Commander within an integrated Unified Command in order to develop priorities and objectives for management of spill response. The Federal Incident Commander may assume overall responsibility for the incident response if the Polluter is unknown, unwilling, or unable to respond.

Field Operations Guide (FOG)

A field operations guide is a manual of instructions on the application of the Incident Command System.

Geographic Area of Response (GAR)

The geographic area of response is the area identified by a response organization within which it intends to offer its services.

Geographic Information System (GIS)

A geographic information system is an electronic information system that provides a geo-referenced database to support management decision-making.

Geographic Response Plans (GRP)

Geographic Response plans act as a guide to WCMRC Operations for the first 24-72 hours of a response to a spill, until an Incident command Post and Unified Command can be established.

Geographic Response Strategies (GRS)

Are Site Specific Strategies tailored to a specific beach, shore, or waterway and are meant to minimize impact on sensitive resources threatened by the spill. Each GRS has two main priorities: to identify sensitive natural, cultural or significant economic resources; to describe and prioritize response strategies in an effort to minimize injury to sensitive natural, cultural, and certain economic resources at risk from oil spills.

HazMat

HazMat refers Hazardous Materials, also known as Dangerous Goods, which are any solid, liquid or gas which can harm people, wildlife, property or the environment. HazMat can also refer to responders specially trained to respond to and mitigate releases of hazardous materials.

HAZWOPER

Hazardous Waste Operations and Emergency Response refers to many types of hazardous waste operations and emergency response conducted in the United States under Occupational Safety and Health Administration (OSHA). The standard contains the safety requirements (particularly training) employers and their sub-contractors or public sector responders must meet in order to conduct clean-ups or emergency response operations.

Incident

An occurrence either human caused or by natural phenomena, that requires action by emergency service personnel to prevent or minimize loss of life or damage to property and/or natural resources.

Incident Action Plan (IAP)

The Incident Action Plan contains general objectives reflecting the overall incident strategy, and specific action plans for the next operational period.

In-Situ Burning

In-situ burning involves the controlled burning of oil at the spill site.

Incident Command Post (ICP)

The incident command post is the location at which the primary command functions are executed.

Incident Command System (ICS)

The ICS system is a standardized on-scene emergency management system specifically designed to allow its user(s) to adopt an integrated organizational structure equal to the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries. It was developed by wildfire services in the United States in the 1970's.

Incident Commander (IC)

The IC is the individual responsible for the management of all incident operations at the incident site. Designations such as "First Nations", "Local", "Provincial", "Federal" and "Polluter" identify the incident commander's jurisdiction. "Coordinator" is often used in the United States.

Incident Objectives

Incident objectives are statements of guidance and direction necessary for the selection of appropriate strategies, and the tactical direction of resources. Incident objectives are based on realistic expectations of what can be accomplished when all allocated resources have been effectively deployed. Incident objectives must be achievable and measurable, yet flexible enough to allow for strategic and tactical alternatives.

Indigenous Peoples

The Canadian constitution recognizes three groups Aboriginal peoples; First Nations, Metis and Inuit.

Initial Response

Initial response is the phase where resources are initially committed to an incident.

Initial Response Phase

The Initial Response Phase is the time between the initial notification to WCMRC that a spill has occurred, and the beginning of the ICS Planning and Operational Cycles. This phase covers the responder's first critical hours at an operational cleanup site, aboard a response vessel, at a staging area, or in the Incident Command Post. This phase may be as short in duration as a few hours, or as long as 72 hours depending on the location and nature of the spill. The goal of the Incident Command is to shorten the initial response phase and enter the Planning / Operational Cycle as soon as possible.

Jurisdiction

A range or sphere of authority. At an incident, public agencies have jurisdiction related to their legal responsibilities and authority for incident mitigation. Jurisdictional authority at an incident can be political/geographical (e.g., city, county, state, or Federal boundary lines), or functional (e.g., police department, health department, etc.). (See Multi-Jurisdiction).

Lead Agency (LA)

The lead agency, In Canada, is the agency designated by law or mandate to have overall responsibility for emergency preparedness and response for their respective government. Also referred to as "key" agency under the B.C. Emergency Program Act. The Canadian Coast Guard is the lead agency for ship source spills.

Leader

Leader is the ICS title for an individual responsible for a Task Force/Strike Team or functional Unit.

Marine Communications and Traffic Services (MCTS)

The Canadian Coast Guard managed communications system that provides safety communications and manages the movement of traffic.

Marpol 73/78

Marpol 73/78 is the International Convention for the Prevention of Pollution from Ships (MARPOL) and is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes.

Mechanical Recovery

The use of mechanical response measures or techniques such as containment booms and skimmers in order to contain and recover spilled oil.

Multi-jurisdiction incident

Multi-jurisdiction incident is an incident requiring action from multiple agencies that have statutory responsibility for incident mitigation. In ICS, these incidents will normally be managed using a Unified Command.

Mutual Aid Agreement

Mutual Aid Agreement is a written agreement between agencies and/or jurisdictions in which they agree to assist one another upon request, by furnishing personnel and equipment.

Notice to Shipping (NOTSHIP)

Notices to Shipping are issued by the Canadian Coast Guard to alert mariners about hazards to navigation or other important information which may affect navigation.

National Environmental Emergencies Centre (NEEC)

Environment and Climate Change Canada's (ECCC) 24/7 hub for providing scientific and technical advice aimed at reducing impacts and ensuring measures are taken to protect the environment. Our marine response capacity is supported by the Government of Canada's Oceans Protection Plan. NEEC can supply a range of expertise and services to the organization leading the response, including:

- Spill and air trajectory and dispersion modelling to track the path and intensity of air, water and ground pollutants;
- Behaviour analysis of hazardous substances in the environment to understand the range of impacts;
- Site-specific weather forecasts to coordinate response efforts;
- Environmental sensitivity mapping (e.g. wildlife and sensitive ecosystems) to understand priority ecosystems and wildlife, and;
- Shoreline clean-up assessment and remediation advice to determine environmental recovery steps.

Occupational Health and Safety Administration (OSHA)

OSHA is an agency of the United States Department of Labor.

Oil Pollution Incident

Oil pollution incident means an occurrence, or a series of occurrences having the same origin, that results or is likely to result in a discharge of oil.

Oiled Wildlife Society of British Columbia (OWSBC)

The Oiled Wildlife Society of British Columbia is a not-for-profit organization dedicated to maintaining preparedness for oiled wildlife response in British Columbia. In the event of an oil spill

in the Lower Mainland of British Columbia the Oiled Wildlife Society will serve as a resource for emergency equipment and training. This includes, maintaining a centralized stockpile of equipment, establishing contingency plans, and, providing training to key personnel.

Oil Spill Resource Information Service (OSRIS)

OSRIS is a database of coastal atlases used for oil spill response planning.

On Scene

On scene means on site at an oil handling facility and at any other location where the oil handling facility deploys the equipment and resources identified in its oil pollution emergency plan in response to an oil pollution incident.

On Scene Commander

On Scene Commander is an individual responsible for the management of a response to a pollution incident.

Operating Environment

Operating environment means sheltered waters, unsheltered waters or a shoreline.

Operational Period

Operational Period is the period of time scheduled for execution of a given set of operational actions specified in the Incident Action Plan. Operational periods can be various lengths, usually not over 24 hours.

P&I Club

Protection and indemnification clubs are co-operatives of ship owners and ship operators who provide marine insurance for their members.

Pollutant

Pollutant means:

- a substance that, if added to any waters, would degrade or alter or form part of a process of degradation or alteration of the quality of the waters to an extent that is detrimental to their use by humans or by an animal or a plant that is useful to humans;
- any water that contains a substance in such a quantity or concentration, or that has been so treated, processed or changed, by heat or other means, from a natural state, that it would, if added to any waters, degrade or alter or form part of a process of degradation or alteration of the quality of the waters to an extent that is detrimental to their use by humans or by an animal or a plant that is useful to humans, and;
- It includes oil and any substance or class of substances that is prescribed for the purpose of CSA, 2001 Part 8 to be a pollutant.

Polluter

The person or organization responsible for spilling oil. Canada's spill response regime is based on a 'Polluter Pays' principle, requiring the Polluter to manage the spill response and pay for all response operations.

Pollution Damage

Pollution damage, in relation to a vessel or an oil handling facility, means loss or damage outside the vessel or oil handling facility caused by contamination resulting from a discharge from the vessel or facility.

Prescribed Oil Handling Facility (OHF)

Prescribed OHF refers to a class of OHF required to have an arrangement with a Transport Canada certified Response Organization for the provision of a response in the event of a pollution incident.

Prescribed Vessel

Prescribed Vessel refers to classes of vessel required to have an arrangement with a Transport Canada certified Response Organization for the provision of a response in the event of a pollution incident, defined in the Environmental Response Arrangements Regulations as the following:

a) Oil tankers of 150 gross tonnage or more;

b) Vessels of 400 gross tonnage or more that carry oil as cargo or as fuel;

c) Groups of vessels that are towed or pushed, are of 150 gross tonnage or more in aggregate and carry oil as cargo.

Primary Area of Response (PAR)

PAR is the marine region, extending to a distance of 50 nautical miles in all directions, from the boundaries of a designated port used as a reference point.

Provincial Emergency Co-ordination Centre

Provincial Emergency Co-ordination Centre is an emergency operations centre established and operated at the provincial central co-ordination level to direct and co-ordinate the provincial government's overall emergency or disaster response and recovery efforts whenever a provincial-level of the B.C. Emergency Response Management System is invoked (support levels 1003 and above). The centre is located at the Emergency Management British Columbia (EMBC) at the provincial emergency program (PEP) headquarters in Victoria.

Provincial Regional Emergency Operations Centre

Provincial Regional Emergency Operations Centre is an emergency operations centre established and operated at the regional level by provincial agencies to co-ordinate provincial emergency response efforts with a region.

Response Organization

Response organization means any person or body in Canada in respect of which a certificate of designation is issued by the Minister of Transport pursuant to subsection 169(1) of the Canada Shipping Act, 2001.

Response Time Standards

Response time standards are specific timelines for deployment of resources to respond to an oil spill.

Safety Data Sheet (SDS)

A Safety Data Sheet is a written document that outlines information and procedures for handling and working with chemicals. It is an element of the Workplace Hazardous Materials Information System (WHMIS). Safety Data Sheets were previously known as Material Safety Data Sheets (MSDS).

Science Table

National Environmental Emergencies Centre (NEEC) can chair a Science table to bring together a group of relevant experts in the field of environmental protection. Science table participants identify environmental protection priorities, and inform response actions that reduce the consequences of environmental emergencies.

Scientific Support Coordinator

A position staffed by a representative of Environment and Climate Change Canada, to provide scientific and technical advice directly to Unified Command.

SEAPRO

Southeast Alaska Petroleum Resource Organization is a USCG approved OSRO in Southeast Alaska.

Shoreline Cleanup Assessment Technique (SCAT)

SCAT is a simple and comprehensive way to perform a survey of an oil spill affected shoreline. This systematic approach collects and uses data on shoreline oiling conditions to support decision-making for shoreline cleanup.

Site Specific Health and Safety Plan

Site specific health and safety plan is a plan developed to assess and mitigate the risks to oils spill response workers.

Spill Treating Agents

Spill treating agents are chemicals used for oil spill control and may include dispersants, surface washing agents, bioremediation agents and miscellaneous other oils spill control agents.

Stakeholders

A stakeholder is any person, group, or organization affected by, and having a vested interest in, the incident and/or the response operation.

Sunken and Submerged Oil

Spilled oil which may, under certain circumstances including but not limited to weathering, environmental conditions, mixing energy, high sediment levels in the water, sink or submerge below the surface.

Tactics

Tactics are processes for deploying and directing resources during an incident to accomplish the desired objective.

Task Force

Task force is a combination of single resources assembled for a particular tactical need, with common communications and a leader.

Tailgate Safety Meeting

Tailgate safety meeting is a job site communications forum for discussing health and safety risks and the mitigation plan for minimizing the risks. Tailgate safety meetings should be held daily before the work shift commences or at any time should conditions change during the shift.

Team

Team is a combination of the same kind and type of resources, with common communications and a leader (see also Single Resource).

Technical Specialists

Technical specialists are personnel with special skills who can be used anywhere within the ICS organization.

Tier

A tier is a step process or series of successively increasing resource activations until all the resources are deployed.

Transportation of Dangerous Goods (TDG)

TDG are safety standards and regulations managed by Transport Canada.

Treat

Treat means to carry out an activity, in a manner that has the least detrimental impact possible on the environment, for the purpose of restoring an operating environment in which an oil pollution incident has occurred to its condition before the incident.

Unified Command

Unified Command, in ICS, is a unified team effort which allows all agencies with responsibility for the incident, either geographical or functional, to manage an incident by establishing a common set of incident objectives and strategies. This is accomplished without losing or abdicating agency authority, responsibility, or accountability. Unified Command is typically composed of a Federal representative, Provincial representative, local government representative, First Nations representative as well as the Polluter who is required to be the Incident Commander.

Vessel of Opportunity (VOO)

Vessels of Opportunity are vessels used to augment company vessels. Vessels may be fishing vessels, marine contractors or others with capable vessels.

Volunteer

Volunteer is any individual accepted to perform services by an agency that has the authority to accept volunteer services. A volunteer is subject to the provisions of the authorizing statute or regulations.

2.2 Glossary of Abbreviations

ABBREVIATION	DESCRIPTION
API	American Petroleum Institute
ASTM	American Society for Testing and Materials
BCERMS	B.C. Emergency Response Management System (Canada)
BCENV	B.C. Ministry of Environment and Climate Change Strategy
BOCF	Bulk Oil Cargo Fee
CALF	Capital Asset/Loan Free
CANUSDIX	Canada United States Dixon Entrance (Contingency Plan)
CANUSPAC	Canada United States Pacific (Contingency Plan)
CCG	Canadian Coast Guard
CER	Canadian Energy Regulator
CHS	Canadian Hydrographic Service
CRM	Customer Resource Management
CRP	Coastal Response Program
CRIMS	Coastal Resource Information Management System
CSA, 2001	Canada Shipping Act, 2001
cSt	Centistokes
CWS	Canadian Wildlife Service
DFO	Department of Fisheries and Oceans
DWT	Dead Weight Ton (international)
ECCC	Environment and Climate Change Canada
EEST	Environmental Emergency Science Table
ECRC	Eastern Canada Response Corporation
EMBC	Emergency Management British Columbia
EPA	Environmental Protection Agency, U.S.
ERA	Enhanced Response Area
ETA	Estimated Time of Arrival
FEMA	Federal Emergency Management Agency

ABBREVIATION	DESCRIPTION
FOG	Field Operations Guide
FOSC	Federal On-Scene Commander (United States/Canada – federal agency)
GAR	Geographic Area of Response
GIS	Geographic Information System
GRP	Geographic Response Plan
GSG	Government Stakeholder Group (Canada)
HAZMAT	Hazardous Materials
HAZWOPER	Hazardous Waste Operations and Emergency Response (OSHA –US)
HS&LC	Health, Safety and Loss Control
IAP	Incident Action Plan
IC	Incident Commander
ICP	Incident Command Post
ICS	Incident Command System
IMO	International Maritime Organization
IMS	Incident Management System
IMT	Incident Management Team
IOPC	International Oil Pollution Compensation Fund (international)
IRP	Integrated Response Plan (Canadian Coast Guard)
ITOPF	International Tanker Owners Pollution Federation
JIBC	Justice Institute of British Columbia
JSA	Job Safety Analysis
LA	Lead Agency
MARPOL 73/78	International Convention for the Prevention of Pollution from Ships (international)
MCTS	Marine Communications and Traffic Services
MSRC	Marine Spill Response Corporation
NEEC	National Environment Emergencies Centre
NEECP	Environment Canada's National Environmental Emergencies Contingency Plan
NEP	National Exercise Program

ABBREVIATION	DESCRIPTION
NWSCP	Northwest Spill Contingency Plan
OHF	Oil Handling Facility
OSC	On-Scene Commander
OSHA	Occupational Safety and Health Administration (United States)
OSRIS	Oil Spill Response Information System
OSRP	Oil Spill Response Plan
OSRO	Oil Spill Removal Organization
OWSBC	Oiled Wildlife Society of British Columbia
P&I Clubs	Protection and indemnification insurance
PAR	Primary Area of Response
PFD	Personal Flotation Device
PPE	Personal Protective Equipment
RO	Response Organization (Canada)
SCAT	Shoreline Cleanup Assessment Technique
SDS	Safety Data Sheet (formerly Material Safety Data Sheet – MSDS)
SEAPRO	Southeast Alaska Petroleum Resource Organization
SOPEP	Shipboard Oil Pollution Emergency Plan
SRM	Spill Response Manager (WCMRC)
SSO	Sunken and Submerged Oil
SVOP	Small Vessel Operator Proficiency
TAG	The Asset Guardian
TC	Transport Canada
TDG	Transportation of Dangerous Goods
TMEP	Trans Mountain Expansion Project
UC	Unified Command
UHF	Ultra High Frequency
uSCAT	Underwater Seabed Cleanup Assessment Technique
USCG	United States Coast Guard

ABBREVIATION	DESCRIPTION
VHF	Very High Frequency
VOO	Vessel of Opportunity
VTS	Vessel Traffic Services (United States)
WCB	WorkSafeBC (Workers' Compensation Board)
WCMRC	Western Canada Marine Response Corporation
WHMIS	Workplace Hazardous Material Information System
WorkSafeBC	Workers' Compensation Board
WRA	Wildlife Rescue Association
WRRL	Worldwide Response Resource List

3.0 EXECUTIVE SUMMARY

This submission (the Plan) has been prepared with the intent of demonstrating how Western Canada Marine Response Corporation (WCMRC) continues to meet the required regulations and planning standards under the Canada Shipping Act, 2001 (CSA, 2001). This Executive Summary identifies how the standards are met on a point-by-point basis.

The introduction portion of this Plan summarizes:

- the key elements of the CSA, 2001;
- the latest Regulations and Standards as they apply to Response Organizations (ROs);
- a reference specifically to where the requirements are met within the plan, and;
- an interpretation of the Regulations and Standards as they apply to ROs.

3.1 Introduction

WCMRC based in Burnaby, British Columbia, hereby applies to the Minister of Transport for continuing certification as a Response Organization (RO). Under amendments to the Canada Shipping Act, which received Royal Assent in June 1993 and the CSA, 2001 as amended in July 2007, ROs are required to demonstrate that they meet the Response Organizations Standards (1995). It is WCMRC's intention to continue to meet the requirements for a 10,000 tonne RO, providing response to marine spills that originate from oil handling facilities during loading/unloading operations, tankers larger than 150 gross tons, and vessels other than tankers larger than 400 gross tons that have an arrangement in place with WCMRC for such response.

This submission utilizes five key areas to demonstrate WCMRC's response capability:

- a series of scenarios (snap shot examples) found in the appendices of this plan;
- a series of tables reflecting tiered response found within Section 12.0 of this plan;
- WCMRC's Field Operations Guide (FOG), which creates a disciplined approach to response for each responding role within the Incident Command System (ICS) framework;
- WCMRC's documented track record of spill responses which is available for review;
- WCMRC's documented track record of training, exercises and equipment maintenance reviewed and verified by Transport Canada (TC).

The scenarios are a snapshot in time of an incident that may occur within WCMRC's response area. These formulate templates that can be utilized within the geographic area. However, depending on the location of the spill, the strategies and sensitivities may vary and would be addressed at the time of the event.

WCMRC also utilizes Area and Geographic Response Planning and Community Engagement to prepare for the unique environment found along the British Columbia coastline.

Area Planning includes:

- logistical information unique to the defined area (e.g., Incident Command Post (ICP) locations, accommodations, ground transportation, local contacts, etc.);
- the notification process for personnel (local and cascaded);
- equipment within the area and mobilization of additional equipment;
- general description of area sensitivities and/or the process to identify them—this is managed by WCMRC's Coastal Response Program and the development of Geographic Response Strategies (GRS), and;
- links to the ICS key command staff positions and associated activities.

WCMRC utilizes ICS as its management system and has developed the supporting "tool box material" to ensure a coordinated, effective and efficient spill response. The FOG describes the roles and key tasks for each ICS position from the initial phase, through the operational phase and into demobilization. Various displays (e.g., Situation Board, Common Operating Picture) are used to track and display the progress for the defined operational period and maintain situational awareness to facilitate effective planning.

WCMRC has ICP supplies located in Burnaby, Nanaimo and Prince Rupert. These include the display boards noted above along with other necessary supplies to efficiently establish an ICP.

3.2 Background

WCMRC is part of a nationwide network of ROs

WCMRC has an infrastructure, equipment base and competent personnel/management resources to ensure a safe, effective and cost efficient response to a 10,000 tonne spill. WCMRC's capability however, extends beyond the 10,000 tonne spill threshold. WCMRC maintains additional equipment, as well as arrangements for cascading opportunities of additional spill management and response personnel and equipment resources from other ROs, mutual aid support, and contracted organizations.

WCMRC is an experienced organization with proven capability

WCMRC has been in existence since 1976, during which time it has grown, and through the RO certification process, has matured to its present level of response capability. Over this time period, WCMRC has responded to more than 800 spill incidents. In addition, WCMRC has acted as a contractor in support to other spill response operations, including the Exxon Valdez and the BP response in the Gulf of Mexico.

3.3 Management of a Spill

Response Organization Role

WCMRC maintains dedicated equipment and personnel, identified in this submission and in WCMRC's internal asset management system (Manager+) and resource management databases, to support the operations of a Polluter or the Canadian Coast Guard (CCG) for marine oil spill response. WCMRC has trained personnel and maintains an infrastructure to manage, deploy and operate these resources.

Response Operation Management - External

WCMRC utilizes the ICS as its spill management system. In the event that the:

- CCG assumes command of the incident, WCMRC would report to CCG;
- The Polluter manages the response operation and in that instance WCMRC would report to the Polluter's Incident Commander (IC) as part of the Incident Management Team.

WCMRC uses the ICS system to coordinate and execute a daily incident action plan developed by the Incident Management Team during a response. WCMRC has demonstrated the ability to coordinate and communicate using the ICS system at spills and exercises.

Response Operation Management - Internal

WCMRC's internal management structure is described in Section 8.0.

3.4 Geographic Area of Response (GAR)

WCMRC'S GAR

WCMRC's GAR (reference Section 9.0) includes all of the coastal waters, and connected, navigable and tidal inland waters of the Province of British Columbia to the Alberta border extending seaward as provided for in federal legislation.

Port of Vancouver

Response capability has been established in the Port of Vancouver to meet the response time planning standards for Tiers 1 and 2. This capability includes specific resources dedicated to the port, as outlined in Section 12.0 and demonstrated by Scenario 1 in Appendix A.

Primary Area of Response (PAR)

Scenario 2 in Appendix A demonstrates that WCMRC has established a response capability within the PAR to meet the required response time standards for Tiers 3 and 4. The response capability for the PAR applies to "all the Canadian waters of Boundary Bay; the waters bounded by a line drawn from a point on shore originating at the Canada-United States border on Point Roberts due west along the international border to a point 123° 19.3'W, then north to a point 49° 14'N, 123° 19.3'W, then to a point 49° 15.5'N, 123° 17'W; the waters of Burrard Inlet east of a line drawn between Point Atkinson Light and Point Grey." These response capabilities are presented in Section 12.0.

Strait of Juan de Fuca Enhanced Response Area (ERA)

Scenario 3 in Appendix A demonstrates that WCMRC has established a response capability within the Strait of Juan de Fuca ERA to meet the required Tier 3 and 4 Response Time Standards. WCMRC is capable of deploying the resources required under the standards, as described by Scenario 3 in Appendix A. These response capabilities are presented in Section 12.0.

3.5 Response Time Planning Standards

WCMRC has demonstrated through a series of scenarios (presented in Appendix A) that it can meet the Response Time Planning Standards within its GAR. WCMRC has also demonstrated in response to the response time planning standards that it has the capability to respond as required for vessels or oil handling facilities in the GAR (reference Response Time Planning Standards).

Within the Designated Port at the Tier 1 Level

WCMRC is capable of deploying on-scene within the Port of Vancouver within 6 hours from first notification, the dedicated equipment identified for Tier 1 in the Port of Vancouver. This capability meets the Tier 1 requirements and is demonstrated in Scenario 1 in Appendix A.

Within the Designated Port at the Tier 2 Level

WCMRC is capable of deploying on-scene within the Port of Vancouver within 12 hours from first notification, the equipment identified for Tier 2 in the Port of Vancouver. This capability meets the Tier 2 requirements and is demonstrated in Scenario 1 in Appendix A.

Within the PAR/ERA at the Tier 3 Level

WCMRC is capable of delivering on-scene, within the Vancouver PAR and within the Strait of Juan de Fuca ERA, within 18 hours from first notification, the equipment identified for Tier 3 response. This capability meets the Tier 3 requirements and is demonstrated for the PAR in Scenario 2 and for the ERA in Scenario No 3 in Appendix A.

Within the PAR/ERA at the Tier 4 Level

WCMRC is capable of delivering on-scene, within the Vancouver PAR and the Strait of Juan de Fuca ERA, within 72 hours from first notification, the equipment identified for Tier 4 response. This capability meets the Tier 4 requirements and is demonstrated for the PAR in Scenario 2 and for the ERA in Scenario No. 3 in Appendix A.

Outside the PAR/ERA

WCMRC provides response outside of the PAR/ERA within its GAR, based on the response time for the PAR/ERA, plus travel time to the response area, based on the average speeds identified in Final Standards Response Organization Response Plan 3-2. An example of this capability is demonstrated in Appendix E.

3.6 Response Strategies

Equipment Rated Capability

WCMRC operates and maintains the following equipment in-house:

- Skimming equipment to collect a combined derated total in excess of 25 tonnes/hour, as required;
- In excess of the required 800 m of unsheltered water boom;
- In excess of the required 12,500 m of sheltered containment /protection boom;
- In excess of the required 12,500 m of shoreline cleanup boom
- Primary temporary storage capacity to hold more than 3,040 tonnes.

These resources are itemized in Section 12.0. As outlined in Section 12.0, these resources are sufficient for the required response within the Designated Port, PAR, and ERA to 10,000 tonne spills. WCMRC is therefore prepared to respond to a spill of 10,000 tonnes, and defines this as its rated capability.

TIER 1 Dedicated Response Capability

WCMRC has the dedicated resources (equipment that cannot be moved outside the port without prior approval from Transport Canada) required to respond to a 150 tonne spill in the Port of Vancouver, within the Response Time Standard. WCMRC is capable of deploying on-scene the dedicated resources summarized in Section 12.0, to the affected operating environments within 6 hours from initial notification. These resources are located within the Port area, and would not be moved beyond this area without prior permission from TC.

TIER 2 Response Capability

WCMRC is capable of deploying on-scene, in the Port of Vancouver, to the affected operating environments the equipment summarized in Section 12.0, within 12 hours from initial notification. These resources are those required to respond to a 1,000 tonne spill in the Port of Vancouver, within the Response Time Planning Standards.

TIER 3 Response Capability

WCMRC is capable of delivering on-scene to the affected operating environments the equipment summarized in Section 12.0, within 18 hours from initial notification. These resources are those required to

respond to a 2,500 tonne spill in the Vancouver PAR or the Juan de Fuca ERA, within the Response Time Planning Standards.

TIER 4 Response Capability

WCMRC is capable of delivering on-scene to the affected operating environments the equipment summarized in Section 12.0, within 72 hours from initial notification. These resources are those required to respond to a 10,000 tonne spill within the Vancouver PAR or the Juan de Fuca ERA, within the Response Time Planning Standards.

3.7 Operating Environments

WCMRC recognizes the mix of operating environments identified by TC for the Vancouver PAR and the Strait of Juan de Fuca ERA, respectively, and as illustrated in the scenarios.

WCMRC Equipment by Operating Environment

WCMRC demonstrates through Section 12.0 of this submittal, and in the scenarios (Appendix A), that it has the mix of necessary resources to perform response operations to meet its response capability in the operating environments of the PAR and ERA.

Simultaneous Operations in all Operating Environments

WCMRC can operate simultaneously in all three operating environments, as demonstrated in the scenarios in Appendix A.

Protection and Cleanup of Environmentally Sensitive Areas

WCMRC has the capability to deploy response resources, under the direction of the CCG or the Incident Management Team, to protect and clean environmentally sensitive areas. WCMRC recognizes the role of Science Table to provide input to the CCG and Incident Management Team, with respect to identification of sensitive areas, establishment of priorities, and countermeasure strategies. Section 17.0 of the submission identifies how this response would be implemented. Examples are provided in the scenarios (Appendix A) of the type of information that may be readily obtained from references for initial identification of sensitive areas.

WCMRC's Approved Countermeasures

WCMRC intends to use only approved response techniques, namely, mechanical containment and recovery techniques.

3.8 Equipment and Personnel Standards

A summary of the equipment inventory maintained and operated by WCMRC is provided in Section 12.0. This material and the scenarios provided in Appendix A, demonstrate that WCMRC has resources required by the CSA, 2001 for a RO with a 10,000 tonne marine oil spill response capability. WCMRC has the support capability and trained personnel to deploy and operate this equipment. Should additional or backup management and supervisory personnel be required, or additional equipment be necessary, for either a larger or a long-term operation, trained and experienced personnel, as well as equipment, would be provided through the national network of ROs, mutual aid partners, and by private contractors, in accordance with existing contracts or Memorandums of Understanding (Section 11.0). The specific ICS job functions for the personnel involved in a response are described in WCMRC's FOG.

Operation Capabilities up to Beaufort Force 4

All of WCMRC's equipment listed for operation in established operating environments can be deployed and operated in that environment up to and including Beaufort Force 4 conditions. This capacity is demonstrated in the equipment specifications and performance criteria provided in Section 12.0.

Boom

WCMRC maintains an inventory of boom that can be used. (Sections 12.0, TAG system and Appendix A).

On-water Recovery Capability

WCMRC is capable of sheltered and unsheltered on-water recovery operations for the four tiers within 10 operational days. The rated capability of WCMRC demonstrates how this planning standard is used to derive on-water capacity (Section 12.0).

Oil Recovery Rated Capability

WCMRC operates and maintains in-house, skimming equipment capable of collecting a combined derated total, in excess of the required 25 tonnes/hour for Tier 4 response in the Vancouver PAR, or Juan de Fuca ERA.

These resources are summarized and itemized in Sections 12.0 and WCMRC's TAG system, as well as internal Training databases, respectively. A summary of the rated capability, by operating environment, demonstrates that WCMRC can respond to each of the operating environments in the PAR and ERA (Section 12.0).

Simultaneous Deployment in all Operating Environments

Appendix A and Section 12.0 present the logistical resources available to WCMRC and demonstrate that WCMRC is capable of deploying the required oil recovery units and trained personnel simultaneously in all operationing environments.

Simultaneous Deployment within Response Time Planning Standards

WCMRC can operate simultaneously within the response time planning standards, as demonstrated in the scenarios in Appendix A.

Primary Temporary Storage Capability

The equipment that is summarized in Section 12.0, demonstrates that WCMRC has sufficient primary temporary storage to maintain oil/oily water waste recovery operations, 24-hours a day for the duration of planned on-water recovery operations.

Secondary Storage Capability

Section 12.0 describes that WCMRC will engage contracted support to supplement secondary storage capacity where required.

Reduction of Required Temporary Storage Capacity

WCMRC demonstrates in Section 12.0, that it exceeds the required primary temporary storage capacity requirements, and therefore, it is not necessary to identify waste reduction methods to reduce that requirement.

Decanting or returning free water from a spill clean-up operation to a water body is recognized as a viable procedure that will reduce overall volume of fluids that must be stored during a spill incident, however current regulations and the regime do not enable the use of decanting as a response measure in Canada. The direction to use decanting would come from the CCG and would only be given at the time of an incident when the full circumstances and impacts are known.

Shoreline Treatment Capability

WCMRC demonstrates in Section 11.0 and 12.0, that it has the capability to treat in excess of 500 m of oiled shoreline per day. Section 8.0 details logistical resources that provide WCMRC with the infrastructure to support this level of operation.

3.9 Exercise Program

WCMRC conducts exercises on a scheduled annual, bi-annual, and tri-annual basis, as outlined in Section 13.0. Actual response to spills may be substituted for exercises where the WCMRC capability has been tested, demonstrated, and documented to the appropriate level of response (e.g., Tiers 1-4) (See Section 13.7).

3.10 Training

WCMRC has developed a training program, which is extended to include non-WCMRC staff, as described in Section 14.0. WCMRC maintains an up-to-date database, which is available for inspection, on the training status of all permanent and WCMRC-trained personnel.

3.11 Health and Safety Program

WCMRC's Health and Safety program for on-site workers, volunteers and other individuals is described in Section 15.0 (all operations) and 16.0 (spill response). WCMRC also has a Health and Safety Manual that describes WCMRC's commitment to Health and Safety of all employees and contractors (described in Section 15.0).

3.12 Bird Hazing

WCMRC has assembled nine wildlife-hazing packages and a BRECO buoy for rapid deployment within its GAR (Section 18.0).

WCMRC assists The Oiled Wildlife Society of British Columbia by storing and maintaining two response trailers stocked with wildlife response and rehabilitation equipment.

4.0 REGULATIONS AND STANDARDS

The purpose of this section is to provide the current Canada Shipping Act, 2001 (CSA, 2001) regulations, standards and guidance documents as they apply to Response Organizations (ROs) and to reference specifically where the requirements are met within the plan.

The CSA, 2001 outlines Canada's marine oil spill preparedness and response regime. The private sector regime seeks to ensure that Canada is better prepared to respond to ship-source oil pollution incidents.

An important component is an appropriate level of response infrastructure. The establishment of private sector ROs, providing a response capability to a maximum of 10,000 tonnes was introduced for the first time in legislation through Chapter 36. The standards for ROs were developed following extensive consultations with interested parties representing the spill response sector, petroleum and shipping industries, environmental groups, provincial governments, CCG and Environment and Climate Change Canada (ECCC). The forum for considering the complex issues involved in spill response was the "work group" which held five meetings to achieve the consensus contained in these standards.

The CSA, 2001 provides the framework for equipment, technical and operational requirements. Under the CSA, 2001, the Governor in Council, on the advice of the Minister may issue regulations for response organizations in developing their response plans, to enable them to comply with the requirements for procedures, equipment and resources as set out in both the legislation and in the regulations for ROs and Oil Handling Facilities (OHF's).

Each response plan is unique, taking into account the geographic features specific to that region. Since the response to an incident will be influenced by environmental and other factors, the standards should not be used as a yardstick against which to measure the appropriateness of the response. Rather, they seek to ensure that a suitable response infrastructure is in place and ready to be deployed in the event of any spill, regardless of size and conditions.

4.1 Regulations and Standards Applicable to Response Organizations

The Canada Shipping Act, 2001 - Regulations and the Transport Canada - Standards are shown below along with the specific footnote where the requirements are met within the plan.

Figure 4-1: Canada Shipping Act, 2001 – OHF and RO Regulations

PART I
RESPONSE ORGANIZATIONS

RESPONSE PLAN

3. (1) A response organization shall demonstrate in its response plan that the response organization has the capability to comply with the requirements relating to the procedures, equipment and resources prescribed in section 4 in respect of its geographical area.

Sections 3.6 | Section 11.0 | Section 12.0

(2) A response organization's response plan shall include the following information:

(*a*) the name and address of the response organization and its geographical area;

Sections 8.1 | Section 9.1

(*b*) the total quantity of oil in respect of which the response organization is to be certified in accordance with the tiered response capabilities set out in section 2 of the *Response Organizations Standards*;

Section 3.0 | Section 12.0

(*c*) the name of each person included in the personnel who is available for a response to an oil spill;

Section 11.1

(*d*) the name of each person to be notified in the event of an oil spill;

Section 10.2

(*e*) the name of each person included in the personnel who has received basic oil spill response training or any other training in relation to an oil spill;

Section 14.0

(*f*) a description of the training that the response organization provides to its personnel in preparation for the responsibilities that they might be requested to undertake in response to an oil spill;

Section 14.0

(*g*) a description of the training that the response organization provides to its employees and to other workers whom it might use to respond at short notice to an oil spill;

Section 14.0

(*h*) a description of the oil spill exercise program established to evaluate the effectiveness of all aspects of the procedures, equipment and resources that are identified in the plan, including exercises to be coordinated with ships, oil handling facilities or the Canadian Coast Guard, as the case may be;

Section 13.0

(*i*) a list of the types and quantity of equipment for use at each designated port in its geographical area in respect of a tier 1 response capability referred to in the *Response Organizations Standards*;

Section 12.0

(*j*) a list of the types and quantity of equipment for use during a simultaneous response in all operating environments;

Section 12.0

(*k*) a list of the equipment for scaring off birds from an oil spill location and of the measures available in support of the wildlife rehabilitation activities of other parties;

Section 18.1

(*l*) a description of the measures that the response organization will take, in response to an oil spill, to protect and treat areas of environmental sensitivities within the affected operating environment;

Section 17.0

(*m*) a description of the treatment and recovery procedures that will be implemented in response to an oil spill;

Section 17.0

(*n*) a description of the procedures that will be implemented for notifying the persons referred to in paragraph (*d*) in the event of an oil spill;

Section 10.2

(*o*) a description of the measures that the response organization will take, in conformity with federal and provincial regulations relating to health and safety, to protect the health and safety of its personnel, of volunteers and of other individuals who are involved, at the request of the response organization, in a response to an oil spill; and

Section 15.0 | Section 16.0

(*p*) a description of procedures for the updating of the response plan.

Section 1.2

(3) A response organization's response plan must take into account any contingency plan for its geographical area that is issued by the Canadian Coast Guard.

Section 7.0

OIL SPILL PROCEDURES, EQUIPMENT AND RESOURCES

4. (1) The procedures to be implemented with respect to a spill of a specified quantity of oil in a geographical area include the following:

(*a*) the response to the oil spill is within the time set out in section 3 of the *Response Organizations Standards*;

Section 12.3

(*b*) the number of metres of shoreline that are treated in a day is at least that set out in section 4 of the *Response Organizations Standards*;

Section 12.8

(*c*) the maximum number of days required to complete the on-water recovery operations is that set out in section 5 of the *Response Organizations Standards*;

Section 12.5

(*d*) the response operation is managed in coordination with the Canadian Coast Guard and federal, provincial and other bodies responsible for, or involved in, the protection of the environment;

Section 7.1 | Section 8.3

(*e*) strategies appropriate for a simultaneous response are employed in all affected operating environments;

Section 12.0 | Appendix A

(*f*) in the case of an on-water recovery operation in unsheltered waters present in its geographical area, the equipment can be operated in Beaufort Force 4 conditions;

Section 12.7

(*g*) the response capability in each applicable operating environment in primary areas of response and enhanced response areas is to be apportioned in accordance with the percentage of tiered response capability that is set out in Schedule II to the *Response Organizations Standards*; and

Section 12.2

(*h*) the equipment and resources are provided to the persons managing the response operation.

Section 11.0 | Section 12.0

(2) The equipment and resources for use with respect to a spill of a specified quantity of oil in a geographical area include the following:

(a) equipment that is appropriate for responding to the oil spill; and

Section 12.0

(b) the primary and secondary temporary storage capacities that are referred to in section 6 of the *Response Organizations Standards*.

Section 12.6

OIL SPILL EXERCISE PROGRAM

5. The oil spill exercise programme referred to in paragraph 3(2)(*h*) shall be carried out over a three-year period that begins on the day on which the certificate of designation is issued.

Section 13.1

EQUIPMENT AT DESIGNATED PORT

6. The equipment that is for a tier 1 response capability described in section 2 of the *Response Organizations Standards* and is to be deployed on the shoreline and in sheltered waters at a designated port may not be removed unless the Minister permits the removal for the purpose of protecting the environment.

Section 12.4

SUBMISSION

7. A response organization shall submit to the Minister four copies of its response plan.

Section 5.2

REVIEW

8. The Minister shall review a response plan within 90 days after the day on which it is submitted.

Section 5.3

PLAN UPDATE

9. A response organization to which a certificate of designation has been issued pursuant to subsection 169. (1) of the Act shall notify the Minister of all substantive changes to its response plan immediately after they are made and shall, at least annually, update its response plan.

Section 1.2

DECLARATION

10. A declaration submitted by a person or body for the purpose of subsection 169.(3)(a) of Act shall be in the form set out in Part I of the schedule.

Section 5.1

CERTIFICATE OF DESIGNATION

11. (1) A certificate of designation issued pursuant to subsection 169.(1) of the Act to a response organization is valid for a period specified by the Minister. The Minister may refuse to issue or renew a certificate, and may suspend or cancel a certificate if circumstances warrant.

Section 5.4

(2) Where a response organization applies to the Minister for a certificate of designation that is in respect of a period that begins on the day after the current certificate of designation expires, it shall make the application at least 90 days before that day.

Section 5.2

Figure 4-2: Transport Canada - Response Organization Standards - TP12401 E

Tiered Response Capabilities

2. For the purposes of section 3, response organizations are categorized according to their capability to respond to oil spills of a maximum specified quantity as follows:

Tier	Maximum Quantity of Oil Spilled
Tier 1 response	150 tonnes
Tier 2 response	1000 tonnes
Tier 3 response	2500 tonnes
Tier 4 response	10000 tonnes

Response Times

3. (1) The equipment and resources relating to a tier 1 response capability are deployed, in respect of an oil spill at a designated port, in the affected operating environments within 6 hours after notification of the spill.

(2) The equipment and resources relating to a tier 2 response capability are deployed, in respect of an oil spill at a designated port, in the affected operating environments within 12 hours after notification of the spill.

(3) The equipment and resources relating to a tier 3 response capability are delivered to the affected operating environments within 18 hours after notification of an oil spill in a primary area of response or an enhanced response area.

(4) The equipment and resources relating to a tier 4 response capability are delivered to the affected operating environments within 72 hours after notification of an oil spill in a primary area of response or an enhanced response area.

(5) In respect of an oil spill occurring in any other marine region within the geographical area of response of the response organization, the equipment and resources relating to a tier 3 and tier 4 response capability are delivered to the affected operating environments within the response time set out in subsection (3) or (4) added to the time necessary to travel at an average travel speed to the oil spill from the nearest primary area of response or enhanced response area.

Number of Metres of Shoreline

4. A minimum of 500 m of shoreline is to be treated each day.

On - Water Recovery Operations

5. On-water recovery operations for oil spills in sheltered waters and unsheltered waters are to be completed within 10 operational days after the day on which the equipment is first deployed in the affected operating environments.

Equipment

6. The equipment for use with respect to an oil spill in a geographical area includes oil recovery units necessary for the operational requirements in that geographical area in addition to:

(a) a sufficient primary temporary storage capacity to maintain recovery operations of oil or oily-water waste continuously during a 24-hour period and a sufficient secondary temporary storage capacity to store at least twice the total quantity of oil or oily-water waste collected by the response organization's oil recovery units that are used in a 24-hour period; or

(b) a primary temporary storage capacity and a secondary temporary storage capacity that are less than those referred to in paragraph (a), where the efficiency of the oil recovery devices or the capability to decant water reduces the volume of storage required, or alternative temporary storage or disposal locations are available within the geographical area.

Schedule I - Designated Ports, Enhanced Response Areas and Primary Areas of Response

Designated Ports

1. The following port is a designated port for the purpose of these Standards:

Vancouver, British Columbia

All the Canadian waters of Boundary Bay; the waters bounded by a line drawn from a point on shore originating at the Canada-United States border on Point Roberts due west along the international border to a point 123°19.3'W, then north to a point 49°14'N, 123°19.3'W, then to a point 49°15.5'N, 123°17'W; the waters of Burrard Inlet east of a line drawn between Point Atkinson Light and Point Grey.

Enhanced Response Areas

2. The following marine region that has no designated ports as reference points are enhanced response areas for the purpose of these Standards:

Juan de Fuca Strait

All the Canadian waters between the western boundary of a line drawn from Carmanah Point on Vancouver Island to Cape Flattery, Washington State, and the eastern boundary consisting of a line running along the 48°25'N parallel from Victoria, eastward, to the Canada-United States border.

Primary Areas of Response

The following marine region is a primary area of response for the purpose of these Standards:

Vancouver, British Columbia

All the Canadian waters between the northern boundary of a line drawn from the point 49°46.5'N, 124°20.5'W on the mainland, through Texada Island, to the point 49°22.5'N, 124°32.4'W on the shore of Vancouver Island and the southern boundary consisting of a line running along the 48°25'N parallel from Victoria, eastward, to the Canada-United States border.

Schedule II - Percentage of Tiered Response Capability

	On Shore (%)	Sheltered (%)	Unsheltered (%)
Primary Area of Response	40	40	20
Enhanced Response Area	40	20	40

All the preceding Transport Canada Response Organization Standards are met by Sections 12.0.

5.0 DECLARATION AND SUBMISSION PROCESS

The purpose of this section is to document the declaration and the submission process for renewal of the Response Organization certification.

5.1 Response Organization Declaration - 2022

Pursuant to paragraph 169. (3)(a) of the Canada Shipping Act, 2001, I, Kevin Gardner, for and on behalf of Western Canada Marine Response Corporation, declare that the procedures, equipment and resources referred to in the Response Plan, August 23, 2022, Submission, are available to the Response Organization in conformity with the Response Organization Regulations and the Response Organization Standards and guidance documents[2],.

Kevin Gardner, President
Western Canada Marine Response Corporation

5.2 Submission for Certificate of Designation - 2022

This Oil Spill Response Plan, originally submitted in 1995, is a document intended to inform Transport Canada (TC) as to how WCMRC complies with response organization regulations and standards.

An electronic copy of WCMRC's Plan submission has been submitted to the Chief Hydrocarbons, Environmental Response Program. Hard copies can be provided upon request.[3]

Elements of this submission include:

- A summary, in point form, of the Canada Shipping Act, 2001 (CSA, 2001) requirements for response organizations;
- A brief description of WCMRC's interpretation of the CSA, 2001 regulations and standards. These interpretations were reviewed with Transport Canada in February 2004 and June 2007;
- A brief description of ongoing enhancements to WCMRC's management tools and systems;
- A visual aid describing the relationship of the plan and related management systems;
- An extract, for reference, from the applicable CSA, 2001 regulations and standards (including submission requirements for re-certification);
- A demonstration on how WCMRC meets each of the applicable CSA, 2001 regulations and standards.

5.3 Minister's Review

The Minister shall review a response plan within 90 days after the day on which it was submitted.

Submission Date: August 23, 2022.[4]

[2] Canada Shipping Act, 2001: Response Organizations Regulations: 10.

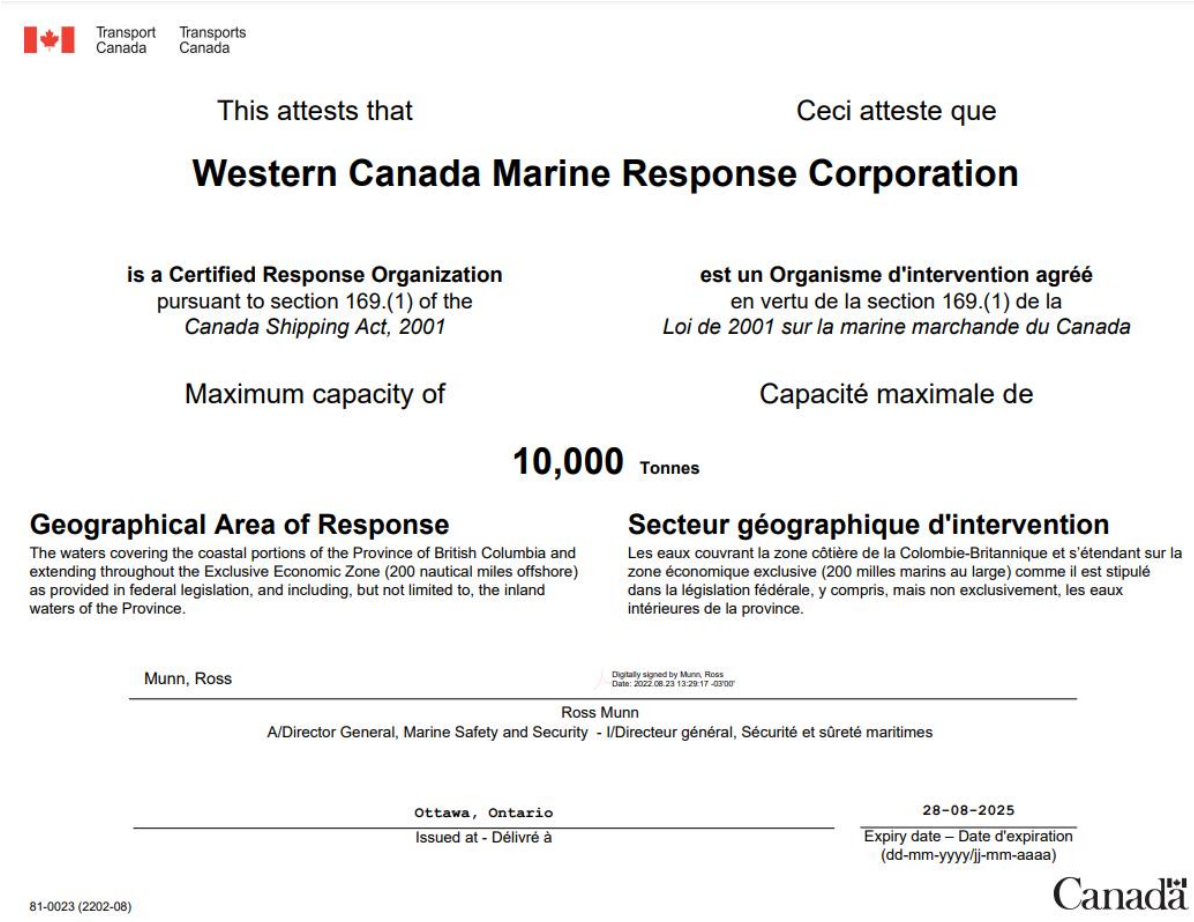
[3] Canada Shipping Act, 2001: Response Organizations Regulations: 7.

[4] Canada Shipping Act, 2001: Response Organizations Regulations: 8.

5.4 Certificate of Designation

A certificate of designation has been issued pursuant to subsection 169.(1) of CSA, 2001 to a response organization is valid for the period specified by the Minister. The Minister may refuse to issue or renew a certificate and may suspend or cancel a certificate if circumstances warrant.[5]

Figure 5-1: Certificate of Designation for the 2022 to 2025 certification period.



Transport Canada Transports Canada

This attests that Ceci atteste que

Western Canada Marine Response Corporation

is a Certified Response Organization
pursuant to section 169.(1) of the
Canada Shipping Act, 2001

est un Organisme d'intervention agréé
en vertu de la section 169.(1) de la
Loi de 2001 sur la marine marchande du Canada

Maximum capacity of Capacité maximale de

10,000 Tonnes

Geographical Area of Response
The waters covering the coastal portions of the Province of British Columbia and extending throughout the Exclusive Economic Zone (200 nautical miles offshore) as provided in federal legislation, and including, but not limited to, the inland waters of the Province.

Secteur géographique d'intervention
Les eaux couvrant la zone côtière de la Colombie-Britannique et s'étendant sur la zone économique exclusive (200 milles marins au large) comme il est stipulé dans la législation fédérale, y compris, mais non exclusivement, les eaux intérieures de la province.

Munn, Ross
Digitally signed by Munn, Ross
Date: 2022.08.23 13:29:17 -03'00'

Ross Munn
A/Director General, Marine Safety and Security - I/Directeur général, Sécurité et sûreté maritimes

Ottawa, Ontario
Issued at - Délivré à

28-08-2025
Expiry date – Date d'expiration
(dd-mm-yyyy/jj-mm-aaaa)

81-0023 (2202-08)

Canada

[5] Canada Shipping Act, 2001: Response Organizations Regulations: 11.

5.5 Compliance Testing

A declaration submitted by a person or body for the purpose of subsection 169(3) of the Act shall be in the form set out in Part 1 of the schedule.

Canada Shipping Act, 2001: Response Organizations Regulations: 10.

The Minister shall review a response plan within 90 days after the day on which it is submitted.

Canada Shipping Act, 2001: Response Organizations Regulations: 8.

A response organization to which a certificate of designation has been issued pursuant to subsection 169.(1) of the Act shall notify the Minister of all substantive changes to its response plan immediately after they are made and shall, at least annually, update its response plan.

The Minister may refuse to issue or renew a certificate, and may suspend or cancel a certificate if circumstances warrant.

Canada Shipping Act, 2001: Response Organizations Regulations: 9.

6.0 BACKGROUND INFORMATION

The purpose of this section is to provide an overview of the Oil Spill Response Plan (OSRP) including: a brief history; response capability scope and limitations; membership, contacts and relationships; user group committee and membership fees.[6]

6.1 Plan Overview

WCMRC's Plan, originally submitted in 1995, is now in its tenth iteration and is designed to inform Transport Canada (TC) as to how WCMRC will meet the RO Regulations and Planning Standards. This includes information on resources available to WCMRC for spill response, spill response training/exercise programs, equipment, spill management and other aspects required to gain certification as a Response Organization. The plan includes information and procedures for the protection of fisheries, wildlife, other natural resources, and public and private property from such spills. It meets the requirements of the Canada Shipping Act, 2001 (CSA, 2001) – Response Organization Regulations and Response Organization Standards *(1995)*. The plan format is structured to provide a description of WCMRC's response capabilities to meet applicable regulations and standards, and to describe the procedures through which those resources would be utilized. The plan was originally developed with input from provincial and federal agencies and was used to gain original certification as a qualified Response Organization (RO).

This plan is supported by a number of reference documents which are noted throughout the plan and are available for TC review upon request.

6.2 Scope and Limitations

This plan describes WCMRC's capability to respond to marine oil spills from prescribed facilities and prescribed vessels. Typical operations with the risk of oil spillage include marine transportation of crude oil and refined products, transfer operations including cargo loading and unloading at a designated facility, lightering, and bunkering. WCMRC provides response service to spills from these, as well as to spills from other sources.

Ship source spills will always be the priority.

This plan describes WCMRC's capabilities as a RO, its response strategies, and identifies resources for specific spill scenarios and area plans. It must be noted that all spills are unique events and require individual assessment and treatment.

Due to the nature of the Response Organization Standards, the scope of this plan will be to demonstrate the capability to deliver on scene the necessary response capacity within the time standards up to the 72 hour (including travel time where stipulated) requirement for the Tier 4 capability, and otherwise and complete on-water recovery operations within the 10-day period.

It is important to remember that the response posture and scenarios described in this document are **not intended to be prescriptive plans** to respond to an incident in the affected area; the standards and scenarios described in this document are for planning purposes only, and should not be considered as performance standards. At the outset of any spill incident, various factors including location of the spill, current and forecasted meteorological and oceanographic conditions, type and volume of oil product as well as other considerations will determine the incident-specific response plan, strategies and tactics. This

[6] Canada Shipping Act, 2001: Response Organization Regulations: 3.(3); 4.(1)(d)

document intends to demonstrate that an appropriate level of response infrastructure and preparedness is established and in place, **ready to respond in the event of any spill incident, regardless of scale**.

As part of a commitment to maintaining Tier 4 preparedness, elements of this Oil Spill Response Plan are intended to be utilized as a strategic guideline to inform the development, planning and implementation of various other management systems, programs and initiatives which help support WCMRC's response readiness. Through this approach, WCMRC will have a guidance and reference through which programs can be developed, maintained and continuously improved according to the Tier 4 standards and requirements, and various elements of the plan, can be verified through exercise. Potential programs which could account for this guidance include:

- Maintenance and Materials Programs
- Training requirements
    - Internal response staff
    - Contracted responders
    - Vessels of Opportunity (VOO)
- Staffing considerations
- Tactical and geographic response plans (GRPs)
- Site-specific protection and response strategies (GRS)
- Logistical planning and considerations
- Exercise Program
- Strategic deployment and staging of resources (bases, equipment, personnel, contractors etc.)

6.3 Membership, Contracts and Relationships

Members of the RO include oil refining and marketing companies, deep-sea ships, and coastal tug and barge operators. Members may be owners or operators of oil handling facilities, or prescribed vessels which require an arrangement with a RO, to meet spill response planning standards under the CSA, 2001 requirements. WCMRC's resources are primarily intended for the use by those members; however, the equipment and personnel are available to respond to oil spills from other sources, under an established fee schedule, or at the request of the CCG. Non-members must sign arrangements at the time of a spill to utilize the RO resources. Members and non-members must also sign a daily work order authorizing the daily Incident Action Plan (IAP).

This plan and related WCMRC documents and management systems are intended to complement member company plans for vessels or facilities, and the Pacific Region Coast Guard Marine Spills Contingency Plan and is managed in coordination with the CCG and federal, provincial and other bodies responsible for, or involved in, the protection of the environment.

Examples of third parties may include, but are not limited to, the CCG, TC and ECCC.

The two general categories of membership arrangements available with WCMRC are:

Table 6-1: WCMRC Membership Categories

PRINCIPAL (MANDATORY)	NON-MANDATORY
Ship - Non-bulk Oil	Subscriber
Ship - Bulk Oil	Third Party
Oil Handling Facility	

Under the terms of the membership arrangements, members are entitled to declare that they have an arrangement with the RO, as required by the CSA, 2001, and to call upon the RO to respond to a member's oil spill incident. If the member requests WCMRC to respond to a spill of oil on water within WCMRC's Geographic Area of Response (GAR), WCMRC shall use its best efforts to provide a response ("Initial Response"). Unless otherwise agreed between the parties, the initial response shall consist of the provision of marine oil spill response services for up to twenty-four (24) hours. If the member notifies WCMRC within the initial twelve (12) hours that WCMRC is to continue to provide marine oil spill response services, then WCMRC will provide the member with a 7-day Plan for the remainder of the initial seven (7) day period.

In addition to the arrangements between WCMRC and its members, WCMRC has established contracts or agreements with providers of services, equipment, or manpower to support its response capability.

At the time of this submission, WCMRC has identified seven agreements that relate to certification:

- Contractor Agreement- Equipment and Personnel;
- General Work Contract;
- Contract for Support/Advisory Services;
- ECRC/WCMRC Operational Management Support Agreement;
- Mutual Aid Agreement – Southeast Alaska Petroleum Resource Organization;
- Mutual Aid Agreement – Association of Petroleum Industry Cooperative Managers;
- Chamber of Shipping of British Columbia-Agency Agreement.

Contracts, arrangements, and Memorandums of Understanding for major support providers are maintained at WCMRC's office.

6.4 User Group Committee

WCMRC has an active User Group that meets semi-annually to review any changes to fees as well as organizational and government program updates. The structure is such that each member and/or representative body of the members (e.g., Chamber of Shipping, Business Agents, Council of Marine Carriers (barging) are invited to participate in the meetings. Participation is voluntary but open to any member. Copies of the minutes are distributed to all participates and posted for others to review.

The key agenda item at each meeting is the review of the process used to calculate the new fees and the acknowledgement that the fee process has been reviewed and signed off by an external accounting firm. Copies of all documentation that is being sent for publication in the Canada Gazette is distributed to the members during the meeting.

WCMRC also utilizes these interface meetings as an opportunity to update our members on programs (e.g., exercises, training) and projects that are underway in which they wish to have input and/or participate in.

WCMRC has established a terms of reference for the User Committee which is available upon request.

6.5 Fees

ROs are funded by industry through preparedness fees charged to the members. Members being those organizations (vessels and oil handling facilities) required by the CSA, 2001 to have an arrangement with a response organization.

The purpose for which fees may be charged by a RO in relationship to an arrangement is to maintain a state of preparedness in their geographic area of response.

Fees are comprised of three components: an annual registration fee, a bulk oil cargo fee and a capital asset/loan fee.

Annual Registration Fee

The current registration fee, effective February 1, 2017, is $775.00. (Excluding applicable taxes) per vessel or oil handling facility. Rates are posted on the WCMRC website under the "Membership" section.

Bulk Oil Cargo Fee (BOCF)

The BOCF:

- is determined on the basis of cost per tonne;
- is a fee applied once to each tonne of oil (either shipping or receiving) transferred within the geographic area serviced by the response organization;
- the BOCF is calculated by multiplying a Bulk Oil Cargo Fee Rate (BOCFR) by the applicable quantity of bulk oil loaded or unloaded within WCMRC's GAR, and where applicable, bulk oil cargo transferred between ships within WCMRC's GAR;
- the BOCFR is calculated by dividing the forecast annual Net Expense (1) of WCMRC by the forecast Annual Volume (2) of bulk oil cargo to be loaded or unloaded within WCMRC's GAR (3); (as a guideline the previous year's actual volumes are used +/- input from members);
- Net Expense (1) = Debt servicing + operating costs including depreciation + return on equity less revenue from forecasted registration fees and other revenues, plus/minus the previous year's operating surplus/deficit;
- Annual Volume (2) = Total volume of bulk oil cargo unloaded + total volume of bulk oil loaded for international destinations and north of 60 within WCMRC's GAR and where applicable, bulk oil cargo transferred between ships within WCMRC's GAR;
- GAR (3) = Geographic area of response for which WCMRC is certified to operate.

The above formula for the BOCFR was endorsed by the participants at the Multi-Stakeholder Consultation Meeting held in Toronto, June 1st – 5th, 1998.

The BOCFR calculated by the above formula is applicable to all products except asphalt. The BOCFR for asphalt is 50% of the rate for all other products.

The current BOCFR, effective January 1, 2022, is $1.928 per tonne. Rates are posted on WCMRC website under the "Membership" section.

Capital Asset/Loan Fee

The capital asset/loan fee (CALF) is a variable fee used for capital purchases and/or asset loans:

The CALF:

- is determined on the basis of cost per tonne;
- the CALF is calculated by multiplying a Capital Asset/Loan Fee rate (CALFR) by the applicable quantity of bulk oil loaded or unloaded within WCMRC's GAR, and where applicable, bulk oil cargo transferred between ships within WCMRC's GAR;
- the CALFR is calculated by dividing the forecast annual Funds Required for Capital Purchases (1) of WCMRC, plus the provision for tax (2) by the forecast Annual Volume (3) of bulk oil cargo to be loaded or unloaded within WCMRC's GAR (4); (as a guideline the previous years' actual volumes are used +/- input from members);
- funds required for Capital Purchases (1) = Annual Capital Budget plus the annual principal bank loan repayment, less amortization of capital assets (excluding amortization of assets purchased previously with the CALF);
- provision for tax (2) = (Funds Required for Capital Purchases less amortization of capital assets purchased previously with the CALF) multiplied by the applicable rate of tax;

- annual volume (3) = total volume of bulk oil cargo unloaded + total volume of bulk oil loaded for international destinations and north of 60 within WCMRC's GAR and where applicable, bulk oil cargo transferred between ships within WCMRC's GAR;
- GAR (4) = Geographic area of response for which WCMRC is certified to operate.

The above formula for the CALFR was introduced to WCMRC's Users' Group in March, 2007.

The CALFR calculated by the above formula is applicable to all products except asphalt. The CALFR for asphalt is 50% of the rate for all other products.

The current Capital Asset/Loan Fee, effective January 1, 2021, is $0.000 per tonne. Rates are posted on WCMRC website under the "Membership" section.

7.0 RELATIONSHIP TO OTHER PLANS AND SYSTEMS

A Response Organization's (RO) response plan must take into account any contingency plan for its geographical area that is issued by the CCG. The response operation is managed in coordination with the CCG and federal, provincial and other bodies responsible for, or involved in the protection of the environment.[7]

7.1 Internal and External Plans and Programs

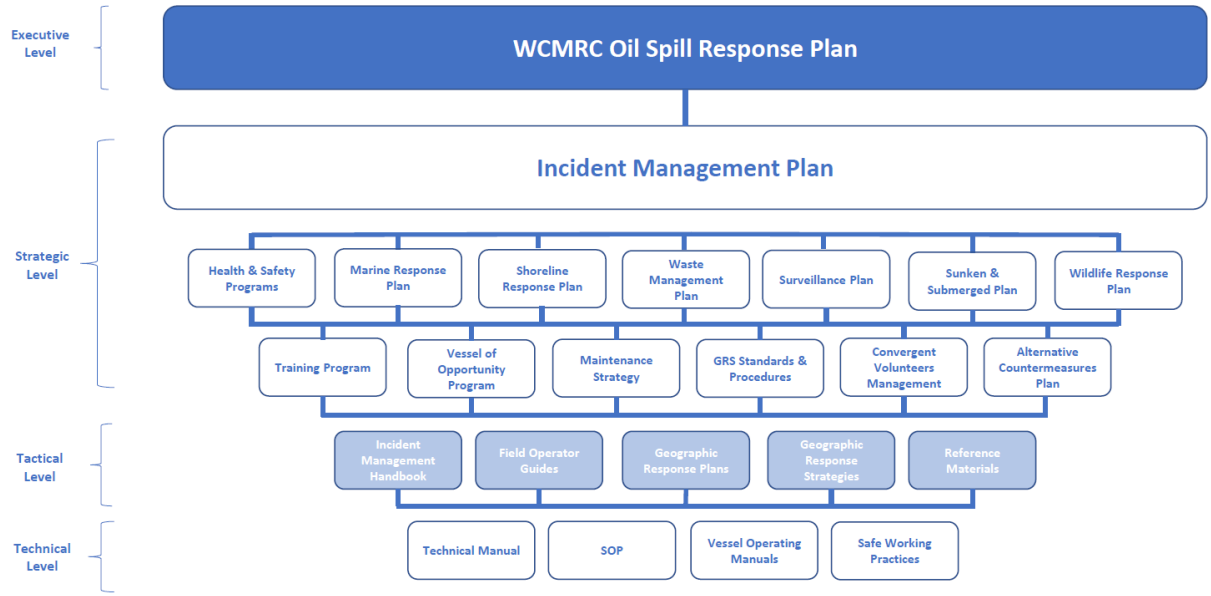
The primary purpose of WCMRC's Oil Spill Response Plan (OSRP) is to demonstrate how the organization meets various regulations, standards and other requirements; as such, the OSRP is considered to be an 'Executive Level' document within a framework which contains WCMRC's other functional plans, programs and procedures by which the organization manages response to an incident, as well as day-to-day activities and operations.

Figure 7.1 below provides a generalized example of this framework from the Executive Level through Strategic, Tactical and Technical Levels. Within the framework, each subsequent level will have a smaller, more precise scope and purpose.

WCMRC's OSRP also falls within a framework of Federal, Provincial, and Industry emergency response plans. As such, the OSRP and WCMRC's other plans and programs are designed for implementation in coordination and integration with other appropriate plans at the time of a spill.

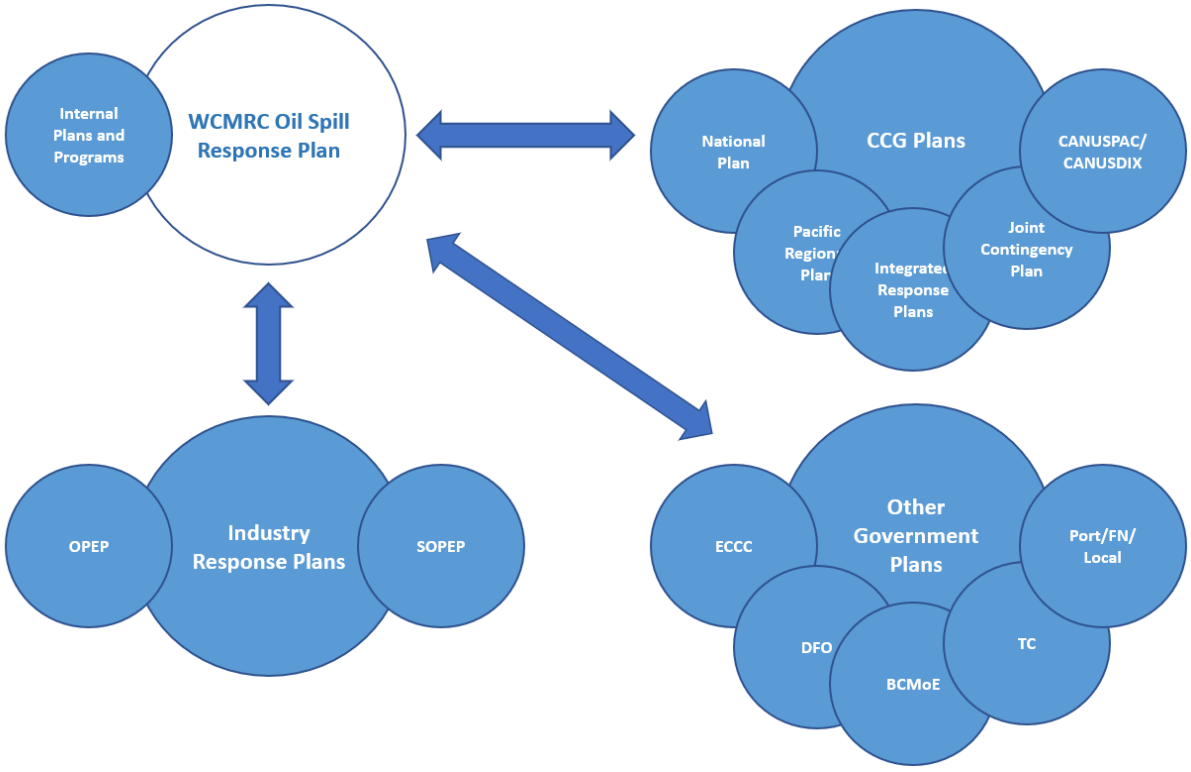
Figure 7.2 illustrates the relationship of the OSRP to other contingency plans in its geographic area including, but not limited to the CCG, other Federal agencies, Provincial agencies and other bodies responsible for, or involved in oil spill response or the protection of the environment.

Figure 7-1: Relationship of OSRP to other WCMRC Plans and Programs



[7] Canada Shipping Act, 2001: Response Organization Regulations: 3.(3); 4.(1)(d)

Figure 7-2: Relationship of OSRP to other Contingency and Emergency Plans



7.2 CCG - Marine Spills Contingency Plan – National Chapter

The CCG - Marine Spills Contingency Plan – National Chapter provides a framework of federal responsibilities in the event of a spill, including defining the role of CCG as the Federal Incident Commander within Unified Command and the greater ICS structure in incidents where it is the Lead Agency. In addition, the plan calls for a system of regional and local contingency plans.

Currently WCMRC participates in CANUSPAC and CANUSDIX exercises as part of aligning with the CCG regional plans.

WCMRC does not have a signed agreement with CCG for response; WCMRC's approach to responding under CCG is to have CCG hire WCMRC as a contractor and sign a Third-Party Agreement, or to have CCG direct WCMRC to respond under their authority set out in the Canada Shipping Act.

7.3 CCG - Pacific Region Marine Spills Contingency Plan

The CCG has been charged with the responsibility to ensure that proper measures are implemented to reduce the potential adverse effects of a marine emergency event. As such, the CCG has prepared regional marine emergency plans, of which the Pacific plan is used in conjunction with other emergency plans in British Columbia waters. The plan outlines responsibilities of the CCG and identifies available resources which may be mobilized for spill response. The plan specifies the role of the CCG as the Lead Agency as follows:

- It is the responsibility of the Polluter to carry out a cleanup operation with the relevant government department ensuring that it is carried out in a satisfactory manner.
- Where the Polluter either cannot or will not carry out a satisfactory cleanup, or is unknown, then the relevant government department will take control of the operation.
- Generally, the CCG will respond to a marine emergency as follows:
- CCG is the Lead Agency for all ship source and mystery (unknown Polluter) spills in Canadian waters.
- Port authorities will initially respond to incidents within the boundaries of their jurisdictions. In the event the required response is beyond their capabilities, for whatever reason, the CCG will, upon agreement, respond as the Lead Agency.
- CCG can act as a resource agency if so required in the case of a land-based spill, spills into water from unidentified sources, or within harbour waters which have their own jurisdiction.

7.4 Canada/United States: CANUSPAC

The Canada-U.S. Joint Marine Pollution Contingency Plan was developed to address coordination of joint spill response for marine spills in the contiguous waters of Canada and the United States. This agreement for the Pacific region is detailed in the Pacific (CANUSPAC) Operation Appendix of the Canada-U.S. Joint Marine Pollution Contingency Plan. The CANUSPAC Appendix is maintained and implemented by the CCG Pacific Region and the 13th U.S. Coast Guard (USCG) District.

7.5 Canada/United States: CANUSDIX

Similar to CANUSPAC, a joint plan provides for coordination of spill response in the marine waters of the Alaska/British Columbia border. This plan, applicable primarily to Dixon Entrance, is maintained and implemented by the CCG Pacific Region and the 17th USCG District.

7.6 CCG Integrated Response Plans (IRP)

The CCG Integrated Response plans are localized, operational plans which act as a guide during emergency response to a marine pollution incident in various areas on the BC coast.

The plans include:

- Greater Vancouver
- Georgia Strait
- Juan de Fuca
- West Vancouver Island
- North Vancouver Island
- Central Coast
- North Coast
- Haida Gwaii

The plans are intended to help inform how key agencies, communities and other organizations (including WCMRC) intend to work together and integrate into a unified response utilizing ICS. The national oil spill response regime recognizes that it is the Polluter who is responsible for its spill and appropriate response; in addition to recognizing the Polluter's responsibilities, the IRPs clarify the roles and importance of local government authorities, First Nations, and others, in collaborative efforts needed for success within the area.

The IRPs are primarily intended for large scale, complex incidents where Unified Command is established; however, they apply to all oil marine pollution incidents regardless of size since all incidents require a level of notification/alerting and assessment as described in the plans.

7.7 Pacific States/B.C. Task Force

In addition to the CCG plan, an Oil Spill Memorandum of Cooperation (June 1989), between the Province of British Columbia and the States of Washington, Oregon, Alaska, California and Hawaii, provides the basis for development of coordinated programs for oil pollution prevention, preparedness, and response at state and provincial levels. This cooperation is accomplished through the structure of the Pacific States/B.C. Oil Spill Task Force. Programs developed under the auspices of this organization include recognition of a common Incident Command Organization, and a detailed program of mutual aid assistance.

Plans for the U.S. Task Force members include Federal Pacific Northwest Area Contingency Plan (United States Coast Guard, Environmental Protection Agency, and Washington State joint plan) as well as individual State Geographic Response Plans (GRPs) which apply to the following transboundary areas:

- Georgia Strait
- Strait of Juan de Fuca
- San Juan Islands
- Dixon Entrance

7.8 British Columbia Marine Oil Spill Contingency Plan

The Province of B.C. maintains jurisdiction over all land between high and low water marks, the seabed of the Strait of Georgia, Juan de Fuca and Queen Charlotte Sound-Johnstone Strait, and the coastal seabed between major headlands, unless responsibility has been transferred specifically to a federal jurisdiction, or is in private ownership. During a spill event, the Ministry of Environment will be the lead ministry in the initiation of a provincial response to a marine oil spill. The operating principles for this response are described in the B.C. Marine Oil Spill Contingency Plan. The B.C. Marine Oil Spill Response Plan defines the scope and structure of the provincial government's involvement when responding to a major marine oil spill. The B.C. Ministry of Environment is responsible for provincial preparedness and response management for spills. This responsibility is designated under the Emergency Program Act and its Emergency Program Management Regulation (Schedule 1), and Section 2 of the Environment Management Act. The plan also reflects the ministry's goal for a "Healthy and Safe Land, Water and Air."

Provincial involvement may be jointly shared with federal agencies, local government, First Nations and industry, or may be solely a provincial government endeavor. This plan is intended to operate concurrently and in cooperation with the plans of other responding jurisdictions and companies. The focus of this plan is at the site (Incident Command Post) level.

7.9 Environment and Climate Change Canada

The Environmental Emergencies Program (EEP) at Environment and Climate Change Canada (ECCC) was created in 1973, following a tanker spill in Nova Scotia. Responsibilities of ECCC in environmental

emergencies are identified in various federal legislation, policies and emergency plans, e.g. Canadian Environmental Protection Act, 1999; Fisheries Act, Emergency Management Act, 2007; Migratory Birds Convention Act, 1994; EC's National Environmental Emergencies Contingency Plan (2012), Federal Policy on Emergency Management (2009) and Federal Emergency Response Plan (2011).

During an incident the National Environmental Emergencies Centre (NEEC) is ECCC's 24/7 hub for scientific support. The NEEC can supply expertise and services to the response including:

- Spill and air trajectory and dispersion modelling to track the path and intensity of air, water and ground pollutants,
- Behavior analysis of hazardous substances in the environment to understand the range of impacts
- Site specific weather forecasts to coordinate response efforts
- Environmental sensitivity mapping
- Shoreline cleanup assessment and remediation advice
- Chair a Science Table bringing together a team of partners which could include CCG, TC, Public Safety Canada, Fisheries and Oceans Canada, Port Authorities, Parks Canada, First Nations, Provincial/Territorial Ministries of Environment.

During the response phase of the emergency, ECCC will designate its staff to serve as the Scientific Support Coordinator (SSC) to ensure the incident response is adequate and follows federal requirements and coordinates the delivery of ECCC's products and services.

7.10 Department of Fisheries and Oceans

Department of Fisheries and Oceans (DFO) do not maintain a contingency or emergency plan, but does respond in cooperation with other agencies.

7.11 Transport Canada

Transport Canada (TC) is the lead regulatory agency for marine oil spills.

Transport Canada's Environmental Response Program does not maintain a contingency or emergency plan, but other programs within Transport Canada do respond in cooperation with other agencies in order to address other elements of the emergency situation or other functions of the response, such as salvage and vessel casualty response. In this regard, Transport Canada plans to reference are

- National Places of Refuge Contingency Plan and Pacific Regional Annex
- Environmental Prevention and Response National Preparedness Plan.

7.12 Port of Vancouver — Emergency Plan

Port of Vancouver is a federally mandated body operating under the Canada Marine Act to manage the waters within the Vancouver Harbour boundaries, and to administer the Port of Vancouver. Its mandate is inseparable from responsibilities of environmental stewardship and as such, shares in authority for ensuring that spills in marine waters within its jurisdiction receive adequate response. Port of Vancouver has developed its own Emergency Response and Business Resumption Plan to respond to emergencies (including oil spills), and to restore conditions to normal as rapidly and efficiently as possible. The Plan also provides a basis for interfacing with other organizations or levels of government impacted by, or having the resources necessary to meet the requirements of the emergency. Port Metro Vancouver maintains a "24/7" harbour patrol coverage and on-call Duty Harbour Master who can be contacted through the CCG's Marine Communications and Traffic Services in Vancouver.

7.13 Oil Handling Facility Emergency Plans

Oil Handling Facilities (OHF's) are required by the CSA, 2001 to have an arrangement with a certified response organization and to have on site their own site-specific marine Oil Pollution Emergency Plan (OPEP). WCMRC has OPEPs on file for many OHFs on the B.C. coast, and several of WCMRC's Geographic Response Strategies (GRS) have been built to reflect the containment or deflection booming strategies illustrated in the OPEP.

7.14 Shipboard Oil Pollution Emergency Plans

Oil tankers of 150 gross tonnage or more, vessels other than oil tankers, of 400 gross tonnage or more that carry oil as cargo or as fuel and vessels that carry oil as cargo or as fuel and that are engaged in towing or pushing at least one other vessel that carries oil as cargo or as fuel, if the combined gross tonnage of the vessels is 150 gross tonnage or more, are required by the CSA, 2001to have an arrangement with a Response Organization to which a certificate of designation has been issued in respect of a specified quantity of oil that is at least equal to the total amount of oil that the ship carries, both as cargo and as fuel, to a maximum of ten thousand tonnes.

In addition each ship must comply with CSA, 2001 regulations respecting the procedures, equipment and resources that the ship must have on board for use in respect of an oil pollution incident respecting the ship, known as a Shipboard Oil Pollution Emergency Plan (SOPEP).

7.15 Other Local Emergency Plans

Fire and police departments, municipalities, cities, ports, First Nations, and companies handling oils or hazardous materials generally have emergency response or contingency plans with which this plan must integrate, as appropriate for spill response. It is important to acknowledge that responding agencies will all have different goals and responsibilities.

Local agencies may become involved with spill incidents when an explosion hazard is present, or to provide controls such as traffic re-routing, restricting access, closure of beaches, etc. Each city and municipality has its own response structure and capability, and participates in the planning, coordination and notification activities associated with pollution incidents and other emergencies.

Traditional field response capabilities of police and fire departments are often useful during a response. They include security and evacuation assistance, crowd control, and communications and equipment support. Local input may be solicited for major spill responses and local officials should be kept informed of relevant issues.

7.16 Compliance Testing

A response organization's response plan must take into account any contingency plan for its geographical area that is issued by the CCG.

Canada Shipping Act, 2001: Response Organization Regulations: 3.(3)

The response operation is managed in coordination with the CCG and federal, provincial and other bodies responsible for, or involved in, the protection of the environment.

Canada Shipping Act, 2001: Response Organization Regulations: 4.(1)(d)

8.0 RESPONSE ORGANIZATION DETAILS

The purpose of this section is to provide the name and address of the response organization and an overview of the spill management structure and interface.[8]

8.1 Name and Address

WCMRC operates as a Transport Canada (TC) certified spill Response Organization (RO), as defined by the Canada Shipping Act, 2001 (CSA, 2001), on the west coast of Canada. Since its inception, and including the period since certification, WCMRC has provided response to more than 800 spills. The RO headquarters is located at:

Mailing address:
Western Canada Marine Response Corporation
206- 3500 Gilmore Way
Burnaby, B.C.
V5G 0B8

Telephone: 604-294-6001

Emergency: 604-294-9116

Internet: http://www.wcmrc.com

Business address:
Western Canada Marine Response Corporation
206- 3500 Gilmore Way
Burnaby, B.C.
V5G 0B8

Facsimile: 604-294-6003

8.2 Our Mission, Vision, Values and Corporate Goals

Mission Statement

WCMRC delivers safe and effective oil spill response services within the province of British Columbia

Our Vision

To be regarded by communities and industry as the leader in marine oil spill response.

Our Values

We believe that putting our values into practice creates long term benefits for our employees, shareholders, stakeholders, suppliers, and the communities we serve. We value:

- Open and honest communication that fosters a climate of trust
- Integrity and respect in all our practices
- Protecting the environment
- Success through competency, creativity and teamwork
- Celebrating individual and team successes

[8] Canada Shipping Act, 2001: Response Organizations Regulations 3.(2)(a); 4.(1)(d)

Corporate Goals

- Health and safety are top priorities in all we do
- Certification requirements are met, and we are always in a ready state
- Provide a supportive work environment that engages employees and encourages continuous improvement
- Ensure that effective cost controls and transparent financial practices are in place
- Create excellence in all areas of our business
- Collaborate with the response community to strengthen our preparedness and capacity

8.3 Business and Response Continuity

WCMRC has developed robust procedures and systems to allow for continued operation of the business and readiness to response to incidents during times of emergency or crisis. WCMRC uses Incident Command System (ICS) processes and principles to manage day-to-day operations during times of emergency, similar to the management of a spill response. Improved methods of communication and access to databases and systems have enhanced the ability of WCMRC staff to continue to work remotely or in a decentralized manner. WCMRC's Safety Department has developed flexible methods to assess and account for evolving hazards and implement modified working practices or procedures to ensure the health and safety of responders and staff.

An example of WCMRC's approach to business and response continuity can be seen in the response to the COVID-19 pandemic.

8.4 Overview of Spill Management Structure and Interface

WCMRC provides its members, as well as appropriate government Lead Agencies and Third Parties, with the expertise necessary to organize and manage marine oil spill response services (i.e., the provision of equipment, personnel and operational management for the containment, recovery and cleanup of oil spilled on water, including preventative measures taken with respect thereto).

WCMRC uses the Incident Command System (ICS) to facilitate the integration and coordination of various teams and its own personnel into its response operations. WCMRC full time employees may fill management and other key roles (Figure 8.2), while other positions may be filled by contract personnel. Job descriptions and task descriptions for all the roles are included in the WCMRC Field Operations Guide (FOG) which is available for review by all members and government agencies. Further information on how WCMRC implements ICS and manages incidents may be referenced in WCMRC's Incident Management Plan document.

Response to a spill may include various personnel representing the following organizations:

- Polluter
- Response Organization
- Transport Canada
- Canadian Coast Guard (CCG)
- Environment and Climate Change Canada (ECCC)
- Department of Fisheries and Oceans (DFO)
- Local municipal authorities
- Port authorities
- Wildlife organizations
- First Nations
- Other impacted stakeholders

Understanding how these various teams are structured is important to ensure that participating teams can integrate their plans and strategies through a coordinated effort. This is accomplished in British Columbia through Impacted Community sessions lead by Liaison Officers and the Environment Unit.

Unless unknown, unable or unwilling, the Polluter is in charge of the overall response and appoints an Incident Commander (IC). The IC is responsible for the deployment of required resources and for providing the CCG with an acceptable plan of action. The CCG is the Lead Agency for all ship source and mystery spills and, as such, has the authority within the federal government, as designated by statute, inter-agency agreement, cabinet decision, and/or custom and precedent, for exercising overall responsibility during a response. Under the National Contingency Plan, the CCG will assume the role of Federal Incident Commander and participate in Unified Command. If, as previously described, the Polluter is unknown, unable or unwilling to conduct an effective response operation, the CCG takes over the management of the response.

8.5 Incident Management Team Integration

In accordance with the CSA, 2001 RO Standards, WCMRC will provide the response resources required to contain, control, and recover the spilled oil, however, the Polluter (or Lead Agency) retains command and control of the response. WCMRC will be able to assist with and advise the IC regarding operational and technical issues and will integrate personnel into the Incident Management Team (IMT) with the Polluter, provincial and/or federal authorities, as required by the situation and scope of the incident.

WCMRC personnel will integrate into the ICS structure with other agencies, organizations, communities and First Nations, filling roles as necessary depending on the complexity of the incident and the appropriate level of response. WCMRC's Incident Management Plan lays out guidelines by which an appropriate level of response and integration will be determined, based upon incident complexity, potential for escalation, limitations and constraints, and requirements of a Polluter or Unified Command. While the plan provides decision making tools and guidelines, each incident and response is necessarily different, and is to be considered on a case-by-case basis. An overview of this approach can be seen in figure 8-2.

Typically, the responsibilities of the Polluter and of WCMRC response personnel will be complementary. The Polluter can use WCMRC as a general contractor for the development and execution of the operational aspects of a marine spill response or to fulfill Incident Management Team (IMT) roles under the ICS Structure. The following charts will help illustrate the roles that each can play in a response.

The Polluter will be responsible for the casualty, the community and all impacts/interface requirements, their own corporate communications, and the overall management of the cleanup. On the cleanup side the Polluter is responsible under the law to take the lead on wildlife activities and recovered material disposal; however, the RO may assist with technical advice and/or contacts for these activities. The RO can handle all other aspects of the clean up as illustrated on the following pages.

Other considerations that should be addressed and managed by the Polluter are:

- Safety
- Scope of response
- Cost effectiveness of operations performed
- Contract variations and business controls

Each ICS role uses the FOG to integrate into and operate within the ICS organization required to respond effectively to spills, and for spill response training and exercises.

Figure 8-1: Response Organization Functional Responsibilities

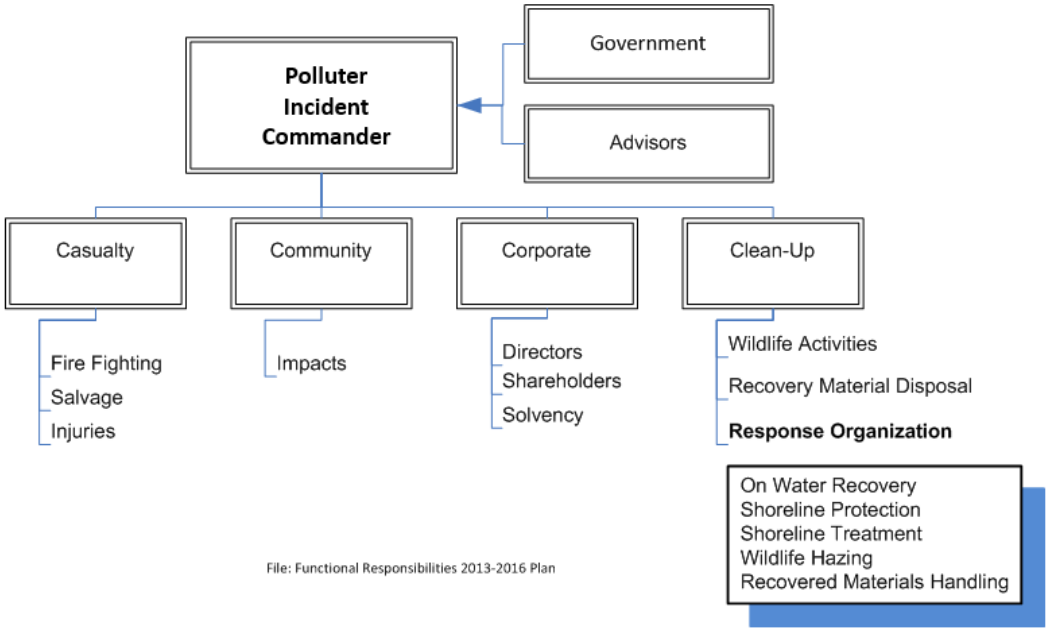


Figure 8-2 - Escalation of Response Personnel for Level 1 through Level 3 response

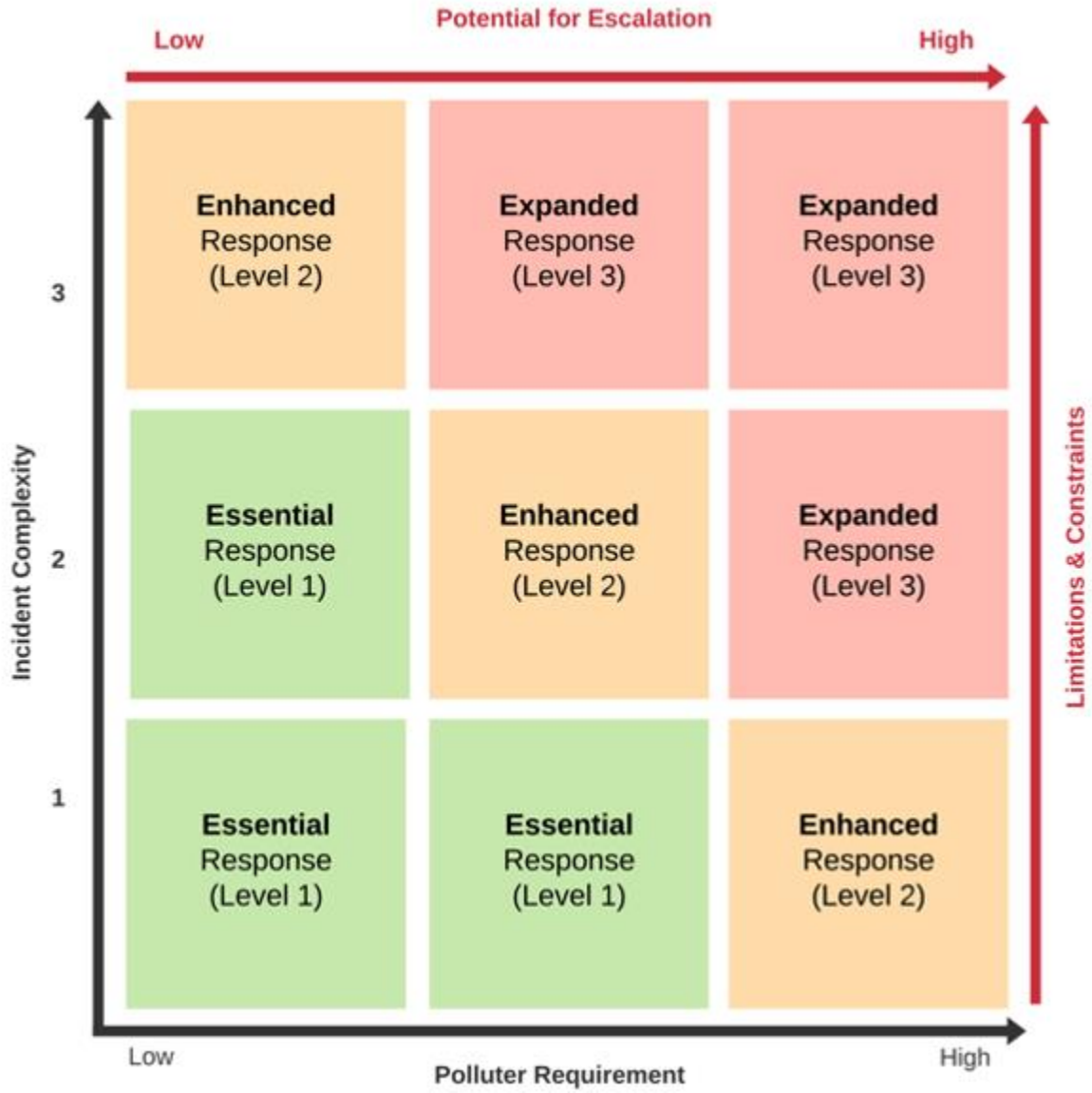


Table 8-1: Comparison of Roles - Polluter to RO

POLLUTER	RESPONSE ORGANIZATION - WCMRC
ICS roles: ▸ IC within Unified Command ▸ Public affairs / Information Officer ▸ Corporate Polluter legal ▸ May fill other ICS roles but this is at the discretion of Polluter management	ICS roles: ▸ Spill Response Manager (SRM) , plus ▸ Capable of filling all ICS Incident Management Roles requested by Polluter or Unified Command (command staff/section chiefs and supporting roles) ▸ Field operations (on-water, shoreline, logistical etc.)
Overall Incident Action Plan (IAP) Approval	Development of a practical and executable plan; technical advice on spill response subject matter
Management of Public Relations/Community and Corporate interface	Support for Public Affairs – technical info and tactics being implemented (Operations)
Management of Legal Issues	Input and Support to Polluter Legal Council
Management of Claims and Complaints	Provision of Trained Staff – can arrange personnel on behalf of Polluter
Resolving Issues of Strategies and Priorities, in conjunction with Gov't Agencies and Stakeholders (see common objectives section of FOG)	Facilitation of subject matter experts (e.g., SCAT, Wildlife, Sunken and Submerged Oil) to Polluter or Unified Command
Communicating Action Plans with Polluter legal, corporate management and local Government Authorities	▸ Development of coordinated IAP ▸ Execution of Plan following Identified Priorities and Strategies
Management of Casualty	▸ Management of field Spill Clean up ▸ Coordination of activities / response with Government Agencies, Consultants, and Contractors
Waste Disposal	Assist with development of Waste Management Plan, facilitation of waste contractors
Environmental Affairs and Natural Resources Damage Assessments	Safety for WCMRC and subcontractors
Wildlife Management	Wildlife hazing/scaring under direction from government agencies and/or wildlife experts

8.6 Response Objectives

The first step for the Incident Commander or Unified Command is to clearly identify the key objectives for the response. These objectives will guide and direct the team in the development of the strategies and tactics to be executed during the response.

Incident objectives must be realistic, measurable, and achievable. Experience has shown that in most incidents there are a number of common priorities for a spill response, and they typically form the key

objectives. These are outlined below as a guideline for the spill response team. Objectives are prioritized in the order of importance when executing a response.

From each objective come the strategies and tactics for responding to the spill. The strategies are basically the plan as to what will be done and the priority. The Planning Section in consultation with the Operations Section develops these strategies. From the strategies, the Operations team develops the tactics necessary to meet the identified objectives and strategies.

Common Objectives:

- Ensure the safety of response personnel and the public.
- Control the source of the spill.
- Manage a coordinated response effort.
- Maximize containment and recovery of spilled oil
- Minimize impact to sensitive areas.
- 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.

8.7 WCMRC Incident Management Team

WCMRC is structured to integrate into an ICS or similar response management system during a spill response incident. In accordance with the Response Organization Standards, WCMRC provides the response resources required to contain, control, and recover the spilled oil.

The ICS management structure and Incident Management Plan approach adopted by WCMRC provides a flexible response capability that can be adjusted and scaled to the magnitude and complexity of the incident. The determination of the appropriate level of response is dependent upon incident-specific circumstances. As successive levels of the response management system are activated, they build upon those activities already in place. All or selected elements of the management team and supporting resources may be activated.

WCMRC's designated SRM is in charge of the overall response activities of the RO and will act as a technical advisor to Command. The SRM will likely interface directly with the Polluter's IC, Unified Command, or with the CCG Federal IC should the CCG assume control of the response. A list of the WCMRC day-to-day functions is provided below. This day-to-day organization fills the roles of the IMT as described in Sections 10 and 11 of this document.

Figure 8-2: WCMRC Organization Chart – Day to Day Operations

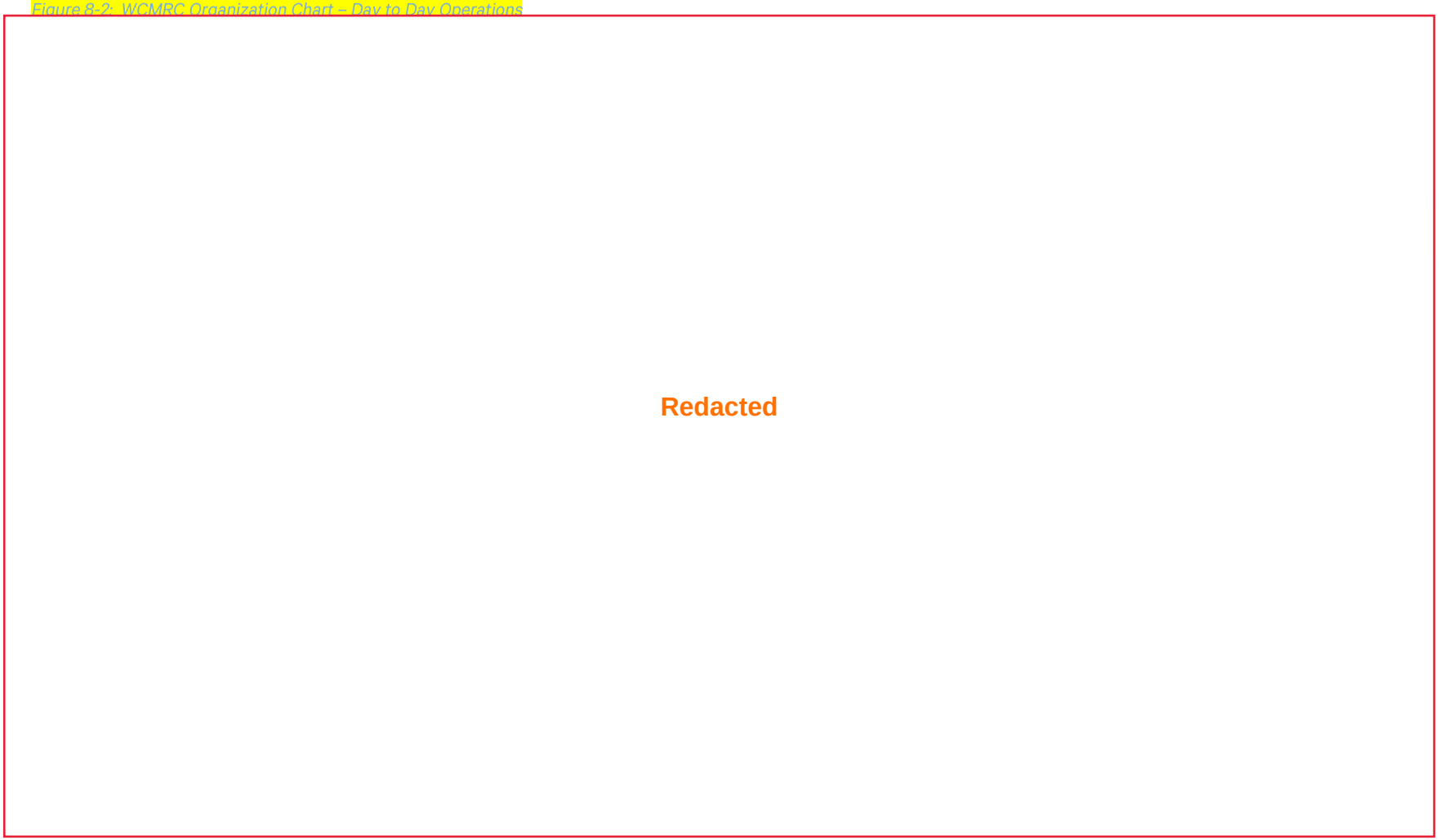
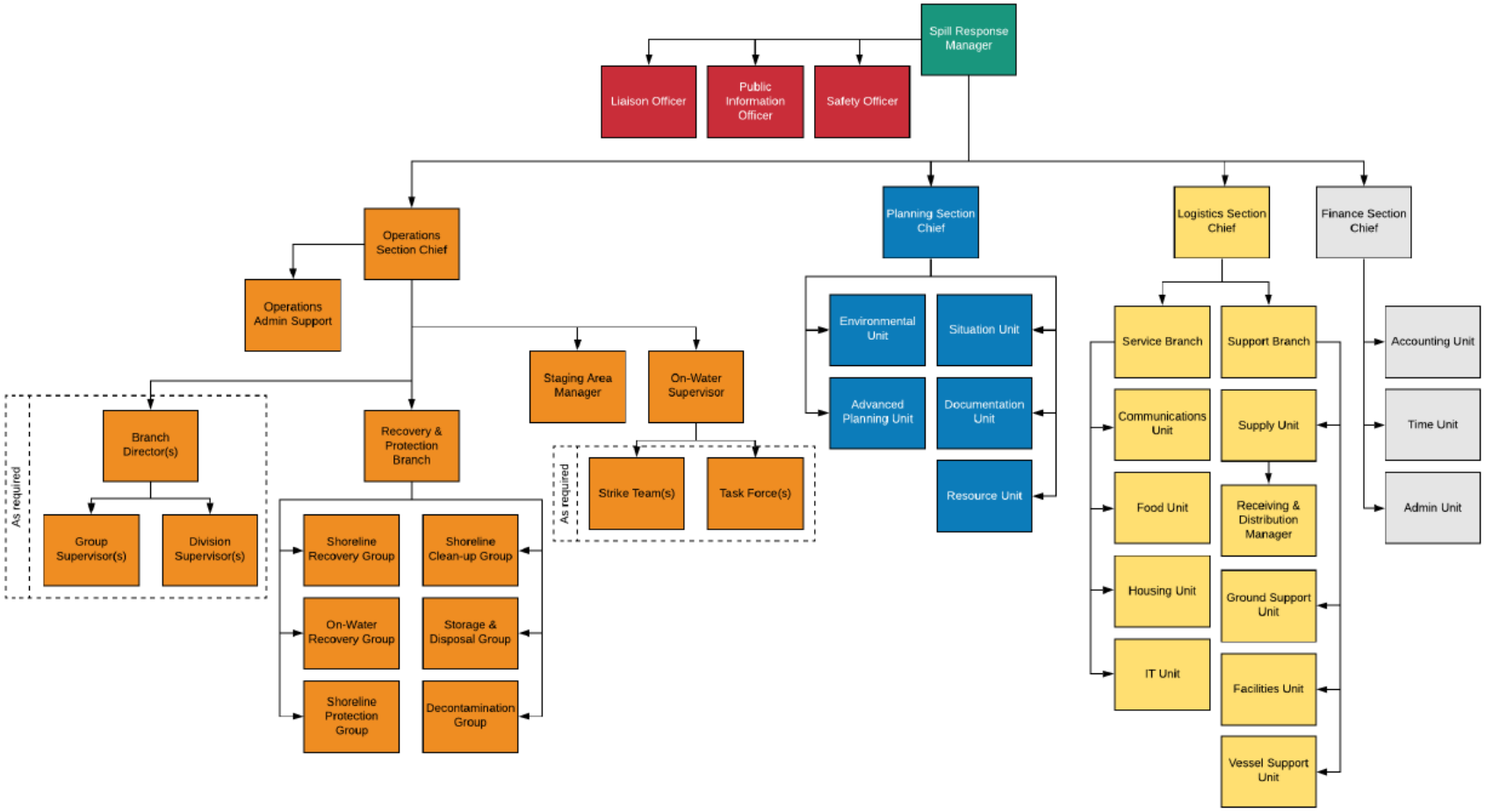


Figure 8-3: WCMRC Incident Command System Organization Chart



8.8 ICS Organization

The IMT is activated and deactivated according to need. At the outset of any incident, all incident management and response functions are initially vested in the IC (in a small spill, the IC might be the only management responder). When the IC identifies the need for assistance, one or more Section Chiefs may be activated. The Section Chief(s) is expected to carry out all the functional responsibilities of the section until additional help is needed or responsibilities are delegated. Depending on the complexity of the incident, the Section Chief can activate one or more unit leaders, managers, supervisors and advisors. A Unified Command (UC) may be established in order allow for cooperating agencies and communities to collaboratively manage the response efforts.

The UC/IC and Section Chiefs have access to consultants and advisors who are recognized experts in the field of spill response. The UC/IC must regularly evaluate and address operational response and incident management needs. This may result in the activation of additional response personnel and equipment, the continued use of existing response personnel and equipment, or the deactivation of response personnel and equipment that are no longer required.

In evaluating and managing the response, the UC/IC will be guided by the four critical strategic priorities — people, environment, assets, reputation (PEAR).

The ICS is structured to address the following major functions that must be carried out in order to provide marine oil spill response services:

- Command and General Staff (Liaison Officer, Safety Officer, Legal Officer, Information Officer)
- Operations
- Logistics
- Finance/Administration
- Planning

8.9 Command and General Staff

Command:

- Maintains an emphasis on health and safety;
- Exercises authority and responsibility for the entire incident response effort;
- Sets response priorities, develops objectives and directs response actions;
- Approves the Incident Action Plan (IAP) and supporting plans for execution;
- Serves as the interface between the IMT and agencies, communities and organizations not directly involved in the response.

Command is responsible for the overall management of the incident. Command directs incident activities, including development and implementation of overall objectives and strategies, and approves ordering and releasing of resources. Each UC member may assign Deputy Incident Commander(s) to assist in carrying out Incident Command responsibilities. UC members may also be assigned individual legal and administrative support from their own organizations.

Command is supported by the General Staff, made up of the Safety Officer, Public Information Officer, Liaison Officer and Legal Officer as required. The General Staff is directly accountable to UC/IC and will take on lead responsibilities for priorities and objectives related to safety of responders and public, keeping public, communities and First Nations informed of response activities, and liaising the input of communities, First Nations and agencies not involved in UC into the ICS process.

Spill Response Manager

For each spill response, WCMRC will designate a Spill Response Manager (SRM).

The SRM is typically a senior, experienced member of the organization who is responsible for managing and overseeing the overall response activities of the RO. In this sense the SRM fulfills mainly an administrative role, being the primary contact with the authorized representative of the Polluter to ensure that Work Orders are regularly completed, internal WCMRC processes and procedures are properly followed and documented, staffing and equipment needs are adequately resourced, and to provide an interface between WCMRC senior management and UC/IC as required. The SRM is not intended to take on the role of directing operational and tactical planning, however they can provide advice and assistance to the Operations Section Chief and other Branches/Groups under Operations as required.

The SRM is also responsible for being a technical advisor to UC or the IC of the Polluter or CCG as applicable. The SRM can assist in setting priorities, developing realistic objectives, resolving resource or planning disputes, advising on next steps, and in general provide an experienced spill response perspective to UC/IC.

Under the WCMRC FOG, the SRM is accountable directly to the IC, and will interface with WCMRC and other personnel in the other ICS sections as needed – It is important to note that the SRM is not a member of Unified Command, but WCMRC is flexible in that the SRM can act as an advisor to UC/IC, or act as a member of the General Staff if desired.

The SRM may activate a Deputy SRM if deemed necessary in order to delegate parts of the workload; this activation is at the discretion of the SRM and to be approved by UC/IC.

8.10 Operations Section

The Operations section is responsible for managing all field-operating activities. In the early stages of a response, they will also handle their own logistics and planning to facilitate response implementation.

The Operations section includes the responsibility to manage on-water activities, shoreline work, aerial support of operations (spotting, etc.), and any special operations that they are required to complete.

The Operations section:

- Organizes and manages all assignments directed at containing and recovering spilled oil, protecting sensitive resource areas, and treating impacted areas;
- Manages critical support assignments to support field missions, such as air operations (i.e., tracking and characterizing slicks and positioning assets);
- Develops tactics and assignments in order to meet operational objectives and strategies.

8.11 Logistics Section

The Logistics section is responsible for providing all support resources. Logistics provides all support for purchasing, transportation, communications and security. Logistics establishes and maintains all field support sites, including staging areas, bases, camps and housing facilities.

Logistics support may include: acquiring and/or constructing and managing response and staging facilities; securing and arranging for the housing, clothing and feeding of response personnel; obtaining, inspecting and maintaining equipment; providing strategic and tactical air, land and water transportation resources; obtaining communications equipment, and setting up and maintaining communications networks; ensuring the security of personnel and equipment; and arranging for the handling of waste materials and the organization and management of demobilization efforts.

The Logistics section:

- Secures the equipment and personnel needed to carry out operational response services;
- Keeps equipment and the response personnel operational in the field.

8.12 Finance/Administration Section

The Finance section monitors all activities with respect to time and billing, and ensures that the response operations are audited for protection of financial resources.

The Finance/Administration section:

- Ensures all expenditures and commitments are subject to strict controls to ensure they are properly documented for asset control and invoicing purposes;
- Processes purchase orders and invoices, tracks the receipt and distribution of resources, monitors costs, audits contractor attendance, and provides the SRM with regular, accurate, and up-to-date reports on the response expenditures and commitments.
- Ensures the administration of all arrangements and agreements.

8.13 Planning Section

The Planning section collects and distributes incident information and is responsible for developing the various operational plans and provides expert advice and technical information to the response operation. The Planning section is the link between the Incident Command and any government technical groups, such as the Science Table. Current contracts with WCMRC members allow WCMRC to implement best effort response procedures for the first 24 hours with a dry bulk cargo vessel and Oil Handling Facilities and 48 hours for tankers without Polluter approval. After that, WCMRC will work to a plan approved by the Polluter.

The Planning section:

- Collects, evaluates and disseminates information related to the incident and compiles and prepares status reports;
- Facilitates tactical (short term) planning and strategic (long term) planning;
- Compiles and prepares the necessary Incident Action Plans, General Plans and supporting documentation for all Plans;
- Prepares and coordinates strategies for a wide variety of functions, such as: storage and disposal of liquid and solid oily and non-oily wastes; conducting SCAT; generating maps; and planning demobilization activities;
- Interfaces with technical advisors and services supplied by contracted companies or by various governments, usually through the Environment Unit. This ensures that the Incident Command and Environment Unit develop strategies and plans based on common and current information.

8.14 Documentation and Record Keeping

All personnel in the Incident Command are responsible for generating their personal activity records and documentation. In any significant spill, WCMRC will employ a Documentation Unit Leader whose primary function is to ensure the completeness and timeliness of all relevant documentation. The Document Unit Leader is also charged with establishing and maintaining files of all documentation. During the incident and at the conclusion of the response, all relevant information will be collected and catalogued by the Documentation Unit.

8.15 Incident Command System Overview

A job description for each position of the WCMRC IMT is provided within the WCMRC FOG. Depending on the size and complexity of the spill, some individuals may perform more than one function. During training (see Section 14), individuals may be trained for several roles in oil spill response management. This overlap of training helps to ensure that sufficient personnel are available and familiar with their potential roles, and to provide backups for scheduled rotations during an extended response.

Incident Command System (ICS)

WCMRC utilizes ICS as the management tool for command, control, and coordination of a response. This system allows for input and a means to coordinate the efforts of the individual agencies, the RO and the Polluter as they work toward the common goal of stabilizing the incident and protecting life, property, and the environment. ICS uses principles that have been proven to improve efficiency and effectiveness in a business setting and applies the principles to emergency response.

While ICS has been practiced for firefighting and emergency response in the United States for nearly two decades, it has only recently been adapted for oil spill response. Numerous Canadian public and private sector agencies including WCMRC are now either using ICS as their management system, or are beginning to convert existing systems. WCMRC completed the conversion to ICS in 2003.

The following ICS overview has been extracted from the WCMRC FOG. For full details by role, on how WCMRC uses ICS to manage an oil spill incident please refer to the WCMRC FOG.

Overview

The Province of British Columbia requires provincial ministries, agencies, boards, commissions and Crown Corporations to use ICS for response to all incidents. Many municipalities, federal departments, First Nations, and industry associations have also adopted ICS as their standard for responding to emergencies.

Most oil spill incidents require a response from a number of different agencies. Regardless of the size of the incident or the number of agencies involved, all incidents require a coordinated effort if we are to ensure an effective response and the efficient, safe use of resources. WCMRC recognizes this, and encourages both government and industry to work together in the management of all environmental emergencies.

To coordinate an effective use of all of the available resources, WCMRC uses the formalized ICS management structure. This structure ensures consistency, fosters efficiency, and provides a process flow during a response.

The ICS organization is built around five major components:

- Command
- Planning
- Operations
- Logistics
- Finance/Administration

These five major components and the related responsibilities are the foundation upon which the rest of the ICS organization develops. The same components and activities apply whether it is a small spill, an exercise and/or in the management of a response to a major spill. In small-scale spills, one person, the Incident Commander, may manage all of the components. Larger spills usually require each component, or section, to set up separately and be staffed according to the size and potential impact of the spill.

The ICS organization has the capability to expand or contract to meet the needs of the incident, but all incidents, regardless of size or complexity, will have an Incident Commander (Polluter and/or CCG) and a SRM. The IC is responsible for the on-scene management, with the RO supporting the response activities.

The goal of the Incident Command System (ICS) is to allow the Incident Command to move from an "emergency/reactive" phase to a "project/proactive" mode of operations (the Planning Cycle), as quickly as possible.

ICS Concepts and Principles

The adaptable ICS structure is composed of major components to ensure quick and effective resource commitment and to maximize response efficiency. The WCMRC FOG, together with its accompanying job aids provides the tools with which WCMRC will integrate into and implement the ICS.

The ICS structure features:

- A modular organization that develops from the top down as the incident warrants
- Integrated communications which use common frequencies and an incident-wide communications plan
- Common terminology: uses plain-English radio codes and common standards for resource identification
- Unity of command
- The ability to function within a unified command structure in which all participating organizations function under a single IAP and within one ICP
- A consolidated IAP, that describes overall goals, response objectives and support activities for the next operating period
- A manageable span of control that ensures no one person supervises more than seven resources
- Designated incident facilities, including an ICP, staging areas, camps, bases (as required) and mobile or consolidated communications centres
- Comprehensive resource management that carefully tracks and makes effective use of all spill response resources

The WCMRC FOG and job aids provide:

- Comprehensive plain language job descriptions that guide the individual team member through the spill response from the initial callout, through the initial response and planning phases through to demobilization
- Custom status, resource tracking and information boards which guide the user to find, utilize and save appropriate information
- Visual aids and prompts to assist personnel with their roles and maintain schedules
- Packaged supply totes that provide the supplies required to establish an effective Incident Command Post and key field sites.

Unified Command (UC)

While a single IC can handle the Command function, the ICS organization may be expanded into a Unified Command for complex responses that cross-jurisdictional boundaries or involve multiple agencies with geographic or functional jurisdiction. The UC brings together the senior personnel of the major stakeholders involved in the response to function as a team with a common set of incident objectives and strategies.

The Unified Command will typically include:

- Federal Incident Commander (Typically Canadian Coast Guard representative)

- Provincial Incident Commander (Typically British Columbia Ministry of Environment representative)
- Local Incident Commander
- First Nations Incident Commander
- Polluter Incident Commander

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

- The specifics of the incident;
- Requirements of the Lead Federal or Provincial Agency's Contingency Plan;
- Decisions reached during the initial meeting of the Unified Command.

The makeup of the UC may change as the incident progresses, in order to account for changes in the situation.

It is important to note that participation in a UC occurs without any agency abdicating authority, responsibility, or accountability.

ICS Planning Cycle

One of the basic components of ICS is the planning cycle. The planning cycle is a highly structured process, conducted at the time of the incident that can be followed during each operational period to facilitate the development of an Incident Action Plan (IAP) for the next operational period. The IAP defines the actions to be taken during the next operational period to achieve the strategic objectives and response priorities specified by the UC/IC.

The planning cycle is built around a series of meetings designed to:

- Establish strategic objectives and response priorities for the next operational period;
- Marshall the manpower, equipment, and support services needed to carry out the plan;
- Commission the preparation of an IAP for the next operational period;
- Brief personnel on the contents of the IAP and General Plan.

The planning cycle typically begins with the SRM/IC daily command staff briefing meeting during which the strategic objectives and response priorities are established. Strategic objectives are short, concise statements that define broad scale objectives to be achieved or addressed during the next operational period.

The Planning section will prepare an IAP covering tactical and support activities required for an operational period, and providing guidance to the next shift. The IAP will be reviewed and approved by Unified Command or the Incident Commander as applicable. For response under the CCG, WCMRC staff will provide advice to the Incident Action Plan prepared by the CCG.

The ICS requires that:

- Meetings be held at prescribed times during each operational period;
- The purpose of the meetings be clearly stated and understood by all participants;
- A Chairperson be designated for each meeting
- Meetings be highly structured and disciplined;
- Meeting attendees know in advance what is expected of them at the meetings, and attendees prepare to make the required presentations;
- Meetings are short in duration.

Figure 8-4: ICS Initial Response Phase – Notification through Activation

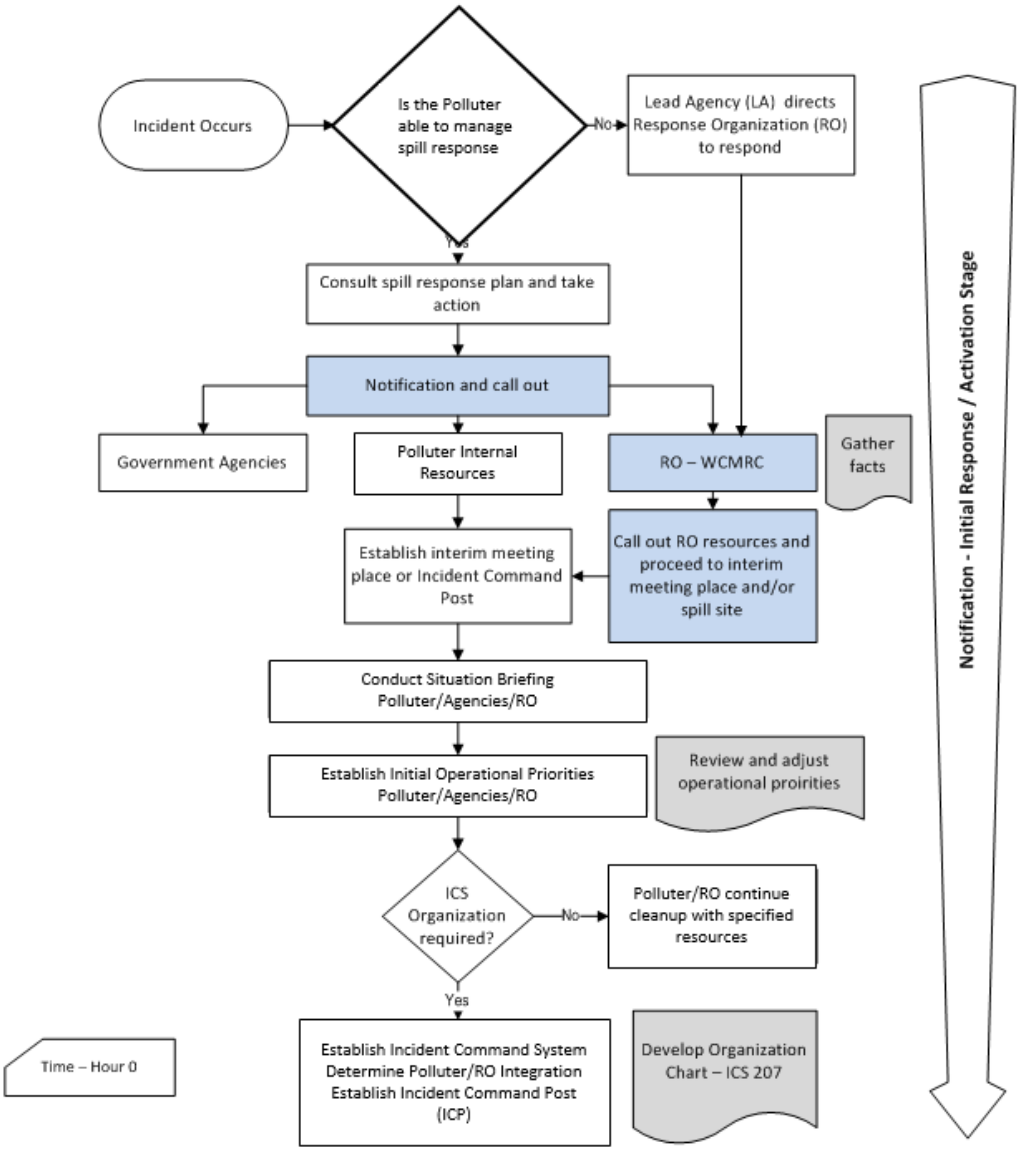
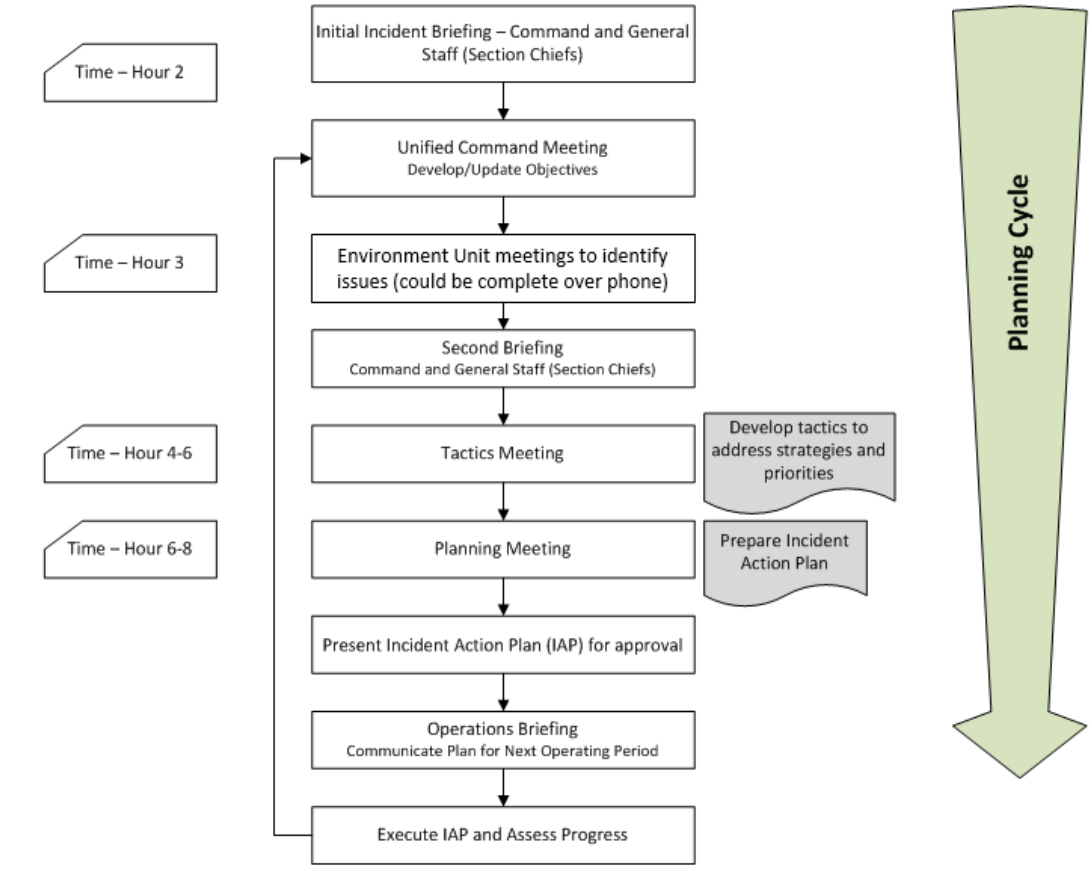


Figure 8-5: ICS Planning Cycle



File: Response Flowchart – 2013-2016 Planning Cycle

Figure 8-6: ICS Priorities

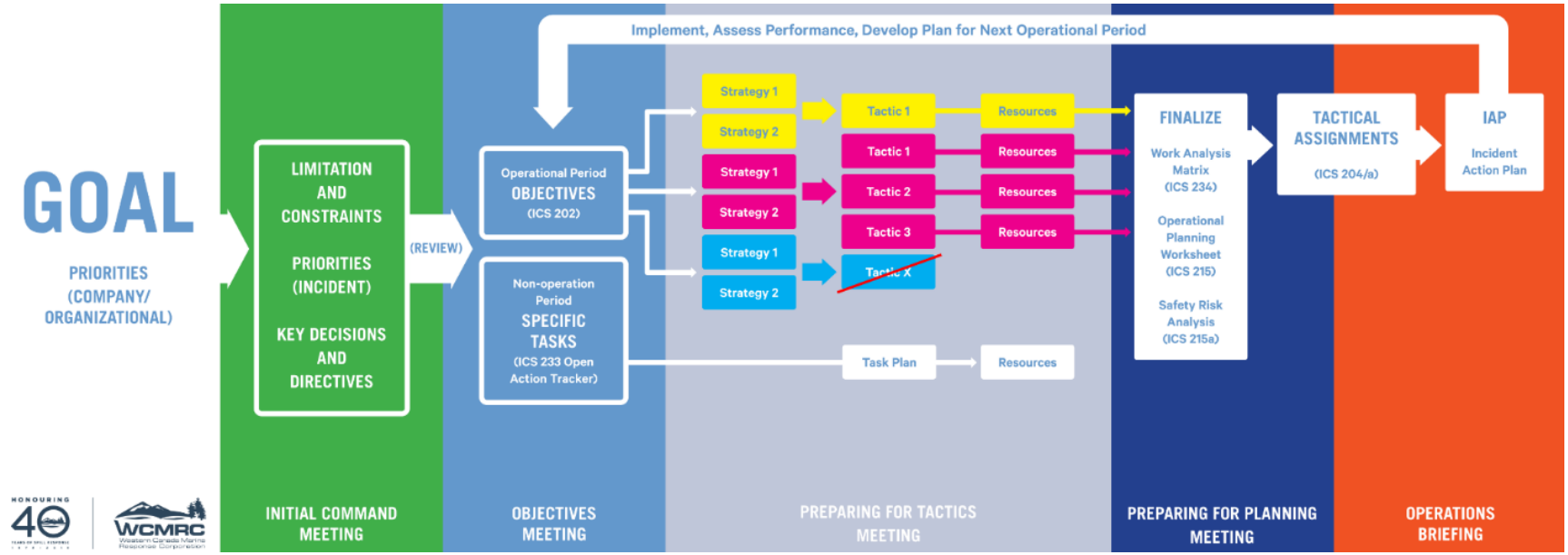
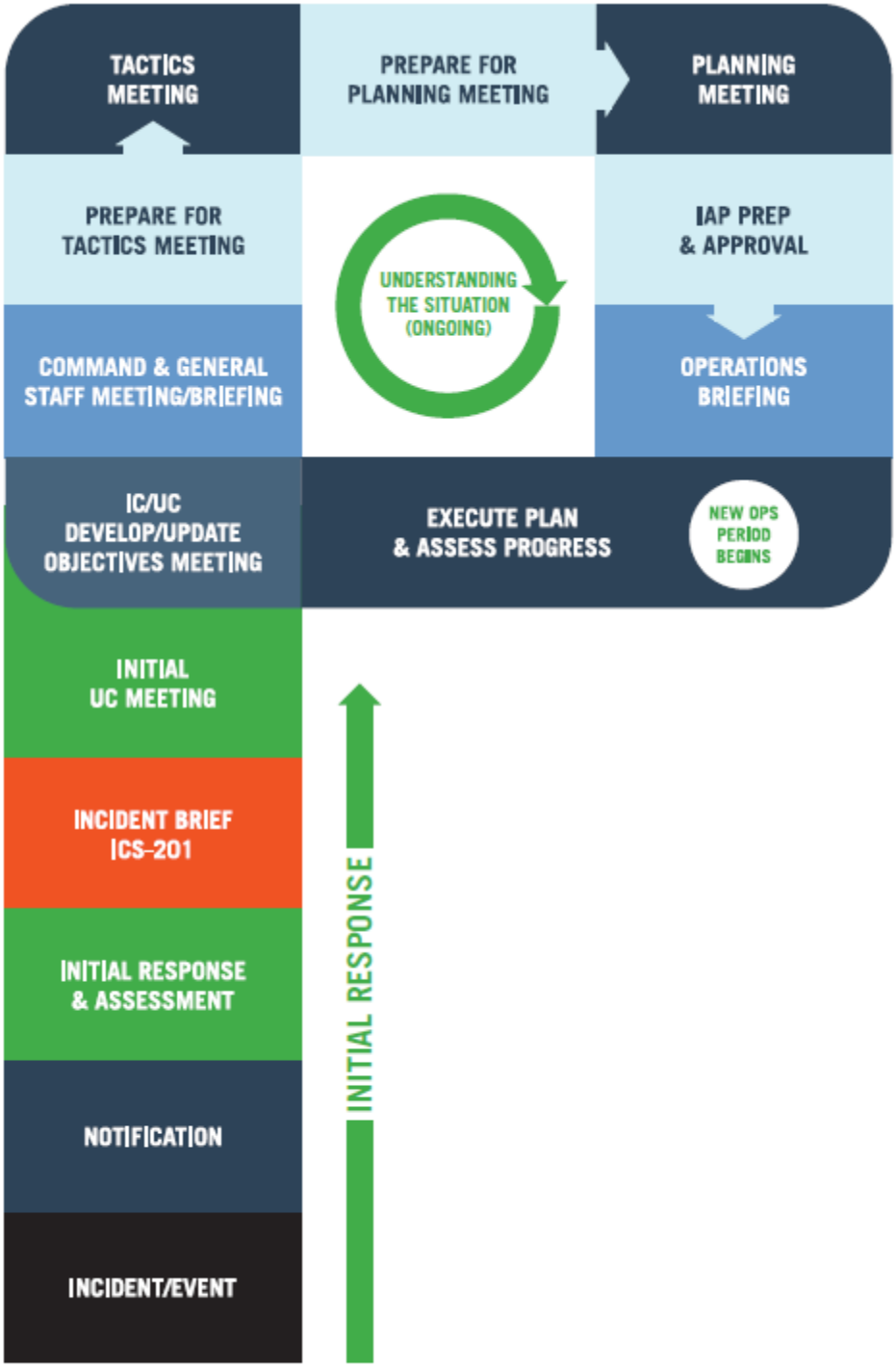


Figure -7: ICS Planning "P"



8.16 Compliance Testing

The name and address of the response organization.

Canada Shipping Act, 2001: Response Organizations Regulations: 3. (2) (a)

The response operation is managed in coordination with the CCG and federal, provincial, and other bodies responsible for, or involved in, the protection of the environment.

Canada Shipping Act, 2001: Response Organizations Regulations: 4. (1) (d)

9.0 GEOGRAPHIC AREA OF RESPONSE

A response organization's response plan shall include a description of the geographical area.[9] [10]

9.1 Geographical Area of Response (GAR)

The geographical area covered by this plan includes the waters covering the coastal portions of the Province of British Columbia and extending throughout the Exclusive Economic Zone (200 nautical miles offshore) as provided in federal legislation, and including, but not limited to, the inland region waters of the Province (Figure 9-1). This part of the plan specifies the various regions of response within the geographic area of response. As described in Section 12 of this document, WCMRC maintains equipment substantially in excess of its Tier 4 capacity requirements; this equipment can be freely moved within the GAR and mobilized for mutual aid. This part of the plan specifies the various regions of response within the geographic area of response.

Designated Port

The Port of Vancouver is recognized as handling a minimum of 500,000 tonnes of oil annually, as being impacted by traffic density and convergence and capable of providing the necessary infrastructure to support the location of a certified Response Organization. As such, this Port is defined as:

> *"All the Canadian waters of Boundary Bay; the waters bounded by a line drawn from a point on shore originating at the Canada-United States border on Point Roberts due west along the international border to a point 123° 19.3'W, then north to a point 49° 14'N, 123° 19.3'W, then to a point 49° 15.5'N, 123° 17'W; the waters of Burrard Inlet east of a line drawn between Point Atkinson Light and Point Grey"* (reference Figure 9-2).

Primary Area of Response (PAR)

Because a majority of large spills (>1,000 tonnes) occur outside port boundaries where vessels converge, the Coast Guard identified Primary Areas of Response (PARs) as areas associated with Designated Ports that require a specific level of response capability and mobilization within designated times. The PAR for the Port of Vancouver is defined as:

> *"All of the Canadian waters between the northern boundary of a line drawn from the point 49° 46.5'N, 124° 20.5'W on the mainland, through Texada Island, to the point 49° 22.5'N, 124° 32.4'W on the shore of Vancouver Island and the southern boundary consisting a line running along the 48° 25'N parallel from Victoria, eastward, to the Canada-United States border"* (reference Figure 9-2).

Enhanced Response Area (ERA)

Marine areas not covered under the above designation, but holding a higher risk of oil spills due to traffic convergence and volume of shipping were identified as Enhanced Response Areas (ERA). The Strait of Juan de Fuca ERA comprises:

> *"All the Canadian waters between the western boundary of a line drawn from Carmanah Point on Vancouver Island to Cape Flattery, Washington State, and the eastern boundary consisting of a line running along the 48° 25'N parallel from Victoria, eastward, to the Canada-United States border"* reference Figure 9-2).

[9] Canada Shipping Act, 2001: Response Organizations Regulations: 3.(2)(a)

[10] Transport Canada –TP 12401 E: Response Organizations Standards: Schedule 1

Figure 9-1: Geographic Area of Response

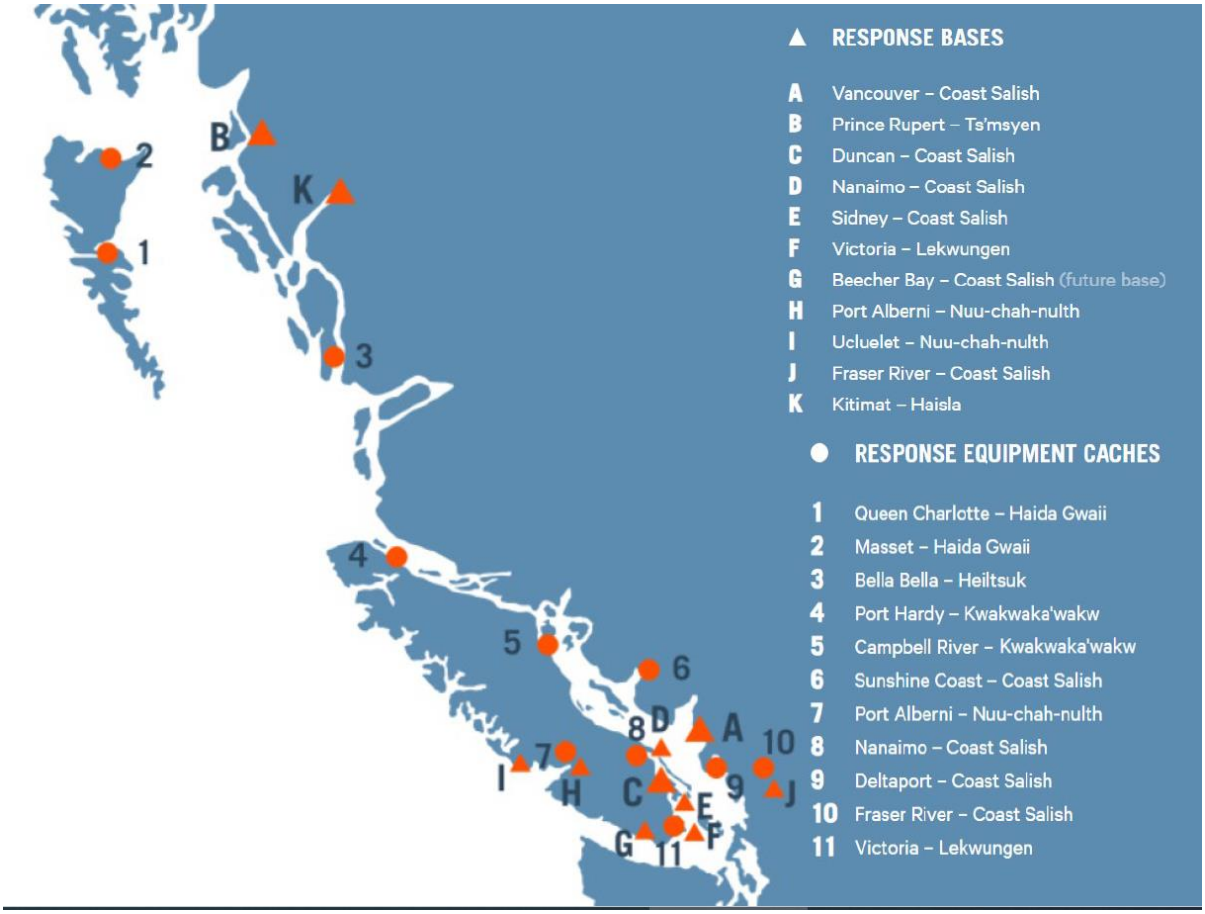
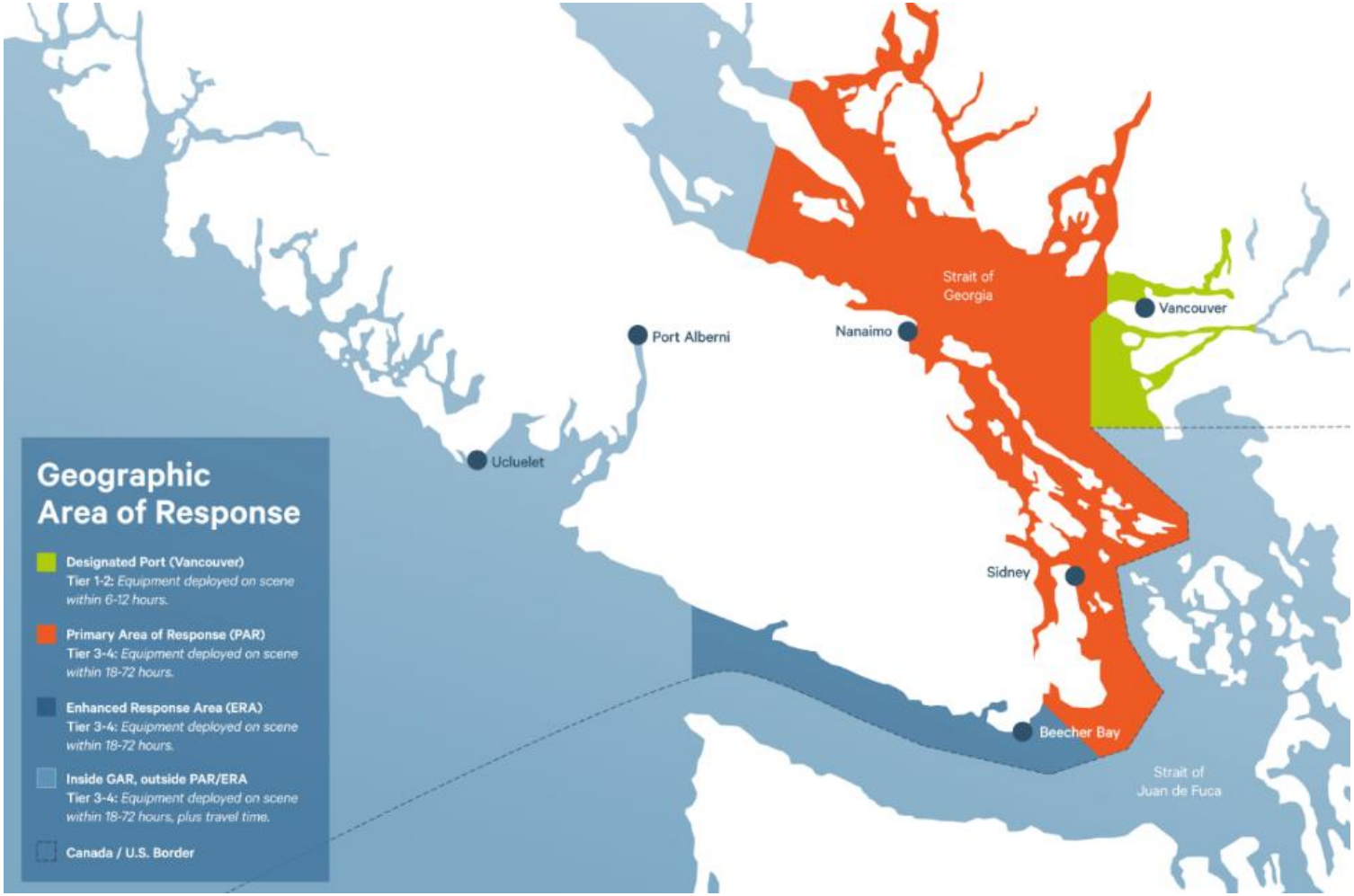


Figure 9-2: Designated Port, Primary Area of Response, Enhanced Response Area



9.2 Compliance Testing

A response organization's response plan shall include a description of the geographical area.

Canada Shipping Act, 2001: Response Organizations Regulations: 3.(2)(a)

Transport Canada –TP 12401 E: Response Organizations –Standards: Schedule 1

10.0 NOTIFICATION

This section identifies the name of each person to be notified in the event of an oil spill and a description of the procedures that will be implemented for notification.[11]

Spill notification procedures are the responsibility of the Polluter. As such, WCMRC is not required to make any calls outside of its own organization except to its contractors and Mutual Aid Partners. The Polluter is responsible for notification to all applicable government agencies. However, it is important that all aspects of notifications be completed. As a courtesy, WCMRC will notify Transport Canada (TC) at the outset of each incident. This section of the plan provides a procedure through which callouts are made within WCMRC, and to its contractors. Contact information for WCMRC, contractors, Mutual Aid partners, and agencies is contained in WCMRC's internal databases.

10.1 Notification

In the event of a spill, WCMRC can be contacted as follows:

Table 10-1: WCMRC 24-hour Notification List

WCMRC 24-hour emergency number – 604-294-9116

The WCMRC emergency line connects to a dedicated answering service (ConnectRocket), which promptly notifies WCMRC on Call Duty Managers. Typically, a minimum of three Duty Managers are always available, comprising an operations representative serving as Duty Manager, an RRT representative as RRT Manager and a Safety representative. Additionally, WCMRC has three Duty Responders, drawn from our operations staff in Nanaimo, Port Alberni, and North Coast where WCMRC does not have staff working 7 days a week, Duty Managers and Responders are selected from a rotation according to the established roster schedule.

NAME	POSITION
Redacted	Director of Operations
	Regional Manager, Vancouver Island
	Area Manager, South Coast
	Area Manager, North Coast
	Base Manager, Sidney
	Base Manager, Port Alberni
	Base Manager, Beecher Bay
	Operations Supervisor, South Coast
	Operations Supervisor, South Coast
	Operations Supervisor, South Coast
	Operations Supervisor, South Coast
	Operations Supervisor, North Coast
	Operations Supervisor, Beecher Bay

[11] Canada Shipping Act, 2001: Response Organizations Regulations: 3.(2)(d); 3.(2)(n)

NAME	POSITION
Redacted	Operations Supervisor, Sidney
	Operations Supervisor, Nanaimo (Acting, RRT Manager June 2024-June 2025)
	Response Readiness Manager
	Training Manager
	Logistics Supervisor
	Response Readiness Supervisor
	Logistics Supervisor
	Emergency Response Planner
	Response Readiness Coordinator
	Response Readiness Specialist
	Response Readiness Contractor Specialist
	Senior Training Specialist
	Training Specialist
	Training Coordinator
	Senior Manager, Health and Safety, DPA
	Safety Advisor
	Safety Coordinator

Table 10-2 WCMRC Duty Responder List

NAME	Base
Redacted	North Coast
	North Coast
	North Coast
	North Coast
	North Coast
	Nanaimo
	Nanaimo
	Nanaimo
	Nanaimo
	Nanaimo
	Nanaimo
	Nanaimo
	Port Alberni
	Port Alberni
	Port Alberni

NAME	Base
Erik Bowkett	Port Alberni

In the event of a spill, specific personnel not initially listed on the Duty Roster may be mobilized by either a Duty Manager or Spill Response Manager, depending on the response level and the requirements of the Incident Management Team. This includes members of the WCMRC Incident Management Team, comprising field and on-water responders, who will collaborate and synchronize efforts with external responders from governmental agencies, other relevant organizations, local communities, and First Nations, as dictated by the needs outlined in WCMRC's Incident Management Plan . WCMRC's Incident Management Team may support and integrate remotely in a similar form to an Emergency Operations Centre, integrate directly into a larger ICS structure within an established Incident Command Post (ICP), or a combination of the two.

Table 10-3: Duty Officer Contact List

NAME	POSITION	SPILL RESPONSE ROLE
Redacted	President	Spill Response Manager
	General Manager	Spill Response Manager
	Director, Response Readiness	Spill Response Manager/ Operations/Planning
	Logistics Manager	Logistics
	Logistics Coordinator, South Coast	Logistics
	Response Readiness Specialist, North Coast	Logistics/Planning
	Logistics Supervisor, Coquitlam	Logistics
	Logistics Supervisor, Nanaimo	Logistics
	Materials Coordinator, Nanaimo	Logistics
	Supply Chain Coordinator, Coquitlam	Logistics
	Logistics Supervisor, Coquitlam (leave)	Logistics
	Response Readiness Manager (leave)	Planning
	Response Readiness Manager	Planning/Operations
	Response Readiness Supervisor	Planning
	Response Readiness Coordinator, South Coast	Planning
	Emergency Response Planner	Planning
	Response Readiness Contractor Specialist	Planning/Logistics
	Controller	Finance
	Consultant	Finance
	Accountant	Finance
	Accountant	Finance

NAME	POSITION	SPILL RESPONSE ROLE
Redacted	Accounts Payable Clerk	Finance
	Accounting Supervisor	Finance
	Information Systems Manager	Logistics
	System Support Coordinator	Planning
	Network Engineer	Logistics
	IT Support Technician, Sidney	Logistics
	IT Support Technician, South Coast	Logistics
	Senior Communications Manager	Information
	Training Manager	Planning/Logistics
	Senior Training Specialist	Operations/Logistics
	Training Specialist	Operations/Logistics
	Training Coordinator, Vancouver Island	Planning
	Training Specialist, Sidney	Operations
	Senior Manager, Health and Safety, DPA	Safety
	Health and Safety Coordinator, South Coast	Safety/Operations
	Health and Safety Advisor	Safety/Operations
	Health and Safety Coordinator, Sidney	Safety/Operations
	Human Resources Generalist	Finance
	Human Resources Manager	Liaison
	Indigenous Relations Advisor	Liaison
	Operations Coordinator, North Coast	Operations/Planning
	Administrative Assistant	Operations/Planning
	Operations Coordinator, Nanaimo	Operations/Planning
	Operations Coordinator, Port Alberni	Operations/Planning
	Operations Coordinator, Sidney	Operations/Planning
	Operations Coordinator, Beecher Bay	Operations/Planning
	Operations Coordinator, Fraser River	Operations/Planning
	Operations Coordinator, South Coast	Operations/Planning
	Administrative Assistant, South Coast	Operations/Planning
	Executive Assistant	Planning
	Senior Operations Planner	Operations/Planning
	Human Resources Coordinator	Finance
	Payroll Administrator	Finance

NAME	POSITION	SPILL RESPONSE ROLE
Redacted	Administrative Assistant, Corporate	N/A
	Senior Manager, Engineering and Maintenance	Logistics
	Marine Engineering Manager	Logistics
	Marine Engineering Manager	Logistics
	Engineering and Maintenance Coordinator	Logistics/Operations
	Mechanical Technician, Nanaimo	Operations
	Electrical Technician, Nanaimo	Operations
	Maintenance Supervisor, North Coast	Operations
	Senior Maintenance Supervisor, Vancouver Island	Planning/Logistics
	Maintenance Supervisor, Sidney	Planning/Logistics
	Maintenance Supervisor, South Coast	Operations
	Mechanical Technician, South Coast	Operations
	Electrical Technician, South Coast	Operations
	Assistant Maintenance Supervisor, North Coast	Operations
	Project Manager	N/A
	Project Coordinator	N/A
	Director of Operations	Spill Response Manager/Operations
	Regional Manager, Vancouver Island	Spill Response Manager/Operations
	Marine Operations Manager, Port Captain	Operations
	Marine Operations Manager, Port Captain	Operations
	Area Manager, South Coast	Operations
	Area Manager, North Coast	Operations
	Base Manager, Nanaimo	Operations
	Base Manager, Sidney	Operations
	Operations Supervisor, Sidney	Operations
	Operations Supervisor, Sidney	Operations
	Base Manager, Port Alberni	Operations
	Base Manager, Beecher Bay	Operations
	Operations Supervisor, South Coast	Operations
	Operations Supervisor, South Coast	Operations

NAME	POSITION	SPILL RESPONSE ROLE
Redacted	Operations Supervisor, South Coast (acting)	Operations
	Operations Supervisor, South Coast	Operations
	Operations Supervisor, Coquitlam	Operations
	Operations Supervisor, North Coast	Operations
	Operations Supervisor, Beecher Bay	Operations
	Operations Supervisor, Nanaimo (acting)	Operations
	Technician, Vancouver Harbour	Operations
	Technician, Vancouver Harbour	Operations
	Technician, Vancouver Harbour	Operations
	Technician, Vancouver Harbour	Operations
	Technician, Vancouver Harbour	Operations
	Technician, Vancouver Harbour	Operations
	Technician, Vancouver Harbour	Operations
	Technician, Vancouver Harbour	Operations
	Technician, Vancouver Harbour	Operations
	Technician, Vancouver Harbour	Operations
	Technician, Vancouver Harbour	Operations
	Technician, Vancouver Harbour	Operations
	Technician, Vancouver Harbour	Operations
	Technician, Vancouver Harbour	Operations
	Technician, Vancouver Harbour	Operations
	Technician, Vancouver Harbour	Operations
	Technician, Vancouver Harbour	Operations
	Technician, Vancouver Harbour	Operations
	Technician, Vancouver Harbour	Operations
	Technician, Vancouver Harbour	Operations
	Technician, Coquitlam	Operations
	Technician, Coquitlam	Operations
	Technician, Coquitlam	Operations
	Technician, Coquitlam	Operations
	Technician, Coquitlam	Operations
	Technician, Coquitlam	Operations
	Technician, Fraser River	Operations

NAME	POSITION	SPILL RESPONSE ROLE
Redacted	Technician, Fraser River	Operations
	Technician, Fraser River	Operations
	Technician, Fraser River	Operations
	Technician, Fraser River	Operations
	Technician, Fraser River	Operations
	Technician, Port Alberni	Operations
	Technician, Port Alberni	Operations
	Technician, Port Alberni	Operations
	Technician, Port Alberni	Operations
	Technician, Port Alberni	Operations
	Technician, Port Alberni	Operations
	Technician, Port Alberni	Operations
	Technician, Port Alberni	Operations
	Technician, Port Alberni	Operations
	Technician, Port Alberni	Operations
	Technician, Beecher Bay	Operations
	Technician, Beecher Bay	Operations
	Technician, Beecher Bay	Operations
	Technician, Beecher Bay	Operations
	Technician, Beecher Bay	Operations
	Technician, Beecher Bay	Operations
	Technician, Beecher Bay	Operations
	Technician, Beecher Bay	Operations
	Technician, Beecher Bay	Operations
	Technician, Beecher Bay	Operations
	Technician, Beecher Bay	Operations
	Technician, Beecher Bay	Operations
	Technician, Beecher Bay	Operations
	Technician, Beecher Bay	Operations
	Technician, Beecher Bay	Operations
	Technician, Beecher Bay	Operations

NAME	POSITION	SPILL RESPONSE ROLE
Redacted	Technician, Sidney	Operations
	Technician, Sidney	Operations
	Technician, Sidney	Operations
	Technician, Sidney	Operations
	Technician, Sidney	Operations
	Technician, Sidney	Operations
	Technician, Sidney	Operations
	Technician, Sidney	Operations
	Technician, Sidney	Operations
	Technician, Sidney	Operations
	Technician, Sidney	Operations
	Technician, Sidney	Operations
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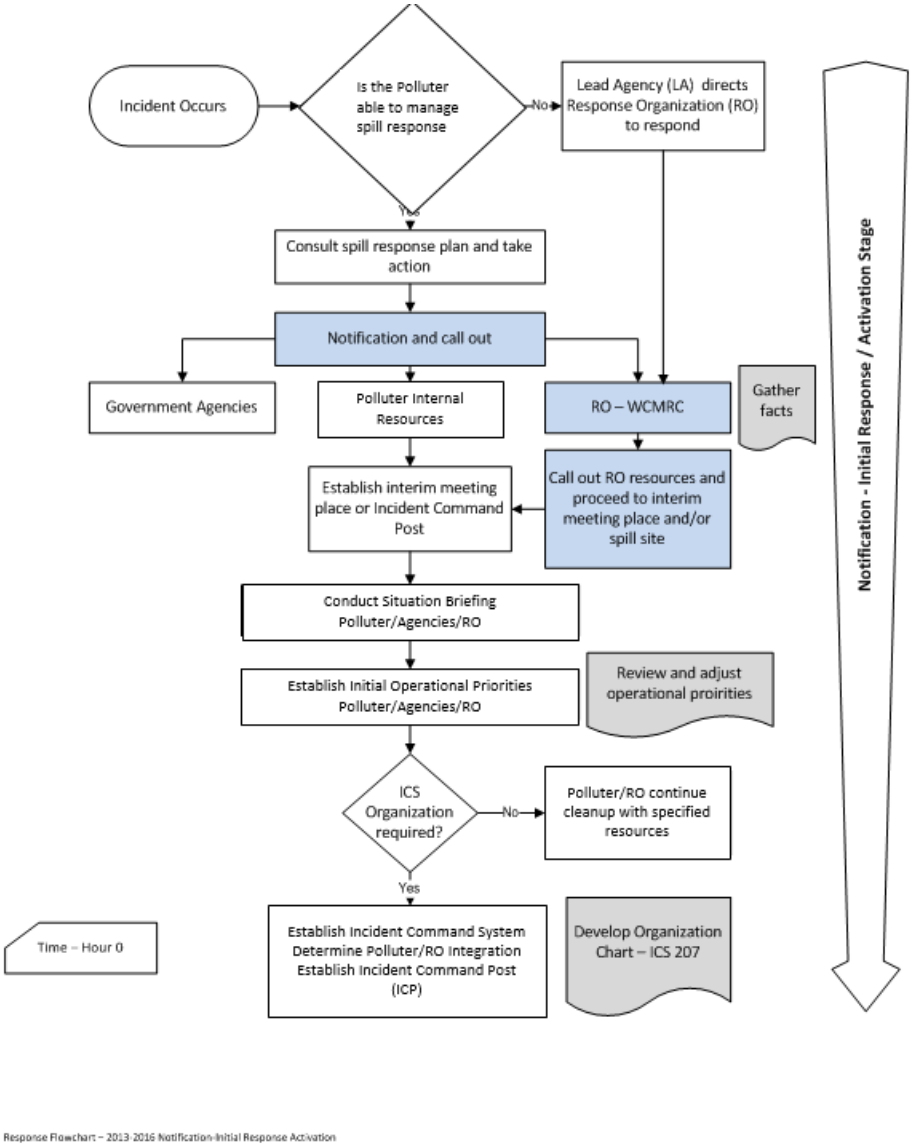
	Technician, Sidney	Operations
	Technician, Sidney	Operations
	Technician, Sidney	Operations
	Technician, Sidney	Operations
	Technician, Sidney	Operations
	Technician, Sidney	Operations
	Technician, Sidney	Operations
	Technician, Nanaimo	Operations
	Technician, Nanaimo	Operations
	Technician, Nanaimo	Operations
	Technician, Nanaimo	Operations
	Technician, Nanaimo	Operations
	Technician, Nanaimo	Operations
	Technician, Nanaimo	Operations
	Technician, Nanaimo	Operations
	Technician, Nanaimo	Operations
	Technician, Nanaimo	Operations

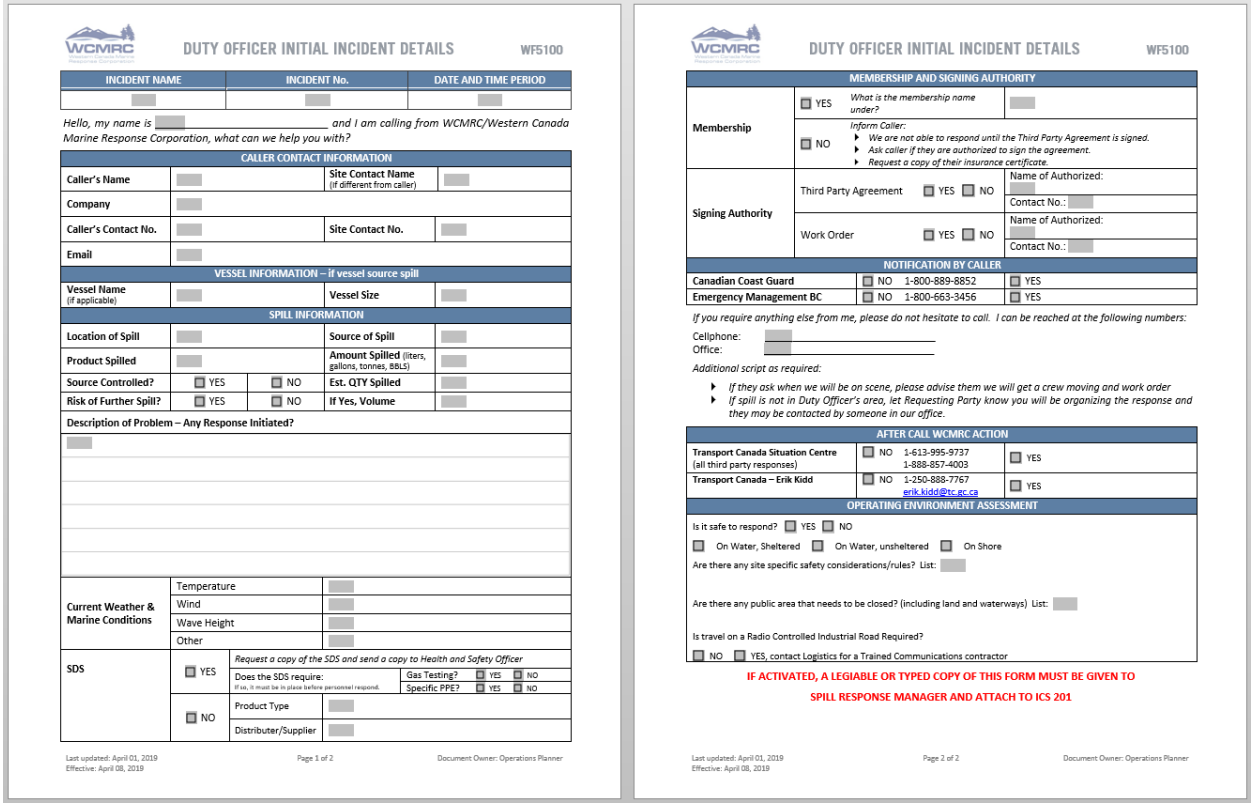
NAME	POSITION	SPILL RESPONSE ROLE
Redacted	Technician, Nanaimo	Operations
	Technician, Nanaimo	Operations
	Technician, Nanaimo	Operations
	Technician, North Coast	Operations
	Technician, North Coast	Operations
	Technician, North Coast	Operations
	Technician, North Coast	Operations

Figure 10-1: Initial Response / Activation Phase



Response Flowchart – 2013-2016 Notification-Initial Response Activation

Figure 10-2: Notification and Callout Procedures



WCMRC DUTY OFFICER INITIAL INCIDENT DETAILS WF5100

INCIDENT NAME	INCIDENT No.	DATE AND TIME PERIOD

Hello, my name is _____ and I am calling from WCMRC/Western Canada Marine Response Corporation, what can we help you with?

CALLER CONTACT INFORMATION			
Caller's Name		Site Contact Name (if different from caller)	
Company			
Caller's Contact No.		Site Contact No.	
Email			
VESSEL INFORMATION – if vessel source spill			
Vessel Name (if applicable)		Vessel Size	
SPILL INFORMATION			
Location of Spill		Source of Spill	
Product Spilled		Amount Spilled (liters, gallons, tonnes, BBLS)	
Source Controlled?	☐ YES ☐ NO	Est. QTY Spilled	
Risk of Further Spill?	☐ YES ☐ NO	If Yes, Volume	

Description of Problem – Any Response Initiated?

Current Weather & Marine Conditions	
Temperature	
Wind	
Wave Height	
Other	

SDS			
☐ YES	*Request a copy of the SDS and send a copy to Health and Safety Officer*		
	Does the SDS require: If so, it must be in place before personnel respond.	Gas Testing? ☐ YES ☐ NO	
		Specific PPE? ☐ YES ☐ NO	
☐ NO	Product Type		
	Distributer/Supplier		

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WCMRC DUTY OFFICER INITIAL INCIDENT DETAILS WF5100

MEMBERSHIP AND SIGNING AUTHORITY			
Membership	☐ YES	*What is the membership name under?*	
	☐ NO	*Inform Caller:* ▸ *We are not able to respond until the Third Party Agreement is signed.* ▸ *Ask caller if they are authorized to sign the agreement.* ▸ *Request a copy of their insurance certificate.*	
Signing Authority	Third Party Agreement ☐ YES ☐ NO		Name of Authorized: Contact No.:
	Work Order ☐ YES ☐ NO		Name of Authorized: Contact No.:

NOTIFICATION BY CALLER		
Canadian Coast Guard	☐ NO 1-800-889-8852	☐ YES
Emergency Management BC	☐ NO 1-800-663-3456	☐ YES

If you require anything else from me, please do not hesitate to call. I can be reached at the following numbers:

Cellphone:
Office:

Additional script as required:

- *If they ask when we will be on scene, please advise them we will get a crew moving and work order*
- *If spill is not in Duty Officer's area, let Requesting Party know you will be organizing the response and they may be contacted by someone in our office.*

AFTER CALL WCMRC ACTION		
Transport Canada Situation Centre (all third party responses)	☐ NO 1-613-995-9737 1-888-857-4003	☐ YES
Transport Canada – Erik Kidd	☐ NO 1-250-888-7767 erik.kidd@tc.gc.ca	☐ YES

OPERATING ENVIRONMENT ASSESSMENT

Is it safe to respond? ☐ YES ☐ NO

☐ On Water, Sheltered ☐ On Water, unsheltered ☐ On Shore

Are there any site specific safety considerations/rules? List:

Are there any public area that needs to be closed? (including land and waterways) List:

Is travel on a Radio Controlled Industrial Road Required?

☐ NO ☐ YES, contact Logistics for a Trained Communications contractor

IF ACTIVATED, A LEGIABLE OR TYPED COPY OF THIS FORM MUST BE GIVEN TO SPILL RESPONSE MANAGER AND ATTACH TO ICS 201

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Duty Officer:

RO Callback

WCMRC's Duty Manager contacts the Polluter for incident information, including any injuries that may have occurred during the incident and completes the WF5100 Duty Officer Initial Incident Details, and commences the ICS 201 Incident Briefing. The above is an excerpt from the WF5100 Duty Officer Initial Incident Details

RO Internal Notification:

The Duty Manager will contact management at the closest local WCMRC base, who will typically be designated as the Spill Response Manager (SRM) to oversee WCMRC response to the incident; according to WCMRC's Incident Management Plan, the SRM, with support from Safety and RRT will continually assess the incident complexity, potential for escalation, limitations and constraints, as well as Polluter and Unified Command requirements, and activate an appropriate level of response in the form of an Incident Management Team and field operations.

SRM, in collaboration with Operations, determines the initial operational priorities and resources. (E.g. personnel, equipment, material) to be activated and mobilized, to be included on the Work Order for approval by the Polluter, or Canadian Coast Guard in the event that the Polluter is unknown, unwilling or unable to respond.

10.2 Callout Procedures

Standby

WCMRC maintains a 24 hour per day, 7 day per week standby system. At all times three WCMRC responders are on duty, supported by other WCMRC personnel and resources.

The Duty Manager speaks to the Polluter directly, gathering incident information and completing the incident report.

On Call Duty Managers

- Prepare and maintain an on-call duty roster.
- Operational personnel provide the primary operational standby and support.
- The responsibility for standby on statutory holidays and weekends is shared as equitably as possible over the course of the calendar year. Director of Operations maintains accountability for full response coverage.
- Proposed changes to the roster are reviewed in advance with the local Operations Manager(s).
- The Duty Officer is responsible for keeping the duty kit (Microsoft Surface and/or binder with blank documents) maintained and available at all times.

The President is notified of all spills by the Director of Operations, Operations Managers, or in their absence the Duty Manager. Depending upon the nature of the spill report and the response activity requested by the member, some or all of the remaining WCMRC personnel may be notified. A list of WCMRC and contracted personnel who could be activated in the event of a spill is listed in Section 11.2.

Special Circumstances

For circumstances such as summer vacations and Christmas, or when large numbers of key personnel are absent at the same time, an “operations calendar” is prepared to identify personnel who are available during the period in question. Casual employees and/or contractors may be polled to determine their availability and placed on standby.

Regional Manager, Area Managers and Base Managers

Operations management staff (Regional Manager, Area Managers and Base Managers), supported by the Training and Response Readiness teams, maintain a roster of available and suitably trained casual, contractor, or support personnel who will be available to support initial response activities, and to provide operational cover during their absences.

10.3 Contact Information

General

WCMRC maintains contact information for WCMRC personnel, advisors, government agency personnel, local contacts, Vessel of Opportunity members/vessels, contractors, suppliers, custodians and clients (members/non-members) and mutual aid personnel. (See Section 11.2)

Mutual Aid/Contractor Contacts

WCMRC will call out response personnel and organizations as required for appropriate response. Contact information for primary response resources, such as Canadian ROs, US OSROs, as well as numerous supplementary contractors and services are maintained in the Response Contractor and Vendor databases.

Agency Contacts

Contact information for Federal, Provincial, local, and U.S. agencies are maintained.

10.4 Compliance Testing

The name of each person to be notified in the event of an oil spill.

Canada Shipping Act, 2001: Response Organizations Regulations: 3.(2)(d)

A description of the procedures that will be implemented for notifying those persons.

Canada Shipping Act, 2001: Response Organizations Regulations: 3.(2)(n)

11.0 PERSONNEL AND RESOURCES

The purpose of this section is to identify the personnel and resources that are available and trained to respond to an oil spill.[12]

11.1 Personnel and Resources

WCMRC personnel will integrate into the ICS structure with other agencies, organizations, communities and First Nations, filling roles as necessary depending on the complexity of the incident and the appropriate level of response. WCMRC's Incident Management Plan lays out guidelines by which an appropriate level of response and integration will be determined, based upon incident complexity, potential for escalation, limitations and constraints, and requirements of a Polluter or Unified Command. While the plan provides decision making tools and guidelines, each incident and response is necessarily different, and is to be considered on a case-by-case basis.

Incident Management Team members, including general staff personnel, section chiefs, branch directors, group supervisors, unit leaders, as well as various field positions are pooled from WCMRC staff, contractors, and mutual aid agreements with other Response Organizations (ROs) across Canada (Eastern Canada Response Corporation) and the United States of America.

WCMRC maintains a permanent staff of more than one hundred fulltime professionals as well as a pool of casual employees. These individuals are all assigned and trained in key roles within the ICS structure. The rest of the Incident Management Team functions are filled, as required, by trained personnel available to WCMRC, either through support contracts and/or mutual aid agreements that WCMRC has in place. The individuals to be named to these functions have extensive experience in their respective roles and have trained and exercised within the management structure. Documentation of their experience and training is maintained on file at WCMRC. Copies of all support agreements are maintained by the Finance and Business Support department of WCMRC.

Section 11.2 summarizes the primary sources of trained oil spill cleanup personnel including company personnel as well as contractors, advisors, Vessel of Opportunity (VOO) Program and mutual aid partners available through a number of contractual agreements that WCMRC has in place. Also listed are resources available through government sponsored training and spill response programs, such as Shoreline Cleanup Assessment Technique (SCAT).

Also in this section are regional field support contractors with spill cleanup capabilities and the number of personnel generally available through each contractor.

Personnel resources, like equipment resources, will escalate as appropriate to properly respond to an incident (reference Table 11-1). The rapid build-up of personnel for marine oil spills of 1,000 tonnes or more can be expected during the initial 2-10 days, filling positions in management, marine operations, and shoreline operations. For a 1,000 tonne spill, as an example, response personnel may grow from the initial response by a few management individuals to approximately 50 in management and 80-100 in marine operations within 3 to 4 days. Shoreline operations typically build-up later in the response and for this example, could exceed 500 people within 7 to 8 days.

[12] Canada Shipping Act 2001: Response Organizations Regulations 3.(2)(c); 3.(2)(e)

Figure 11-1: Escalation of Response Personnel for Level 1 through Level 3 response

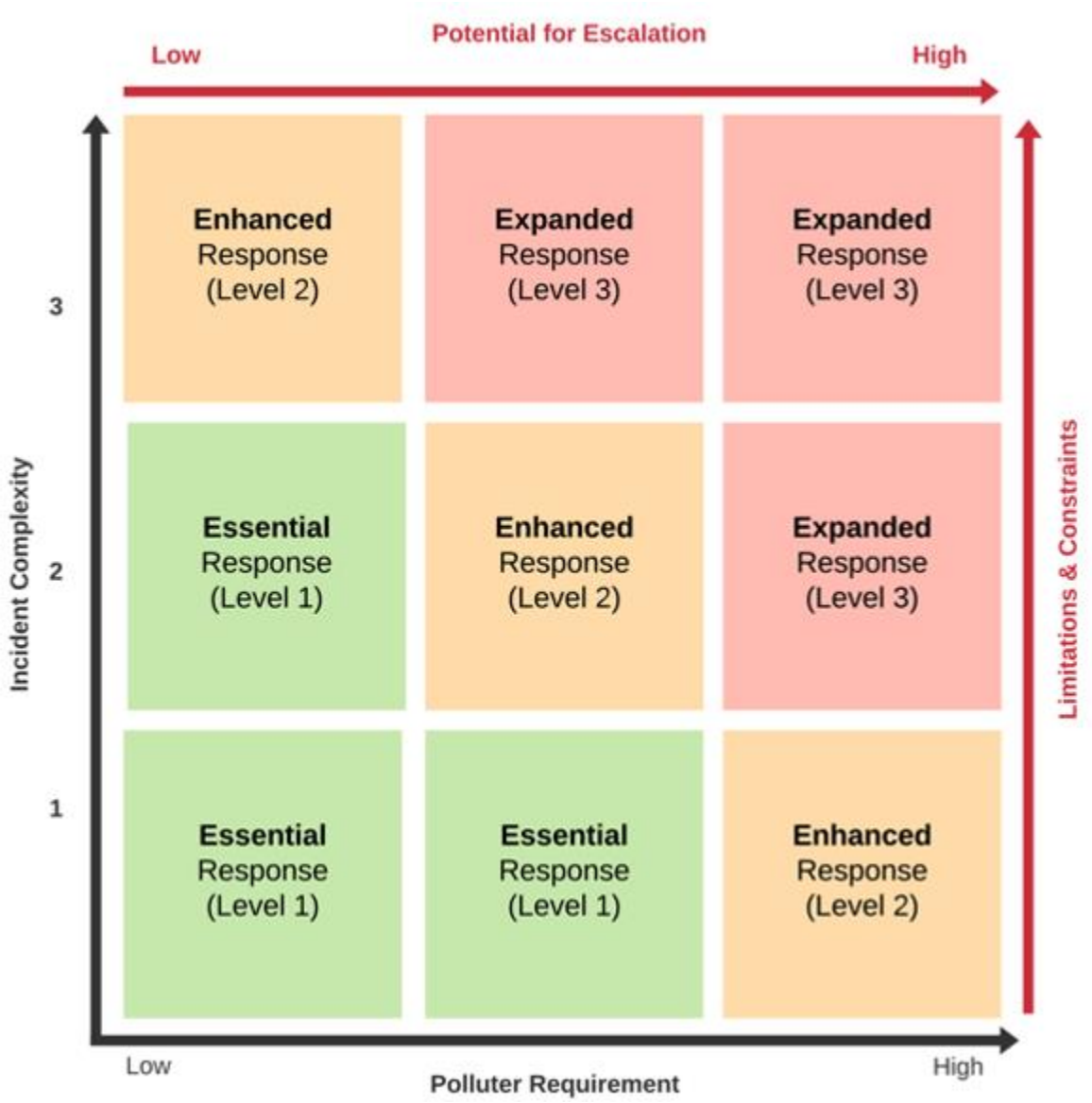
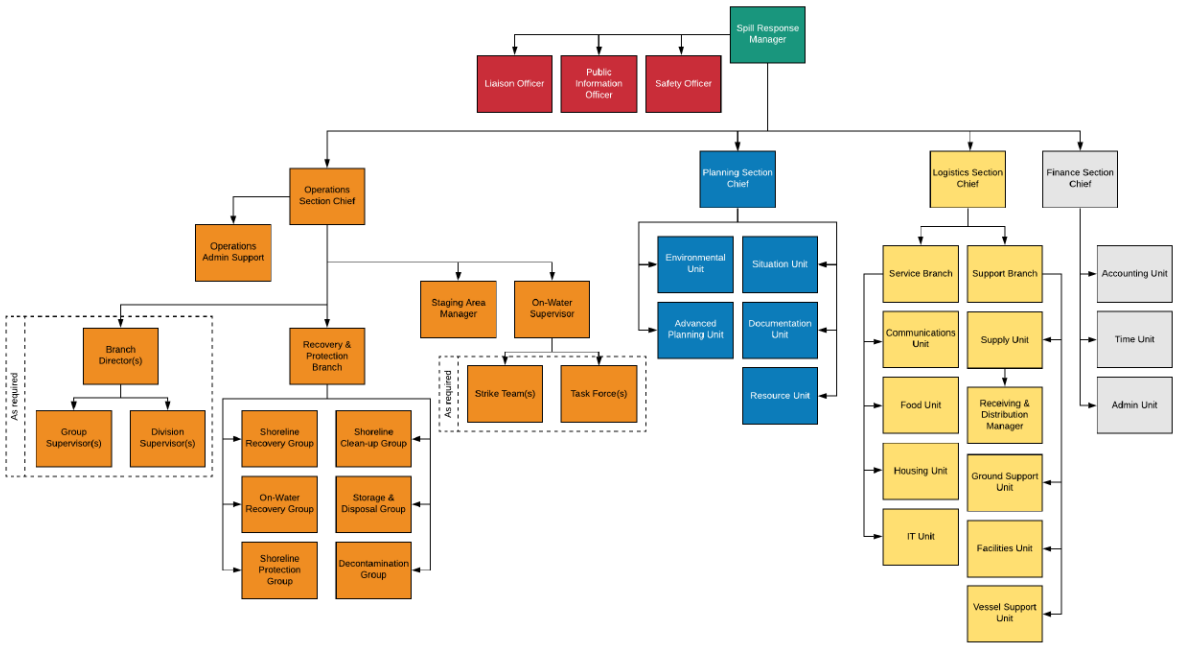


Figure 11-2: Example Level 3 Response Organization Chart



11.2 WCMRC ICS Organizational Support Pool

WCMRC maintains resource data including detail on WCMRC personnel, advisors, government agency personnel and mutual aid personnel, as well as local contacts for Vessels of Opportunity, contractors, suppliers and custodians, including contact information, in the Response Contractor and Vendor databases.

WCMRC's approach is to initially activate and deploy the responders and resources nearest the spill site, so long as they can safely and appropriately conduct the required task. If a particular resource is unavailable or unable, others listed will be contacted.

Table 11-1: WCMRC Incident Command Post Personnel

POSITION	NAME	ALTERNATE
Spill Response Manager	Redacted	
▸ Safety Officer		
▸ Liaison Officer		
▸ Information Officer		
Operations Section Chief		
Operations Administration		
Recovery and Protection Branch		
▸ On-Water Recovery		
▸ Shoreline Operations		
▸ Decontamination		
▸ Storage and Disposal		
Planning Section Chief		
▸ Environment Unit		
▸ Situation Unit Leader		
▸ Resource Unit Leader		
▸ Documentation Unit Leader		
Finance Section Chief		
▸ Accounting Unit		
▸ Time Unit		
Logistics Section Chief		
Support Branch and Service Branch		
Ordering Manager		

Table 11-2: Spill Response Advisors under Contract

ADVISOR NAME	LOCATION	SERVICES
Redacted	North Vancouver	Communications
	Surrey	Logistics, Planning
	North Vancouver	Health and Safety
	Victoria	Environmental, SSO
	North Vancouver	Operations, Planning, Training
	Richmond	Environmental, Health and Safety
	Richmond	Planning, Operations
	Abbotsford	Planning
	Duncan	Planning, SCAT
	North Vancouver	Wildlife
	Richmond	Environmental, Health and Safety
	Seattle, WA	SSO
	Port Moody	Planning, Operations
	Vancouver	Environmental
	Vancouver	Finance
	Edmonds, WA	Operations, SSO, Planning, SCAT
	Smithers	Operations
	Bainbridge Island, WA	Planning, SCAT
	Bainbridge Island, WA	Planning, SCAT
	Seattle, WA, USA	Command
	Burnaby	Operations
	Edmonton	Planning, SCAT
	Vancouver	Security
	Nanaimo	Planning, Geomatics
	Southampton, UK	Planning, Training, SCAT

Table 11-3: Mutual Aid Support and Manpower

ORGANIZATION	RESPONSE ROLES	PERSONNEL (APPROX.)
Redacted	On-Water Operations, Incident Management Support	5
	On-Water Operations, Incident Management Support	10
	Incident Management Support	10
	On-Water Operations	5
	Incident Management Support, Alternative Response Measures Technical Expertise	20

11.2 Spill Response Contractors

Table 11-4: North Coast Spill Response Contractors

NORTH COAST		
CONTRACTOR	RESPONSE ROLES	PERSONNEL (APPROX.)
Redacted	Vessel Crew	<5
	Initial Response / Vessel of Opportunity	5 - 10
	Shoreline Worker	5 - 10
	Shoreline Worker / Staging Area	<5
	Vessel of Opportunity / Vessel Crew	~10
	Vessel Crew / Initial Responder / Vessel of Opportunity	5 - 10
	Shoreline/ Vessel Crew / Initial Responder	>25
	Shoreline Worker	<5
	Initial Responder / Vessel of Opportunity	5-10
	Shoreline Worker	<5
	Vessel Crewing	<5
	Vessel Crew / Initial Responder / Shoreline Worker	5 - 10
	Shoreline Worker / Staging Area	<5
	Shoreline Worker / Staging Area	5 - 10
	Staging Area / Safety	<5
	Vessel Crew	<5
	Shoreline Worker / Vessel Crew / Initial Responder / Vessel of Opportunity	5 - 10

NORTH COAST		
CONTRACTOR	RESPONSE ROLES	PERSONNEL (APPROX.)
Redacted	Vessel Crew / Initial Responder / Vessel of Opportunity	<5

Table 11-5: Vancouver Island Spill Response Contractors

VANCOUVER ISLAND		
CONTRACTOR	RESPONSE ROLES	PERSONNEL (APPROX.)
Redacted	Vessel of Opportunity / Safety	10
	Vessel Crew / Shoreline Worker	10 – 25
	Vessel of Opportunity / Vessel Crew	<5
	Vessel of Opportunity / Vessel Crew	10-20
	Vessel of Opportunity / Vessel Crew	
	Vessel of Opportunity	<5
	Vessel of Opportunity	5-10
	Vessel Crew	<5
	Vessel of Opportunity	<5
	Vessel of Opportunity	10
	Initial Responder / Vessel Crew	<5
	Initial Responder / Vessel of Opportunity	5
	Vessel of Opportunity	5 - 10
	Vessel Crew / Shoreline Worker / Vessel of Opportunity	10 – 25
	Vessel Crew	20+
	Shoreline Worker / Staging Area	<5
	Vessel of Opportunity	5-10
	Vessel Crew	10 +
	Vessel of Opportunity	10
	Vessel Crew / Initial Responder / Vessel of Opportunity / Shoreline Supervisor / UAV Operations	~20
	Vessel of Opportunity / Vessel Crew	~6
	Shoreline Worker	5 – 10
	Shoreline Worker / Vessel Crew	10-15
	Vessel of Opportunity	<5

Table 11-6: South Coast Spill Response Contractors

SOUTH COAST		
CONTRACTOR	RESPONSE ROLES	PERSONNEL (APPROX.)
Redacted	Vessel Crew	~15
	Shoreline Worker / Shoreline Supervisor	10 – 25
	Vessel Crew	5-10
	Vessel Crew / Vessels of Opportunity	10-15
	UAV Operations	5 – 10
	Shoreline Worker / Shoreline Supervisor / Staging Area / Decontamination	~20
	Shoreline Worker	~20
	Vessel of Opportunity	5 – 10
	Vessel Crew / Vessel of Opportunity	~15
	Vessel of Opportunity	5 – 10
	Vessel of Opportunity	~10
	Vessel of Opportunity/Initial Responder	~6

Table 11-7: Other Regions Spill Response Contractors

OTHER REGIONS		
CONTRACTOR	RESPONSE ROLES	PERSONNEL (APPROX.)
Redacted	Equipment	<5
	Equipment	<5
	Equipment	<5
	UAV Operations	<5

11.3 Vessel of Opportunity Program

The Vessel of Opportunity (VOO) Program is designed to support WCMRC people and assets during a spill to execute on operational or logistical tactics. A VOO selected for an operational tactic has crew trained by WCMRC to respond to marine oil spills. A VOO is a commercially registered vessel (tugboat, crew boat, water taxi or work boat) that may have towing capacity, lifting ability and/or available deck space to utilize in a spill. Trained VOO contractors will be used to perform response operations, and other vessels may be activated at the time of a spill to support logistical and other functions, including safety, air monitoring, crew or equipment/supply transport. Individual capabilities and detailed information for each VOO member are maintained in WCMRC's Response Contractor database.

The VOO Program is managed by WCMRC's Readiness Department, and training is provided by a collaboration between WCMRC's Training and Operations Departments. The following vessels are dedicated to operational tactics, thus are trained annually.

Table 11-8: VOO Members List

Contractor	Vessel Name	Region	Base	Tactic
Redacted		NC	PR	Current Buster
		SC	VH	Containment Skimming
		VI	NAN	Current Buster
		NC	PR	Containment Skimming/Initial Responder
		NC	PR	Current Buster/Initial Responder
		SC	VH	Shuttle Storage/Initial Responder
		SC	VH	Current Buster

Contractor	Vessel Name	Region	Base	Tactic
Redacted		VI	NAN	Current Buster
		VI	NAN	Current Buster
		VI	PA	Shuttle Storage
		SC	VH	Current Buster
		SC	VH	Protection Booming
		VI	NAN	Protection Booming
		VI	NAN	Protection Booming /Initial Responder
		NC	PR	Shuttle Storage
		SC	VH	Shuttle Storage
		SC	FR	Shuttle Storage
		VI	NAN	Shuttle Storage
		VI	SID	Shuttle Storage
		VI	PA	Shuttle Storage
		VI	PA	Current Buster
		VI	SID	Shuttle Storage
		SC	VH	Shuttle Storage
		VI	SID	Coastal Response Package
		VI	SID	Coastal Response Package
		VI	SID	Coastal Response Package

Contractor	Vessel Name	Region	Base	Tactic
Redacted		VI	BB	Coastal Response Package
		VI	PA	Coastal Response Package
		VI	PA	Coastal Response Package
		VI	NAN	Initial Responder
		NC	PR	Initial Responder/Containment Skimming
		NC	PR	Initial Responder/Shuttle Storage

11.4 SCAT Resources

WCMRC maintains relationships with a number of subject matter experts who can be contracted to provide SCAT services, or can facilitate the activation of these contractors by relaying contact information to a Polluter or Unified Command

Main SCAT Contractors:

- Polaris Applied Sciences,
- Triox,
- SpillConsult,
- S3,
- EnviroEmerg,
- SNRC, and
- Owens Coastal Consultants

11.5 Compliance Testing

To identify the name of each person available and trained to respond to an oil spill.

Canada Shipping Act, 2001: Response Organizations Regulations 3.(2)(c); 3.(2)(e)

12.0 EQUIPMENT

The purpose of this section is to demonstrate that appropriate equipment is available, including but not limited to booms, skimmers, and temporary storage to meet the requirements of the Canada Shipping Act, 2001 (CSA, 2001) regulations and standards. The specific requirements relate to oil quantity, response time, on-water recovery, and shoreline treatment in each operating environment within the defined geographical areas.[13] [14]

12.1 Rated Capability

WCMRC maintains or has access to inventories of equipment and supplies at locations throughout British Columbia that will allow for on water deployment to meet the requirements of regulations and standards made under the CSA, 2001.

The CCG Guidance Documents and the Final Standards dated February 28, 1994 provide guidance on the appropriate level of response capability as prescribed under the CSA, 2001. WCMRC provides for a tiered response with a mix of resources appropriate to the operating environments in the area of concern.

Table 12-1: Tiered Response Capabilities

TIER	MAXIMUM QUANTITY OF OIL SPILLED
Tier 1 response capability	150 tonnes
Tier 2 response capability	1,000 tonnes
Tier 3 response capability	2,500 tonnes
Tier 4 response capability	10,000 tonnes

The tables in this document detail the WCMRC equipment (vessels, booms, skimmers, and storage) used to demonstrate WCMRC's ability to meet the planning standards.

12.2 Operating Environments

The amount and type of equipment used in any spill response operation is governed by the environmental conditions prevalent in the area of the incident. Most geographic areas of response can be divided into a number of distinct operating environments, based on factors such as wind, sea state, tides, currents, and bathymetric features.

These operating environments are defined as follows:

- Unsheltered waters are waters where on-water oil recovery operations are normally affected by environmental conditions. Larger vessels or ships are normally needed to operate safely in these waters.
- Sheltered waters are waters where on-water oil recovery operations can be carried out effectively with minimal disruption from environmental conditions. As an example, this environment is one in which small barges (18m - 30m) and small boats (6m–12m) can operate safely.

[13] Canada Shipping Act, 2001: Response Organization Facility Regulations: 3.(1); 3.(2)(b); 3.(2)(i); 3.(2)(j); 4.(1)(a); 4.(1)(c); 4.(1)(e); 4.(1)(f); 4.(1)(g); 4.(2); 4.(2)(a); 4.(2)(b); 6.

[14] Transport Canada –TP 12401 E: Response Organizations Standards: Section 2., 3., 4., 5., 6., Schedule II

- Shoreline is the intertidal zone between the maximum low tide and maximum high tide, including the back shore area affected by storm conditions. (Note: Includes some on-water oil recovery capability for near shore treatment operations, due to the rise and fall of the tide and the resultant immersion of the intertidal zone).

Operating environments can be further quantified through comparison to ASTM F 625 Standard Practice for Classifying Water Bodies for Spill Control Systems.

Table 12-2: Operating Environment Classification

OPERATING ENVIRONMENT (RO PLANNING STANDARDS)	OPERATING ENVIRONMENT (ASTM)	BEAUFORT SCALE	SIGNIFICANT WAVE HEIGHT	WIND SPEED	EXAMPLE SEA CONDITIONS
Shoreline	Calm Water	1 or 2	0.2 - 0.5m	4 - 6kn	Small, short non-breaking waves
Sheltered	Protected Water	3	0.5 - 1m	7 - 10kn	Small waves, some whitecaps
Unsheltered	Open Water	4	1 - 2m	11 - 16kn	Moderate waves, frequent whitecaps

The CCG, in consultation with Environment and Climate Change Canada (ECCC), adopted the following response percentages for the operating environments in the geographic response area covered by this plan.

Table 12-3: Response Allocation by Geographic Area

PAR / ERA	ONSHORE	SHELTERED	UNSHELTERED
Vancouver	40%	40%	20%
Juan de Fuca Strait	40%	20%	40%

WCMRC provides the equipment capability for the prescribed mix of operating environments for all tiers of spill response within the geographic area of response, to a maximum of 10,000 tonnes. For planning purposes, the total volume of oil for each tier is partitioned into a volume corresponding to the relative mix of operating environments. Hence, a 1,000 tonne spill in the Vancouver Primary Area of Response (PAR) is represented by 400 tonnes in each of a shoreline and sheltered environment and 200 tonnes in unsheltered conditions.

- The guidelines for resources were used to estimate required equipment inventories of boom, on-water recovery equipment, storage and shoreline cleanup delivered within the prescribed times. These are outlined in Table 12-22, Table 12-23, and Table 12-24. In the same tables WCMRC has identified actual available equipment resources allocated to each tier as part of standing response posture.

12.3 Response Time Planning Standards

The equipment deployment timing per Tables 12-15 through 12-18 meets the requirements of the CSA, 2001 restated for reference as follows (also refer to Figure 12-1 and Table 12-4 following):

Tier 1: The equipment and resources relating to a Tier 1 response capability are deployed on scene, in respect of an oil spill at a designated port, in the affected operating environments within 6 hours after notification of the spill. The equipment associated with a Tier 1 response must be dedicated to the Designated Port, and may only be moved beyond the port boundaries by permission of Transport Canada.

Tier 2: The equipment and resources relating to a Tier 2 response capability are deployed on scene, in respect of an oil spill at a designated port, in the affected operating environments within 12 hours after notification of the spill.

Tier 3: The equipment and resources relating to a Tier 3 response capability are delivered on scene to the affected operating environments within 18 hours after notification of an oil spill in a primary area of response or an enhanced response area.

For Vessels of Opportunity, Guidance Document No.4 recognizes, in addition to the 18 hours, an additional 8 hours to locate/load/prepare the vessel for response operations.

Tier 4: The equipment and resources relating to a Tier 4 response capability are delivered on scene to the affected operating environments within 72 hours after notification of an oil spill in a primary area of response or an enhanced response area.

In respect of an oil spill occurring in any other marine region within the geographical area of response of the response organization, the equipment and resources relating to a Tier 3 and Tier 4 response capability are delivered on scene to the affected operating environments within the response time set out in subsection (3) or (4) added to the time necessary to travel at an average travel speed to the oil spill from the nearest primary area of response or enhanced response area.

Figure 12-1: Geographic Areas of Response and Response Time Planning Standards

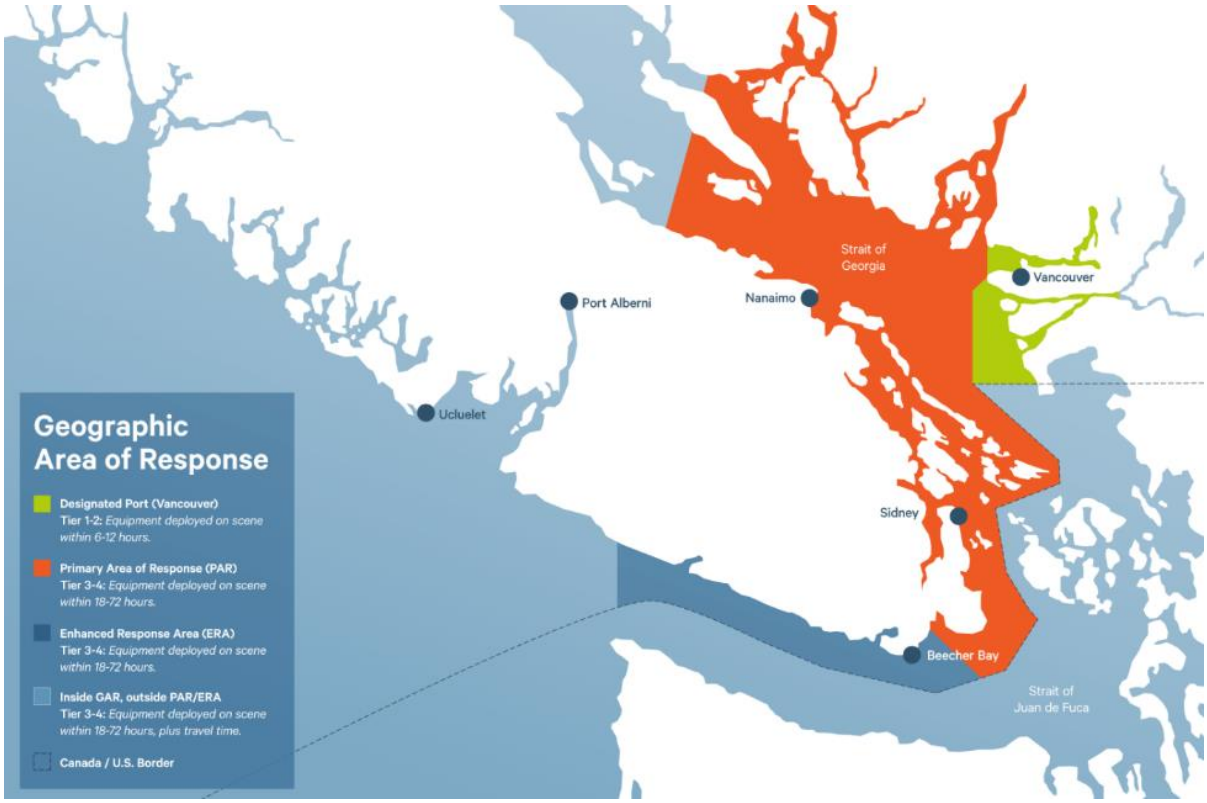


Table 12-4: RO Response Time Planning Standards for Tier Levels (CSA, 2001)

DESIGNATED AREA	TIER 1 150 TONNES	TIER 2 1,000 TONNES	TIER 3 2,500 TONNES	TIER 4 10,000 TONNES
Inside Port Boundary	Deployed on-scene in Designated Port (dedicated resident equipment) from time of notification 6 hours	Deployed on-scene in Designated Port from time of notification 12 hours	Not Applicable	Not Applicable
Inside PAR/ERA	Not Applicable	Not Applicable	Delivered on-scene within the PAR/ERA from time of notification 18 hours	Delivered on-scene within the PAR/ERA from time of notification 72 hours
Outside PAR/ERA Inside GAR	Not Applicable	Not Applicable	Delivered on-scene from time of notification 18 hours + travel	Delivered from time of notification 72 hours + travel

Spill response times and capacities for regions outside the PARs are equivalent to the PAR response times, plus the time required to transit from the resource location to the spill location. The exception to this, however, is for Enhanced Response Areas (ERAs) such as the Juan de Fuca Strait. Response times in the ERA are equivalent to those specified under the PAR requirements.

Estimated speeds for travel over land, water and air are established in the Response Organization (RO) Standards, as follows: Ground = 65 km/hr; Water = 6 knots; Air = 100 knots.

Mobilization

Response times are a function of the time needed to mobilize the resources, time to transport equipment from its location to the spill site, and time to deploy equipment on site. For planning purposes, WCMRC has made several assumptions based on response experience and planning. In general, all trailers may be mobilized within 2 hours of notification, however travel times between certain regions are dependent on ferry schedules and travel where possible or required. Mobilization times for vessels would depend upon the vessel home location: crews located within the Vancouver Harbour and Fraser River response bases have shown an ability to mobilize within 1 hour; other WCMRC bases assume 2 hours mobilization; WCMRC barges assume 4 hour mobilization, in order to source and activate necessary tug support; Vessel of Opportunity contractors assume 8 hours. Response to spills outside of the PAR/ERA would require longer mobilization times, for example vessels cascading to the south from Prince Rupert, or vessels from the south to Prince Rupert.

Travel Time

This section provides estimates of travel times and response times from major pre-positioned equipment locations to the Designated Port (Port of Vancouver) and major areas of risk identified within the PAR/ERA. Travel times for equipment transport are provided by using the times/distances provided in Table 12-5. Response times for vessels are the sum of mobilization time and travel time, given both for the planning standard speed of 6 knots over water, as well as the nominal cruising speed of the vessel, defined as the cruising speed of the vessel under optimal sea, weather and visibility conditions, where the vessel can be operated safety and efficiently. The 'Planning Standard Speed' of 6 knots is considered to be conservative for planning purposes, so actual response time will likely be somewhere between the planning standard and nominal speed response times. Trailers are assumed to be transported via highway at an average of 65 km/hr. However, ferry transport may be required in a number of circumstances not accounted for in Table 12-5.

Table 12-5: Equipment Mobilization Distances and Times

Note: vessels shaded in gray are part of WCMRC's dedicated Tier 1 package for Vancouver Harbour. 'Nominal Cruising Speed' is defined as the cruising speed of the vessel under optimal sea, weather and visibility conditions, where the vessel can be operated safety and efficiently. The 'Planning Standard Speed' of 6 knots is considered to be conservative for planning purposes, so actual response time will likely be somewhere between the planning standard and nominal speed response times.

					English Bay			Strait of Georgia			Arachne Reef			Race Rocks			J Buoy		
Asset	Home Location	Planning Standard Speed (kt)	Nominal Cruising Speed (kt)	Mobilization Time (hours)	Distance (nm)	Planning Standard Speed Response Time (hours)	Nominal Speed Response Time (hours)	Distance (nm)	Planning Standard Speed Response Time (hours)	Nominal Speed Response Time (hours)	Distance (nm)	Planning Standard Speed Response Time (hours)	Nominal Speed Response Time (hours)	Distance (nm)	Planning Standard Speed Response Time (hours)	Nominal Speed Response Time (hours)	Distance (nm)	Planning Standard Speed Response Time (hours)	Nominal Speed Response Time (hours)
Texada Sentinel	Vancouver Harbour	6	30	1	8	2.33	1.27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Seymour Sentinel	Vancouver Harbour	6	6	1	8	2.33	2.33	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Harbour Sentinel	Vancouver Harbour	6	18	1	8	2.33	1.44	32	6.33	2.78	50	9.33	3.78	83	14.83	5.61	144	25.00	9.00
Echo Sentinel	Vancouver Harbour	6	25	1	8	2.33	1.32	32	6.33	2.28	50	9.33	3.00	83	14.83	4.32	144	25.00	6.76
Pacific Sentinel	Vancouver Harbour	6	26	1	8	2.33	1.31	32	6.33	2.23	50	9.33	2.92	83	14.83	4.19	144	25.00	6.54
Sentinel 301	Vancouver Harbour	6	6	4	8	0	0	32	9.33	9.33	50	12.33	12.33	83	17.83	17.83	144	28.00	28.00
Sentinel 302	Vancouver Harbour	6	6	4	8	0	0	32	9.33	9.33	50	12.33	12.33	83	17.83	17.83	144	28.00	28.00
MJ Green	Vancouver Harbour	6	25	1	8	2.33	1.27	32	9.33	2.28	50	9.33	3.00	83	14.83	4.32	144	25.00	6.76
Bowen Sentinel	Fraser River	6	30	1	31	6.17	2.03	26	5.33	1.87	44	8.33	2.47	77	13.83	3.57	138	24.00	5.60
Gulf Sentinel	Nanaimo	6	12	2	31	7.17	4.58	33	7.50	4.75	41	8.83	5.42	77	14.83	8.42	136	24.67	13.33
Cortes Sentinel	Nanaimo	6	30	2	31	7.17	3.03	33	7.50	3.10	41	8.83	3.37	77	14.83	4.57	136	24.67	6.53
Discovery Sentinel	Nanaimo	6	30	2	31	7.17	3.03	33	7.50	3.10	41	8.83	3.37	77	14.83	4.57	136	24.67	6.53
Salish Sentinel	Nanaimo	6	11	2	31	7.17	4.82	33	7.50	5.00	41	8.83	5.73	77	14.83	9.00	136	24.67	14.36
Island Sentinel	Nanaimo	6	18	2	31	7.17	3.72	33	7.50	3.83	41	8.83	4.28	77	14.83	6.28	136	24.67	9.56
Hecate Sentinel	Sidney	6	26	2	45	9.50	3.73	22	5.67	2.85	5	2.83	2.19	34	7.67	3.31	96	18.00	5.69
Cormorant Sentinel	Sidney	6	25	2	45	9.50	3.80	22	5.67	2.88	5	2.83	2.20	34	7.67	3.36	96	18.00	5.84
Saturna Sentinel	Sidney	6	30	2	45	9.50	3.50	22	5.67	2.73	5	2.83	2.17	34	7.67	3.13	96	18.00	5.20
Strait Sentinel	Beecher Bay	6	12	2	80	15.33	8.67	60	12.00	7.00	36	8.00	5.00	6	3.00	2.50	61	12.17	7.08
GM Penman	Beecher Bay	6	26	2	80	15.33	5.08	60	12.00	4.31	36	8.00	3.38	6	3.00	2.23	61	12.17	4.35
Cheanuh Sentinel	Beecher Bay	6	25	2	80	15.33	5.20	60	12.00	4.40	36	8.00	3.44	6	3.00	2.24	61	12.17	4.44
Race Sentinel	Beecher Bay	6	30	2	80	15.33	4.67	60	12.00	4.00	36	8.00	3.20	6	3.00	2.20	61	12.17	4.03
Coastal Sentinel	Port Alberni	6	12	2	180	32.00	17.00	160	28.67	15.33	140	25.33	13.67	110	20.33	11.17	56	11.33	6.67
Barkley Sentinel	Port Alberni	6	26	2	180	32.00	8.92	160	28.67	8.15	140	25.33	7.38	110	20.33	6.23	56	11.33	4.15
Nootka Sentinel	Port Alberni	6	30	2	180	32.00	8.00	160	28.67	7.33	140	25.33	6.67	110	20.33	5.67	56	11.33	3.87
Solander Sentinel	Port Alberni	6	25	2	180	32.00	9.20	160	28.67	8.40	140	25.33	7.60	110	20.33	6.40	56	11.33	4.24

Trailer Home Location	Speed (km/h)	Mobilization Time (hrs)	English Bay		Strait of Georgia		Arachne Reef		Race Rocks		J Buoy	
			Distance (km)	Response time (hours)	Distance (km)	Response time (hours)	Distance (km)	Response time (hours)	Distance (km)	Response time (hours)	Distance (km)	Response time (hours)
TRAILERS												
Vancouver Harbour	65	1	15	1.23	30	1.46	30	1.46	110	4.69	175	5.69
Fraser River	65	1	27	1.42	35	1.54	35	1.54	90	4.38	168	5.58
Nanaimo	65	2	40	4.62	128	3.97	128	3.97	112	3.72	133	4.05
Sidney	65	2	45	4.69	3	2.05	3	2.05	50	2.77	128	3.97
Beecher Bay	65	2	95	5.46	51	2.78	51	2.78	4	2.06	90	3.38
Port Alberni	65	2	120	5.85	215	5.31	215	5.31	197	5.03	218	5.35

12.4 Total Rated Capacity

Tables 12-15 through 12-18 illustrate the required capacity versus the actual capacity allocated by WCMRC for a spills in Tiers 1 through 4. These examples would be valid in the Vancouver Harbour Designated Port for Tiers 1 and 2, or the PAR/ERA for Tiers 3 and 4, with their respective response times applying.

It is important to note that the resources identified to meet the planning standards would be augmented as appropriate with additional equipment available through WCMRC inventories, as well as mutual aid agreements with west coast US OSROs and other ROs across Canada. In the contiguous waters of Canada and the United States, US mutual aid resources would be engaged immediately if their location and response times allowed them to be on scene ahead of WCMRC resources or if the characteristics of the spill require additional immediate skimming assistance.

Tier 1 - 150 Tonne Resident Capability - Port of Vancouver

This capability recognizes that equipment is required to be dedicated for the Designated Port. Oil products moved through the Port of Vancouver are representative of the full range covered by the MARPOL Annex 1, Appendix 1, List of Oils. The skimmers listed below provide the necessary range of coverage for these oils. Shoreline and environmental types within the Port of Vancouver is representative of the range found on the coast of British Columbia.

WCMRC has established the equipment listed in Table 12.6 as a minimum level of resources for a Tier 1 - 150 tonne response capability. WCMRC will not move dedicated equipment outside of the Designated Port without the authorization of Transport Canada.

Table 12-6: Dedicated Equipment - Port of Vancouver

EQUIPMENT	DESCRIPTION	QUANTITY
Skimmers	Seymour Sentinel – Marco 50 Belt - Derated Capacity: 16.2 t/hr (Vancouver Harbour)	1
	RBS-05 Twin Brush - Derated Capacity: 4.0 t/hr (Trailer 219)	1
	Manta Ray Head (vacuum truck use) – Derated Capacity: 4.2 t/hr (Burnaby Warehouse)	1
	Triton 60 – Derated Capacity: 12.6 t/hr (Trailer 188)	1
	Sala Roll Pump – Derated Capacity: 5.0 t/hr (Burnaby Warehouse)	1
Boom Protection, Shoreline and Containment	The boom designated can be used interchangeably in containment, shoreline protection, or shoreline cleanup operations Boom is stored complete with anchors, lines, lights etc. (including boom onboard Texada Sentinel, and dedicated boom Trailers 134 and 225)	2134m
Vessels	Landing Craft (Texada Sentinel)	1
	Skimming Vessel (Seymour Sentinel)	1
	Workboat (Sentinel No. 15)	1

EQUIPMENT	DESCRIPTION		QUANTITY
Storage (Total 51.7)	10 T Floating Bladders (Burnaby Warehouse, Trailer 219) 5.7 T Floating Collar (Trailer 219) 12.0 T Integral Storage (Seymour Sentinel) 4.5 T Port-a-Tank (shoreline) (Burnaby Warehouse) 5.7 T Port-a-Tank (shoreline) (Burnaby Warehouse) 3.8 T Floating Collar (Trailer 188)		2 1 1 2 1 1
Response Trailers	Trailer No. 188 ▸ skimmer (Triton 60) ▸ floating collar ▸ sorbents and bags ▸ generator and lights ▸ workshop ▸ fire pump ▸ PPE and First Aid kit ▸ consumables for shoreline workers ▸ decontamination equipment	Trailer No. 219 ▸ skimmer (RBS-05 Twin Brush) ▸ floating bladder ▸ floating collar ▸ sorbents and bags ▸ generator and lights ▸ workshop ▸ fire pump ▸ PPE and First Aid kit ▸ consumables for shoreline workers ▸ decontamination equipment	2 Trailers

Note: All Tier 1 - 150 tonne dedicated equipment components are labeled and identified as such within the WCMRC equipment ***Error! Reference source not found.*** *through* ***Error! Reference source not found..***

The following equipment will be used to supplement the above-listed dedicated equipment:

- vacuum trucks for direct offloading of equipment, as well as direct suction of recovered or accumulated oil;
- additional storage barges to support onshore and sheltered water recovery;
- flat and special purpose barges to carry vacuum trucks to areas where road access in the port is restricted;
- immediate initial storage and processing of recovered waste;
- purchase or lease of skimmers and oil spill equipment, if required.

Vancouver, as a major metropolitan city, and hub for environmental activities on the Canadian west coast, is home to some of the foremost suppliers of oil spill countermeasures equipment in North America.

WCMRC has entered into agreements and built relationships with various contractors and service suppliers who may be called upon to provide immediate support and assistance for local on-water and shoreline operations within the port.

In the event of a spill which could find WCMRC's overall inventory depleted to the Tier 1 - 150 Tonne capability, significant additional resources could be purchased or leased on short notice. In actuality, appropriate arrangements would be made prior to the WCMRC inventory being depleted to this point.

12.5 On-Water Recovery

Guidelines for on-water recovery stipulate that resources be identified to meet the rated recovery capability of the organization over a 10 day operational period.

Boom and skimmers, mechanical recovery techniques, represent the fundamental equipment for on-water spill countermeasures available to WCMRC. Enhanced sweep systems, shoreline containment and mobile skimming will be used to recover oil on-water along with brush, disc and weir skimmers. Skimmers fitted with positive displacement pumps and annular water ring injection, are capable of viscous oil recovery.

Boom Resources

The Transport Canada (TC) guidance for estimating an adequate level of boom resources is provided in Appendix B of the Final Standards for Response Organization Response Plans.

In general, the Transport Canada guideline specifies boom planning standards in terms of four potential uses of the boom:

- On-Water Containment Boom – to contain the source of the spill;
- Sweep Boom – to assist with skimmers in unsheltered waters;
- Protection Boom – to protect sensitive shorelines;
- Shoreline Cleanup Boom – to assist with shoreline treatment operations.

The guidance notes that 400 m of boom should exist for each oil recovery unit required for operation in unsheltered waters (sweep system). As shown in Table 12-20 and Table 12-21, one sweep system/skimmer is assumed to meet the skimming requirements for unsheltered waters to Tier 3 (whether in the Designated Port, PAR or ERA), whereas two would be required for Tier 4. WCMRC also has in inventory NOFI Current Buster sweep systems, which can be deployed for the same operational strategy.

In sheltered waters, TC specifies boom requirements based on projected oil on water and oil in contact with the shoreline. Sufficient boom should be available to protect sensitive resources identified for the area. TC has recognized that 5,000 m of protection boom delivered in 24 hours represents a planning cap for protection boom.

Boom resources for on-water containment in sheltered waters are calculated as 1.250 times the volume (tonnes) of oil in the sheltered environment. The amount of boom required for containment near the shoreline is estimated as 0.625 times the volume (tonnes) of oil in the sheltered waters. Thus, the total boom planning standard for sheltered water containment operations is 1.875 times the volume (tonnes) of oil in that environment.

Shoreline cleanup operations are predicated upon the daily treatment of a minimum of 500m of shoreline. Approximately 1,000m of boom would adequately support this level of activity under the Transport Canada Planning Standards as illustrated in Tables 12-19, 12-20 and 12-21.

WCMRC boom resources meet the planning standards for a Tier 4 - 10,000 tonne spill in the PAR/ERA (Table 12-18, and Tables 12-20 and 12-21). It is important to note that capacity for Tier 1 is considered and calculated separately, while Tiers 2 through 4 are cumulative. WCMRC boom equipment specifications, locations, and quantities with respect to operating environments, are summarized in Table 12-22.

Table 12-7 and Table 12-8 below describe recommended boom specifications according to operating environment, as described in Table 12-2, as well as a general summary of boom types and specifications from WCMRC's inventory with relation to operating environments. Boom properties are derived from ASTM F 1523 Standard Guide for Selection of Booms in Accordance with Water Body Classifications.

Table 12-7: Recommended Boom Properties

OPERATING ENVIRONMENT (RO PLANNING STANDARDS)	OPERATING ENVIRONMENT (ASTM)	BOOM HEIGHT (")	BOOM HEIGHT (mm)	BUOYANCY / WEIGHT RATIO
Shoreline	Calm Water	>=6, <24	>=150, <600	3:1
Sheltered	Protected Water	>=18, <42	>=460, <1040	4:1
Unsheltered	Open Water	>36	>900	8:1

Table 12-8: Boom Specifications

BOOM NAME	BOOM TYPE	OVERALL BOOM HEIGHT		OPERATING ENVIRONMENT
Kepner SeaCurtain	curtain/self-inflating	26 in.	660 mm.	**Unsheltered**, Sheltered
Kepner SeaCurtain	curtain/self-inflating	32	800	**Unsheltered**, Sheltered
Kepner SeaCurtain	curtain/self-inflating	43	1090	**Unsheltered**, Sheltered
Kepner SeaCurtain	curtain/self-inflating	54	1370	**Unsheltered**, Sheltered
Vikoma HISprint	curtain/inflatable	60	1500	**Unsheltered**, Sheltered
NOFI Current Buster 4	sweep (high speed recovery)	32	800	**Unsheltered**, Sheltered
NOFI Current Buster 6	sweep (high speed recovery)	32	800	**Unsheltered**, Sheltered
Curtain Boom (GP)	curtain/internal foam	24	600	**Sheltered**, Shoreline
River	curtain/internal foam	18	460	**River,** Shoreline
Inshore (IS)	curtain/internal foam	24	600	**Shoreline**, Sheltered
Shore Seal	Inflatable/water filled	24	600	**Shoreline**
Shore Seal	Inflatable/water filled	30	760	**Shoreline**

Highlighted environment refers to the primary use of the boom.

Unsheltered Boom

Unsheltered boom is generally air inflated with an overall height that exceeds 900 mm (36") from the top of the floatation chamber (freeboard) to the bottom of the skirt (draft). Typically stored on reels, it deploys rapidly and is effective in the unsheltered environment as a boom sweep, containment boom or as protection boom.

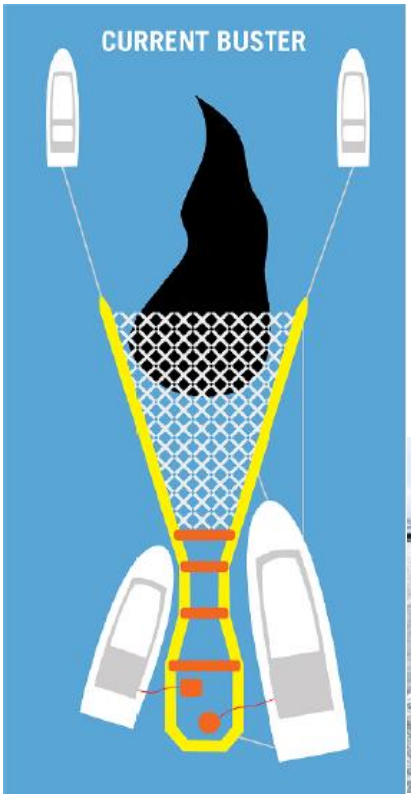
Manufacturers include Kepner, Desmi, Vikoma, Versatech

Figure 12-2: Inflatable Booms (Kepner SeaCurtain pictured)

The Current Buster sweep system is a unique product for containing and recovering oil. The system can be operated in sheltered and unsheltered water and is capable of containing and collecting oil at towing speeds up to 4 knots versus conventional sweep system speeds of approximately 1 knot. The Current Busters allow higher rates of encounter and more efficient skimming.

The system consists of a front sweep which guides/herds oil into a combined collector/skimming device and then into a separator tank from which the oil is recovered by a simple pump or conventional skimmer.

Figure 12-3: Current Buster (NOFI)



Sheltered Boom

Curtain boom with internal flotation (in practical usage termed as General Purpose boom) is a versatile curtain style boom designed for use in many different spill response applications. This is the most common type of boom used in the sheltered water environment; Ideal overall height for sheltered water boom is 450-1100mm (18-42"), typically 600mm (24"), aligning with the Protected Water classification under ASTM standards and the sheltered operating environment under Planning Standards.

Manufacturers include Canadyne and Versatech.

Figure 12-4: Curtain Boom (General Purpose Boom)

Shoreline Boom

Boom for the shoreline environment is typically either similar to various curtain booms with internal floatation applicable to the sheltered water environment, or is of an inflatable and water filled design known as Shore Seal or Tidal Seal; boom for the shoreline environment is typically 150-600mm (6-24").

Shore Seal or tidal seal boom is used to prevent oil from spreading further along the shoreline. The water-filled chambers act as ballasts when the boom is floating. When the tide goes out, the chambers sit on the ground and form a seal.

Tidal seal boom consists of an air inflated flotation chamber and a water filled skirt chamber. The water filled chamber will seal the shore at the water's edge.

Manufacturers include Versatech and Vikoma.

Figure 12-5: Shore Seal Boom

Skimmers

Planning standards for on-water recovery stipulate that skimmer resources be identified to meet the recovery capability of the organization over a 10 day operational period. Recovery equipment used to arrive at the planning standard is to be derated to 20% of its nameplate capacity. However, demonstrated recovery efficiencies in excess of 20% may be used if validated by actual records.

Planning standards for on-water recovery operations require the capability of WCMRC to operate in all three environments simultaneously. To calculate the planning standards for skimmer equipment, the spill planning volume is first subdivided into the relative percent in each operating environment.

Subsequently, the derated capacity to recover the volume in each environment is estimated by dividing the volume by the 10 days planned for cleanup in the sheltered and unsheltered operating environments, and 50 days for the shoreline operating environment. (Table 12-19, Table 12-20, and Table 12-21).This estimate is based on a planned 24-hour recovery operation. WCMRC has adopted the 20% derating factor for the purposes of this submission. It is assumed that 100% of the oil will be recovered in the unsheltered and sheltered operating environments, and 10% of the oil in the shoreline operating environment.

Although this plan is predicated on a 24-hour operational period, WCMRC recognizes that there may be situations where the nature of the spill dictates that 24-hour on-water recovery is not feasible. Table 12-23 demonstrates that WCMRC maintains sufficient surplus (also known as Plan+) on-water recovery capability to meet the standards over a reduced operational period.

WCMRC maintains a skimmer inventory that meets the planning standards requirements for on-water recovery of a Tier 4 - 10,000 tonne spill in either the Designated Port, PAR or ERA. It is important to note that capacity for Tier 1 is considered and calculated separately, while Tiers 2 through 4 are cumulative. A summary of the WCMRC skimmer specifications is seen below in Table 12-9 and resources, locations and capacities are listed in Table 12-23.

Table 12-9: Skimmer Specifications

SKIMMER NAME	MANUFACTURER	TYPE	OPTIMUM OIL VISCOSITY	OPERATING ENVIRONMENT
Harbour 30	MARCO	Vessel/belt	All	Sheltered
Offshore 50	MARCO	Vessel/belt	All	Unsheltered/sheltered
Offshore 75	MARCO	Vessel/belt	All	Unsheltered/sheltered
LAMOR LORS-2	ROZEMA/LAMOR	Vessel/brush	All	Unsheltered/sheltered
LAMOR LORS-3	ROZEMA/LAMOR	Vessel/brush	All	Unsheltered/sheltered
LAMOR MM12	LAMOR	Brush	All	Sheltered
LAMOR MM30	LAMOR	Brush	All	Sheltered
RBS-05	Aquaguard	Disc/brush/drum	All	Shoreline/sheltered
Triton 60	Aquaguard	Disc/brush/drum	All	Shoreline/sheltered
Triton 35	Aquaguard	Disc/brush/drum	All	Shoreline/sheltered
Triton 150	Aquaguard	Disc/brush/drum	All	Shoreline/sheltered
T12	Vikoma	Disc	Medium	Shoreline/sheltered
Fuzzy Disk	Crucial	Disc	All	Shoreline/sheltered
Pedco Weir	Pedco	Weir	Light-Medium	Sheltered
Slurp Weir	Unknown	Weir	Light-Medium	Sheltered
Manta Ray	Unknown	Weir	Light-Medium	Shoreline
Skim Pack	Skim Pack	Weir	Light-Medium	Shoreline
Sala Roll	Megator	Pump	Medium-High	Shoreline
Grooved Disk	ROZEMA/Elastec	Vessel/disc	Light-Medium	Unsheltered/sheltered

24-Hour Operations

The WCMRC on-water recovery plan is based on a 24-hour per day operational period, both for planning and operational purposes; the operational period as well as response strategies and tactics deployed may be adjusted based on safety considerations including but not limited to darkness, weather, conditions, visibility etc.

In the event 24-hour continuous recovery operations are not feasible or possible due to safety considerations, WCMRC has sufficient skimming capacity to shorten the duration of the daily on-water recovery period in order to meet the planning requirements.

Table 12-10: Derated Skimming Capacity

DERATED SKIMMING CAPACITY REQUIRED (TONNES PER HOUR)	ON-WATER OPERATING PERIOD
42 tph	24 hours
56 tph	18 hours
84 tph	12 hours
126 tph	8 hours

WCMRC has successfully implemented 24-hour operations in oil spill incidents.

Responders are trained and equipped to operate safely in restricted visibility working conditions. WCMRC maintains a variety of generators and lighting units in its warehouse, equipment trailers, and vessels. Additional lighting can be procured to supplement existing lights and address specific operational requirements. WCMRC will illuminate all working areas to required standards and issue personnel with individual illumination, as required. Replacement lighting and accessories are always readily accessible. Information is available concerning WCMRC's in house lighting capability, as well as contractor and supplier capability.

It is understood that helicopters will be grounded during darkness (unless approved for night flying), and that suitably equipped, fixed wing aircraft will be used only in those circumstances where limited personnel and equipment transportation is required. WCMRC has infrared camera and radio tracking and direction finding capability, which further facilitates night operations.

WCMRC and contractor personnel work a 12-hour shift rotation. In order to meet the additional personnel needs necessitated by 24-hour operations, WCMRC response personnel are supplemented by additional qualified contractors and mutual aid partners in Canada and the USA.

Emergency notification procedures for cross-border movements are detailed in the Cross-Border Procedures Manual.

WCMRC emphasizes the safety of operating personnel which continues to be of prime importance during 24-hour operations, including the hours of darkness. Dedicated surface craft and vehicles will be allotted for personnel rescue or medical evacuation. The Safety Officer and Operations Safety Watch will ensure that safe working practices are followed at all times.

12.6 Temporary Storage

The planning standards for equipment and personnel indicate there must be sufficient primary temporary storage capacity to maintain oil/oily water waste recovery operations 24 hours per day. Primary temporary storage capacity is defined as the storage required for each oil recovery unit. The required secondary storage capacity is essentially double the primary storage capacity.

WCMRC temporary storage capacities are summarized in Table 12-24. As illustrated, WCMRC maintains sufficient in-house storage to meet the primary and secondary storage requirements of CCG Guidance Document 3 for Tiers 1 to 4 (Tier 1 is calculated separately, while Tiers 2 through 4 are cumulative). The main assets which provide this capacity are the Sentinel 303 and 304 response barges – based in Nanaimo and Vancouver Harbour, respectively, each of these double-hulled response barges provides 3500 tonnes of storage capacity, as well as significant other response capabilities, including various types of boom for different operating environments, and two sweep systems each. Additionally, the Sentinel 302 single-hulled response barge, based in Vancouver Harbour, provides 4000 tonnes of storage capacity, as boom for the unsheltered operating environment and a sweep system. WCMRC maintains an active Marine Technical Review Board (MTRB) for the use of the single-hulled Sentinel 302.

As a contingency, or for situations where one of WCMRC's response barges is out of service and must be mitigated, WCMRC's initial plan would be to utilize a combination of Plan+ storage resources as summarized in Table 12-24, as well as sourcing and contracting available Canadian double-hulled tank barges who can support response efforts with additional secondary storage resources. WCMRC maintains relationships with barge operators on the coast who maintain these assets, including:

- Seaspan/Marine Petrobulk
  - Seaspan 825 (3,974 tonnes capacity)
  - Seaspan 827 (4,292 tonnes capacity)
  - Seaspan 880 (12,718 tonnes capacity)
  - Seaspan 882 (13,036 tonnes capacity)
  - Petrobulker (5,087 tonnes capacity)
  - PB 32 (5,087 tonnes capacity)
  - PB 34 (5,087 tonnes capacity)
- North Arm Transportation
  - North Arm Genesis (2,310 tonnes capacity)
  - North Arm Pioneer (1,633 tonnes capacity)
- Island Tug and Barge
  - ITB Resolution (4,200 tonnes capacity)
  - ITB Reliant (4,200 tonnes capacity)
  - Island Trader (10,500 tonnes capacity)
  - ITB Vancouver (4,000 tonnes capacity)
  - ITB Supplier (4,030 tonnes capacity)
- Minerva Bunkering
  - PT 22 (3,500 tonnes capacity)
  - PT 40 (2,700 tonnes capacity)

WCMRC maintains contact information for these service providers in the Response Contractor and Vendor databases, including contact information for 24 hour/day operations and dispatch.

As per the guidance provided in CCG Guidance Document 4, for planning purposes it is expected that it will take 8 hours (4 hours to find, plus 4 hours to load/prepare) to mobilize a contracted barge, utilizing WCMRC's existing logistical and procurement processes. Based on planning standard speeds, it is

estimated that a contracted barge would take 9.5 hours to transit to the PAR, and 18 hours to transit to the ERA after the 8 hour mobilization time.

In the event that it is not possible to secure a Canadian double-hulled tank barge due to lack of availability or prior commitments, WCMRC's contingency plan would be to look at other potentially available assets, in the following order of consideration:

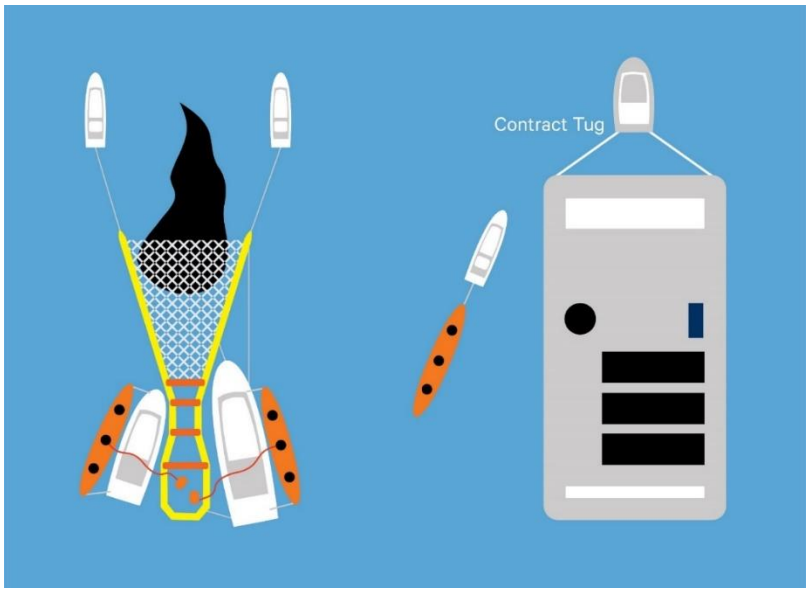
- American double-hulled tank barges (through mutual aid or industry sourcing)
  - MSRC 380 (6040 tonnes capacity) – Staged in Port Angeles
  - MSRC WC Park Responder (635 tonnes capacity – Staged in Port Angeles
- Inbound or empty tankers opportunistically available in the area
- Rail tank cars through industry relationships with Canadian Pacific and Canadian National Railways
  - WCMRC maintains industry relationships with emergency and incident management staff at CN and CP Rail, and contact information for 24 hour/day incident management; through these contacts, DOT-111 tank cars with storage capacity of approximately 114 tonnes can be contracted and mobilized for additional capacity. Availability can be variable depending on a number of factors, therefore mobilization times are difficult to estimate.
- Shoreside tankage through waste management facilities
  - WCMRC maintains industry relationship with waste management organizations including GFL Environmental, including contact information for 24 hour/day dispatch and support
  - GFL Environmental waste disposal facilities on the BC coast include the ability to store and dispose of hazardous liquid waste, with varying capacity available at different facilities. As per WCMRC's Waste Management Plan, GFL Environmental is also a key contractor supporting vacuum trucks and B-train trucks which can be used to offload WCMRC bladders and barges
    - Victoria Facility: 200 tonnes capacity
    - Port Alberni Facility: 400 tonnes capacity
    - Surrey Facility: 1200 tonnes capacity

WCMRC will use at least one barge as a primary storage system for offloading skimmers, and will use small barges or bladders to transfer or shuttle recovered oil from recovery operations (such as skimming vessels or other skimmers, current busters or other sweep systems) between primary and secondary storage. Best practice for WCMRC is to maintain the primary storage barge as close to the ongoing recovery operations as possible in order to reduce transit times, if safe and practical to do so, however the barge may have to be positioned in a sheltered area if necessary. In this sense, shuttle storage operations allow the barge to provide primary storage for different operating environments simultaneously.

In the case where shoreside storage (for example in the form of shoreside tanks or railcars as per the above) is to be utilized, if it is not possible to transfer directly from a barge or bladder to the shoreside tank due to distance or other factors, a shuttling procedure will be utilized by transferring recovered oil from a barge or bladder to a contracted vacuum truck or B-train tanker truck, transporting to the shoreside storage tank and transferring from the truck to the tank. Although the Polluter is responsible for waste management, as per WCMRC's Waste Management Plan, it is recognized that temporary storage can become a bottleneck in the waste stream and that the inability to offload temporary storage can lead to situations where recovery operations can be impeded; as such WCMRC maintains industry contacts, including 24 hour/day dispatch contact information, with providers of vacuum trucks and B-train trucks which will be used to evacuate bladders and barges and to transfer oil to on-shore facilities for disposal. WCMRC can help to facilitate this element waste management planning in order to ensure continuous recovery operations. Availability is variable at any given time due to ongoing commitments.

- GFL Environmental can provide vacuum trucks of approximately 5-10 tonnes, and B-Train tanker trucks of approximately 60-80 tonnes – approximately 50 trucks (Delta, Victoria, Chemainus)
- McRae's Environmental can provide vacuum trucks of approximately 5-10 tonnes, and B-Train tanker trucks of approximately 60-80 tonnes – approximately 50 trucks (Richmond)
- Veolia Environmental can provide vacuum trucks of approximately 5-10 tonnes – approximately 10 trucks (Vancouver)
- Sumas Environmental can provide vacuum trucks of approximately 5-10 tonnes, and B-Train tanker trucks of approximately 60-80 tonnes – approximately 10 trucks (Burnaby)
- Alchemist Specialty Carriers can provide B-Train tanker trucks of approximately 60-80 tonnes – approximately 30 trucks (Langley)
- Westcan Bulk Transport can provide B-Train tanker trucks of approximately 60-80 tonnes – approximately 20 trucks (Maple Ridge)
- Tymac Launch Service can provide B-Train tanker trucks of approximately 60-80 tonnes – approximately 5 trucks (Vancouver)
- Clean Harbours can provide vacuum trucks of approximately 5-10 tonnes – approximately 5 trucks (Delta)
- Spruce City Sanitary Service can provide vacuum trucks of approximately 5-10 tonnes – approximately 5 trucks (Prince George)
- Bear Creek Group can provide vacuum trucks of approximately 5-10 tonnes – approximately 5 trucks (Terrace)

Figure 12-6: Typical Shuttles to Temporary Barge Storage



WCMRC Storage Resources

CCG's original Guidance Document 3 suggests the liquid storage requirements for a 10,000 tonne spill in the Vancouver PAR may be portrayed as follows:

Table 12-11: Liquid Storage Requirements for the Vancouver PAR

1. PAR Vancouver		2. Incident 10,000 tonne		
3. Operating Environments		4. Oil to be skimmed		
40% onshore	4,000t	\	10%	400t
40% sheltered	4,000t	\	all	4,000t
20% unsheltered	2,000t	\	all	2,000t
100%	10,000t			6,400t
5. Liquid recovered total (10 days) (50 days for onshore)				6. Recovered (per day)
Onshore 400t	divided by 20%*	2,000t	divided by 50 days	40t
Sheltered 4000t	divided by 20%*	20,000t	divided by 10 days	2,000t
Unsheltered 2000t	divided by 20%*	10,000t	divided by 10 days	1,000t
6,400t	* Skimmer derating factor			3,040t

The CCG guidance document uses the skimmer's full nameplate capacity for the calculations and requires storage for that amount.

Storage Requirements

Primary Storage required by this model is 3,040t

Secondary Storage required by this model is 6,080t

Total Gross Storage requirements 9,120t

To meet the primary storage requirements of this 10,000 tonne planning model, WCMRC can employ all of its storage resources including onboard storage of the Sentinel 302 barge. Secondary storage is available in the form of contract single-hulled barges.

12.7 Spill Response Vessels

WCMRC maintains a dedicated fleet of specialized spill response vessels. The vessels range in size from small skiffs to landing craft to skimming vessels to large barges. WCMRC's flagship, the Salish Sentinel, is the largest purpose-built skimming vessel in Canada. A listing of the WCMRC vessels including: name, location, function, length and sea state are listed in Table 12-21.

Sea States

Environmental conditions under which mechanical response would be most effective:

Sea state 0-2 (equivalent to Beaufort Scale of <3) — Booming and skimming operations are most effective when the sea state is less than 3, wind speed is less than 10 knots, and wave height is less than 1m. Wave heights induced by a given wind speed and duration within a sheltered harbour, bays, or in the lee of islands or other land forms will be much less than in the open ocean unless channeled.

Conditions which would reduce effectiveness: (WCMRC equipment still capable of operating (but at reduced effectiveness).

Sea state approaching 3 (Beaufort Scale 4) — Containment booming and skimming is difficult with limited effectiveness at Sea State 3 or higher (significant wave height greater than about 1 m, wind velocity greater than about 14 knots). In addition, agitation by waves will tend to emulsify water and oil. An emulsion, or mousse, may be more difficult to recover from the water surface. Rope-mop type skimmers can recover oil up to a maximum viscosity of 10,000 cSt, but operate at lower efficiencies with thicker oils. Emulsification may also increase the volume of the spill since fuel-water emulsions can incorporate between 60% and 80% water by volume within 2-3 hours (ITOPF, 1986-Technical Information Paper).

Note – Response Organizations Regulations require WCMRC to plan to operate up to and including Beaufort Force 4 only.

Conditions which would prevent mechanical response:

Sea state of greater than 3 (greater than Beaufort Scale 4). Containment booming and skimming is typically not effective at Sea State 3 or higher (significant wave height greater than about 1 m, wind velocity greater than about 14 knots). A sea state of 3 or higher would limit response to equipment and personnel mobilization and to control the spill at its source by transfers and lightering.

Table 12-12: Definition of Sea States and Beaufort Scale

WIND SPEED (KNOTS)	BEAUFORT SCALE	MAXIMUM WAVE HEIGHT (m)	SEA STATE	APPEARANCE
1 - 3	1	0.1	0	Calm – small ripples, without foam crests
4 - 6	2	0.3	1	Small wavelets, do not break
7 - 10	3	1.0	2	Large wavelets, beginning to break
11 – 16	4	1.5	3	Small waves, frequent foam crests
17 - 21	5	2.5	4	Large waves, many foam crests
22 - 27	6	4.0	5	Large waves, some spray, foam crests everywhere

12.8 Shoreline Cleanup

The RO standards require that sufficient equipment and personnel is available through WCMRC to treat a minimum of 500m of shoreline per day. Shoreline treatment operations will largely depend upon the characteristics of the affected shoreline, the area sensitivities, degree of oiling, and character of stranded oil. The ExxonMobil (2000) Oil Spill Cleanup Field Manual provides logistical guidelines for the equipment and personnel required to perform various shoreline treatments. WCMRC also utilizes the Environment Canada Field Guide to Shoreline Cleanup Response as a tactical guidance document. These logistical guidelines, as applied to the general shoreline types of British Columbia, provide an indication of manpower and equipment resources for shoreline cleanup operations.

WCMRC provides support for onshore operations by fielding shoreline cleanup teams to perform appropriate shoreline treatment operations, as summarized in Table 12-13. Assumptions are that approximately 500m of shoreline is treated daily and that chemical and biological techniques are not considered primary methods of treatment. Sources of manpower and equipment are detailed provided in systems. Some of the resources listed in equipment tables would be used specifically for shoreline cleanup operations. WCMRC has equipment identified for sheltered and unsheltered on-water marine operations that may be relocated from other response areas and used to support shoreline cleanup, as directed by the Spill Response Manager/Incident Commander.

Each standard WCMRC shoreline flush kit is capable of operating on 60m of shoreline; to meet the requirement to conduct shoreline cleanup operations on up to 500m of shoreline per day, WCMRC foresees the requirement to mobilize and deploy 9 shoreline flush kits, along with a workforce of Shoreline Supervisors, Shoreline Workers, and other safety, operational and logistical support. Boom required to support shoreline treatment of this method amounts to 1000m of boom.

WCMRC stages shoreline flush kits at each operational base, distributed between standard Shoreline Trailers and stored in warehouses, for a total of 72 flush kits strategically stationed along the BC coast. This posture allows WCMRC to have a resident capacity in each base's Zone of Responsibility to respond to smaller spills and provide an initial response during a larger incident where additional resources and responders will be cascaded into the impacted area to meet the cleanup requirements. Distribution of kits and other supporting equipment is shown in Table 12-14 below.

Table 12-13: Typical Shoreline Treatment Requirements

SHORELINE TYPE	QUANTITY	ITEM
All	61m	Sorbent boom
	15 rolls	Sorbent rolls
	50 bundles	Sorbent pads
	25 boxes	Oleophilic strips (pom-poms or mops)
	1	Roll 3m x 33m of 6 ml plastic
	10 rolls	Duct tape
	2	Water deluge systems
Pebble and Cobble	2	Low pressure wash systems
	1000m	Boom
	2	Shallow water skimmers c/w pumps (e.g., WCMRC Manta Rays)
	2	4.7 tonne open top tanks
Sand	30 each	Rakes, shovels (round and square), 5 gallon buckets
	1000m	Sand/gravel bags
	2	Low pressure wash systems
Bedrock and Manmade Solids	2	Low pressure wash systems (see Pebble and Cobble)
	1000m	Boom (see Pebble and Cobble)
	2	Shallow water skimmers (see Pebble and Cobble)
	10 each	Scrapers and long-handled squeegees
	2	Water deluge systems (see Pebble and Cobble)
Marsh and Mudflats	2	Low pressure wash systems (see Pebble and Cobble)
	1000m	Boom (see Pebble and Cobble)
	2	Shallow water skimmers (see Pebble and Cobble)
	2	4.7 tonnes open top tanks
	1-2	Skiffs
	4	Weed eaters
	33m	Mat for pathways and access

Notes:

Specific boom and skimmers are listed in other tables. Manta Ray skimmers and vacuum trucks can provide shoreline recovery in addition to recovery resources identified for on-water.

WCMRC maintains a minimum of eight water deluge/low pressure washing systems for shoreline flushing in each of its operating areas and has prepared the specifications and drawings for similar units to be manufactured on short notice as required. High-pressure wash consists of pressure washers in inventory and available for sale, lease or rent from logistical suppliers and contractors as required.

Low pressure/deluge components:1- 8hp gasoline trash pump (396 gpm, 96 ft. head), 33m rigid 3" suction hose c/w strainer, 66m lay flat 3" discharge, 2 holes every foot.

Table 12-14 - Shoreline Treatment Resources

Location	Kits in Shoreline Trailers	Kits in Warehouse	Drums of Corexit 9580	Spray Kits	Barrel Transfer Pumps
Vancouver Harbour Base	4	10	8	2	2
Fraser River Base	4	4	4	2	2
Nanaimo Base	8	10	8	2	2
Port Alberni Base	4	4	4	2	2
Sidney Base	4	4	4	2	2
Beecher Bay Base	4	4	4	2	2
Prince Rupert Base	4	4	4	2	2
Totals	**72 Flush Kits**		**36 Drums**	**14 Spray Kits**	**14 Barrel Transfer Pumps**

12.9 Communications

An effective communications system is critical in the management and control of day-to-day operations and during emergency response situations. A communications system is used to direct personnel, vessels, aircraft, automobiles, and receive information regarding the status, surveillance, logistics needs, and/or other emergency requirements.

The primary communications network is capable of total coverage throughout the spill operating area. The CCG provides public VHF capabilities that encompass over 98% coverage on the BC coast. Backup systems, comprising single-side band and relays and satellite communications, provide a wide range of coverage that may extend beyond the immediate spill operations area.

WCMRC operates its own secure licensed UHF frequencies via a network of fixed and portable receivers. WCMRC operates 6 UHF repeaters. The repeaters are located as follows: South Coast- Mount Seymour; Vancouver Island- Salt Spring Island, Bahokus Peak; North Coast- Hartley Bay, Gil Island and Mount Hays. WCMRC's repeaters are digitally networked and internet enabled, and communications can be conducted on the network by a user utilizing the TrboNet software on their computer.

Together with repeaters operated by Marine Spill Response Corporation in the United States, this network allows communication with response resources from the upper reaches of Georgia Strait to as far away as Buoy "J" at the mouth of Juan de Fuca Strait.

For small spills, normal vessel communications equipment will be sufficient to direct and coordinate on-site cleanup personnel. All WCMRC response vessels have fixed VHF and UHF radio equipment for routine communication among vessels. Many of the larger vessels also carry handheld UHF radios. For larger spills, a communication plan would be developed by the Logistics Section. Priorities will be set with critical operations communications dedicated to particular frequencies in order to avoid communication hindrances.

Communications Resources

WCMRC maintains a variety of communications equipment distributed on its vessels and in one major communications centre. This equipment includes handheld VHF and UHF units, portable UHF repeaters, single-side band radios, weather reception facsimile machines, inReach satellite communication devices, satellite telephone and cellular telephones. WCMRC has portable UHF base units which can be dispatched to the field for establishing remote site UHF capability between an operations centre, staging area and vessel crews. In the event of a spill in an area where line-of-sight communications equipment is not adequate, these units will be used to maintain communications between response personnel and WCMRC spill management. Land phone lines and/or mobile phones and satellite communications devices may also be used to maintain communications between field response crews and the operations centre. In addition to cellular phones, WCMRC vessels can be reached through local marine operators on VHF frequencies or they can reach shore through this system. For offshore operations, the vessels can operate on single sideband and use a marine operator service if needed. Emergency telephones for the operations centre, field posts, and other needs can be installed by the local telephone company, usually within 24 to 72 hours.

12.10Equipment Maintenance and Asset Management

Finding the appropriate balance of maintenance strategies is key to minimizing asset downtime and repair costs while maintaining a safe environment for workers. To properly maintain assets and ensure that they remain in working order, E&M will utilize a number of industry standard maintenance strategies:

- Preventive Maintenance
- Predictive Maintenance

- Corrective Maintenance and Failure Investigation
- Critical and Spare Parts Inventory
- Inventory Control
- Engineering Change Controls

WCMRC uses a computerized maintenance management system (The Asset Guardian / TAG), to manage maintenance of spill response equipment. The system provides WCMRC users with the ability to search and report on equipment by location, domicile, type, description, asset number and other criteria. The system is used to schedule, track and manage the preventative maintenance and repair (corrective maintenance) of all WCMRC equipment. The program's audit capability allows remote users with appropriate access rights the ability to audit equipment records.

Benefits of a robust computerized maintenance management system include:

- Process standardization. Work orders (WO) are standardized so that all technicians follow a consistent work procedure. These standard procedures may evolve over time as improvements are made to processes or equipment changes.
- Scheduling and managing maintenance work. Schedules are based on operating cycles and manufacturer recommendations. Transport Canada, Class, and other regulatory body requirements will drive work plans in TAG and the system will provide the primary records to support compliance.
- Business Intelligence. TAG will capture a vast majority of Maintenance activities and condition data that comprise the database from which KPIs, management reports, tools, documentation, procedures, schedules, and tracking features are derived. Data analysis will provide information to drive maintenance optimization strategies.

TAG can be accessed remotely via the internet which provides flexibility of use during routine maintenance and spill response activities. Users are able to choose from a menu of pre-defined reports.

Ongoing verification inspections of WCMRC's equipment capacity by TC are facilitated by using TAG records to demonstrate that preventative maintenance practices have been following manufacturer recommendations.

As illustrated in this Tables 12-22, 12-23 and 12-24 of this Section, WCMRC has in inventory surplus capacity above Tier 4 requirements, known as 'Plan+'. WCMRC's Maintenance Department works closely with the Readiness Department to ensure that there are always sufficient resources available in a response ready state to meet requirements. For specific types of assets which are allocated towards WCMRC's Tier 4 capacity, the similar, or other appropriate Plan+ assets can be utilized to mitigate an allocated asset when it is out of service for maintenance, or otherwise unavailable. An example of how this is implemented is that the Maintenance Department will plan vessel haulout schedules to ensure that there is always a sufficient number of the vessel class available to meet the requirements. WCMRC has established a process by which to notify Transport Canada of when assets go out of service, what the mitigation for the asset is, as well as other necessary changes to locations and inventories of key equipment.

Further information concerning WCMRC's maintenance programs can be referenced in WCMRC's Maintenance Strategy documentation.

12.11 Mutual Aid Resources

WCMRC maintains mutual aid agreements with Oil Spill Response Organizations (OSROs) in Washington and Alaska, as well as the rest of Canada. In addition, WCMRC participates in the Worldwide Response Resource List (WRRL) program coordinated by the United States Coast Guard, which shares equipment

information and availability among OSROs on the west coast of North America. The Worldwide Response Resource List may be viewed at http://www.wrrl.us/. For more information, see Section 11.2.

WCMRC's contribution to mutual aid will be limited to resources that exceed 10,000 tonne capacity unless there is prior approval of TC.

12.12 Compliance Testing

Equipment that is appropriate for responding to an oil spill is provided to those managing the response operation, including but not limited to booming, skimming, primary and secondary temporary storage, sufficient to meet the requirements of CSA, 2001 regulations and standards specifically related to oil quantity, response time, on-water recovery, and shoreline treatment in the defined geographical area in each applicable operating environments and specified sea states apportioned in accordance with the tiered response capability.

Canada Shipping Act, 2001: Response Organization Regulations SOR/95-405: 3.(1); 3.(2)(b); 3.(2)(i); 3.(2)(j); 4.(1)(a); 4.(1)(c); 4.(1)(e); 4.(1)(f); 4.(1)(g); 4.(2); 4.(2)(a); 4.(2)(b); 6.

Canada Shipping Act, 2001: Response Organization Standards (1995) – TP 12401 E: Section 2., 3., 4., 5., 6., Schedule II

Table 12-15 - Planned Tier 1 Capacities

Tier 1

Booming				
Asset	**Location**		**Capacity (m)**	**ETA to Port (hrs)**
24" GP	TRL No. 134	Delta Port/TSI Terminals	305	2.5
24" GP	Texada Sentinel	WCMRC Vancouver Harbour	305	2.5
24" GP	TRL No. 225	Port Metro Vancouver Helijet	1524	1.5
Planned			**2134**	
Requirement			**1781**	

Skimming				
Asset	**Location**		**Capacity (derated t/hr)**	**ETA to Port (hrs)**
Marco 50 Belt	Seymour Sentinel	WCMRC Vancouver Harbour	16.2	2.5
Triton 60	TRL No. 188	WCMRC Fraser River	12.6	1.5
RBS-05 Twin Brush	TRL No. 219	Suncor Burnaby	4	1.5
Sala Roll Pump	Warehouse	WCMRC Coquitlam	5	1.5
Manta Ray	Warehouse	WCMRC Coquitlam	4.2	1.5
Planned			**42**	
Requirement			**0.32**	

Temporary Storage				
Asset	**Location**		**Capacity (t)**	**ETA to Port (hrs)**
Floating Collar	TRL No. 188	WCMRC Fraser River	3.8	1.5
Floating Collar	TRL No. 219	Suncor Burnaby	5.7	1.5
SeaSlug	TRL No. 219	Suncor Burnaby	10	1.5
Port-a-Tank	Warehouse	WCMRC Coquitlam	4.5	1.5
Port-a-Tank	TRL CON No. 971	WCMRC Vancouver Harbour	5.7	1.5
SeaSlug	Warehouse	WCMRC Coquitlam	10	1.5
Integral	Seymour Sentinel	WCMRC Vancouver Harbour	12	2.5
Planned			**51.7**	
Primary Storage Requirement			**39**	
Secondary Storage Requirement			**76**	

Table 12-16 - Planned Tier 2 Capacities

Tier 2				
Booming				
Asset	**Location**		**Capacity (m)**	**ETA to Port (hrs)**
24" GP	Bowen Sentinel	WCMRC Fraser River	305	3
24" GP	Sentinel 102	Allied Shipyard	610	1.5
24" GP	Sentinel 304	WCMRC Vancouver Harbour	4270	1.5
24" GP	TRL No. 707	Delta Port/TSI Terminals	1524	3
Planned			**6709**	
Requirement			**2938**	
Skimming				
Asset	**Location**		**Capacity (derated t/hr)**	**ETA to Port (hrs)**
RBS-05	TRL No. 218	Suncor Burnaby	2.0	1.5
Desmi Terminator	Sentinel 304	WCMRC Vancouver Harbour	25.0	1.5
Crucial Fuzzy Disc	TRLCON966	WCMRC Vancouver Harbour	4.0	1.5
Triton 35	Warehouse	Suncor Burnaby	7.6	1.5
Lamor MM30	Warehouse	Suncor Burnaby	10.6	1.5
Planned			**49.2**	
Requirement			**2.12**	
Temporary Storage				
Asset	**Location**		**Capacity (t)**	**ETA to Port (hrs)**
Integral	Sentinel 220	Allied Shipyard	40	1.5
Integral	Sentinel 221	Allied Shipyard	40	1.5
Integral	Sentinel 304	WCMRC Vancouver Harbour	3500	1.5
Seaslug	Sentinel 304	WCMRC Vancouver Harbour	5	1.5
Seaslug	TRL No. 218	Suncor Burnaby	5	1.5
Port-a-Tank	Warehouse	WCMRC Coquitlam	5.7	1.5
Port-a-Tank	Warehouse	WCMRC Coquitlam	5.7	1.5
Floating Collar	TRL CON No. 972	WCMRC Vancouver Harbour	5.7	1.5
Floating Collar	TRL CON No. 972	WCMRC Vancouver Harbour	5.7	1.5
Planned			**3612.8**	
Primary Storage Requirement			**255**	
Secondary Storage Requirement			**510**	

Table 12-17 - Planned Tier 3 Capacities

Tier 3					
Booming					
Asset	**Location**		**Capacity (m)**	**ETA to PAR (hrs)**	**ETA to ERA (hrs)**
24" GP	Texada Sentinel	WCMRC Vancouver Harbour	305	6	12
24" GP	Sentinel 102	Allied Shipyard	610	6	12
24" GP	Sentinel 304	WCMRC Vancouver Harbour	4270	6	18
Vikoma HiSprint 1500	Sentinel 304	WCMRC Vancouver Harbour	1220	6	18
24" GP	TRL No. 707	Delta Port/TSI Terminals	1524	6	18
Kepner SeaCurtain 43"	Strait Sentinel	WCMRC Beecher Bay	762	8	6
Nofi Current Buster 4	Strait Sentinel	WCMRC Beecher Bay	35	8	6
Kepner SeaCurtain 43"	Hecate Sentinel	Van Isle Marina	457	4	8
24" GP	Cormorant Sentinel	Van Isle Marina	244	4	8
24" GP	Sentinel 106	Van Isle Marina	610	4	8
24" GP	TRL No. 709	WCMRC Sidney	1524	6	12
Planned			**115611**		
Requirement (PAR)			**8275**		
Requirement (ERA)			**7738**		
Skimming					
Asset	**Location**		**Capacity (derated t/hr)**	**ETA to PAR (hrs)**	**ETA to ERA (hrs)**
RBS-05	TRL No. 218	Suncor Burnaby	2.0	6	12
Desmi Terminator	Sentinel 304	WCMRC Vancouver Harbour	25.0	6	18
Crucial Fuzzy Disc	TRLCON966	WCMRC Vancouver Harbour	4.0	6	18
Triton 35	Warehouse	Suncor Burnaby	7.6	6	18
Lamor MM30	Warehouse	Suncor Burnaby	10.6	6	18
Desmi Terminator	Strait Sentinel	WCMRC Beecher Bay	25.0	8	6
Lamor LORS-3	Hecate Sentinel	Van Isle Marina	49.2	4	8
Lamor MM30	Warehouse	WCMRC Sidney	10.6	6	18
Planned			**141.6**		
Requirement			**6.33**		
Temporary Storage					
Asset	**Location**		**Capacity (t)**	**ETA to PAR (hrs)**	**ETA to ERA (hrs)**
Integral	Sentinel 220	Allied Shipyard	40	6	12
Integral	Sentinel 221	Allied Shipyard	40	6	12
Integral	Sentinel 304	WCMRC Vancouver Harbour	3500	6	18
Seaslug	Sentinel 304	WCMRC Vancouver Harbour	5	6	18
Seaslug	TRL No. 218	Suncor Burnaby	5	6	12
Port-a-Tank	Warehouse	WCMRC Coquitlam	5.7	6	18
Port-a-Tank	Warehouse	WCMRC Coquitlam	5.7	6	18
Floating Collar	TRL CON No. 972	WCMRC Vancouver Harbour	5.7	6	18

Floating Collar	TRL CON No. 972	WCMRC Vancouver Harbour	5.7	6	18
Integral	Sentinel 217	WCMRC Beecher Bay	40	4	8
Integral	Hecate Sentinel	Van Isle Marina	30	4	8
Integral	Sentinel 211	Van Isle Marina	40	4	8
Frame Tank	Warehouse	WCMRC Sidney	5	6	18
Frame Tank	Warehouse	WCMRC Sidney	5	6	18
Seaslug	Warehouse	WCMRC Sidney	5	6	18
Seaslug	Warehouse	WCMRC Sidney	5	6	18
Planned			**3742.8**		
Primary Storage Requirement			**760**		
Secondary Storage Requirement			**1520**		

Table 12-18 - Planned Tier 4 Capacities

Tier 4					
Booming					
Asset	**Location**		**Capacity (m)**	**ETA to PAR (hrs)**	**ETA to ERA (hrs)**
24” GP	Texada Sentinel	WCMRC Vancouver Harbour	305	6	12
24” GP	Sentinel 102	Allied Shipyard	610	6	12
24” GP	Sentinel 304	WCMRC Vancouver Harbour	4270	6	18
Vikoma HiSprint 1500	Sentinel 304	WCMRC Vancouver Harbour	1220	6	18
Nofi Current Buster 4	Sentinel 304	WCMRC Vancouver Harbour	35	6	18
Nofi Current Buster 6	Sentinel 304	WCMRC Vancouver Harbour	63	6	18
24” GP	TRL No. 707	Delta Port/TSI Terminals	1524	6	18
Kepner SeaCurtain 43"	Strait Sentinel	WCMRC Beecher Bay	762	8	6
Nofi Current Buster 4	Strait Sentinel	WCMRC Beecher Bay	35	8	6
Kepner SeaCurtain 43"	Hecate Sentinel	Van Isle Marina	457	4	8
24” GP	Cormorant Sentinel	Van Isle Marina	244	4	8
24” GP	Sentinel 106	Van Isle Marina	610	4	8
24” GP	TRL No. 709	WCMRC Sidney	1524	6	12
Vikoma HiSprint 1500	Sentinel 302	Ch. Dan Buoys	915	6	18
Nofi Current Buster 6	Sentinel 302	Ch. Dan Buoys	63	6	18
Kepner SeaCurtain 43"	GM Penman	WCMRC Beecher Bay	457	6	4
24” GP	Sentinel 303	WCMRC Nanaimo	4270	6	18
Vikoma HiSprint 1500	Sentinel 303	WCMRC Nanaimo	1220	6	18
Nofi Current Buster 4	Sentinel 303	WCMRC Nanaimo	35	6	18
Nofi Current Buster 6	Sentinel 303	WCMRC Nanaimo	63	6	18
Planned			**18682**		
Requirement (PAR)			**14300**		
Requirement (ERA)			**10550**		
Skimming					
Asset	**Location**		**Capacity (derated t/hr)**	**ETA to PAR (hrs)**	**ETA to ERA (hrs)**
RBS-05	TRL No. 218	Suncor Burnaby	2.0	6	12
Desmi Terminator	Sentinel 304	WCMRC Vancouver Harbour	25.0	6	18
Crucial Fuzzy Disc	Warehouse	WCMRC Vancouver Harbour	4.0	6	18
Triton 35	Warehouse	Suncor Burnaby	7.6	6	18
Lamor MM30	Warehouse	Suncor Burnaby	10.6	6	18
Desmi Terminator	Strait Sentinel	WCMRC Beecher Bay	25.0	8	6
Lamor LORS-3	Hecate Sentinel	Van Isle Marina	49.2	4	8
Lamor MM30	Warehouse	WCMRC Sidney	10.6	6	18
Triton 35	Warehouse	WCMRC Sidney	7.6	6	18
Triton 150	Trailer 600	WCMRC Nanaimo	30	6	18
Lamor MM30	Sentinel 302	Ch. Dan Buoys	10.6	6	18

Lamor LORS-3	GM Penman	WCMRC Beecher Bay	49.2	6	4
Desmi Terminator	Sentinel 303	WCMRC Nanaimo	25.0	6	18
Planned			**256.4**		
Requirement			**25.33**		
Temporary Storage					
Asset	**Location**		**Capacity (t)**	**ETA to PAR (hrs)**	**ETA to ERA (hrs)**
Integral	Sentinel 220	Allied Shipyard	40	6	12
Integral	Sentinel 221	Allied Shipyard	40	6	12
Integral	Sentinel 304	WCMRC Vancouver Harbour	3500	6	18
Seaslug	Sentinel 304	WCMRC Vancouver Harbour	5	6	18
Seaslug	TRL No. 218	Suncor Burnaby	5	6	12
Port-a-Tank	Warehouse	WCMRC Coquitlam	5.7	6	18
Port-a-Tank	Warehouse	WCMRC Coquitlam	5.7	6	18
Floating Collar	Warehouse	WCMRC Vancouver Harbour	5.7	6	18
Floating Collar	Warehouse	WCMRC Vancouver Harbour	5.7	6	18
Integral	Sentinel 217	WCMRC Beecher Bay	40	4	8
Integral	Hecate Sentinel	Van Isle Marina	30	4	8
Integral	Sentinel 211	Van Isle Marina	40	4	8
Frame Tank	Warehouse	WCMRC Sidney	5	6	18
Frame Tank	Warehouse	WCMRC Sidney	5	6	18
Seaslug	Warehouse	WCMRC Sidney	5	6	18
Seaslug	Warehouse	WCMRC Sidney	5	6	18
Seaslug	Warehouse	WCMRC Sidney	5	6	18
Integral	Sentinel 302	**Planned**	4000	6	18
Integral	GM Penman	WCMRC Beecher Bay	30	4	8
Integral	Sentinel 214	WCMRC Beecher Bay	40	4	8
Integral	Sentinel 218	Sentinel 303	40	6	18
Integral	Sentinel 219	Sentinel 303	40	6	18
Integral	Sentinel 303	WCMRC Nanaimo	3500	6	18
Seaslug	Sentinel 303	WCMRC Nanaimo	5	6	18
Integral	Sentinel 212	Van Isle Marina	40	4	8
Planned			**11437.8**		
Primary Storage Requirement			**3040**		
Secondary Storage Requirement (to be made up of WCMRC assets and contracted support as per Section 12.6)			**6080**		

Table 12-19 - Comparison of WCMRC Actual Equipment versus Equipment Required - Vancouver Port

Tier 1 - 150 tonne		**Required**			**Actual**		
		Tier 1 < 6 hours		**Port**	**Tier 1** < 6 hours		**Port**
		Shoreline	**Sheltered**	**Total**	**Shoreline**	**Sheltered**	**Total**
Planning Volumes (tonnes)	①	75	75	150	75	75	150
Skimmers							
Derated capacity (tonnes/hr)	⑥	0.01	0.31	0.32	9.20	32.80	42.00
Storage							
Guidance Doc.3 Primary		1	38	39	10.2	41.5	51.7
Guidance Doc.3 Secondary	⑦	1	75	76			
Boom (m)							
Sweep	②						
Containment	③		281	281		305	305
Protection	④		500	500		640	640
Shoreline Cleanup	⑤	1000		1000	1067		1067
Total		**1000**	**781**	**1781**	**1067**	**945**	**2012**

Tier 2 - 1000 tonne		**Required**			**Actual**		
		Tier 2 <12 hours		**Port**	**Tier 2** <12 hours		**Port**
		Shoreline	**Sheltered**	**Total**	**Shoreline**	**Sheltered**	**Total**
Planning Volumes (tonnes)	①	500	500	1000	500	500	1000
Skimmers							
Derated capacity (tonnes/hr)	⑥	0.04	2.08	2.12	6.00	43.20	49.20
Storage							
Guidance Doc.3 Primary		5	250	255	22.8	3590.0	3612.8
Guidance Doc.3 Secondary	⑦	10	500	510			
Boom (m)							
Sweep	②						
Containment	③		938	938		1524	1524
Protection	④		1000	1000		3661	3661
Shoreline Cleanup	⑤	1000		1000	1524		1524
Total		**1000**	**1938**	**2938**	**1524**	**2547**	**6709**

① Planning volume = spill volume x % operating environment
② Sweep: used in the unsheltered environment for Tier 3 and 4
③ Follows CCG Guidance Appendix B: spill volume x 1.875
④ Cap for protection boom expected in 24 hours
⑤ Can be used in sheltered, shoreline or unsheltered environment: will be used in part to cover shoreline
⑥ Derated recovery capacity = volume to be recovered / (10 days x 24 hours) for sheltered and unsheltered, 50 days for shoreline
⑦ Per CCG Guidance Doc 3, primary storage is from WCMRC assets, secondary storage will be from WCMRC assets or contracted support

Table 12-20 - Comparison of WCMRC Actual Equipment versus Equipment Required - Vancouver PAR

Tier 3 - 2500 tonne

		Required				Actual			
		Tier 3	<18 hours		**PAR**	**Tier 3**	<18 hours		**PAR**
		Shoreline	**Sheltered**	**Unsheltered**	**Total**	**Shoreline**	**Sheltered**	**Unsheltered**	**Total**
Planning Volumes (tonnes)	①	1000	1000	500	2500	1000	1000	500	2500
Skimmers									
Derated capacity (tonnes/hr)	⑥	0.08	4.17	2.08	6.33	6.00	61.40	74.20	141.60
Storage									
Guidance Doc.3 Primary	⑧	10	500	250	760	42.8	1700.0	2000.0	3742.8
Guidance Doc.3 Secondary	⑦	20	1000	500	1520				
Boom (m)									
Sweep	②			400	400			797	797
Containment	③		1875		1875		3994		3994
Protection	④		5000		5000		5185		5185
Shoreline Cleanup	⑤	1000			1000	1524			1524
Total		**1000**	**6875**	**400**	**8275**	**1524**	**9179**	**797**	**11500**

Tier 4 - 10000 tonne

		Required				Actual			
		Tier 4	<72 hours		**PAR**	**Tier 4**	<72 hours		**PAR**
		Shoreline	**Sheltered**	**Unsheltered**	**Total**	**Shoreline**	**Sheltered**	**Unsheltered**	**Total**
Planning Volumes (tonnes)	①	4000	4000	2000	10000	4000	4000	2000	10000
Skimmers									
Derated capacity (tonnes/hr)	⑥	0.33	16.70	8.30	25.33	6.00	148.40	102.00	256.40
Storage									
Guidance Doc.3 Primary	⑧	40	2000	1000	3040	122.8	7815.0	3500.0	11437.8
Guidance Doc.3 Secondary	⑦	80	4000	2000	6080				
Boom (m)									
Sweep	②			800	800			2115	2115
Containment	③		7500		7500		8721		8721
Protection	④		5000		5000		6261		6261
Shoreline Cleanup	⑤	1000			1000	1524			1524
Total		**1000**	**12500**	**800**	**14300**	**1524**	**14982**	**2115**	**18621**

① Planning volume = spill volume x % operating environment
② Sweep: used in the unsheltered environment for Tier 3 and 4
③ Follows CCG Guidance Appendix B: spill volume x 1.875
④ Cap for protection boom expected in 24 hours
⑤ Can be used in sheltered, shoreline or unsheltered environment: will be used in part to cover shoreline
⑥ Derated recovery capacity = volume to be recovered / (10 days x 24 hours) for sheltered and unsheltered, 50 days for shoreline
⑦ Per CCG Guidance Doc 3, primary storage is from WCMRC assets, secondary storage will be from WCMRC assets or contracted support
⑧ Sentinel 302 acts as both sheltered and unsheltered storage capacity

Table 12-21 - Comparison of WCMRC Actual Equipment versus Equipment Required - Juan de Fuca ERA

Tier 3

		Required				Actual			
		Tier 3	< 18 hours		**ERA**	Tier 3	< 18 hours		**ERA**
		Shoreline	**Sheltered**	**Unsheltered**	**Total**	**Shoreline**	**Sheltered**	**Unsheltered**	**Total**
Planning Volumes (tonnes)	①	1000	500	1000	2500	1000	1000	500	2500
Skimmers									
Derated capacity (tonnes/hr)	⑥	0.08	2.08	4.17	6.33	6.00	61.40	74.20	141.60
Storage									
Guidance Doc.3 Primary	⑧	10	250	500	760	42.8	1700.0	2000.0	3742.8
Guidance Doc.3 Secondary	⑦	20	500	1000	1520				
Boom (m)									
Sweep	②			400	400			797	797
Containment	③		938		938		3994		3994
Protection	④		5000		5000		5185		5185
Shoreline Cleanup	⑤	1000			1000	1524			1524
Total		**1000**	**5938**	**400**	**7338**	**1524**	**9179**	**797**	**11500**

Tier 4

		Required				Actual			
		Tier 4	< 72 hours		**ERA**	**Tier 4**	< 72 hours		**ERA**
		Shoreline	**Sheltered**	**Unsheltered**	**Total**	**Shoreline**	**Sheltered**	**Unsheltered**	**Total**
Planning Volumes (tonnes)	①	4000	2000	4000	10000	4000	2000	4000	10000
Skimmers									
Derated capacity (tonnes/hr)	⑥	0.33	8.30	16.70	25.33	6.00	102.00	148.40	256.40
Storage									
Guidance Doc.3 Primary	⑧	40	1000	2000	3040	122.8	4000.0	7315.0	11437.8
Guidance Doc.3 Secondary	⑦	80	2000	4000	6080				
Boom (m)									
Sweep	②			800	800			797	797
Containment	③		3750		3750		3994		3994
Protection	④		5000		5000		5185		5185
Shoreline Cleanup	⑤	1000			1000	1524			1524
Total		**1000**	**8750**	**800**	**10550**	**1524**	**9179**	**797**	**18621**

① Planning volume = spill volume x % operating environment
② Sweep: used in the unsheltered environment for Tier 3 and 4
③ Follows CCG Guidance Appendix B: spill volume x 1.875
④ Cap for protection boom expected in 24 hours
⑤ Can be used in sheltered, shoreline or unsheltered environment: will be used in part to cover shoreline
⑥ Derated recovery capacity = volume to be recovered / (10 days x 24 hours) for sheltered and unsheltered, 50 days for shoreline
⑦ Per CCG Guidance Doc 3, primary storage is from WCMRC assets, secondary storage will be from WCMRC assets or contracted support
⑧ Sentinel 302 acts as both sheltered and unsheltered storage capacity

Table 12-22 - Boom

Home Port	Location	Boom Type	Shoreline	Sheltered	Unsheltered	Length (m)	Tier
South Coast							
Delta	TRL No. 134	Delta Port/TSI Terminals	24" GP	305	0	0	305	Tier 1
Fraser River	TRL No. 213	WCMRC Fraser River	24" GP	0	610	0	610	Plan +
Delta	TRL No. 707	Delta Port/TSI Terminals	24" GP	0	1524	0	1524	Tier 2
Fraser River	Sentinel 110	WCMRC Fraser River	24" GP	0	610	0	610	Plan +
Fraser River	Texada Sentinel	WCMRC Vancouver Harbour	24" GP	0	305	0	305	Tier 1
Burnaby	TRL No. 227	Suncor Burnaby	18" River	396	0	0	396	Plan +
Fraser River	TRL No. 235	WCMRC Fraser River	30" Shore Seal	92	0	0	92	Plan +
Sunshine Coast	TRL No. 181	Sechelt Fire Department	24" IS	0	305	0	305	Plan +
Burnaby	TRL No. 224	Suncor Burnaby	24" GP	0	305	0	305	Plan +
Fraser River	Bowen Sentinel	WCMRC Fraser River	24" GP	0	183	0	183	Tier 2
Vancouver Harbour	Harbour Sentinel	WCMRC Vancouver Harbour	24" GP	0	412	0	412	Plan +
Vancouver Harbour	Pacific Sentinel	WCMRC Vancouver Harbour	Kepner SeaCurtain 43"	0	0	457	457	Plan +
Vancouver Harbour	Port Metro Vancouver	Port Metro Vancouver Main Street Dock	24" GP	0	610	0	610	Plan +
Vancouver Harbour	Sentinel 102	Allied Shipyard	24" GP	0	610	0	610	Tier 2
Vancouver Harbour	Sentinel 104	Suncor Terminal	24" GP	0	610	0	610	Plan +
Vancouver Harbour	Sentinel 111	Lion's Gate Marina	24" GP	0	610	0	610	Plan +
Vancouver Harbour	Sentinel 301	WCMRC Vancouver Harbour	Kepner SeaCurtain 54"	0	0	915	915	Plan +
Vancouver Harbour	Sentinel 301	WCMRC Vancouver Harbour	24" GP	0	457	0	457	Plan +
Vancouver Harbour	Sentinel 302	Ch. Dan Buoys	Nofi Current Buster 6	0	0	63	63	Tier 4
Vancouver Harbour	Sentinel 302	Ch. Dan Buoys	Fire Boom	0	0	152	152	Plan +
Vancouver Harbour	Sentinel 302	Ch. Dan Buoys	Vikoma HISprint 1500	0	0	915	915	Tier 4
Vancouver Harbour	Sentinel 304	WCMRC Vancouver Harbour	24" GP	0	4270	0	4270	Tier 2

Home Port	Location		Boom Type	Shoreline	Sheltered	Unsheltered	Length (m)	Tier
South Coast								
Vancouver Harbour	Sentinel 304	WCMRC Vancouver Harbour	Vikoma HISprint 1500	0	0	1220	1220	Tier 3
Vancouver Harbour	Sentinel 304	WCMRC Vancouver Harbour	Nofi Current Buster 4	0	0	35	35	Tier 4
Vancouver Harbour	Sentinel 304	WCMRC Vancouver Harbour	Nofi Current Buster 6	0	0	63	63	Tier 4
Vancouver Harbour	TRL No. 215	Suncor Burnaby	30" Shore Seal	92	0	0	92	Plan +
Vancouver Harbour	TRL No. 225	Port Metro Vancouver Main Street Dock	24" GP	762	762	0	1524	Tier 1
Vancouver Harbour	TRL No. 250	Suncor Burnaby	24" GP	0	305	0	305	Plan +
Vancouver Harbour	TRL No. 510	Suncor Burnaby	Nofi Current Buster 4	0	0	35	35	Plan +
Vancouver Harbour	TRL No. 703	Suncor Burnaby	24" GP	1524	0	0	1524	Plan +
Vancouver Harbour	TRL No. 719	Suncor Burnaby	24" GP	0	610	0	610	Plan +
Vancouver Harbour	Warehouse	WCMRC Coquitlam	30" Shore Seal	152	0	0	252	Plan +
Vancouver Harbour	Warehouse	WCMRC Coquitlam	24" GP	0	762	0	762	Plan +
Vancouver Harbour	Warehouse	WCMRC Coquitlam	18" IS	91	0	0	91	Plan +
Vancouver Harbour	Warehouse	WCMRC Coquitlam	30" Air Inflate	0	0	152	152	Plan +
Vancouver Harbour	Warehouse	WCMRC Coquitlam	24" IS	76	0	0	76	Plan +
Vancouver Harbour	Warehouse	WCMRC Coquitlam	18" River	121	0	0	121	Plan +
South Coast Totals			**Tier 1**	1067	945	0	2012	
			Tier 2	0	6709	0	6709	
			Tier 3	0	0	1220	1220	
			Tier 4	0	0	1076	1076	
			Plan +	2544	6206	1711	10561	
			Total	3611	13860	4007	21578	

Home Port	Location		Boom Type	Shoreline	Sheltered	Unsheltered	Length (m)	Tier
Vancouver Island								
Beecher Bay	GM Penman	WCMRC Beecher Bay	Kepner SeaCurtain 43"	0	0	457	457	Tier 4
Beecher Bay	Sentinel 114	WCMRC Beecher Bay	24" GP	0	610	0	610	Plan +
Beecher Bay	Sentinel 115	WCMRC Beecher Bay	24" GP	0	610	0	610	Plan +
Beecher Bay	Strait Sentinel	WCMRC Beecher Bay	Kepner SeaCurtain 43"	0	0	762	762	Tier 3
Beecher Bay	Strait Sentinel	WCMRC Beecher Bay	Nofi Current Buster 4	0	0	35	35	Tier 3
Campbell River	TRL No. 712	Aquatrans Distributers	24" GP	0	1524	0	1524	Plan +
Campbell River	TRL No. 714	WCMRC Nanaimo	24" GP	0	457	0	457	Plan +
Cowichan Bay	S27 907C	Pacific Industrial Marine	24" GP	0	533	0	533	Plan +
Cowichan Bay	S27 919C	Pacific Industrial Marine	24" GP	0	533	0	533	Plan +
Cowichan Bay	TRL No. 131	Pacific Industrial Marine	Kepner SeaCurtain 41"	0	0	305	305	Plan +
Galiano Island	S27 900C	Whaler Bay	24" GP	0	533	0	533	Plan +
Galiano Island	B27 923C	Whaler Bay	24" GP	0	533	0	533	Plan +
Galiano Island	S27 924C	Montague Harbour	24" GP	0	533	0	533	Plan +
Nanaimo	Discovery Sentinel	WCMRC Nanaimo	24" GP	0	305	0	305	Plan +
Nanaimo	Gulf Sentinel	WCMRC Nanaimo	Kepner SeaCurtain 43"	0	0	762	762	Plan +
Nanaimo	Gulf Sentinel	WCMRC Nanaimo	Nofi Current Buster 4	0	0	35	35	Plan +
Nanaimo	Island Sentinel	WCMRC Nanaimo	24" GP	0	412	0	412	Plan +
Nanaimo	Salish Sentinel	WCMRC Nanaimo	Kepner SeaCurtain 32"	0	0	91	91	Plan +
Nanaimo	Sentinel 103	WCMRC Nanaimo	24" GP	0	610	0	610	Plan +
Nanaimo	Sentinel 105	WCMRC Nanaimo	24" GP	0	610	0	610	Plan +
Nanaimo	Sentinel 113	WCMRC Nanaimo	24" GP	0	610	0	610	Plan +
Nanaimo	Sentinel 303	WCMRC Nanaimo	24" GP	0	4270	0	4270	Tier 4
Nanaimo	Sentinel 303	WCMRC Nanaimo	Vikoma HISprint 1500	0	0	1220	1220	Tier 4
Nanaimo	Sentinel 303	WCMRC Nanaimo	Nofi Current Buster 4	0	0	35	35	Tier 4

Home Port	Location		Boom Type	Shoreline	Sheltered	Unsheltered	Length (m)	Tier
Vancouver Island								
Nanaimo	Sentinel 303	WCMRC Nanaimo	Nofi Current Buster 6	0	0	63	63	Tier 4
Nanaimo	TRL No. 137	WCMRC Nanaimo	24" GP	0	305	0	305	Plan +
Nanaimo	TRL No. 194	WCMRC Nanaimo	24" GP	0	610	0	610	Plan +
Nanaimo	REEL0137	WCMRC Nanaimo	Kepner SeaCurtain 43"	0	0	305	305	Plan +
Nanaimo	TRL No. 207	WCMRC Nanaimo	24" GP	0	610	0	610	Plan +
Nanaimo	TRL No. 211	WCMRC Nanaimo	24" GP	0	550	0	550	Plan +
Nanaimo	TRL No. 214	WCMRC Nanaimo	30" Shore Seal	92	0	0	92	Plan +
Nanaimo	TRL No. 502	WCMRC Nanaimo	24" GP	0	305	0	305	Plan +
Nanaimo	TRL No. 507	WCMRC Nanaimo	Nofi Current Buster 4	0	0	35	35	Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	18" River	350	0	0	350	Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	24" GP	0	579	0	579	Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	30" Shore Seal	152	0	0	152	Plan +
Pedder Bay	TRL No. 337	Pedder Bay Marina	24" GP	0	305	0	305	Plan +
Port Alberni	Barkley Sentinel	Port Alberni Port Authority	Kepner SeaCurtain 43"	0	0	457	457	Plan +
Port Alberni	Coastal Sentinel	Port Alberni Port Authority	Kepner SeaCurtain 43"	0	0	762	762	Plan +
Port Alberni	Coastal Sentinel	Port Alberni Port Authority	Nofi Current Buster 4	0	0	35	35	Plan +
Port Alberni	Nootka Sentinel	Port Alberni Port Authority	24" GP	0	183	0	183	Plan +
Port Alberni	Sentinel 108	Ucluelet Small Craft Harbour	24" GP	0	610	0	610	Plan +
Port Alberni	TRL No. 217	WCMRC Port Alberni	30" Shore Seal	92	0	0	92	Plan +
Port Alberni	TRL No. 338	WCMRC Port Alberni	24" GP	0	305	0	305	Plan +
Port Alberni	TRL No. 704	WCMRC Port Alberni	24" GP	0	610	0	610	Plan +
Port Alberni	TRL No. 715	WCMRC Port Alberni	24" GP	0	1524	0	1524	Plan +
Port Hardy	TRL No. 700	Bear Cove Chevron	24" GP	0	1524	0	1524	Plan +
Port Hardy	TRL No. 702	Bear Cove Chevron	24" GP	0	610	0	610	Plan +
Quadra Island	Sentinel 112	April Point Marina	24" GP	0	610	0	610	Plan +
Saturna Island	B27 915C	Lyall Harbour	24" GP	0	533	0	533	Plan +
Sidney	Cormorant Sentinel	Van Isle Marina	24" GP	0	244	0	183	Tier 3

Home Port	Location		Boom Type	Shoreline	Sheltered	Unsheltered	Length (m)	Tier
Vancouver Island								
Sidney	Hecate Sentinel	Van Isle Marina	Kepner SeaCurtain 43"	0	0	457	457	Tier 3
Sidney	Sentinel 106	Van Isle Marina	24" GP	0	610	0	610	Tier 3
Sidney	Sentinel 107	Van Isle Marina	24" GP	0	610	0	610	Plan +
Sidney	TRL No. 216	WCMRC Sidney	30" Shore Seal	92	0	0	92	Plan +
Sidney	TRL No. 228	WCMRC Sidney	24" GP	0	305	0	305	Plan +
Sidney	TRL No. 336	WCMRC Sidney	24" GP	0	305	0	305	Plan +
Sidney	TRL No. 717	WCMRC Sidney	24" GP	0	610	0	610	Plan +
Sidney	Warehouse	WCMRC Sidney	24" GP	0	152	0	152	Plan +
Sidney	Warehouse	WCMRC Sidney	30" Shore Seal	30	0	0	30	Plan +
Sooke	S27 904C	Whiffin Spit	24" GP	0	533	0	533	Plan +
Sooke	S27 906C	Whiffin Spit	24" GP	0	533	0	533	Plan +
Sooke	TRL No. 234	Otter Point Marine Park	30" Shore Seal	92	0	0	92	Plan +
Sooke	TRL No. 716	Otter Point Marine Park	24" GP	0	1524	0	1524	Plan +
Sooke	TRL No. 718	WCMRC Beecher Bay	24" GP	0	610	0	610	Plan +
Ucluelet	Sentinel 109	Ucluelet Small Craft Harbour	24" GP	0	610	0	610	Plan +
Ucluelet	TRL No. 339	Ucluelet Small Craft Harbour	24" GP	0	305	0	305	Plan +
Ucluelet	TRL No. 710	Ucluelet Small Craft Harbour	24" GP	0	1524	0	1524	Plan +
Ucluelet	U27 902C	Secret Beach	24" GP	0	533	0	533	Plan +
Ucluelet	U27 905C	Secret Beach	24" GP	0	533	0	533	Plan +
Victoria	Race Sentinel	WCMRC Beecher Bay	24" GP	0	183	0	183	Plan +
Victoria	TRL No. 709	WCMRC Sidney	24" GP	0	1524	0	1524	Tier 3
Vancouver Island Totals			**Tier 1**	0	0	0	0	
			Tier 2	0	0	0	0	
			Tier 3	0	23788	1254	3571	
			Tier 4	0	4270	1775	6045	
			Plan +	900	27056	2787	30743	
			Total	900	33643	5816	40359	

Home Port	Location	Boom Type	Shoreline	Sheltered	Unsheltered	Length (m)	Tier
North Coast							
Haida Gwaii	TRL No. 135	Daajing Giids	24" GP	0	305	0	305	Plan +
Haida Gwaii	TRL No. 701	Daajing Giids	24" GP	0	610	0	610	Plan +
Haida Gwaii	TRL No. 701	Daajing Giids	30" Shore Seal	30	0	0	30	Plan +
Haida Gwaii	TRL No. 706	Masset, North Arm Transportation	24" GP	0	610	0	610	Plan +
Kitimat	Gil Sentinel	MK Bay Marina	24" GP	0	305	0	305	Plan +
Kitimat	TRL No. 226	MK Bay Marina	24" GP	0	305	0	305	Plan +
Kitimat	TRL No. 711	MK Bay Marina	24" GP	0	1524	0	1524	Plan +
Kitimat	TRL No. 713	MK Bay Marina	24" GP	0	610	0	610	Plan +
Kitimat	TRL No. 713	MK Bay Marina	30" Shore Seal	30	0	0	30	Plan +
Port Edward	TRL No. 721	Port Edward Harbour	24" GP	0	1524	0	1524	Plan +
Prince Rupert	Sentinel 100	Cow Bay Marina	24" GP	0	366	0	366	Plan +
Prince Rupert	Sentinel 101	Cow Bay Marina	24" GP	0	366	0	366	Plan +
Prince Rupert	TRL No. 135	Coastal Propane	24" GP	0	305	0	305	Plan +
Prince Rupert	TRL No. 208	Port Edward Harbour	Kepner SeaCurtain 26"	0	0	457	457	Plan +
Prince Rupert	TRL No. 195	Ridley Island Grain Elevator	24" GP	0	457	0	457	Plan +
Prince Rupert	TRL No. 210	Ridley Island Grain Elevator	24" GP	0	1524	0	1524	Plan +
Kitimat	TRL No. 220	MK Bay Marina	24" GP	0	305	0	305	Plan +
Prince Rupert	TRL No. 233	Coastal Propane	Vikoma HISprint 1500	0	0	305	305	Plan +
Prince Rupert	TRL No. 508	WCMRC Prince Rupert	Nofi Current Buster 4	0	0	35	35	Plan +
Prince Rupert	TRL No. 509	WCMRC Prince Rupert	Nofi Current Buster 4	0	0	35	35	Plan +
Prince Rupert	TRL No. 705	Fairview Container Terminal	30" Shore Seal	92	0	0	92	Plan +
Prince Rupert	TRL No. 708	Fairview Container Terminal	24" GP	0	610	0	610	Plan +
Prince Rupert	TRL No. 720	WCMRC Prince Rupert	24" GP	0	457	0	457	Plan +
Prince Rupert	TRL No. 720	WCMRC Prince Rupert	30" Shore Seal	30	0	0	30	Plan +
Prince Rupert	Vigilant Sentinel	Cow Bay Marina	24" GP	0	305	0	305	Plan +
Prince Rupert	Warehouse	WCMRC Prince Rupert	18" River	915	0	0	915	Plan +
Prince Rupert	Warehouse	WCMRC Prince Rupert	30" Shore Seal	30	0	0	30	Plan +

Home Port	Location		Boom Type	Shoreline	Sheltered	Unsheltered	Length (m)	Tier
North Coast								
Prince Rupert	Warehouse	WCMRC Prince Rupert	24" GP	0	137	0	137	Plan +
Prince Rupert	Warehouse	WCMRC Prince Rupert	30" Air Inflate	0	0	305	305	Plan +
Shearwater	TRL No. 179	Shearwater, Shearwater Marine	24" GP	0	457	0	457	Plan +
Shearwater	TRL No. 190	Shearwater, Shearwater Marine	2 4" GP	0	1220	0	1220	Plan +
North Coast Totals				0	0	0	0	**K 7**
			Tier 2	0	0	0	0	
			Tier 3	0	0	0	0	
			Tier 4	0	0	0	0	
			Plan +	1127	11997	1137	14261	
			Total	1127	11997	1137	14261	
Totals - All Areas				1067	945	0	2012	**Tier 1**
				0	6709	0	6709	**Tier 2**
				0	2317	2474	4791	**Tier 3**
				0	4270	2851	7121	**Tier 4**
				4571	45259	5635	55565	**Plan +**
				5638	59500	10960	76198	**Total**
Totals - By Area								
South Coast				3611	13860	4007	21578	
Vancouver Island				900	33643	5816	40359	
North Coast				1127	11997	1137	14261	
Total				5638	59500	10960	76198	

Table 12-23 - On-Water Recovery (Skimmers)

Home Port	Location	Skimmer Type	Number of Units	Derated Capacity (t/hr)	Total Derated Capacity (t/hr)	Nameplate Capacity (t/hr)	Shoreline	Sheltered	Unsheltered	Optimum Oil Viscosity	Tier
South Coast											
Fraser River	TRL No. 213	WCMRC Fraser River	Triton 35	1	7.6	7.6	38.0	R	R		Med	Plan +
Vancouver Harbour	MJ Green	WCMRC Vancouver Harbour	Lamor LORS-2	2	16.4	32.8	164.0	☑	☑	☑	All	Plan +
Vancouver Harbour	TRL No. 188	WCMRC Vancouver Harbour	Triton 60	1	12.6	12.6	63.0	☑	☑		All	Tier 1
Sunshine Coast	TRL No. 181	Sechelt Fire Department	Lamor MM12	1	3.9	3.9	19.6	☑	☑		All	Plan +
Vancouver Harbour	False Creek Sentinel	WCMRC Vancouver Harbour	Marco 30 Belt	1	6.0	6.0	30.0		☑		All	Plan +
Vancouver Harbour	Pacific Sentinel	WCMRC Vancouver Harbour	Lamor LORS-3	2	24.6	49.2	246.0	☑	☑	☑	All	Plan +
Vancouver Harbour	Sentinel 301	WCMRC Vancouver Harbour	Triton 35	1	7.6	7.6	38.0	☑	☑		All	Plan +
Vancouver Harbour	Sentinel 302	Ch. Dan Buoys	Lamor MM30	1	10.6	10.6	53.0	☑	☑	☑	Med-High	Tier 4
Vancouver Harbour	Sentinel 302	Ch. Dan Buoys	Triton 150	1	30.0	30.0	150.0		☑	☑	All	Tier 4
Vancouver Harbour	Sentinel 304	WCMRC Vancouver Harbour	Desmi Terminator	1	25.0	25.0	125.0		☑	☑	All	Tier 2
Vancouver Harbour	Seymour Sentinel	WCMRC Vancouver Harbour	Marco 50 Belt	1	16.2	16.2	81.0		☑	☑	All	Tier 1
Vancouver Harbour	TRL No. 189	WCMRC Fraser River	Triton 60	1	12.6	12.6	63.0	☑	☑		All	Plan +
Vancouver Harbour	TRL No. 218	Suncor Burnaby	RBS-05	1	2.0	2.0	10.0	☑	☑		All	Tier 2
Vancouver Harbour	TRL No. 219	Suncor Burnaby	RBS-05 Twin Brush	1	4.0	4.0	20.0	☑	☑		All	Tier 1
Vancouver Harbour	TRL No. 719	Suncor Burnaby	Triton 35	1	7.6	7.6	38.0	☑	☑		All	Plan +
Vancouver Harbour	Warehouse	WCMRC Coquitlam	Skim Pack	1	4.2	4.2	21.0	☑			Light-Med	Plan +
Vancouver Harbour	TRLCON966	WCMRC Vancouver Harbour	Crucial Fuzzy Disc	1	4.0	4.0	20.0	☑	☑		All	Tier 2
Vancouver Harbour	Warehouse	WCMRC Coquitlam	Sala Roll Pump	1	5.0	5.0	25.0	☑			Med-High	Tier 1
Vancouver Harbour	Warehouse	WCMRC Coquitlam	Manta Ray	1	4.2	4.2	21.0	☑			Light-Med	Tier 1
Vancouver Harbour	Warehouse	WCMRC Coquitlam	RBS-05	1	2.0	2.0	10.0	☑	☑		All	Plan +
Vancouver Harbour	Warehouse	WCMRC Coquitlam	Pedco Weir	1	4.2	4.2	21.0		☑		Light-Med	Plan +
Vancouver Harbour	Warehouse	WCMRC Coquitlam	Slurp Weir	1	4.2	4.2	21.0		☑		Light-Med	Plan +
Vancouver Harbour	Warehouse	WCMRC Coquitlam	Triton 35	1	7.6	7.6	38.0	☑	☑		All	Tier 2
Vancouver Harbour	Warehouse	WCMRC Fraser River	Triton 35	1	7.6	7.6	38.0	☑	☑		All	Plan +
Vancouver Harbour	Sentinel 304	WCMRC Vancouver Harbour	Triton 35	1	7.6	7.6	38.0	☑	☑		All	Plan +
Vancouver Harbour	Warehouse	WCMRC Coquitlam	Lamor MM30	1	10.6	10.6	53.0	☑	☑	☑	Med-High	Tier 2
Vancouver Harbour	Warehouse	WCMRC Coquitlam	Lamor MM30	1	10.6	10.6	53.0	☑	☑	☑	Med-High	Plan +
Vancouver Harbour	Warehouse	WCMRC Vancouver Harbour	Lamor MM30	1	10.6	10.6	53.0	☑	☑	☑	Med-High	Plan +

Home Port	Location	Skimmer Type	Number of Units	Derated Capacity (t/hr)	Total Derated Capacity (t/hr)	Nameplate Capacity (t/hr)	Shoreline	Sheltered	Unsheltered	Optimum Oil Viscosity	Tier
South Coast											
South Coast Totals				Tier 1	42.0						
				Tier 2	49.2						
				Tier 3	0.0						
				Tier 4	40.6						
				Plan +	178.3						
				Total	310.1	1550.6					

Home Port	Location		Skimmer Type	Number of Units	Derated Capacity (t/hr)	Total Derated Capacity (t/hr)	Nameplate Capacity (t/hr)	Shoreline	Sheltered	Unsheltered	Optimum Oil Viscosity	Tier
Vancouver Island												
Beecher Bay	GM Penman	WCMRC Beecher Bay	Lamor LORS-3	2	24.6	49.2	246.0	☑	☑	☑	All	Tier 4
Beecher Bay	Strait Sentinel	WCMRC Beecher Bay	Desmi DOP-250	1	25.0	25.0	125.0		☑	☑	All	Tier 3
Nanaimo	TRL No. 714	WCMRC Nanaimo	Triton 60	1	12.6	12.6	63.0	☑	☑		All	Plan +
Nanaimo	Gulf Sentinel	Nanaimo Port Authority	Desmi DOP-250	1	25.0	25.0	125.0		☑	☑	All	Plan +
Nanaimo	Salish Sentinel	WCMRC Nanaimo	Marco 75 Belt	1	22.0	22.0	110.0		☑	☑	All	Plan +
Nanaimo	Sentinel 303	WCMRC Nanaimo	Desmi Terminator	1	25.0	25.0	125.0		☑	☑	All	Tier 4
Nanaimo	TRL No. 182	WCMRC Nanaimo	RBS-05	1	2.0	2.0	10.0	☑	☑		All	Plan +
Campbell River	TRL No. 207	Aquatrans Distributers	Triton 35	1	7.6	7.6	38.0	☑	☑		Med	Plan +
Nanaimo	TRL No. 211	WCMRC Nanaimo	Triton 35	1	7.6	7.6	38.0	☑	☑		Med	Plan +
Nanaimo	TRL No. 600	WCMRC Nanaimo	Triton 150	1	30.0	30.0	150.0		☑	☑	All	Plan +
Nanaimo	TRL No. 601	WCMRC Nanaimo	Triton 20	1	4.3	4.3	21.5	☑	☑		Med	Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	Triton 35	1	7.6	7.6	38.0	☑	☑		Med	Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	Skim Pack	1	4.2	4.2	21.0	☑			Light-Med	Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	Crucial Fuzzy Disc	1	4.0	4.0	20.0	☑	☑		All	Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	RBS-05	1	2.0	2.0	10.0	☑	☑		All	Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	Manta Ray	1	4.2	4.2	21.0	☑			Light-Med	Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	Lamor MM30	1	10.6	10.6	53.0	☑	☑	☑	Med-High	Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	Lamor MM30	1	10.6	10.6	53.0	☑	☑	☑	Med-High	Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	Lamor MM30	1	10.6	10.6	53.0	☑	☑	☑	Med-High	Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	Lamor MM30	1	10.6	10.6	53.0	☑	☑	☑	Med-High	Plan +
Pedder Bay	TRL No. 605	Pedder Bay Marina	Triton 20	1	4.3	4.3	21.5	☑	☑		Med	Plan +
Port Alberni	Barkley Sentinel	Port Alberni Port Authority	Lamor LORS-3	2	24.6	49.2	246.0	☑	☑	☑	All	Plan +
Port Alberni	Coastal Sentinel	Port Alberni Port Authority	Desmi DOP-250	1	25.0	25.0	125.0		☑	☑	All	Plan +
Port Alberni	TRL No. 603	WCMRC Port Alberni	Triton 20	1	4.3	4.3	21.5	☑	☑		Med	Plan +
Port Alberni	TRL No. 704	WCMRC Port Alberni	Triton 35	1	7.6	7.6	38.0	☑	☑		Med	Plan +
Port Alberni	TRL No. 704	WCMRC Port Alberni	Manta Ray	1	4.2	4.2	21.0	☑			Light-Med	Plan +
Port Alberni	Warehouse	WCMRC Port Alberni	Lamor MM30	1	10.6	10.6	53.0	☑	☑	☑	Med-High	Plan +
Port Hardy	TRL No. 702	Bear Cove Chevron	Triton 35	1	7.6	7.6	38.0	☑	☑		Med	Plan +
Sidney	Hecate Sentinel	Van Isle Marina	Lamor LORS-3	2	24.6	49.2	246.0	☑	☑	☑	All	Tier 3
Sidney	TRL No. 604	WCMRC Sidney	Triton 35	1	4.3	4.3	21.5	☑	☑		Med	Plan +
Sidney	TRL No. 717	WCMRC Sidney	Triton 20	1	4.3	4.3	21.5	☑	☑		Med	Plan +
Sidney	TRL No. 310	WCMRC Sidney	Lamor MM12	1	3.9	3.9	19.6	☑	☑		All	Plan +
Sidney	Warehouse	WCMRC Sidney	Lamor MM30	1	10.6	10.6	53.0	☑	☑	☑	Med-High	Tier 3

Home Port	Location		Skimmer Type	Number of Units	Derated Capacity (t/hr)	Total Derated Capacity (t/hr)	Nameplate Capacity (t/hr)	Shoreline	Sheltered	Unsheltered	Optimum Oil Viscosity	Tier
Vancouver Island												
Sidney	Warehouse	WCMRC Sidney	Lamor MM30	1	10.6	10.6	53.0	☑	☑	☑	Med-High	Plan +
Sidney	Warehouse	WCMRC Sidney	Triton 20	1	4.3	4.3	21.5	☑	☑		Med	Plan +
Sooke	TRL No. 718	Otter Point Marine Park	Triton 35	1	7.6	7.6	38.0	☑	☑		Med	Plan +
Ucluelet	TRL No. 602	Ucluelet Small Craft Harbour	Triton 20	1	4.3	4.3	21.5	☑	☑		Med	Plan +
Vancouver Island Totals				**Tier 1**		0.0						
				Tier 2		0.0						
				Tier 3		84.8						
				Tier 4		74.2						
				Plan +		330.9						
				Total		48995	2449.6					

Home Port	Location		Skimmer Type	Number of Units	Derated Capacity (t/hr)	Total Derated Capacity (t/hr)	Nameplate Capacity (t/hr)	Shoreline	Sheltered	Unsheltered	Optimum Oil Viscosity	Tier
North Coast												
Haida Gwaii	TRL No. 701	Daajing Giids	RBS-05	1	2.0	2.0	10.0	☑	☑		All	Plan +
Haida Gwaii	TRL No. 706	Masset, North Arm Transportation	Triton 35	1	7.6	7.6	38.0	☑	☑		All	Plan +
Kitimat	TRL No. 713	MK Bay Marina	RBS-05 Twin Brush	1	4.0	4.0	20.0	☑	☑		All	Plan +
Prince Rupert	Container No. 240	WCMRC Prince Rupert	Lamor MM30	1	10.6	10.6	53.0	☑	☑	☑	Med-High	Plan +
Prince Rupert	Container No. 240	WCMRC Prince Rupert	Lamor MM30	1	10.6	10.6	53.0	☑	☑	☑	Med-High	Plan +
Prince Rupert	Container No. 240	WCMRC Prince Rupert	Lamor MM30	1	10.6	10.6	53.0	☑	☑	☑	Med-High	Plan +
Prince Rupert	Container No. 240	WCMRC Prince Rupert	Lamor MM30	1	10.6	10.6	53.0	☑	☑	☑	Med-High	Plan +
Prince Rupert	Eagle Bay	Cow Bay Marina	Lamor LORS-2	2	16.4	32.8	164.0	☑	☑	☑	All	Plan +
Prince Rupert	TRL No. 195	Ridley Island Grain Elevator	T-18 Disc	1	3.6	3.6	18.0	☑	☑		Med	Plan +
Prince Rupert	TRL No. 506	Coastal Propane	RBS-05 Twin Brush	1	4.0	4.0	20.0	☑	☑		All	Plan +
Prince Rupert	TRL No. 708	Fairview Container Terminal	Triton 35	1	7.6	7.6	38.0	☑	☑		All	Plan +
Prince Rupert	TRL No. 720	WCMRC Prince Rupert	Triton 60	1	12.6	12.6	63.0	☑	☑		All	Plan +
Prince Rupert	Warehouse	WCMRC Prince Rupert	Manta Ray	1	4.2	4.2	21.0	☑			Light-Med	Plan +
Prince Rupert	Warehouse	WCMRC Prince Rupert	Crucial Fuzzy Disc	1	4.0	4.0	20.0	☑	☑		All	Plan +
Prince Rupert	Warehouse	WCMRC Prince Rupert	Triton 35	1	7.6	7.6	38.0	☑	☑		All	Plan +
Prince Rupert	Warehouse	WCMRC Prince Rupert	Triton 35	1	7.6	7.6	38.0	☑	☑		All	Plan +
Prince Rupert	Warehouse	WCMRC Prince Rupert	Triton 60	1	12.6	12.6	63.0	☑	☑		All	Plan +
Prince Rupert	Warehouse	WCMRC Prince Rupert	Lamor MM12	1	3.9	3.9	19.6	☑	☑		All	Plan +
Prince Rupert	Warehouse	WCMRC Prince Rupert	Lamor MM30	1	10.6	10.6	53.0	☑	☑	☑	Med-High	Plan +
Prince Rupert	Warehouse	WCMRC Prince Rupert	Lamor MM30	1	10.6	10.6	53.0	☑	☑	☑	Med-High	Plan +
Prince Rupert	Warehouse	WCMRC Prince Rupert	Lamor MM30	1	10.6	10.6	53.0	☑	☑	☑	Med-High	Plan +
Shearwater	TRL No. 179	Shearwater, Shearwater Marine	Triton 60	1	12.6	12.6	63.0	☑	☑		All	Plan +
North Coast Totals					**Tier 1**	0.0						
					Tier 2	0.0						
					Tier 3	0.0						
					Tier 4	0.0						
					Plan +	200.9						
					Total	200.9	1004.6					

Home Port	Location	Skimmer Type	Number of Units	Derated Capacity (t/hr)	Total Derated Capacity (t/hr)	Nameplate Capacity (t/hr)	Shoreline	Sheltered	Unsheltered	Optimum Oil Viscosity	Tier
North Coast											
Totals - All Areas				**Tier 1**	42.0						
				Tier 2	49.2						
				Tier 3	92.4						
				Tier 4	114.8						
				Plan +	710.2						
				Total	1008.6	5042.8					
Totals - By Area											
				South Coast	310.1						
				Vancouver Island	489.9						
				North Coast	200.9						
				Total	1001.1	5042.8					

Table 12-24 - Temporary Storage – Portable and Integral

Home Port	Location		Storage Type	Capacity (t)	Sheltered	Unsheltered	Tier
South Coast							
Fraser River	TRL No. 213	WCMRC Fraser River	Floating Collar	5.7	☑		Plan +
Fraser River	TRL No. 213	WCMRC Fraser River	SeaSlug	5.0	☑		Plan +
Fraser River	TRL No. 213	WCMRC Fraser River	Port-a-Tank	4.5	☑		Plan +
Fraser River	MJ Green	WCMRC Fraser River	Integral	10.0		☑	Plan +
Fraser River	Sentinel 216	WCMRC Fraser River	Integral	40.0		☑	Plan +
Fraser River	TRL No. 188	WCMRC Fraser River	Floating Collar	3.8	☑		Tier 1
Burnaby	TRL No. 227	Suncor Burnaby	Port-a-Tank	4.5	☑		Plan +
Fraser River	TRL No. 235	WCMRC Fraser River	Port-a-Tank	4.5	☑		Plan +
Fraser River	TRL No. 235	WCMRC Fraser River	Port-a-Tank	4.5	☑		Plan +
Fraser River	TRL No. 235	WCMRC Fraser River	Frame Tank	5.0	☑		Plan +
Fraser River	TRL No. 235	WCMRC Fraser River	Frame Tank	5.0	☑		Plan +
Fraser River	Warehouse	WCMRC Fraser River	SeaSlug	5.0	☑		Plan +
Sunshine Coast	TRL No. 181	Sechelt Fire Department	SeaSlug	5.0	☑		Plan +
Sunshine Coast	TRL No. 181	Sechelt Fire Department	Port-a-Tank	4.5	☑		Plan +
Burnaby	TRL No. 224	Suncor Burnaby	Port-a-Tank	4.5	☑		Plan +
Vancouver Harbour	False Creek Sentinel	WCMRC Vancouver Harbour	Integral	3.7	☑		Plan +
Vancouver Harbour	Pacific Sentinel	WCMRC Vancouver Harbour	Integral	30.0		☑	Plan +
Vancouver Harbour	Sentinel 202	Allied Shipyard	Integral	40.0		☑	Plan +
Vancouver Harbour	Sentinel 205	Lion's Gate Marina	Integral	40.0		☑	Plan +
Vancouver Harbour	Sentinel 208	Allied Shipyard	Integral	40.0		☑	Plan +
Vancouver Harbour	Sentinel 215	Allied Shipyard	Integral	40.0		☑	Plan +
Vancouver Harbour	Sentinel 220	Allied Shipyard	Integral	40.0		☑	Tier 2
Vancouver Harbour	Sentinel 221	Allied Shipyard	Integral	40.0		☑	Tier 2
Vancouver Harbour	Sentinel 301	WCMRC Vancouver Harbour	SeaSlug	10.0	☑		Plan +
Vancouver Harbour	Sentinel 301	WCMRC Vancouver Harbour	SeaSlug	10.0	☑		Plan +
Vancouver Harbour	Sentinel 301	WCMRC Vancouver Harbour	SeaSlug	10.0	☑		Plan +
Vancouver Harbour	Sentinel 302	Ch. Dan Buoys	Integral	4000.0		☑	Tier 4

Home Port	Location		Storage Type	Capacity (t)	Sheltered	Unsheltered	Tier
South Coast							
Vancouver Harbour	Sentinel 304	WCMRC Vancouver Harbour	Integral	3500.0		☑	Tier 2
Vancouver Harbour	Sentinel 304	WCMRC Vancouver Harbour	SeaSlug	5.0	☑		Tier 2
Vancouver Harbour	Seymour Sentinel	WCMRC Vancouver Harbour	Integral	12.0		☑	Tier 1
Burnaby	TRL No. 185	Suncor Burnaby	Floating Collar	5.7	☑		Plan +
Burnaby	TRL No. 185	Suncor Burnaby	Port-a-Tank	4.5	☑		Plan +
Burnaby	TRL No. 185	Suncor Burnaby	Port-a-Tank	4.5	☑		Plan +
Burnaby	TRL No. 189	Suncor Burnaby	SeaSlug	5.0	☑		Plan +
Burnaby	TRL No. 215	Suncor Burnaby	Port-a-Tank	5.7	☑		Plan +
Burnaby	TRL No. 215	Suncor Burnaby	Port-a-Tank	5.7	☑		Plan +
Burnaby	TRL No. 215	Suncor Burnaby	Port-a-Tank	5.7	☑		Plan +
Burnaby	TRL No. 218	Suncor Burnaby	SeaSlug	5.0	☑		Tier 2
Burnaby	TRL No. 219	Suncor Burnaby	Floating Collar	5.7	☑		Tier 1
Burnaby	TRL No. 219	Suncor Burnaby	SeaSlug	10.0	☑		Tier 1
Vancouver Harbour	TRL No. 227	WCMRC Fraser River	Port-a-Tank	4.5	☑		Plan +
Burnaby	TRL No. 303	Suncor Burnaby	Port-a-Tank	4.5	☑		Plan +
Burnaby	TRL No. 303	Suncor Burnaby	Floating Collar	3.8	☑		Plan +
Burnaby	TRL No. 719	Suncor Burnaby	Port-a-Tank	4.5	☑		Plan +
Burnaby	TRL No. 719	Suncor Burnaby	Frame Tank	5.0	☑		Plan +
Burnaby	TRL No. 719	Suncor Burnaby	SeaSlug	5.0	☑		Plan +
Vancouver Harbour	TRL CON No. 971	WCMRC Vancouver Harbour	SeaSlug	5.0	☑		Plan +
Vancouver Harbour	Warehouse	WCMRC Coquitlam	SeaSlug	25.0	☑		Plan +
Vancouver Harbour	Warehouse	WCMRC Coquitlam	Port-a-Tank	4.5	☑		Tier 1
Vancouver Harbour	Warehouse	WCMRC Coquitlam	Port-a-Tank	5.7	☑		Tier 1
Vancouver Harbour	Warehouse	WCMRC Coquitlam	SeaSlug	10.0	☑		Tier 1
Vancouver Harbour	Warehouse	WCMRC Coquitlam	Port-a-Tank	5.7	☑		Tier 2
Vancouver Harbour	Warehouse	WCMRC Coquitlam	Port-a-Tank	5.7	☑		Tier 2
Vancouver Harbour	Sentinel 304	WCMRC Vancouver Harbour	Port-a-Tank	5.7	☑		Plan +
Vancouver Harbour	Warehouse	WCMRC Coquitlam	Floating Collar	3.8	☑		Plan +
Vancouver Harbour	TRL CON No. 967	WCMRC Vancouver Harbour	Floating Collar	3.8	☑		Plan +
Vancouver Harbour	TRL CON No. 972	WCMRC Vancouver Harbour	Floating Collar	5.7	☑		Tier 2

Home Port	Location		Storage Type	Capacity (t)	Sheltered	Unsheltered	Tier
South Coast							
Vancouver Harbour	TRL CON No. 972	WCMRC Vancouver Harbour	Floating Collar	5.7	☑		Tier 2
Vancouver Harbour	Warehouse	WCMRC Coquitlam	Floating Collar	5.7	☑		Plan +
Vancouver Harbour	TRL CON No. 972	WCMRC Vancouver Harbour	Floating Collar	5.7	☑		Plan +
Vancouver Harbour	Warehouse	WCMRC Coquitlam	Poly-Tank	3.8	☑		Plan +
South Coast Totals			**Tier 1**	51.7			
			Tier 2	3612.8			
			Tier 3	0			
			Tier 4	4000			
			Plan +	454			
			Total	8118.5			

Home Port	Location	Storage Type	Capacity (t)	Sheltered	Unsheltered	Tier
Vancouver Island						
Beecher Bay	GM Penman	WCMRC Beecher Bay	Integral	30.0		☑	Tier 4
Beecher Bay	Sentinel 214	WCMRC Beecher Bay	Integral	40.0		☑	Tier 4
Beecher Bay	Sentinel 217	WCMRC Beecher Bay	Integral	40.0		☑	Tier 3
Nanaimo	TRL No. 714	WCMRC Nanaimo	Port-a-Tank	4.5	☑		Plan +
Nanaimo	TRL No. 714	WCMRC Nanaimo	Frame Tank	5.0	☑		Plan +
Nanaimo	TRL No. 714	WCMRC Nanaimo	SeaSlug	5.0	☑		Plan +
Nanaimo	Salish Sentinel	WCMRC Nanaimo	Integral	79.5		☑	Plan +
Nanaimo	Sentinel 200	WCMRC Nanaimo	Integral	15.9		☑	Plan +
Nanaimo	Sentinel 206	WCMRC Nanaimo	Integral	40.0		☑	Plan +
Nanaimo	Sentinel 218	Sentinel 303	Integral	40.0		☑	Tier 4
Nanaimo	Sentinel 219	Sentinel 303	Integral	40.0		☑	Tier 4
Nanaimo	Sentinel 303	WCMRC Nanaimo	Integral	3500.0		☑	Tier 4
Nanaimo	Sentinel 303	WCMRC Nanaimo	SeaSlug	5.0	☑		Tier 4
Nanaimo	TRL No. 182	WCMRC Nanaimo	Floating Collar	3.8	☑		Plan +
Nanaimo	TRL No. 182	WCMRC Nanaimo	Port-a-Tank	4.5	☑		Plan +
Nanaimo	TRL No. 194	WCMRC Nanaimo	Port-a-Tank	4.5	☑		Plan +
Nanaimo	TRL No. 194	WCMRC Nanaimo	SeaSlug	5.0	☑		Plan +
Campbell River	TRL No. 207	Aquatrans Distributers	Port-a-Tank	4.5	☑		Plan +
Campbell River	TRL No. 207	Aquatrans Distributers	Floating Collar	5.7	☑		Plan +
Nanaimo	TRL No. 207	Aquatrans Distributers	SeaSlug	5.0	☑		Plan +
Nanaimo	TRL No. 207	Aquatrans Distributers	SeaSlug	10.0	☑		Plan +
Nanaimo	TRL No. 211	WCMRC Nanaimo	Floating Collar	4.5	☑		Plan +
Nanaimo	TRL No. 211	WCMRC Nanaimo	Port-a-Tank	4.5	☑		Plan +
Nanaimo	TRL No. 211	WCMRC Nanaimo	SeaSlug	5.0	☑		Plan +
Nanaimo	TRL No. 214	WCMRC Nanaimo	Port-a-Tank	4.5	☑		Plan +
Nanaimo	TRL No. 221	WCMRC Nanaimo	Port-a-Tank	4.5	☑		Plan +
Nanaimo	TRL No. 221	WCMRC Nanaimo	Floating Collar	3.8	☑		Plan +
Nanaimo	TRL No. 600	WCMRC Nanaimo	FASTANK	10.0	☑		Plan +
Nanaimo	TRL No. 601	WCMRC Nanaimo	SeaSlug	5.0	☑		Plan +
Nanaimo	TRL No. 601	WCMRC Nanaimo	Frame Tank	5.0	☑		Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	Floating Collar	5.7	☑		Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	Floating Collar	5.7	☑		Plan +

Home Port	Location		Storage Type	Capacity (t)	Sheltered	Unsheltered	Tier
Vancouver Island							
Nanaimo	Warehouse	WCMRC Nanaimo	Floating Collar	5.7	☑		Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	Floating Collar	5.7	☑		Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	SeaSlug	5.0	☑		Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	SeaSlug	5.0	☑		Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	SeaSlug	5.0	☑		Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	SeaSlug	5.0	☑		Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	SeaSlug	5.0	☑		Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	SeaSlug	10.0	☑		Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	SeaSlug	10.0	☑		Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	SeaSlug	10.0	☑		Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	SeaSlug	10.0	☑		Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	SeaSlug	10.0	☑		Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	Frame Tank	5.0	☑		Plan +
Nanaimo	Warehouse	WCMRC Nanaimo	SeaSlug	5.0	☑		Plan +
Pedder Bay	TRL No. 605	Pedder Bay Marina	SeaSlug	5.0	☑		Plan +
Pedder Bay	TRL No. 605	Pedder Bay Marina	Frame Tank	5.0	☑		Plan +
Port Alberni	Barkley Sentinel	Port Alberni Port Authority	Integral	40.0		☑	Plan +
Port Alberni	Sentinel 210	Port Alberni Port Authority	Integral	40.0		☑	Plan +
Ucluelet	Sentinel 213	Ucluelet Small Craft Harbour	Integral	40.0		☑	Plan +
Port Alberni	TRL No. 603	WCMRC Port Alberni	SeaSlug	5.0	☑		Plan +
Port Alberni	TRL No. 603	WCMRC Port Alberni	Frame Tank	5.0	☑		Plan +
Port Alberni	TRL No. 704	WCMRC Port Alberni	Port-a-Tank	4.5	☑		Plan +
Port Alberni	TRL No. 704	WCMRC Port Alberni	Floating Collar	4.5	☑		Plan +
Port Alberni	TRL No. 704	WCMRC Port Alberni	SeaSlug	5.0	☑		Plan +
Port Alberni	TRL. No 217	WCMRC Port Alberni	Port-a-Tank	4.5	☑		Plan +
Port Alberni	TRL. No 217	WCMRC Port Alberni	Port-a-Tank	4.5	☑		Plan +
Port Alberni	TRL. No 217	WCMRC Port Alberni	Frame Tank	5.0	☑		Plan +
Port Alberni	TRL. No 217	WCMRC Port Alberni	Frame Tank	5.0	☑		Plan +
Port Alberni	Warehouse	WCMRC Port Alberni	Frame Tank	5.0	☑		Plan +
Port Alberni	Warehouse	WCMRC Port Alberni	Frame Tank	5.0	☑		Plan +
Port Hardy	TRL No. 702	Bear Cove Chevron	Port-a-Tank	4.5	☑		Plan +
Port Hardy	TRL No. 702	Bear Cove Chevron	SeaSlug	5.0	☑		Plan +
Quadra Island	Sentinel 207	April Point Marina	Integral	40.0		☑	Plan +

Home Port	Location		Storage Type	Capacity (t)	Sheltered	Unsheltered	Tier
Vancouver Island							
Sidney	Hecate Sentinel	Van Isle Marina	Integral	30.0		☑	Tier 3
Sidney	Sentinel 211	Van Isle Marina	Integral	40.0		☑	Tier 3
Sidney	Sentinel 212	Van Isle Marina	Integral	40.0		☑	Tier 4
Sidney	TRL No. 216	WCMRC Sidney	Port-a-Tank	4.5	☑		Plan +
Sidney	TRL No. 216	WCMRC Sidney	Port-a-Tank	4.5	☑		Plan +
Sidney	TRL No. 216	WCMRC Sidney	Frame Tank	5.0	☑		Plan +
Sidney	TRL No. 216	WCMRC Sidney	Frame Tank	5.0	☑		Plan +
Sidney	TRL No. 604	WCMRC Sidney	SeaSlug	5.0	☑		Plan +
Sidney	TRL No. 604	WCMRC Sidney	Frame Tank	5.0	☑		Plan +
Sidney	TRL No. 717	WCMRC Sidney	Port-a-Tank	4.5	☑		Plan +
Sidney	TRL No. 717	WCMRC Sidney	Frame Tank	5.0	☑		Plan +
Sidney	TRL No. 717	WCMRC Sidney	SeaSlug	5.0	☑		Plan +
Sidney	Warehouse	WCMRC Sidney	Frame Tank	5.0	☑		Plan +
Sidney	Warehouse	WCMRC Sidney	Frame Tank	5.0	☑		Tier 3
Sidney	Warehouse	WCMRC Sidney	Frame Tank	5.0	☑		Tier 3
Sidney	Warehouse	WCMRC Sidney	SeaSlug	5.0	☑		Tier 3
Sidney	Warehouse	WCMRC Sidney	SeaSlug	5.0	☑		Tier 3
Sooke	TRL No. 234	Otter Point Marine Park	Port-a-Tank	4.5	☑		Plan +
Sooke	TRL No. 234	Otter Point Marine Park	Port-a-Tank	4.5	☑		Plan +
Sooke	TRL No. 234	Otter Point Marine Park	Frame Tank	5.0	☑		Plan +
Sooke	TRL No. 234	Otter Point Marine Park	Frame Tank	5.0	☑		Plan +
Beecher Bay	TRL No. 718	WCMRC Beecher Bay	Port-a-Tank	4.5	☑		Plan +
Beecher Bay	TRL No. 718	WCMRC Beecher Bay	Frame Tank	5.0	☑		Plan +
Beecher Bay	TRL No. 718	WCMRC Beecher Bay	SeaSlug	5.0	☑		Plan +
Ucluelet	TRL No. 602	Ucluelet Small Craft Harbour	SeaSlug	5.0	☑		Plan +
Ucluelet	TRL No. 602	Ucluelet Small Craft Harbour	Frame Tank	5.0	☑		Plan +
Vancouver Island Totals			**Tier 1**	0			
			Tier 2	0			
			Tier 3	130			
			Tier 4	3695			
			Plan +	2810			
			Total	6635			

Home Port	Location	Storage Type	Capacity (t)	Sheltered	Unsheltered	Tier
North Coast						
Haida Gwaii	TRL No. 701	Daajing Giids	Floating Collar	5.7	☑		Plan +
Haida Gwaii	TRL No. 701	Daajing Giids	FASTANK	4.2	☑		Plan +
Haida Gwaii	TRL No. 701	Daajing Giids	SeaSlug	5.0	☑		Plan +
Haida Gwaii	TRL No. 706	Masset, North Arm Transportation	Port-a-Tank	4.5	☑		Plan +
Haida Gwaii	TRL No. 706	Masset, North Arm Transportation	SeaSlug	5.0	☑		Plan +
Haida Gwaii	TRL No. 706	Masset, North Arm Transportation	FASTANK	4.2	☑		Plan +
Kitimat	TRL No. 713	MK Bay Marina	Floating Collar	5.7	☑		Plan +
Kitimat	TRL No. 713	MK Bay Marina	Port-a-Tank	4.5	☑		Plan +
Kitimat	TRL No. 713	MK Bay Marina	SeaSlug	5.0	☑		Plan +
Kitimat	TRL No. 713	MK Bay Marina	FASTANK	5.7	☑		Plan +
Prince Rupert	Eagle Bay	Cow Bay Marina	Integral	10.0		☑	Plan +
Prince Rupert	Sentinel 203	Cow Bay Marina	Integral	40.0		☑	Plan +
Prince Rupert	Sentinel 204	Cow Bay Marina	Integral	40.0		☑	Plan +
Prince Rupert	Sentinel 209	Cow Bay Marina	Integral	40.0		☑	Plan +
Prince Rupert	TRL No. 195	Ridley Island Grain Elevator	Floating Collar	5.7	☑		Plan +
Prince Rupert	TRL No. 195	Ridley Island Grain Elevator	Port-a-Tank	4.5	☑		Plan +
Prince Rupert	TRL No. 195	Ridley Island Grain Elevator	SeaSlug	5.0	☑		Plan +
Prince Rupert	TRL No. 506	Coastal Propane	Port-a-Tank	4.5	☑		Plan +
Prince Rupert	TRL No. 705	Fairview Container Terminal	Port-a-Tank	4.5	☑		Plan +
Prince Rupert	TRL No. 705	Fairview Container Terminal	Port-a-Tank	4.5	☑		Plan +
Prince Rupert	TRL No. 705	Fairview Container Terminal	Frame Tank	5.0	☑		Plan +
Prince Rupert	TRL No. 705	Fairview Container Terminal	Frame Tank	5.0	☑		Plan +
Prince Rupert	TRL No. 708	Fairview Container Terminal	SeaSlug	5.0	☑		Plan +
Prince Rupert	TRL No. 708	Fairview Container Terminal	Port-a-Tank	4.5	☑		Plan +
Prince Rupert	TRL No. 708	Fairview Container Terminal	FASTANK	4.2	☑		Plan +
Prince Rupert	TRL No. 720	WCMRC Prince Rupert	Frame Tank	5.0	☑		Plan +
Prince Rupert	TRL No. 720	WCMRC Prince Rupert	Port-a-Tank	5.7	☑		Plan +
Prince Rupert	TRL No. 720	WCMRC Prince Rupert	Floating Collar	5.7	☑		Plan +

Home Port	Location		Storage Type	Capacity (t)	Sheltered	Unsheltered	Tier
North Coast							
Prince Rupert	TRL No. 720	WCMRC Prince Rupert	SeaSlug	5.0	☑		Plan +
Prince Rupert	Warehouse	WCMRC Prince Rupert	SeaSlug	25.0	☑		Plan +
Prince Rupert	Warehouse	WCMRC Prince Rupert	SeaSlug	10.0	☑		Plan +
Prince Rupert	Warehouse	WCMRC Prince Rupert	SeaSlug	10.0	☑		Plan +
Prince Rupert	Warehouse	WCMRC Prince Rupert	SeaSlug	10.0	☑		Plan +
Prince Rupert	Warehouse	WCMRC Prince Rupert	SeaSlug	5.0	☑		Plan +
Prince Rupert	Warehouse	WCMRC Prince Rupert	SeaSlug	5.0	☑		Plan +
Prince Rupert	Warehouse	WCMRC Prince Rupert	Port-a-Tank	4.5	☑		Plan +
Prince Rupert	Warehouse	WCMRC Prince Rupert	Port-a-Tank	4.5	☑		Plan +
Prince Rupert	Warehouse	WCMRC Prince Rupert	FASTANK	4.2	☑		Plan +
Shearwater	TRL No. 179	Shearwater, Shearwater Marine	Port-a-Tank	4.5	☑		Plan +
Shearwater	TRL No. 179	Shearwater, Shearwater Marine	FASTANK	5.7	☑		Plan +
Shearwater	TRL No. 179	Shearwater, Shearwater Marine	SeaSlug	10.0	☑		Plan +
Shearwater	TRL No. 190	Shearwater, Shearwater Marine	Port-a-Tank	4.5	☑		Plan +
Shearwater	TRL No. 190	Shearwater, Shearwater Marine	SeaSlug	5.0	☑		Plan +
Shearwater	TRL No. 190	Shearwater, Shearwater Marine	SeaSlug	5.0	☑		Plan +
Port Edward	TRL No. 197	Port Edward Harbour	SeaSlug	5.0	☑		Plan +
Port Edward	TRL No. 197	Port Edward Harbour	SeaSlug	5.0	☑		Plan +
North Coast Totals			**Tier 1**	0			
			Tier 2	0			
			Tier 3	0			
			Tier 4	0			
			Plan +	366.2			
			Total	366.2			
Totals - All Areas			**Tier 1**	51.7			
			Tier 2	3612.8			
			Tier 3	130			

Home Port	Location	Storage Type	Capacity (t)	Sheltered	Unsheltered	Tier
North Coast						
		Tier 4	7695			
		Plan +	1492.2			
		Total	12981.7			
Totals - By Area						
		South Coast	8118.5			
		Vancouver Island	4497			
		North Coast	366.2			
		Total	15119.7			

Table 12-25 - Vessels

Home Port	Vessel Name	Location	Vessel Type	Length (m)	Speed (kn)	Sea State
South Coast						
Fraser River	MJ Green	WCMRC Fraser River	Skimming Vessel	13.7	25	3
Fraser River	Sentinel 110	WCMRC Fraser River	Boom Skiff	9.1	20 (towed)	3
Fraser River	Sentinel 216	WCMRC Fraser River	Mini Barge	12.2	15 (towed)	3
Fraser River	Sentinel 25	WCMRC Fraser River	Work Boat	5.5	30	2
Vancouver Harbour	Texada Sentinel	WCMRC Vancouver Harbour	Landing Craft	11.8	30	3
Fraser River	Bowen Sentinel	WCMRC Fraser River	Landing Craft	11.6	30	3
Vancouver Harbour	Echo Sentinel	WCMRC Vancouver Harbour	Landing Craft	15.9	25	3
Vancouver Harbour	False Creek Sentinel	WCMRC Vancouver Harbour	Skimming Vessel	8.8	17	2
Vancouver Harbour	Harbour Sentinel	WCMRC Vancouver Harbour	Boom Boat	14.3	18	3
Vancouver Harbour	Pacific Sentinel	WCMRC Vancouver Harbour	Skimming Vessel	20	26	3
Fraser River	Sentinel 1	WCMRC Fraser River	Logistics Boat	7.9	25	3
Vancouver Harbour	Sentinel 102	WCMRC Vancouver Harbour	Boom Skiff	9.1	20 (towed)	3
Vancouver Harbour	Sentinel 104	WCMRC Vancouver Harbour	Boom Skiff	9.1	20 (towed)	3
Vancouver Harbour	Sentinel 111	Lion's Gate Marina	Boom Skiff	9.1	20 (towed)	3
Vancouver Harbour	Sentinel 13	WCMRC Vancouver Harbour	Work Boat	5.1	15	2
Vancouver Harbour	Sentinel 15	WCMRC Vancouver Harbour	Work Boat	4.2	15	2
Vancouver Harbour	Sentinel 20	Sentinel 302	Work Boat	5.3	20	2
Vancouver Harbour	Sentinel 202	Allied Shipyard	Mini Barge	12.2	15 (towed)	3
Vancouver Harbour	Sentinel 205	Lion's Gate Marina	Mini Barge	12.2	15 (towed)	3
Vancouver Harbour	Sentinel 208	Allied Shipyard	Mini Barge	12.2	15 (towed)	3
Vancouver Harbour	Sentinel 215	Allied Shipyard	Mini Barge	12.2	15 (towed)	3
Vancouver Harbour	Sentinel 220	Allied Shipyard	Mini Barge	12.2	15 (towed)	3
Vancouver Harbour	Sentinel 221	Allied Shipyard	Mini Barge	12.2	15 (towed)	3
Fraser River	Sentinel 24	WCMRC Fraser River	Work Boat	5.5	30	2
Vancouver Harbour	Sentinel 301	WCMRC Vancouver Harbour	Response Barge	51.2	6 (towed)	3
Vancouver Harbour	Sentinel 302	Ch. Dan Buoys	Response Barge	71.9	6 (towed)	3

Home Port	Vessel Name	Location	Vessel Type	Length (m)	Speed (kn)	Sea State
South Coast						
Vancouver Harbour	Sentinel 304	WCMRC Vancouver Harbour	Response Barge	83.8	6 (towed)	3
Vancouver Harbour	Seymour Sentinel	WCMRC Vancouver Harbour	Skimming Vessel	14.9	6	3

Home Port	Vessel Name	Location	Vessel Type	Length (m)	Speed (kn)	Sea State
Vancouver Island						
Beecher Bay	Cheanuh Sentinel	WCMRC Beecher Bay	Landing Craft	15.9	25	3
Beecher Bay	GM Penman	WCMRC Beecher Bay	Skimming Vessel	20	26	3
Beecher Bay	Sentinel 114	WCMRC Beecher Bay	Boom Skiff	9.1	20 (towed)	3
Beecher Bay	Sentinel 115	WCMRC Beecher Bay	Boom Skiff	9.1	20 (towed)	3
Beecher Bay	Sentinel 214	WCMRC Beecher Bay	Mini Barge	12.2	15 (towed)	3
Beecher Bay	Sentinel 217	WCMRC Beecher Bay	Mini Barge	12.2	15 (towed)	3
Beecher Bay	Sentinel 31	WCMRC Beecher Bay	Work Boat	8.1	30	3
Beecher Bay	Strait Sentinel	WCMRC Beecher Bay	Coastal Response Vessel	25	10	3
Nanaimo	Cortes Sentinel	WCMRC Nanaimo	Landing Craft	9.1	40	3
Nanaimo	Discovery Sentinel	WCMRC Nanaimo	Landing Craft	10.6	30	3
Nanaimo	Gulf Sentinel	WCMRC Nanaimo	Coastal Response Vessel	25	10	3
Nanaimo	Island Sentinel	WCMRC Nanaimo	Boom Boat	14.7	18	3
Nanaimo	Salish Sentinel	WCMRC Nanaimo	Skimming Vessel	22.9	11	3
Nanaimo	Sentinel 103	WCMRC Nanaimo	Boom Skiff	9.1	20 (towed)	3
Nanaimo	Sentinel 105	WCMRC Nanaimo	Boom Skiff	9.1	20 (towed)	3
Nanaimo	Sentinel 113	WCMRC Nanaimo	Boom Skiff	9.1	20 (towed)	3
Nanaimo	Sentinel 200	WCMRC Nanaimo	Mini Barge	9.1	15 (towed)	3
Nanaimo	Sentinel 206	WCMRC Nanaimo	Mini Barge	12.2	15 (towed)	3
Nanaimo	Sentinel 218	WCMRC Nanaimo	Mini Barge	12.2	15 (towed)	3
Nanaimo	Sentinel 219	WCMRC Nanaimo	Mini Barge	12.2	15 (towed)	3
Nanaimo	Sentinel 22	WCMRC Nanaimo	Work Boat	6.9	25	2
Nanaimo	Sentinel 23	WCMRC Nanaimo	Work Boat	4.9	18	2
Nanaimo	Sentinel 27	WCMRC Nanaimo	Work Boat	5.5	15	2
Nanaimo	Sentinel 303	WCMRC Nanaimo	Response Barge	83.8	6 (towed)	3
Nanaimo	Sentinel 33	WCMRC Nanaimo	Work Boat	8.1	30	3
Port Alberni	Barkley Sentinel	Port Alberni Port Authority	Skimming Vessel	22	26	3

Home Port	Vessel Name	Location	Vessel Type	Length (m)	Speed (kn)	Sea State
Vancouver Island						
Port Alberni	Coastal Sentinel	Port Alberni Port Authority	Coastal Response Vessel	25	10	3
Port Alberni	Nootka Sentinel	Port Alberni Port Authority	Landing Craft	11.6	30	3
Ucluelet	Sentinel 108	Ucluelet Small Craft Harbour	Boom Skiff	9.1	20 (towed)	3
Port Alberni	Sentinel 210	Port Alberni Port Authority	Mini Barge	12.2	15 (towed)	3
Ucluelet	Sentinel 213	Ucluelet Small Craft Harbour	Mini Barge	12.2	15 (towed)	3
Port Alberni	Sentinel 32	Port Alberni Port Authority	Work Boat	8.1	30	3
Port Alberni	Solander Sentinel	Port Alberni Port Authority	Landing Craft	15.9	25	3
Quadra Island	Sentinel 112	April Point Marina	Boom Skiff	9.1	20 (towed)	3
Quadra Island	Sentinel 207	April Point Marina	Mini Barge	12.2	15 (towed)	3
Sidney	Cormorant Sentinel	Van Isle Marina	Landing Craft	11.6	30	3
Sidney	Hecate Sentinel	Van Isle Marina	Skimming Vessel	20	26	3
Sidney	Saturna Sentinel	Van Isle Marina	Landing Craft	15.9	25	3
Sidney	Sentinel 106	Van Isle Marina	Boom Skiff	9.1	20 (towed)	3
Sidney	Sentinel 107	Van Isle Marina	Boom Skiff	9.1	20 (towed)	3
Sidney	Sentinel 14	WCMRC Sidney	Work Boat	5.1	15	2
Sidney	Sentinel 211	Van Isle Marina	Mini Barge	12.2	15 (towed)	3
Sidney	Sentinel 212	Van Isle Marina	Mini Barge	12.2	15 (towed)	3
Victoria	Sentinel 30	Hyack Marina	Work Boat	8.1	30	3
Port Alberni	Sentinel 109	Port Alberni Port Authority	Boom Skiff	9.1	20 (towed)	3
Beecher Bay	Race Sentinel	WCMRC Beecher Bay	Landing Craft	11.6	30	3

Home Port	Vessel Name	Location	Vessel Type	Length (m)	Speed (kn)	Sea State
North Coast						
Kitimat	Gil Sentinel	MK Bay Marina	Landing Craft	10.8	30	3
Prince Rupert	Eagle Bay	Cow Bay Marina	Skimming Vessel	13.7	25	3
Prince Rupert	Kaien Sentinel	Cow Bay Marina	Landing Craft	14.9	25	3
Prince Rupert	Sentinel 100	Cow Bay Marina	Boom Skiff	7.7	20 (towed)	3
Prince Rupert	Sentinel 101	Cow Bay Marina	Boom Skiff	7.7	20 (towed)	3
Prince Rupert	Sentinel 203	Cow Bay Marina	Mini Barge	12.2	15 (towed)	3
Prince Rupert	Sentinel 204	Cow Bay Marina	Mini Barge	12.2	15 (towed)	3
Prince Rupert	Sentinel 209	Cow Bay Marina	Mini Barge	12.2	15 (towed)	3
Prince Rupert	Sentinel 21	WCMRC Prince Rupert	Work Boat	5.5	30	2
Prince Rupert	Sentinel 28	WCMRC Prince Rupert	Work Boat	5.5	15	2
Prince Rupert	Sentinel 29	WCMRC Prince Rupert	Work Boat	5.5	30	2
Prince Rupert	Vigilant Sentinel	Cow Bay Marina	Landing Craft	11.6	30	3

Table 12-26 – Trailers

Home Port	#	Location	Trailer Type	Trailer Contents
South Coast				
Delta	134	Delta Port/TSI Terminals	Boom Trailer	305m 24" GP Boom
Delta	213	Delta/Seaspan Coastal Intermodal	Equipment Trailer	610m 24" GP Boom, Triton 35 Skimmer, SeaSlug, Floating Collar, Port-a-Tank
Delta	707	Delta Port/TSI Terminals	Boom Trailer	1524m 24" GP Boom
Fraser River	188	WCMRC Fraser River	Equipment Trailer	Triton 60 Skimmer, Floating Collar
Fraser River	199	WCMRC Fraser River	Boat Trailer	Sentinel 25
Fraser River	227	WCMRC Fraser River	Boom Trailer	396m 18" River Boom, Port-a-Tank
Burnaby	235	Suncor Burnaby	Shoreline Trailer	92m 30" Shoreseal Boom, 2x Port-a-Tank, 2x Frame Tank
Sunshine Coast	181	Sechelt Fire Department	Equipment Trailer	305m 24" IS Boom, Lamor MM12 Skimmer, SeaSlug
Burnaby	224	Suncor Burnaby	Boom Trailer	305m 24" GP Boom, Port-a-Tank
Vancouver Harbour	132	WCMRC Vancouver Harbour	Boat Trailer	Sentinel 15
Vancouver Harbour	136	WCMRC Coquitlam	Utility Trailer	Utility Trailer
Vancouver Harbour	139	WCMRC Vancouver Harbour	Boat Trailer	Sentinel 13
Vancouver Harbour	185	WCMRC Vancouver Harbour	Equipment Trailer	610m 24" GP Boom, Floating Collar, 2x Port-a-Tank
Fraser River	189	WCMRC Fraser River	Equipment Trailer	Triton 60 Skimmer, SeaSlug
Burnaby	206	Suncor Burnaby	Wildlife Trailer	Wildlife Rescue
Fraser River	209	WCMRC Fraser River	Boat Trailer	Sentinel 1
Burnaby	215	WCMRC Burnaby	Shoreline Trailer	92m 30" Shoreseal Boom, 3x Port-a-Tank
Vancouver Harbour	218	WCMRC Vancouver Harbour	Equipment Trailer	RBS-05 Skimmer, SeaSlug
Vancouver Harbour	219	WCMRC Vancouver Harbour	Equipment Trailer	RBS-05 Twin Brush Skimmer, Floating Collar, SeaSlug
Burnaby	222	Suncor Burnaby	PPE Trailer	Personal Protective Equipment
Vancouver Harbour	223	WCMRC Coquitlam	Boat Trailer	Sentinel 24
Vancouver Harbour	225	Port Metro Vancouver M	Boom Trailer	1524m 24" GP Boom
Burnaby	250	Suncor Burnaby	Boom Trailer	305m 24" GP Boom
Burnaby	301	Suncor Burnaby	ICP Supplies Trailer	Incident Command Post Supplies
Burnaby	303	Suncor Burnaby	Decon Trailer	Decontamination, Floating Collar, Port-a-Tank
Burnaby	503	Suncor Burnaby	Boat Trailer	False Creek Sentinel
Burnaby	510	Suncor Burnaby	Current Buster Trailer	Current Buster 4
Burnaby	511	Suncor Burnaby	Staging Area Trailer	Staging Area Trailer
Burnaby	512	Suncor Burnaby	Staging Area Trailer	Staging Area Trailer
Burnaby	703	Suncor Burnaby	Boom Trailer	1524m 24" GP Boom
Burnaby	719	Suncor Burnaby	Equipment Trailer	610m 24" GP Boom, Triton 35 Skimmer, SeaSlug, Port-a-Tank, Frame Tank
Burnaby	901	Suncor Burnaby	Communications Trailer	Communications Trailer

Home Port	#	Location	Trailer Type	Trailer Contents
Vancouver Island				
Beecher Bay	311	WCMRC Beecher Bay	Utility Trailer	Utility Trailer
Beecher Bay	802	WCMRC Beecher Bay	Boat Trailer	Sentinel 31
Campbell River	712	Aquatrans Distributors	Boom Trailer	1524m 24" GP Boom
Nanaimo	714	WCMRC Nanaimo	Equipment Trailer	457m 24" GP Boom, Triton 60 Disc Skimmer, SeaSlug, Port-a-Tank, Frame Tank
Cowichan Bay	131	Westcan Terminal	Boom Trailer	305m 41" Kepner SeaCurtain
Cowichan Bay	196	Westcan Terminal	Utility Trailer	Utility Trailer
Cowichan Bay	S27 907C	Pacific Industrial Marine	Coastal Response Package	533m 24" GP Boom
Cowichan Bay	S27 919C	Pacific Industrial Marine	Coastal Response Package	533m 24" GP Boom
Galiano Island	S27 900C	Whaler Bay	Coastal Response Package	533m 24" GP Boom
Galiano Island	B27 923C	Whaler Bay	Coastal Response Package	533m 24" GP Boom
Galiano Island	S27 924C	Montague Harbour	Coastal Response Package	533m 24" GP Boom
Nanaimo	137	WCMRC Nanaimo	Boom Trailer	305m 24" GP Boom
Nanaimo	141	WCMRC Nanaimo	Boat Trailer	Sentinel 23
Nanaimo	170	WCMRC Nanaimo	Boat Trailer	Sentinel 200
Nanaimo	182	WCMRC Nanaimo	Equipment Trailer	RBS-05 Skimmer, Floating Collar, Port-a-Tank
Nanaimo	191	WCMRC Nanaimo	Boat Trailer	Sentinel 27
Nanaimo	194	WCMRC Nanaimo	Equipment Trailer	610m 24" GP Boom, SeaSlug, Port-a-Tank
Nanaimo	202	WCMRC Nanaimo	Boom Trailer	305m 43" Kepner SeaCurtain
Campbell River	207	Aquatrans Distributors	Equipment Trailer	610m 24" GP Boom, Triton 35 Skimmer, 2x SeaSlug, Floating Collar, Port-a-Tank
Nanaimo	211	WCMRC Nanaimo	Equipment Trailer	550m 24" GP Boom, Triton 35 Disc Skimmer, SeaSlug, Floating Collar, Port-a-Tank
Nanaimo	214	WCMRC Nanaimo	Shoreline Trailer	92m 30" Shoreseal Boom, Port-a-Tank
Nanaimo	221	WCMRC Nanaimo	Decon Trailer	Decontamination, Floating Collar, Port-a-Tank
Nanaimo	230	WCMRC Nanaimo	Boom Retrieval Trailer	Boom Retrieval
Nanaimo	306	WCMRC Nanaimo	ICP Supplies Trailer	Incident Command Post Supplies
Nanaimo	308	WCMRC Nanaimo	Utility Trailer	Utility Trailer
Nanaimo	501	WCMRC Nanaimo	Boat Trailer	Sentinel 22
Nanaimo	502	WCMRC Nanaimo	Boom Trailer	305m 24" GP Boom
Nanaimo	505	WCMRC Nanaimo	Boat Trailer	Cortes Sentinel
Nanaimo	507	WCMRC Nanaimo	Current Buster Trailer	Current Buster 4

Home Port	#	Location	Trailer Type	Trailer Contents
Vancouver Island				
Nanaimo	513	WCMRC Nanaimo	Staging Area Trailer	Staging Area Trailer
Nanaimo	600	WCMRC Nanaimo	Equipment Trailer	Triton 150 Skimmer, FASTANK
Nanaimo	601	WCMRC Nanaimo	Equipment Trailer	Triton 20 Skimmer, SeaSlug, Frame Tank
Nanaimo	804	WCMRC Nanaimo	Boat Trailer	Sentinel 33
Cortes Island	N27925C	Gorge Harbour	Coastal Response Package	533m 24" GP Boom
Pedder Bay	337	Pedder Bay Marina	Boom Trailer	305m 24" GP Boom
Pedder Bay	605	Pedder Bay Marina	Equipment Trailer	Triton 20 Skimmer, SeaSlug, Frame Tank
Port Alberni	138	WCMRC Port Alberni	Command Trailer	Command Trailer
Port Alberni	217	WCMRC Port Alberni	Shoreline Trailer	92m 30" Shoreseal Boom, 2x Port-a-Tank, 2x Frame Tank
Port Alberni	309	WCMRC Port Alberni	Utility Trailer	Utility Trailer
Port Alberni	338	WCMRC Port Alberni	Boom Trailer	305m 24" GP Boom
Port Alberni	603	WCMRC Port Alberni	Equipment Trailer	Triton 20 Skimmer, SeaSlug, Frame Tank
Port Alberni	704	WCMRC Port Alberni	Equipment Trailer	610m 24" GP Boom, Triton 35 Skimmer, Manta Ray Skimmer, SeaSlug, Floating Collar, Port-a-Tank
Port Alberni	715	WCMRC Port Alberni	Boom Trailer	1524m 24" GP Boom
Port Alberni	803	WCMRC Port Alberni	Boat Trailer	Sentinel 32
Port Hardy	702	Bear Cove Chevron	Equipment Trailer	610m 24" GP Boom, Triton 35 Skimmer, SeaSlug, Port-a-Tank
Port Hardy	700	Bear Cove Chevron	Boom Trailer	1524m 24" GP Boom
Saturna Island	B27 915C	Lyall Harbour	Coastal Response Package	533m 24" GP Boom
Sidney	130	WCMRC Sidney	Boat Trailer	Sentinel 14
Sidney	216	WCMRC Sidney	Shoreline Trailer	92m 30" Shoreseal Boom, 2x Port-a-Tank, 2x Frame Tank
Sidney	228	WCMRC Sidney	Boom Trailer	305m 24" GP Boom
Sidney	232	WCMRC Sidney	Boom Retrieval Trailer	Boom Retrieval
Sidney	310	WCMRC Sidney	Utility Trailer	Utility Trailer
Sidney	336	WCMRC Sidney	Boom Trailer	305m 24" GP Boom
Sidney	604	WCMRC Sidney	Equipment Trailer	Triton 20 Skimmer, SeaSlug, Frame Tank
Sidney	717	WCMRC Sidney	Equipment Trailer	610m 24" GP Boom, Triton 35 Skimmer, SeaSlug, Port-a-Tank, Frame Tank
Sidney	802	Van Isle Marina	Boat Trailer	Sentinel 30
Sidney	511	WCMRC Sidney	Staging Area Trailer	Staging Area Trailer
Sooke	234	Otter Point Marine Park	Shoreline Trailer	92m 30" Shoreseal Boom, 2x Port-a-Tank, 2x Frame Tank
Sooke	716	Otter Point Marine Park	Boom Trailer	1524m 24" GP Boom
Beecher Bay	718	WCMRC Beecher Bay	Equipment Trailer	610m 24" GP Boom, Triton 35 Skimmer, SeaSlug, Port-a-Tank, Frame Tank

Home Port	#	Location	Trailer Type	Trailer Contents
Vancouver Island				
Sooke	S27 904C	Whiffin Spit	Coastal Response Package	533m 24" GP Boom
Sooke	S27 906C	Whiffin Spit	Coastal Response Package	533m 24" GP Boom
Ucluelet	339	Ucluelet Small Craft Harbour	Boom Trailer	305m 24" GP Boom
Ucluelet	602	Ucluelet Small Craft Harbour	Equipment Trailer	Triton 20 Skimmer, SeaSlug, Frame Tank
Ucluelet	710	Ucluelet Small Craft Harbour	Boom Trailer	1524m 24" GP Boom
Ucluelet	U27 902C	Secret Beach	Coastal Response Package	533m 24" GP Boom
Ucluelet	U27 905C	Secret Beach	Coastal Response Package	533m 24" GP Boom
Sidney	709	WCMRC Sidney	Boom Trailer	1524m 24" GP Boom

Home Port	#	Location	Trailer Type	Trailer Contents
North Coast				
Port Edward	208	Port Edward Harbour	Boom Trailer	457m 26" Kepner SeaCurtain
Haida Gwaii	701	Daajing Giids	Equipment Trailer	610m 24" GP Boom, 30m 30" Shoreseal Boom, RBS-05 Skimmer, SeaSlug, Floating Collar, FASTANK
Haida Gwaii	706	Masset, North Arm Transportation	Equipment Trailer	610m 24" GP Boom, Triton 35 Skimmer, SeaSlug, Port-a-Tank, FASTANK
Kitimat	171	MK Bay Marina	Boat Trailer	Gil Sentinel
Kitimat	226	MK Bay Marina	Boom Trailer	305m 24" GP Boom
Kitimat	711	MK Bay Marina	Boom Trailer	1524m 24" GP Boom
Kitimat	713	MK Bay Marina	Equipment Trailer	610m 24" GP Boom, 30m 30" Shoreseal Boom, RBS-05 Twin Brush Skimmer, Seaslug, Floating Collar, FASTANK, Port-a-Tank
Port Edward	721	Port Edward Harbour	Boom Trailer	1524m 24" GP Boom
Port Edward	900	Port Edward Harbour	Command Trailer	Command Trailer
Prince Rupert	135	Coastal Propane	Boom Trailer	305m 24" GP Boom
Prince Rupert	144	WCMRC Prince Rupert	Boat Trailer	Sentinel 28
Prince Rupert	195	Ridley Island Grain Elevator	Equipment Trailer	457m 24" GP Boom, T-18 Disc Skimmer, SeaSlug, Floating Collar, Port-a-Tank
Prince Rupert	210	Ridley Island Grain Elevator	Boom Trailer	1524m 24" GP Boom
Prince Rupert	220	WCMRC Prince Rupert	Boom Trailer	305m 24" GP Boom
Prince Rupert	229	WCMRC Prince Rupert	Utility Trailer	Utility Trailer
Prince Rupert	231	Coastal Propane	Boom Retrieval Trailer	Boom Retrieval
Prince Rupert	233	WCMRC Prince Rupert	Boom Trailer	305m Vikoma HISprint 1500
Prince Rupert	240	WCMRC Prince Rupert	Equipment Container	4x MM30 Skimmer
Prince Rupert	305	WCMRC Prince Rupert	PPE Trailer	Personal Protective Equipment
Prince Rupert	307	WCMRC Prince Rupert	Decon Trailer	Decontamination
Prince Rupert	500	WCMRC Prince Rupert	Boat Trailer	Sentinel 29
Prince Rupert	504	WCMRC Prince Rupert	Boat Trailer	Sentinel 21
Prince Rupert	506	Coastal Propane	Equipment Trailer	RBS-05 Twin Brush Skimmer, Port a tank
Prince Rupert	508	WCMRC Prince Rupert	Current Buster Trailer	Current Buster 4
Prince Rupert	509	WCMRC Prince Rupert	Current Buster Trailer	Current Buster 4
Prince Rupert	705	Fairview Container Terminal	Shoreline Trailer	92m 30" Shoreseal Boom, 2x Port-a-Tank, 2x Frame Tank
Prince Rupert	708	Fairview Container Terminal	Equipment Trailer	610m 24" GP Boom, Triton 35 Skimmer, SeaSlug, Port-a-Tank, FASTANK
Prince Rupert	720	WCMRC Prince Rupert	Equipment Trailer	457m 24" GP Boom, 30m 30" Shoreseal Boom, Triton 60 Skimmer, SeaSlug, Floating Collar, Port-a-Tank, Frame Tank
Shearwater	179	Shearwater, Shearwater Marine	Equipment Trailer	457m 24" GP Boom, Triton 60 Skimmer, Seaslug, Port-a-Tank, FASTANK
Shearwater	190	Shearwater, Shearwater Marine	Equipment Trailer	1220m 24" GP Boom, 2 SeaSlugs, Port-a-Tank

13.0 EXERCISE PROGRAM

This section describes the oil spill exercise program established to evaluate the effectiveness of all aspects of the procedures, equipment and resources that are identified in the plan, including exercises to be coordinated with ships, oil handling facilities or the CCG. The oil spill exercise program shall be carried out over the three year period that commences the day the certificate of designation is issued.[15]

13.1 Exercise Plan

A successful exercise focuses on a few clear objectives, and has a simple but challenging design consistent with defined objectives. WCMRC has developed an exercise program and will conduct exercises using a representative sample of response equipment, spill response personnel, and Incident management, while exercising clearly stated objectives and functions within the certification period. The exercise program is designed so that a series of exercises are tied together and functions are exercised in way to achieve objectives that could not be fully tested or explored in a single exercise.

Representative Sample Defined

By definition a "representative sample" is when a population such as an equipment inventory, is divided into strata and a random sample is taken from each stratum.

Exercise Plan Outline

WCMRC conducts exercises to ensure its members have uninterrupted access to marine spill response services 24 hours a day, 7 days a week.

The objective of the exercise program is to conduct real-time drills that:

- demonstrate the operational capability of a representative sample of WCMRC equipment, incident management and trained spill responders;
- further the training of WCMRC personnel, advisors and spill responders;
- identify areas within the Incident Command System (ICS), training programs, response plans and procedures (for example WCMRC's series of Strategic Response Plans, overviewed in Section 7.1 of this document) that can be improved.

To ensure the overall program objective is met, a number of exercises are conducted over the three-year certification cycle. There are three main types of exercises:

- Workshops;
- Operations Based Exercises (Equipment Deployments);
- Discussion Based Exercises (Incident Management focus).

Each exercise type has a different emphasis and set of objectives that are selected to provide guidance in the exercise design. Exercises are conducted at varying frequencies as established within this section of the plan.

The exercise types, purpose, and frequencies for when they are conducted are outlined in Table 13-1. All exercises may be conducted in cooperation with a Member or Government Agency. Government agencies, local communities and First Nations, industry and other response partners are invited to participate or observe exercises.

[15] Canada Shipping Act, 2001: Response Organizations Regulations 3.(2)(h), 5.

Table 13-1: Exercise Types, Frequencies and Purpose

EXERCISE TYPE	FREQUENCY	PURPOSE
Incident Management Facilitated Workshop	As required throughout the three-year certification period	Discussion-based workshop used to draw information from participants regarding a specific topic – WCMRC uses Workshops in order to raise awareness and enhance spill response community knowledge on specific subjects which may be difficult or otherwise undesirable to test within the scope of a larger exercise.
Equipment Deployment Tier 1 Exercise in a Designated Port, and elsewhere in the GAR, up to 150 tonnes	Up to 4x Annual	To demonstrate the initial response capability, utilizing a defined scenario, of WCMRC equipment in the Designated Port, as well as other areas of the GAR. This exercise will include the activation of members of the response team, and the deployment of a representative sample of WCMRC equipment. Over the 2022-2025 cycle, WCMRC intends to build up to undertaking four Tier 1 exercises on an annual basis. The exercises will be distributed as follows: • Within the Designated Port, to continue to meet the requirements under the RO Regulations • In Prince Rupert, to account for increased risk and potential expansion of exercise requirements • Between WCMRC's Nanaimo and Sidney response bases in the PAR • Between WCMRC's Beecher Bay and Port Alberni Response bases in the ERA These exercises are intended to be used as opportunities to exercise, validate and improve discrete operational components of preparedness and response capacity up to the Tier 4 level, as described in scenarios in Appendix A of this document.
Incident Management (Tabletop) Tier 2 Exercise in a Designated Port or GAR, up to 1,000 tonnes	Annual	To demonstrate the response capability, utilizing a defined scenario that includes notification, spill assignments, and the activation of incident management personnel for a managed response to a spill of up to 1,000 tonnes.
Equipment Deployment Tier 3 Exercise in GAR, up to 2,500 tonnes	Every 2 Years	To demonstrate the response capability, utilizing a defined scenario that includes notification, spill assignments, the deployment of a representative sample of WCMRC equipment, and may include incident management personnel for a managed response to a spill of up to 2,500 tonnes.
Incident Management (Tabletop) Tier 4 Exercise in GAR, up to 10,000 tonnes	Every 3 Years	To demonstrate the response capability, utilizing a defined scenario that includes notification, spill assignments, the activation of incident management personnel, and may include the deployment of a representative sample of WCMRC equipment for a managed response to a spill of up to 10,000 tonnes.

13.2 Response Functions to be Exercised

Over the three-year certification cycle, the program will exercise a number of response functions, as outlined in the CCG National Exercise Program (NEP). As recommended in the NEP, not every function is involved in each exercise; rather, each function is included in at least one exercise throughout the program.

Functions to be exercised within the Certification Period:

- Response Organization (RO) Activation
- Contractor Support/Services Notification and Activation
- Incident Management
- Situation Analysis
- Strategy Development
- Site Safety and Health
- Equipment Deployment and Readiness
- Wildlife Hazing
- Shoreline Assessment and Cleanup
- Alternative Countermeasures Assessment
- Communications
- Logistics
- Decontamination
- Financial Management/Documentation
- Mutual Aid

WCMRC will not be responsible for, but may support the Member/Polluter/Government Agencies in the functional areas of:

- Wildlife Rescue and Rehabilitation
- Fishery Protection
- Vessel Casualty Response and Salvage
- Waste Management and Disposal
- Public Affairs/Media Relations
- Legal Support

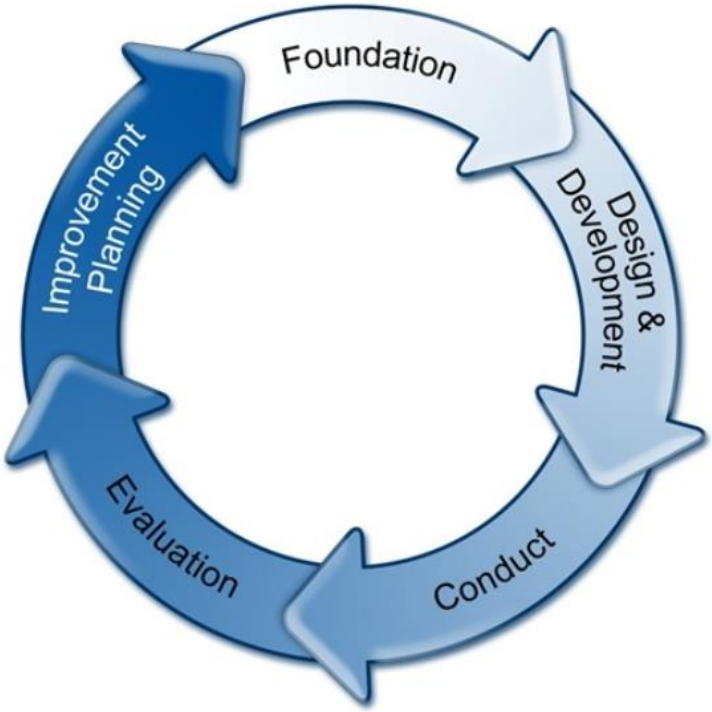
During the Exercise Design and Development Phase, the Exercise Design Team will utilize the response functions in order to develop specific objectives, relevant to the exercise scenario, to be evaluated. These objectives will define the activities that responders will undertake, outline the desired learning outcomes of the exercise and help frame the exercise scope and focus for controllers, participants, evaluators and observers.

13.3 Exercise Design

WCMRC utilizes the Exercise Design methodology taught by the Justice Institute of British Columbia (JIBC).

The JIBC methodology outlines a standardized five-phase approach to exercise design and planning, and has been adopted by several Government agencies and members of the response community in the region, facilitating coordination and collaboration on exercise planning (see Section 13.4 for more information). A brief summary of each phase will be described below. The cycle focuses on a holistic approach to exercising to ensure continuous improvement throughout the organization.

Figure 13-1: Five-Phase Design Cycle



Foundation Phase

In the Foundation Phase, the Lead Designer(s) reviews the Exercise Program and Plan to ensure awareness of any internal or regulatory requirements to be met, policies to follow, and the particular purpose, scope and expectations of the individual exercise to be planned.

The Lead Designer forms the Exercise Design Team, comprised of a full swath of organizational representation, and mirroring the ICS structure which will be used to manage the scenario in the exercise, or in a real incident.

- Lead Designer
- Safety
- Information
- Liaison
- Operations
- Planning
- Logistics
- Finance

During the Foundation Phase, the Exercise Design Team will use the Exercise Program and Plan to define the general scope for the exercise in order to ensure requirements are met; topics to be considered are:

- Confirm exercise type and scale
- Determine response functions to be exercise
- Identify plans, procedures or processes to be evaluated
- Identify a viable hazard or risk to develop a scenario
- Determine desired or required industry, Government and community participation
- Determine exercise dates
- Verify exercise budget
- Schedule exercise planning conferences and timelines

Design and Development Phase

The Design and Development Phase will typically take up the majority of the time and effort of the Exercise Design Team during the cycle; during this Phase, the Exercise Design Team will have to define and develop all the exercise details, from design requirements such as exercise objectives, expected actions and evaluation criteria, to identifying logistical and operational requirements and developing plans to ensure the exercise can be executed efficiently and successfully during the Conduct Phase. The Exercise Design Team will also be required to actively engage with external participants (see Section 13.4) to ensure coordination and collaboration on exercise design, and will be required to formally invite attendees. The Exercise Design Team will create exercise documentation including the Exercise Participant Package, which will be submitted to Transport Canada a minimum of one month prior to the exercise.

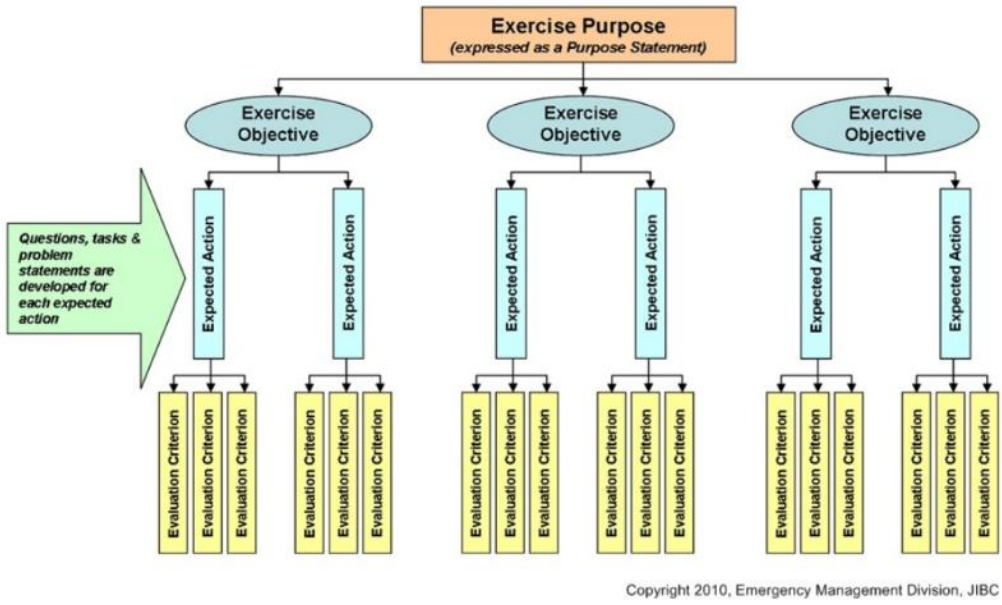
The Exercise Design Team will develop the following details:

- Exercise Purpose – confirmed from Exercise Program and Plan, describes the scope of the exercise in one concise statement
- Exercise Objectives – specific desired actions that need to occur in order for the exercise to successfully complete its purpose
- Expected Actions – are the criteria used to determine whether each objective has been achieved
- Evaluation Criteria – the metric used to measure and analyze participant performance

Topics to be considered during the Design and Development Phase:

- Exercise scenario and location
- Exercise scope, priorities, objectives and injects
- Limitations and Constraints
- Confirm required internal WCMRC and external participation
- Assigning exercise roles (including ICS positions for Players, as well as Controllers, Evaluators, Coaches and Observers)
- Confirm exercise dates
- Determine potential impacted communities
- Identify local issues, concerns, sensitivities
- Confirm and organize exercise location(s), accommodations, meals, supplies, travel arrangements, moorage, fuel etc.
- Develop, distribute and brief logistical and operational plans for exercise execution
- Develop, distribute and brief exercise documentation, including Participant Package, Controller Package, Evaluator Package, Master Sequence of Events List as required

Figure 13-2: Development of Exercise Objectives



Conduct Phase

The Conduct Phase is the actual execution of the exercise. Depending on the type, scope and scenario of the exercise, Players will be presented with a simulation of an emergency event or incident, and are expected to respond appropriately in order to work towards the identified exercise objectives; Players are anticipated to respond according to existing policies, plans, procedures, processes and systems in place, in order to validate and evaluate their use, and gather learnings which can be used to enhance and improve them.

Key exercise roles include:

- Players – Fill responder and ICS roles during exercise, respond to the scenario according to their defined role and responsibilities
- Controllers – Facilitate and run the exercise; Controllers will start and end the exercise at designated times, ensure Players are staying within the exercise scope and focusing on the defined objectives, and act as the Simulation Cell (SIMCELL) which will introduce 'injects' of information or situations for the Players to respond to and account for
- Evaluators – Observe Player actions taken against defined objectives (with Expected Actions, Evaluation Criteria) and appropriateness of actions taken and decisions made according to the scenario and situation; verify Player implementation and usage of plans, procedures, processes etc.
- Observers – Attendees who are not actively participating in the exercise, but who are attending to raise their own awareness or the awareness of their agency, community, organization etc. of how a response to an incident would unfold. Observers may be from a government agency or community who are observing the exercise in an 'official' capacity, or may be from a local community or organization who are attending for their own interest and learning.
- Coaches – Experienced subject matter experts who assist Players with ICS and role specific processes and tasks; help ensure that exercise Players have the best opportunity to learn from experienced responders and have assistance to get through sticking points in the ICS process

Evaluation Phase

The Evaluation Phase take places concurrently with, as well as after the Conduct Phase. During the exercise, Evaluators will observe Player actions taken against defined objectives, and the appropriateness of actions taken and decisions made according to the scenario and situation. Evaluators will utilize the pre-defined Exercise Objectives, Expected Actions and Evaluation criteria, which can be used as an evaluative checklist; Evaluators will also record their observations in the form of notes in the Evaluator Package.

Exercise Controllers and Evaluators, in collaboration with the Exercise Design Team, will also hold a series of exercise debriefs in order to more fully capture a summary of the exercise, and to allow exercise Players the opportunity to share their experience and what they perceived to be successes and strengths of the response, as well as challenges or weaknesses.

Debriefs to be held may include:

- 'Hotwash' discussion immediately following conclusion of the exercise, including as many participants as possible
- Formal debrief for key exercise Players, approximately one to two weeks following the exercise
- Smaller ICS section or unit debriefs may be scheduled following the exercise
- Exercise Design Team debrief

Information from Evaluator notes and observations, as well as debrief discussions, will be incorporated by the Exercise Design Team into an After Action Report. The After Action Report serves as a record of key events for the exercise, a summary of actions taken according to objectives, and is used to identify key learnings, as well as recommendations and corrective actions for the organization to take, contributing to the continuous improvement approach of the cycle and acting as a planning resource for future exercises. WCMRC will provide an After Action Report to Transport Canada following each exercise identified in the Exercise Plan.

Improvement Planning Phase

The Improvement Planning Phase exemplifies the continuous improvement focus of the design cycle. During this phase, the Exercise Design Team will utilize the exercise After Action Report with the recommendations and corrective actions identified, and assist the organization with implementing an Improvement Plan. Senior management of the organization will be engaged to review recommendation and corrective actions from the report, determine priority action items, assign responsible groups or individuals, identify deadlines, and give guidance on implementation of corrective actions.

Depending on the nature of the recommendation and corrective actions identified, the Improvement Planning Phase of a particular exercise, or indeed the exercise program as a whole, may extend over a multi-year period. The responsibility of the Exercise Design Team in the Foundation Phase of an exercise is to review previous After Action Reports to identify items that can be improved upon or further explored in future exercises, and on senior management to ensure that recommendations and corrective actions are acted upon where possible and feasible, and to ensure that challenges or weaknesses that are noted in multiple exercises are prioritized for improvement.

WCMRC is committed to continuous improvements in all areas of preparedness and the organization, and therefore commits to ensure the follow through of the exercise design cycle as effectively as possible.

13.4 Exercise Coordination Group

WCMRC participates in the regional Exercise Coordination Group, made up of Government and Industry oil spill response partners. The purpose of the Group is to maximize the benefit of exercises by collaborating in the planning, conduct and evaluation of shared exercise objectives that foster improved integration of Government and Industry resources in response management.

Additional goals of the group are to share dates and information about known exercises in the community, coordinate the inclusion of agency-specific objectives into exercises, de-conflict scheduling and facilitate participation, and collaborate and share information on exercise evaluation and learnings.

Membership of the Exercise Coordination Group consists of representatives from:

- WCMRC
- Canadian Coast Guard
- Transport Canada
- Environment and Climate Change Canada
- Department of Fisheries and Oceans
- British Columbia Ministry of Environment
- Canadian Energy Regulator

The Exercise Coordination Group will typically meet on a quarterly basis in person or via conference-call, and may meet more frequently as required prior to or following an exercise.

13.5 Exercise Records and Documentation

To demonstrate that the objectives established for each exercise are met, WCMRC commits to producing the appropriate documentation for each exercise. The documentation is filed internally and made available for review by TC upon request. The WCMRC exercise documentation form, developed in conjunction with TC, is completed to summarize the results of each exercise, along with an After Action Report summarizing exercise objectives, observations, recommendations, and key learnings as part of a commitment to continuous improvement.

13.6 External Exercises

Spill response exercises allow WCMRC response personnel to gather necessary experience as they practice assigned actions that will be required in a real spill situation. Therefore, WCMRC endeavours to participate in as many exercises as possible, such as Member exercises, Industry, CCG, and other Government or external agencies. Doing so enhances relationships and aids in the swift integration of WCMRC into the incident management organization when a real incident occurs.

13.7 Spill Substitution

Response to spill incidents provides the most valuable demonstration of the WCMRC response capability. As a result, actual response to spill incidents may also be substituted for an exercise at the request of the Response Organization Manager, and with agreement of Transport Canada[16].

In all cases, substituted exercises and/or spill events will be accompanied by the appropriate documentation for review by Transport Canada at their request.

13.8 Compliance Testing

To describe the oil spill exercise program established to evaluate the effectiveness of all aspects of the procedures, equipment and resources that are identified in the plan, including exercises to be coordinated with ships, oil handling facilities or the CCG and TC. The oil spill exercise program shall be carried out over the three year period that commences the day the certificate of designation is issued.

Canada Shipping Act, 2001 – Response Organizations Regulations 3.(2)(h), 5.

[16] Transport Canada Response Organization Certification Guidebook- 12.1 Tier 1 Policy – Oil Spill Incident as Equivalent Exercise Certification

14.0 TRAINING

The purpose of this section is to provide a description of the training that the response organization provides to its employees and other personnel in preparation for the responsibilities they might be requested to undertake in response to an oil spill.[17]

WCMRC training programs are designed to meet the requirements of the Oil Spill Response Plan (OSRP) by ensuring that an adequate number of employee and contract personnel are trained to WCMRC competency standards.

Competencies are set by determining the roles essential for the execution of tactics outlined in the OSRP and calculating the number of personnel required to fill those roles as well as the essential competencies needed to perform tactics properly and safely. These numbers and competencies are the main drivers of the training programs and are reviewed annually.

The training outlined in this section is overseen by the Director of Response Readiness and facilitated by the Training & Development department, with extensive and continuous engagement with Health & Safety and Operations.

Developed by the Training & Development Department, and executed primarily by Training Specialists and Operations trainers and evaluators, a blending of classroom sessions, practical field sessions and rigorous evaluation of competence are the underpinning of all training programs at WCMRC. WCMRC is also committed to ensuring that all personnel hold certifications required for their roles as regulated by Transport Canada and other regulating bodies.

Oil spill exercises and other day to day Operational activities also play an important part in practicing and demonstrating tactical skills (see Section 13.0).

14.1 Spill Response Roles

As noted in the introduction, WCMRC responders include both Employees and Contractors. Full-time and Casual employees ensure WCMRC remains fully prepared and response ready, and also fill key roles within the Incident Command System (ICS). As such, WCMRC strives to have all employees receive all operational and ICS training applicable for their primary spill response roles. The focus of the training is Operations staff, and spill response roles include:

- Oil Spill Response Technician – Deckhand
- Oil Spill Response Technician – Master
- Oil Spill Response Technician – Engineer

Contractors are used in a number of roles to augment WCMRC employees and ensure that the capabilities outlined in the spill response plan can be achieved. WCMRC must be prepared to sustain a prolonged response to a given incident with some response activities carrying through 24hrs per day. Large spills can see response activities lasting many months with vessels moving from their primary response roles into secondary roles; Contractor responders must be trained to WCRMC standards to ensure that they are ready to respond when additional personnel capacity is required. Roles for Contractors include:

- Vessels of Opportunity
- Vessel Crewing: Deckhands & Masters
- Shoreline Supervisor / Shoreline Worker

[17] Canada Shipping Act, 2001: Response Organizations Regulations: 3.(2)(f); 3.(2)(g).

- Initial Responder
- Staging Area Management

14.2 Training Programs – WCMRC Employees

Marine Personnel Regulations

WCMRC ensures that all mariners engaged in on water operations roles are fully trained and certified to the standard required by Marine Personnel Regulations, and in accordance with Safe Manning documents on each WCMRC vessel.

Table 14-1: Marine Personnel Regulations Certification Requirements by Role

COURSES	OIL SPILL RESPONSE TECHNICIAN					
	Deckhand	Deckhand SVMO	60T Master	150T Master	500T Master	Engineer
Small Vessel Operator Proficiency	X					
Small Vessel Machinery Operator		X				
Master Limited (under 60T)			X			
Master 150T, Domestic				X		
Master 500T, Domestic					X	
Engineer (4th, 3rd, 2nd, or 1st Class)						X
Marine Basic First Aid	X	X	X			
Marine Advanced First Aid				X	X	X
MED Small Domestic Vessel Basic Safety (MED A3)	X	X				
MED Domestic Vessel Safety (MED A1/A2)	X	X	X			
MED STCW Basic Safety Training	CRV DH	CRV DH		X	X	X
MED STCW Marine Advanced Firefighting				X	X	X
MED STCW Proficiency in Survival Craft and Rescue Boat				X	X	X
Restricted Operators Certificate – Marine	X	X				
Restricted Operators Certificate – Marine Commercial			X			X
GMDSS Restricted Operators Certificate – Marine Commercial				X	X	
Simulated Electronic Navigation – Limited (DH with SVOP)	X		X			

Levels Program

WCMRC's competency-based Levels Program endeavours to ensure that all WCMRC mariners are competent to fulfill their specific duties as Oil Spill Response Technicians. The program is not meant to duplicate Transport Canada examination processes. It applies to all Oil Spill Response Technicians regardless of their employment type (full-time, part-time, or casual) and is expected to be completed within two years of employment (or the equivalent hours of work for a casual employee). The program does not apply to corporate, administrative, supervisory, and management positions.

Table 14-2: WCMRC Spill Response Competencies

COURSES	OIL SPILL RESPONSE TECHNICIAN				
	Deckhand	60T Master	150T Master	500T Master	Engineer
CORP1102 - Corporate Orientation and Building a Respectful Workplace	X	X	X	X	X
HSE1101- WHMIS	X	X	X	X	X
HSE1102 – Food Safe (Level 1)	X	X	X	X	X
HSE1106 – Air Quality Sampling Equipment Orientation	X	X	X	X	X
HSE1107 – Counterbalance Forklift Operator	X	X	X	X	X
HSE1108 – Truck Mounted Crane Operator	X	X	X	X	X
HSE1109 – Practical Rigging	X	X	X	X	X
HSE1110 – Orientation to Oil Spill Operations	X	X	X	X	X
HSE1203 – Fall Protection End User	X	X	X	X	X
HSE1204 – Safe Backing & Trailer Towing	X	X	X	X	X
HSE1301 – Confined Space Awareness	X	X	X	X	X
HSE1302 – Confined Space Entry	X	X	X	X	X
HSE1423 – HAZWOPER	X	X	X	X	X
IMP1102 - Duty Officer	X	X	X	X	X
IMP1403 - ICS100	X	X	X	X	X
IMP2203 - ICS200	X	X	X	X	X
IMP3203 - ICS300	X	X	X	X	X
MAR1101 - Spill Response Seamanship	X	X	X	X	X
OPS1101 - Oil Spill Incident Assessment	X	X	X	X	X
OPS1102 - Oil Spill Decontamination	X	X	X	X	X
OPS1103 - Into to Booming and GRS	X	X	X	X	X
OPS1104 - Intro to Skimming, Recovery and Temp Storage	X	X	X	X	X

OPS1105 – Current Buster	X	X	X	X	X
OPS1106 - Pumps, Small Equipment, and Trailers	X	X	X	X	X
OPS1107 - Response Base Orientation	X	X	X	X	X

Vessel Specific Training

WCMRC crew, in addition to becoming competent in spill response tactics, must become proficient in their roles on specific vessels. To facilitate this, vessel specific training is conducted and sign offs are administered, and marine certifications are upgraded beyond the minimum requirements to meet vessel safe manning requirements.

Table 14-3: Vessel Specific Training - Master

VESSEL	OIL SPILL RESPONSE TECHNICIAN - MASTER														
	WCMRC Vessel Sign Off Course Code	Small Vessel Operator Proficiency (SVOP)	Master Limited (under 60T)	Master 150T, Domestic	Master 500T, Domestic	Marine Basic First Aid	Marine Advanced First Aid	MED Small Domestic Vessel Basic Safety (MED A3)	MED Domestic Vessel Safety (MED A1/A2)	MED STCW Basic Safety Training	MED STCW Marine Advanced Firefighting	MED STCW Proficiency in Survival Craft and Rescue Boat	Restricted Operators Certificate - Marine	Restricted Operators Certificate - Marine Commercial	GMDSS Restricted Operators Certificate - Marine Commercial
Barkley Sentinel	73' Skimmer			X			X			X	X	X			X
Coastal Sentinel	CRV				X		X			X	X	X			X
Cormorant Sentinel	38' Landing Craft	X						X					X		
Bowen Sentinel	38' Landing Craft	X						X					X		
Cortes Sentinel	27' Landing Craft	X						X					X		
Discovery Sentinel	35' Landing Craft		X			X			X					X	
Eagle Bay	45' Skimmer		X			X			X					X	
False Creek Sentinel	29' Skimmer	X						X					X		
Gil Sentinel	36' Landing Craft	X						X					X		
GM Penman	65' Skimmer			X			X			X	X	X			X
Gulf Sentinel	CRV				X		X			X	X	X			X
Harbour Sentinel	Boom Boat		X			X			X					X	
Hecate Sentinel	65' Skimmer			X			X			X	X	X			X
Island Sentinel	Boom Boat		X			X			X					X	
Kaien Sentinel	49' Landing Craft		X			X			X					X	
MJ Green	47' Skimmer		X			X			X					X	
Pacific Sentinel	65' Skimmer			X			X			X	X	X			X
Salish Sentinel	75' Skimmer			X			X			X	X	X			X
Sentinel 1	Workboat	X						X					X		
Sentinel 13	Workboat	X						X					X		
Sentinel 14	Workboat	X						X					X		

VESSEL	OIL SPILL RESPONSE TECHNICIAN - MASTER														
	WCMRC Vessel Sign Off Course Code	Small Vessel Operator Proficiency (SVOP)	Master Limited (under 60T)	Master 150T, Domestic	Master 500T, Domestic	Marine Basic First Aid	Marine Advanced First Aid	MED Small Domestic Vessel Basic Safety (MED A3)	MED Domestic Vessel Safety (MED A1/A2)	MED STCW Basic Safety Training	MED STCW Marine Advanced Firefighting	MED STCW Proficiency in Survival Craft and Rescue Boat	Restricted Operators Certificate - Marine	Restricted Operators Certificate - Marine Commercial	GMDSS Restricted Operators Certificate - Marine Commercial
Sentinel 15	Workboat	X						X					X		
Seymour Sentinel	49' Skimmer		X			X			X					X	
Single Engine Workboats	Workboats	X						X					X		
Solander Sentinel	52' Landing Craft														
Strait Sentinel	CRV				X		X			X	X	X			X
Texada Sentinel	39' Landing Craft		X			X			X					X	
Twin Engine Workboats	Workboats	X						X					X		
Vigilant Sentinel	38' Landing Craft		X			X			X					X	

Table 14-4: Vessel Specific Training – Engineer

VESSEL	OIL SPILL RESPONSE TECHNICIAN - ENGINEER							
	WCMRC Vessel Sign Off Course Code	Small Vessel Machinery Operator (SVMO)	4th Class Engineer	Marine Advanced First Aid	MED Domestic Vessel Safety (MED A1/A2)	MED STCW Basic Safety Training	MED STCW Marine Advanced Firefighting	MED STCW Proficiency in Survival Craft and Rescue Boat
Barkley Sentinel	73' Skimmer		X	X		X	X	X
Eagle Bay	45' Skimmer	X		X	X			
GM Penman	65' Skimmer		X	X		X	X	X
Hecate Sentinel	65' Skimmer		X	X		X	X	X
Kaien Sentinel	49' Landing Craft	X		X	X			
MJ Green	47' Skimmer	X		X	X			
Pacific Sentinel	65' Skimmer		X	X		X	X	X

Table 14-5: Vessel Specific Training – Deckhand

VESSEL	OIL SPILL RESPONSE TECHNICIAN - DECKHAND			
	WCMRC Vessel Sign Off Course Code	MED Small Domestic Vessel Basic Safety (MED A3)	MED Domestic Vessel Safety (MED A1/A2)	MED STCW Basic Safety Training
Barkley Sentinel	73' Skimmer			X
Coastal Sentinel	CRV			X
Bowen Sentinel	38' Landing Craft	X		
Cormorant Sentinel	38' Landing Craft	X		
Cortes Sentinel	27' Landing Craft	X		
Discovery Sentinel	35' Landing Craft	X		
Eagle Bay	45' Skimmer			X
False Creek Sentinel	29' Skimmer	X		
Gil Sentinel	36' Landing Craft	X		
GM Penman	65' Skimmer			X
Gulf Sentinel	CRV			X
Harbour Sentinel	Boom Boat		X	
Hecate Sentinel	65' Skimmer			X
Island Sentinel	Boom Boat		X	
Kaien Sentinel	49' Landing Craft	X		
MJ Green	47' Skimmer			X
Pacific Sentinel	65' Skimmer			X
Salish Sentinel	75' Skimmer		X	
Sentinel 1	Workboat	X		
Sentinel 13	Workboat	X		
Sentinel 14	Workboat	X		
Sentinel 15	Workboat	X		
Seymour Sentinel	49' Skimmer		X	
Single Engine Workboats	Workboat	X		

VESSEL	OIL SPILL RESPONSE TECHNICIAN - DECKHAND			
	WCMRC Vessel Sign Off Course Code	MED Small Domestic Vessel Basic Safety (MED A3)	MED Domestic Vessel Safety (MED A1/A2)	MED STCW Basic Safety Training
Solander Sentinel	52' Landing Craft	X		
Strait Sentinel	CRV			X
Twin Engine Workboats	Workboat	X		
Texada Sentinel	39' Landing Craft	X		
Vigilant Sentinel	38' Landing Craft	X		

14.3 Training Program - Contractor Responders

Vessel Crewing

In extended responses that require the deployment of significant WCMRC assets, Contractors will be needed to augment WCMRC crews for on water operations. These roles will include Deckhands and Masters, and Contractors will be trained in the skills essential to spill response as well as vessel specific operations.

There are many factors to consider when deciding on the number of responders required to carry out on water spill operations. The organization must first consider the minimum staffing requirements necessary to satisfy the response capacity and times related to the CSA regulatory requirements along with the TMEP NEB commitments. Other considerations include; safe manning, response base equipment, and the ability to sustain a long term response.

The Vessel Crewing program requirements are based on the above considerations, as well as WCMRC competency standards. A focus on safety, essential spill response tactics, and vessel and role specific training ensure that Contractors assigned to work on WCMRC vessels have the necessary skills to respond competently alongside WCRMC Spill Technicians.

Table 14-6: Vessel Crewing Training Outline

<table>
<tr><th>TACTIC / TOPIC</th><th>COMPETENCY SUPPORTED / PURPOSE</th><th>EXECUTION</th></tr>
<tr><td>CON1101 – Orientation to WCMRC</td><td>Provide overview of WCMRC and oil spill response regime.</td><td>Classroom</td></tr>
<tr><td>CON1102 – Introduction to Oil Spill Operations</td><td>Provide essential information around safety expectations and overview of spill response operations.</td><td>Classroom</td></tr>
<tr><td>CON1112 – Spill Response Essentials</td><td>Training and evaluation on essential skills required for on water spill response operations.</td><td>Classroom & Field Training</td></tr>
<tr><td>Vessel Specific Sign Off Training
*course code and details vary based on role and vessel</td><td>Vessel safety, mechanical, and operations – specific to vessel and role.</td><td>Field training and evaluation</td></tr>
<tr><th colspan="3">TRAINING OUTLINE</th></tr>
<tr><td colspan="3">Introductory Course & Spill Response Essentials</td></tr>
<tr><td colspan="2">Classroom:
CON1101 – Orientation to WCMRC
CON1102 – Introduction to Oil Spill Operations</td><td>Classroom & On Water (Field) Training:
CON1112 – Spill Response Essentials:
▸ Types of Boom
▸ Containment Booming
▸ Boom Anchoring
▸ Knots Review
▸ Shoreline Protection Booming
▸ Sweep Patterns and Techniques
▸ Towing & Offloading</td></tr>
<tr><td colspan="3">Vessel Specific Sign Off</td></tr>
<tr><td>Vessel Orientation / Safety
On Vessel:
Roles and responsibilities of specified role on board for safe ops of this vessel
Spill response role
Vessel capabilities
Vessel limitations
Stem to stern familiarization trip
▸ Safety and emergency equipment on board
▸ Fire stations
▸ Fire suppression
▸ Lifesaving equipment - ditch kit-rafts-solas-epirb
▸ Mob - mord
▸ First aid equipment
▸ PPE
▸ Smoke/fire detection systems
Abandon ship procedure</td><td>Mechanical / Engineering / Bridge
On Vessel:
Basic mechanical orientation - below deck (non spill response)
▸ Fuel system
▸ Steering system
▸ Propulsion system
▸ Hydraulics
▸ Water system - black/grey/fresh
▸ Plumbing
▸ Galley
▸ Electrical
▸ Generator
▸ Bilge alarms
Full bridge familiarization</td><td>Vessel Operations
On Vessel:
Start-up - shut down
Safe ops
Vessel maneuvering
Docking
Anchoring
Navigation - radar/plotter/AIS
Night ops
Fueling
Emergency procedures while underway
Mob/mord - vessel operations
Electrical - batteries-shore power-charging</td></tr>
</table>

Shoreline Supervisor

The Shoreline Supervisor program provides Contractor personnel trained and prepared to safely and confidently direct the work of "Just in Time" Shoreline Worker crews. Supervisors are Contractor personnel previously vetted by WCMRC as having supervisory experience and trained as Shoreline Workers. Field assessment will include evaluation of supervisory skills as Supervisors will direct a crew in a cleanup scenario. Training will also include classroom presentations, field training, and a scenario based mobilization.

Table 14-7: Shoreline Supervisor Training Outline

TACTIC / TOPIC	COMPETENCY SUPPORTED / PURPOSE	EXECUTION
CON1101 - Orientation to WCMRC	Provide overview of WCMRC and oil spill response regime.	Prerequisite
CON1102 - Introduction to Oil Spill Operations	Provide essential information around safety expectations and overview of spill response operations.	Prerequisite
CON1111 – Shoreline Supervisor	Supervise crews of workers engaged in shoreline cleanup efforts.	Classroom presentation & Field session

TRAINING OUTLINE	
Day 1	**Day 2**
Classroom & Hands-on Equipment training (field or warehouse) **Classroom:** CON1101 & CON1102 CON1111 – Shoreline Supervisor: ▸ What is a Supervisor ▸ Due Diligence ▸ New and Young Workers ▸ Right to Refuse ▸ Effective Supervision ▸ Hazard and Risk Mitigation ▸ Hazards Specific to Shoreline ▸ Emergency Planning ▸ Working Respectfully with Indigenous Peoples ▸ Inspection and Audits ▸ Documentation **Field / Warehouse:** Shoreline Cleanup – Refresher (set up of a Shoreline Flushkit)	**Field Session:** Student led session, instructing and supervising Shoreline Workers in the set up and running of clean-up operations for a segment of shoreline. ▸ Site Safety & Work Assignments ▸ Briefing 204s ▸ Tailgates/Site Safety Plans ▸ Check in Check out procedures ▸ PPE ▸ Shoreline Flush Kit / Shoreseal boom – set up ▸ Shoreline Flush Kit – running ▸ Demobilization/tear down of flush kit ▸ Decon & paperwork submission Session concludes with a formal debrief, including self, peer, and instruction evaluation on Supervisory competencies.

Initial Responder

The Initial Responder designation identifies appropriately trained crews in geographic areas that have an unacceptable mobilization time by WCMRC crews. Initial Responders can be on scene within a shorter time frame and, utilizing local WCMRC equipment caches, provide scene assessment and containment until WCMRC arrival on scene. Upon WCMRC arrival Initial Responders can continue to support WCMRC response operations according to their tactical training.

Because initial tactics are best supported by Vessel Operations, the Initial Responder crews are often part of the Vessels of Opportunity program.

Table 14-8: Initial Responder Training Outline

TACTIC / TOPIC	COMPETENCY SUPPORTED / PURPOSE	EXECUTION
Safety – Scene Assessment	Assessment of scene: gas monitoring and other safety assessment, spill assessment	Workshop & Field Session
Trailers – Familiarization and Use	Access and utilize contents of local trailers.	Workshop & Field Session
Booming – Containment/Deflection/Anchoring	Contain casualty / source with boom and tend until WCMRC arrival on scene.	Workshop (on vessel) & Field Session
Recovery – Sorbents/Skimming/Temp Storage/Waste Handling	Support recovery efforts when WCMRC arrives on scene.	Workshop & Field Session
TRAINING OUTLINE		
Day 1	**Day 2**	**Day 3**
Intro Presentations & Classroom Sessions	Field Session – Tactical Training	Scenario Callout & Mobilization (Initial Responder Designation)

Vessels of Opportunity

The Vessel of Opportunity (VOO) is a program designed to support spill responders, deploy coastal protection strategies and provide invaluable marine expertise during a spill. A VOO is a vessel whose crew is trained by WCMRC to respond to marine oil spills and can be a fishing vessel, tugboat, crew boat, water taxi or work boat with towing capacity, lifting ability and/or available deck space. Vessels are aluminum or steel hulled and at least 18 feet in length.

Table 14-9: Vessel of Opportunity Training Outline

TACTIC / TOPIC	COMPETENCY SUPPORTED / PURPOSE	EXECUTION
CON1101 - Orientation to WCMRC	Provide overview of WCMRC and oil spill response regime.	Classroom presentation
CON1102 - Introduction to Oil Spill Operations	Provide essential information around safety expectations and overview of spill response operations.	Classroom presentation
And at least one of the following:		
CON1103 - Current Buster Deployment	Deploy and retrieve the Current Buster system.	Classroom & Field session
CON1104 - Sweep Deployment	Deploy boom and various sweep patterns.	Classroom & Field session
CON1105 - Containment Booming	Deploy and tend boom around casualty.	Classroom & Field session
CON1106 - GRS and Shoreline Protection Booming	Apply a GRS and deploy/tend shoreline protection booming.	Classroom & Field session
CON1107 - Towing, Offloading, and Temporary Storage	Conduct towing operations with a mini-barge and execute an offloading plan.	Classroom & Field session

TRAINING OUTLINE	
First Year in Program:	
Day 1	**Additional Days**
Intro Presentations: CON1101 – Orientation to WCRMC CON1102 – Introduction to Oil Spill Operations **Classroom Sessions (Theory) of at least one tactic:** CON1103 – Current Buster Deployment CON1104 – Sweep Deployment CON1105 – Containment Booming CON1106 – GRS and Shoreline Protection Booming CON1107 – Towing, Offloading, and Temp Storage	**Field Session – Tactical Training and Field Evaluation of at least one tactic:** CON1103 – Current Buster Deployment CON1104 – Sweep Deployment CON1105 – Containment Booming CON1106 – GRS and Shoreline Protection Booming CON1107 – Towing, Offloading, and Temp Storage One field day per tactic. Add additional training days as needed.
Subsequent Years:	
Refresher / Confirmation Training	**Training on Additional Tactics**
Single day exercise in previously trained tactic. Crew and vessel are assessed for continued competence.	Length of training will depend on vessel and tactic(s) assigned. Theory (classroom) training + field training and evaluation required for each tactic.

Staging Area Management

The Staging Area Management program ensures Contractor personnel are equipped with the knowledge and skills to fill essential positions / functions in a staging area. As the physical connection between Logistics and Operations, the staging area staff ensure that equipment and supplies needed to support response operations are available and properly tracked. In addition, staging area staff manage and track waste, track personnel coming through the staging area as they report and demobilize, and set up and run personnel decontamination.

Table 14-10: Staging Area Management Training Outline

TACTIC / TOPIC	COMPETENCY SUPPORTED / PURPOSE	EXECUTION
CON1101 - Orientation to WCMRC	Provide overview of WCMRC and oil spill response regime.	Classroom
CON1102 - Introduction to Oil Spill Operations	Provide essential information around safety expectations and overview of spill response operations.	Classroom
CON1113 – Staging Area Management	Perform the essential functions of a staging area, including equipment/consumables tracking, waste management, personnel decontamination and tracking and all related WCMRC paperwork.	Classroom & Field Session
TRAINING OUTLINE		
Day 1 – AM	**Day 2 - PM**	
Classroom Session CON1101 & CON1102 CON1113 – Theory / Introduction Session	**Field Session** CON1113 – Practical Training & Evaluation ▸ Trailer and Equipment Familiarization ▸ Waste Management and Decontamination Set Up ▸ ICS Forms and Essential Paperwork	

14.4 Just in Time Training

In partnership with Response Organizations across Canada, WCMRC has developed a Just in Time training program focused on safety of oil spill response workers. In a response, this program can be delivered by a member of the WCMRC Operations or Training departments or a Mutual Aid partner and will ensure Just in Time workers have essential knowledge and skills regarding safety during a response.

In addition, when a spill response role requires tactical training in addition to the above, WCMRC is committed to developing a Just in Time training plan that is suited the situation. Due to the dynamic nature of spill response, this plan will vary based the roles and tactics, the qualifications of the Contractor personnel, and other details of the response.

14.5 Training Records Management

Management of training records allows WCMRC to ensure that employees and Contractor personnel are qualified to perform the roles to which they are assigned in a response. In addition, this essential function also helps to ensure that an adequate number of personnel have been trained to support the capabilities outlined in the OSRP.

WCMRC uses an electronic database (Client Relations Management) to store and manage employee and Contractor personnel training records. These records include Certifications and internal training deemed essential to the primary and secondary roles they will fill in a spill response.

14.6 Incident Management & Logistics Support Training

WCMRC ensures that all staff engaged as part of the Response Operation Management in the IMT are fully trained for the roles that they may be assigned. The ICS guide below has been developed by WCMRC as part of its corporate staff Levels Program. The ICS training courses listed are used in combination with Strategic and Tactical level plans, supported by mentoring and experience gained from participating in exercises and incidents.

See table 10.2 for a listing of WCMRC personnel pre-assigned to IMT roles.

STANDARD COURSES									
TRAINING	ICS-100 (1hr) (IMP1403)	ICS-200 (2hrs) (IMP2203)	ICS-300 Initial 4 day Refresher (4hrs) (IMP3203)	WCMRC Response Overview (4 hrs)	WCMRC IMP (2hrs)	WCMRC MRP (2hrs)	Field Operating Guide (FOG)	WCMRC Tactical Manual	ICS 400 (40hrs) Refresher (16hrs)
Delivery Method	Online	Online	TBD	Online	Self Study	Self Study	Self Study	Self Study	Classrom
Frequency	Once	Once	Once	Once	Once	Once	Once	Once	Once
Training Passport Level	L1	L1	L3	L1	L2	L2	L2	L2	L3/L4
OSRT IM ROLES									
Primary Role									
Oil Spill Response Technician	YES	YES		YES	YES	YES	YES	YES	
Pottential Secondary Role									
ASSISTANT SAFETY OFFICER	YES	YES	YES	YES	YES	YES	YES	YES	N/A
DIVISION & GROUP SUPERVISOR	YES	YES	YES	YES	YES	YES	YES	YES	YES
UNIT LEADER	YES	YES	YES	YES	YES	YES		YES	
STRIKE TEAM/TASK FORCE LEADER	YES	YES	YES	YES	YES	YES	YES	YES	
SINGLE RESOURCE BOSS	YES	YES		YES	YES	YES	N/A	YES	
STAGING AREA MANAGER	YES	YES	YES	YES	YES	YES	YES	YES	

14.7 Compliance Testing

To describe the training that the response organization provides to its employees and other personnel in preparation for the responsibilities that they might be requested to undertake in response to an oil spill.

Canada Shipping Act, 2001: Response Organizations Regulations: 3.(2)(e); 3.(2)(f); 3.(2)(g)

15.0 HEALTH AND SAFETY - MANUAL

This section describes the Health and Safety Manual which outlines the policies and guidelines surrounding occupational health and safety to mitigate risk of accidents, incidents and injuries.[18]

15.1 Health and Safety Manual

WCMRC's Health and Safety Manual demonstrates management's full commitment to employee Occupational Health and Safety in compliance with Federal Regulations (Canada Labour Code Part 2 Occupational Health and Safety) and where applicable Provincial Regulations (Workers Compensation Act, WorkSafeBC Regulations)

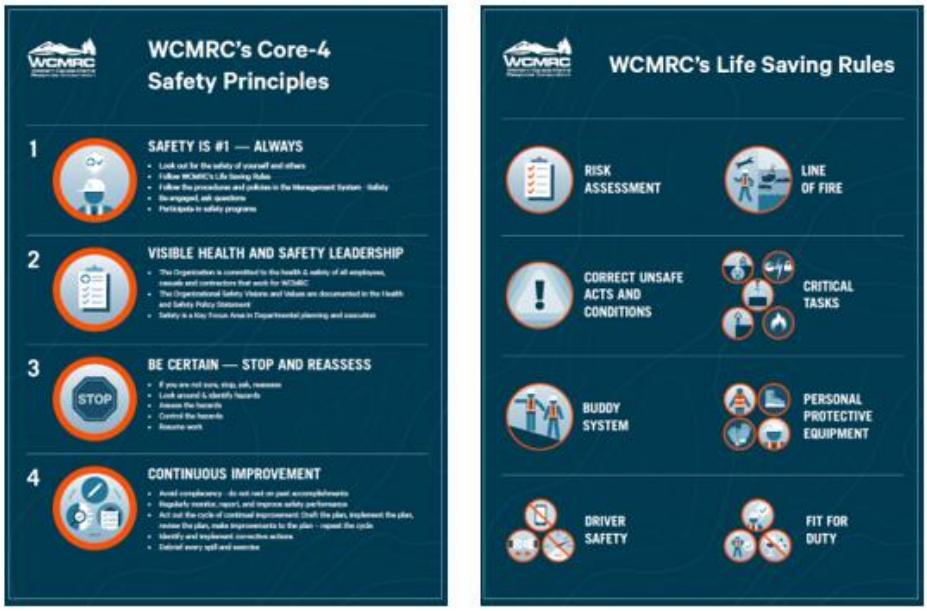
This Manual is a summary of safety policies, programs and procedures specific to the Management System – Safety (alternately known as safety management system or SMS) and ensures compliance with all applicable federal and provincial acts, regulations, standards and guidelines. It applies to all WCMRC employees, casuals and contractors, and for operations conducted by WCMRC. Detail and instruction on specific safety policies, programs and procedures is made available in the safety management system (SMS). In the case of duality, the written procedure with the higher level of standard will be followed.

Health and Safety Policy Statement

WCMRC's Health and Safety Policy Statement outlines the responsibilities for the employer, employees, supervisors and contractors. It reconfirms WCMRC's commitment to support a proactive safety culture where all stakeholders take an active ownership of Health and Safety by identifying potential risk and putting controls in place to mitigate hazards before engaging in work activities.

The Health and Safety Policy Statement reinforces safety culture programs and best practices inclusive of WCMRC's CORE-4 Safety Principles and Life Saving Rules.

Figure 15-1 Core-4 and Life Saving Rules



[18] Canada Shipping Act, 2001: Response Organizations Regulations 3.(2)(0)

Worker's Rights (Refuse Unsafe Work)

Part II, Section 128 of the Canada Labour Code (CLC) emphasizes three rights:

- Right to Know – to be informed of all known or foreseeable risks which exists in the work place and could endanger his/her health or safety
- Right to Participate – to be involved in health and safety discussions
- Right to Refuse – unsafe work as long as
    - The refusal does not put the life, health or safety of another person directly in danger; or
    - The danger in question is not a normal condition of employment.

Risk Management

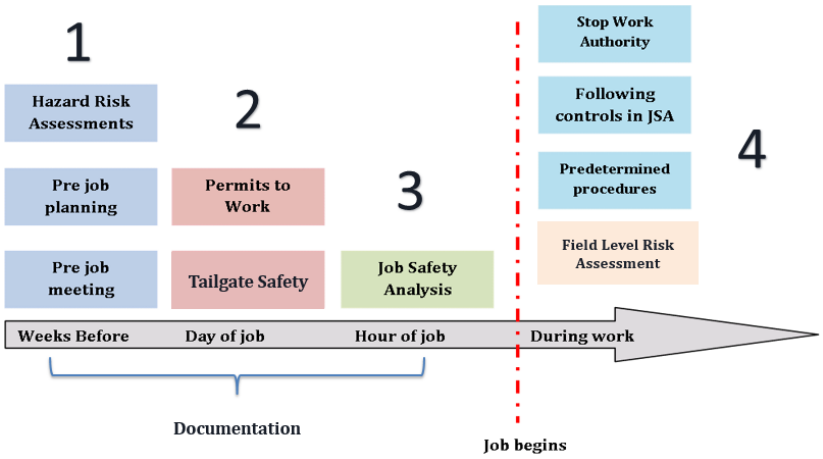
Risk management and assessments are actions that minimize risk within acceptable levels. The purpose for risk management is to have fewer accidents and if they do occur, the outcome to be less severe, as it allows everyone involved to better understand and control the risks.

The aim is to reduce risks within acceptable levels by identifying the existing hazards and risks and implementing the necessary controls.

WCMRC utilizes four levels of Risk Analysis:

1. **Hazard Risk Assessment (aka HRA or HIRA)** - Completed at Management / Supervisory level. A formal document designed to aid in the decision making process, by assessing the likelihood and impact of identified hazards, and putting in place the necessary controls, to eliminate or reduce the impact and/ or likelihood of the risk.
2. **Tailgate Safety** - Supervisors and Workers (round table or task specific). The tailgate safety record is a formal multi-page document used to assess, mitigate and communicate hazards on all worksites that would not be included in the Job Safety Analysis (i.e. any work location during a spill response, anytime a vessel is going to be underway, when operating/maintaining any small equipment, when using any hazardous materials, etc.).
3. **Job Safety Analysis (JSA)** - Completed by workers (typically in the field). A documented form, specific to a single task or work process, designed to identify hazards and controls.
4. **Last Minute Risk Assessment (aka LMRA or Self-Check)** - Continual assessment of job conditions, before, during and after job activity.

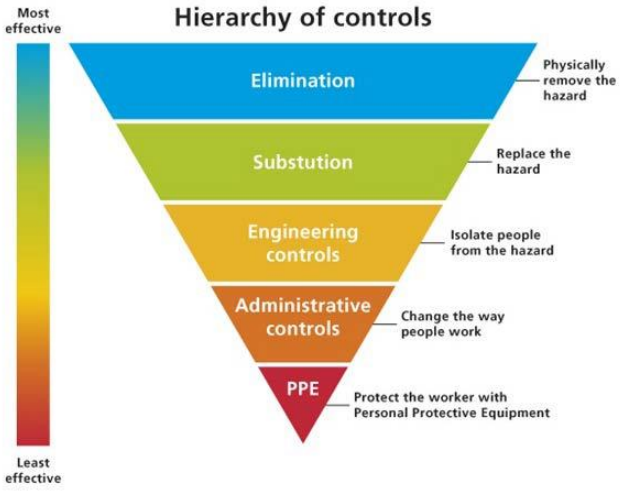
Figure 15-2 Risk Analysis



Hierarchy of Controls

When considering the implementation of hazard controls, a hierarchy of hazard control methodology is to be considered. It is a system used in industry to minimize or eliminate perceived hazards. The chart below depicts the hazard controls as a hierarchy, in order of decreasing effectiveness:

Figure 15-3 Hierarchy of Controls



Hazard and Incident Reporting

Hazard Reporting

If safe to do so, fix any observed hazard immediately (items that may contribute to slips, trips and falls, blocked access etc., can generally be corrected right away) and report the finding to your Supervisor. Employees, Casuals and Contractors are encouraged to submit safety observations (positive and negative) for documentation and follow up. The aim is to recognize the potential for harm and implement the corrective action as soon as practicable, to avoid an incident form occurring.

Incident Reporting

All incidents including near misses must be reported to your Supervisor immediately. Additionally, all incidents are to be reported to the Designated Person Ashore (DPA) via phone - DPA Connect Rocket number 778-800-6684 and/or email at dpa@wcmrc.com. An incident report is to be completed and sent to the DPA once safe to do so. In addition to the Health and Safety Manual, detailed incident reporting procedures are available in the Company Procedure Manual (CPM), and Vessel Operations Manuals.

It is the responsibility of the Designated Person Ashore to ensure the investigation of incidents and near misses is conducted and learnings from such investigations is shared with the applicable parties within the organization. All incidents are to be investigated for the purpose of identifying corrective actions. Serious incidents resulting in loss or harm and hazardous occurrences and near misses, which had the potential for serious loss or harm will be investigated and formally documented using incident root cause analysis investigation method and documented via incident investigation report form.

WHMIS

Workplace Hazardous Materials Information System (WHMIS) is a communication system on hazardous materials in the workplace, from the suppliers of the controlled products to employers and workers. Safety

Data Sheets (SDS) will be made available via the safety department, as well as on company computers via a link to the company SDS database. It is critical that an SDS is provided and reviewed prior to responding to a spill. Applicable WHMIS training will be provided to all employees.

SDS (Safety Data Sheets)

Safety Data Sheets for products are made available by a link on the company Sharepoint site The Bridge, which directs users to the following web page: http://ccinfoweb.ccohs.ca/msds/search.html In the event of a spill response, an SDS must be provided as soon as possible to the spill response team. Employees, Casuals and Contractors are to review SDS sheets before working with chemicals and hazardous materials, and as part of the Tailgate Safety and JSA process.

PPE (Personal Protective Equipment)

Section 16.0 Personal Protective Equipment, of the Management System – Safety (MS-S) (SMS), provides specific detail on PPE requirements. Ultimately each situation must be analyzed, through conducting a pre-task assessment, job safety analysis (JSA) or following a hazard risk assessment control, for the inherent hazards and the proper PPE to be selected. Not all situations can be covered and there may be additional requirements dependent on the specific task and/or location. PPE requirements are not position related, but job and/or site related. Specific PPE may be required at each operating location. All employees must adhere to any additional PPE requirements specific to any facility outside of WCMRC when attending as a guest. If WCMRC's PPE requirements are more stringent or exceed the minimum expectations of the operation we are visiting, then WCMRC's PPE requirements shall be adhered to.

Confined Space

UNDER NO CIRCUMSTANCES shall an employee enter a confined space, without following proper procedures. WCMRC Employees, Casuals and Contractors entering a confined space are to have received the proper training, prior to entry. A Confined Space Entry Permit is required before anyone is to enter a confined space, regardless of the purpose for entering the space. All of those involved in confined spaces are to be familiar with the Occupational, Health and Safety regulations for confined space entry and be appropriately trained. The entrant of a confined space should adhere to the applicable regulations for confined space entry. All confined spaces are immediately dangerous to life and health (IDLH) spaces unless they have been proven otherwise. For detailed information on the WCMRC Confined Space Entry Program, see Health & Safety Program Section 17. Critical Tasks - 17.1 Confined Space Entry.

LOTO (Lockout Tagout)

The purpose of the Lockout / Tag out Program is to establish a means of positive control to prevent the accidental starting or activating of machinery or systems while they are being repaired, cleaned and/or serviced. By using a lockout or an isolation device, the hazardous energy can be managed effectively. If the hazards cannot be eliminated, efforts must be employed to minimize those hazards. Procedures developed for the safe isolation and lockout of equipment shall follow the guidelines listed in the LOTO Program. Only authorized individuals shall carry out lockout procedures. Authorized individuals shall understand the operation and the specific lockout procedures for the equipment. For detailed information on the WCMRC LOTO Program, see Health & Safety Program Section 17. Critical Tasks - 17.2 Lockout Tagout Program.

Fall Protection

Fall protection is required when working at heights greater than 3 m (9.8ft.) or from a lesser height from which an unusual risk of injury may occur. Selection of personal fall protection equipment shall be based on: the type of work, the work environment, the weight, size, and shape of the worker, the type and position/location of anchorage, and the length of the lanyard. End users must be trained in the use of fall

protection equipment and procedures. For detailed information on the WCMRC Fall Protection Program, see Health & Safety Program Section 17. Critical Tasks - 17.3 Fall Protection Program.

Hot Work

No Hot Work is permitted at any facility or during operations where there may be exposure to a potentially explosive atmosphere such as a terminal or during fuel transfer operations. The Hot Work Hazard control Guidelines, and Permit requirements shall be followed at all times. Due to possible changes in the work place, all foreseeable hazards may not have been considered. For detailed information on the WCMRC Hot Work Program, see Health & Safety Program Section 17. Critical Tasks - 17.4 Hot Work Program.

Cranes and Rigging

Only trained and authorized people shall give crane signals as per Occupational Health and Safety Regulations. Rigging and slinging tasks must be performed by or under the direct supervision of qualified workers who are familiar with the rigging to be used and familiar with the code of signals for controlling hoisting operations. For detailed information on the WCMRC Cranes and Rigging, see Health & Safety Program Section 17. Critical Tasks - 17.5 Cranes and Rigging.

Dive Operations

All sub-contracted dive companies working for WCMRC must be compliant to WorkSafeBC OHS Regulation, “part 24 – Diving, Fishing and other Marine Operations”. The dive company is responsible for issuing a notice of project and for the safety around the diving operations and will ensure the Operations Department is aware of any diving activities at facilities. Vessels need to report to the local Port Authority and Vessel Traffic when diving operations are conducted and are to ensure the dive company displays the proper signals. In the event the dive company is unable to provide the appropriate documentation, WCMRC dive operations checklists and notice of dive project documentation may be used as an alternative. These can be found in Management System – Safety (MS-S), Section 17.6 - Dive Operations.

Working alone or in Isolation

While it is not always hazardous to work alone, it can be when other circumstances are present. Whether a situation is a high or low risk will depend on the location, type of work, interaction with the public, or the consequences of an emergency, accident, injury, etc. This wide variety of circumstances makes it important to assess each situation individually. No individuals will work alone while performing high hazard activities. Individuals shall work in twos (continuous monitoring) or high frequency monitoring for high hazard activities. Further guidance is made available, including guidance on Journey Management, in the Management System - Safety (MS-S), Section 18.0 – Working Alone Policy.

Fatigue Management

Being fatigued may present hazards as it can affect the worker’s ability to do their job effectively and safely. WCMRC Employees, Casuals and Contractors should make it known to their supervisor when they feel the effects of fatigue. Additionally, supervisors and coworkers should intervene when they observe an individual who may be showing signs of fatigue, as it is common that individuals are often poor at recognizing their own level of fatigue, performance and decision making. Guidelines have been put in place by the International Maritime Organization (IMO) regarding fatigue management. These principles can also be applied to shore-based workers and the associated work activities.

Safeguarding Equipment and Tools

Equipment that is found to be missing safeguards shall be tagged and removed from service until such safeguarding can be reinstalled. Safeguards shall not be modified in any manner and are to be used in accordance with the manufacturer's recommendations. All portable tools used by Employees, Casuals and Contractors shell meet the standards set out in CSA Standard CAN C22.2 No.71.1-M89. Portable electric tools used in a fire hazard area shall be made of non-sparking material and be marked as appropriate for use in an area of that hazard.

Injury Management (Return to Work)

It is WCMRC's commitment to the successful recovery of injured and ill employees by assisting in early intervention and return to work in a safe manner. It is WCMRC's policy to take all reasonable steps to return injured and ill employees to their pre-injury job as quickly as possible. Before returning to work following any injury regardless of whether the injury is work related or not, or from illness which requires medical treatment, the employee must provide his/her physician with a letter outlining WCMRC's return to work program and a Physicians' Statement which will confirm that recovery is complete or that certain work restrictions apply. The certificate will also show the physician has approved a date an employee will return to work.

Hearing Conservation

WCMRC is to assess workplace conditions to ensure employees are not exposed to excessive noise levels beyond what is permissible by occupational health and safety regulation. Hearing protection is to be made available. At every location, where an employee, casual or contractor may be exposed to sound pressure levels greater than 87 dBA, signs warning of a potentially hazardous level of sound in the workplace are to be posted (i.e. entrances to vessel engine rooms). Employees, in consultation with the workplace health and safety committee, are to be provided training and education in the fit, care and use of hearing protection.

Workplace Inspection

All company facilities shall be included in site inspections including building, yard, and office areas. Inspections of equipment, tools, and machinery will be conducted according to the recommended maintenance intervals as per Task Analysis and Operators Manuals. A site inspection is to be conducted monthly prior to the monthly Safety Committee Meeting. In addition to inspecting facilities, an observation of work practices shall be conducted and documented. Results of the site inspection are to be reported at the monthly Safety Committee Meetings.

Internal Audit Program

WCMRC has in place an internal audit program that follows the IOS principles of *plan-do-check-act*. An audit cycle is established for fleet and shoreside operations. Response Readiness and Training are accountable for ensuring response equipment is audited on a defined cycle to ensure compliance with Transport Canada.

The DPA (or their designate) is responsible to ensure Internal Management System - Safety audits are scheduled and carried out. Auditors are to be adequately trained and assigned by the DPA.

Results of audits are brought to the attention of the Manager having responsibility for the audited area. All items arising from the audits are reviewed to verify the success of the corrective actions.

Mobile Equipment Operation

The operator of the mobile equipment must operate the equipment safely, maintain full control of the equipment, and comply with the laws governing the operation of the equipment A supervisor must not

knowingly operate or permit a worker to operate mobile equipment if the worker has not met the training and testing requirements. The manager or supervisor is responsible for assessing each mobile equipment operator's performance on an on-going basis. CSA Standards stipulates a mobile equipment operator must take a refresher course every 2 years, or if there is an incident or accident attributable to operator error.

Emergency Preparedness

In the event of an emergency requiring response from outside of the organization, procedures are to follow those outlined in the Company Procedure Manual (CPM). Emergency Contact lists are made available and are to be printed and posted in conspicuous locations on the vessels and within the offices and facilities.

Each facility has in place a documented Emergency Response Plan. Outlined in these plans are responsibilities and procedures for staff to follow, in the event of an emergency.

Fire and Safety Plans (Emergency Evacuation Maps) are posted in office, facilities and on vessels. The maps indicate muster stations, lifesaving equipment and procedures to follow in the event of a fire or emergency requiring evacuation.

Employees participate in drills and exercises to ensure familiarity in emergency response procedures.

Commercial Vehicle Safety

All WCMRC fleet trucks and trailers undergo an inspection regime compliant with BC Commercial Vehicle Safety requirements. It is the responsibility of WCMRC to ensure that fleet vehicles and trailers are properly registered, and vehicle operators are licensed accordingly. Fleet vehicles and trailers are subject to an internal preventative maintenance program and are inspected at intervals of 6 months. An annual inspection, conducted by an authorized CVSE inspector is to be completed and inspection certificate issued. It is the responsibility of the maintenance department to ensure all WCMRC fleet vehicles and trailers are inspected as per regulation and proper records are kept. Vehicles are to be inspected prior to use and pre-trip inspection documentation is to be maintained.

15.2 Compliance Testing

To describe the measures that the response organization will take, in conformity with federal and provincial regulations, to protect the health and safety, and to protect the health and safety of its personnel and others engaged at the request of the response organization in response to an oil spill.

Canada Shipping Act, 2001 - Response Organizations Regulations 3.(2)(0)

16.0 HEALTH AND SAFETY – OIL SPILL RESPONSE

This section describes the measures that the response organization (RO) will take, in conformity with federal and provincial regulations, to protect the health and safety of its personnel and others, engaged at the request of the response organization, in response to an oil spill.[19]

Personnel charged with planning for oil spill response activities are faced with a vast array of tasks that must be analyzed and prioritized. Often these tasks conflict, requiring decisions to be made and compromises reached. Health and Safety must never be compromised, regardless of the environmental imperative. Documented, safety systems of work should always be established and adhered to. Temptation to "get the job done" at the expense of the Health and Safety of the responders should be resisted at all costs.

Health and Safety should be the cornerstone of all oil spill preparatory measures. At each stage of the planning cycle, there must be a conscious check to ensure that no unwarranted increase in health and safety risk has occurred, or if it has, that additional control measures are put in place to counter it.

As such, WCMRC employees and contractors that work under WCMRC direction must adhere to WCMRC's Health and Safety Manual, outlined in Section 15. In addition, WCMRC employees and contractors must comply with the ICS 208 Safety Plan and ICS 206 Medical Plan specific to the incident.

16.1 Initial Scene Assessment

Responding to volatile and toxic spills can pose potential health and safety concerns for responders. Petroleum products are complex mixtures of chemical elements; at times they can be explosive, flammable, toxic and even carcinogenic. These risks can be further defined as acute and chronic, or those that may pose immediate risks to the safety and health of responders and those that may result in long term health effects.

Depending on the characteristics of the spilled products and weathering (i.e. dissipation, evaporation, wind speed etc.) the risks can be diminished or increased. In all cases, prior to a response, an assessment will take place to ensure the characteristics of the spilled products are known and understood. Based on this knowledge, an accurate and safe response will be planned and executed.

WCMRC has developed a Site Assessment and Response Procedures guidance document to enable Duty Officers and first responders to make educated decisions on initial response actions and capabilities.

16.2 Air Quality Monitoring

Responses to oil spills inevitably put responders and chemicals together in the same environment. Potential exposure of personnel should be assessed, monitored, and controlled if health effects are to be avoided. Each type of oil, when spilled into the environment, will have its own set of chemical characteristics that will determine the most effective response strategy and, indeed, which strategies are safe to use. It should be borne in mind that the chemical characteristics of the spilled oil will usually change over a period of time as a result of what is known as 'the weathering process,' i.e. the action of the elements on the product and its reaction with the surroundings.

WCMRC spill response technicians are trained in the use of air monitoring equipment and adhere to Air Quality Monitoring Procedures. Appropriate Air Monitoring Equipment and information from the SDS is

[19] Canada Shipping Act 2001: Response Organizations Regulations 3. (2)(0)

reviewed to identify hazards , on activation and on-going throughout the response. Detailed information on the WCMRC Air Quality Monitoring Procedures is provided in the company's safety management system. .

16.3 Personnel Protective Equipment

Personal protective equipment (PPE) are essential elements in ensuring responders are able to work in a safe manner. The proper selection and use of PPE requires skill and experience. The following points are taken into consideration when selecting the appropriate PPE:

- The expected working conditions and hazards;
- The activities to be performed;
- The person(s) being exposed; and
- The compatibility of the equipment—each piece of PPE should be capable of performing effectively without hindering the proper operation of other pieces.

Consideration should also be given to the nature of the task and the demands placed on the worker, including:

- The physical effort required to do the job;
- The methods of work involved;
- How long the PPE will need to be worn;
- The need for adequate vision and communications whilst wearing the items;
- Whether high cost, durable equipment or lower cost disposable items be selected; and
- Whether the task is critical to the overall clean-up.

16.4 ICS 208 Safety Plan

The ICS 208 Safety Plan contains critical safety information developed specifically for the incident response. The ICS 208 is produced with the Incident Action Plan (IAP) and provides key stakeholders a plan to safeguard personnel and assets during all phases of the incident response.

The Safety Officer and his / her Deputy / Assistant Safety Officers identifies hazardous situations associated with the incident and provides safety and occupational health advice in the AIP for assigned responders.

Information on the ICS 208 include:

- Critical Safety and Occupational Health information
- Site Map of spill location
- Summary of spill oil (or oil at risk) from Safety Data Sheet (SDS)
- ICP Site Safety Guidelines
- Vessel Operations / Staging Area Safety Guidelines:
- Security / Accountability of responders
- Fire / Emergency Evacuation procedures
- First Aid / Medical Aid procedures
- Site specific hazards and procedures
- Adverse weather plan for vessels
- Personal Protective Equipment (PPE)
- Personnel Decontamination plan

16.5 ICS 206 Medical Plan

The Safety Officer and his/her Deputy/Assistant Safety Officers review and provide input to the Medical Plan. Elements of the ICS 206 include:

- Location of Medical Aid Stations and how to contact
- Transportation to Medical Care via air or ground and how to contact
- Contact information and addresses of Hospitals and Medical Care Facilities
- Medical Emergency Procedures

16.6 Compliance Testing

To describe the measures that the response organization will take, in conformity with federal and provincial regulations, to protect the health and safety, and to protect the health and safety of its personnel and others engaged at the request of the response organization in response to an oil spill.

Canada Shipping Act 2001 -Response Organizations Regulations 3. (2)(0)

17.0 RESPONSE COUNTERMEASURES

This section describes the measures that the response organization will take in response to an oil spill, to protect, recover and treat areas of environmental sensitivities within the affected operating environment.[20]

17.1 Initial Response

As soon as any spill is detected, the Polluter may implement emergency response procedures. Generally response falls into two categories: the reactive emergency or initial response phase that involves immediate response actions and mobilization, and the proactive planned or project phase that is established after the spill organization is in place and can prepare and plan day-to-day activities. These phases of response are consistent with WCMRC's ICS based approach to incident management, as detailed in Section 8.0 of this document. A conscientious effort is required to implement a successful transition between these two phases, with the formation of Unified Command, the Incident Management Team, and the establishment of an Incident Command Post. The specific actions taken to contain, control and cleanup a spill will vary with the type of oil spilled, the amount spilled, the location and environmental conditions.

When requested in the initial phase, WCMRC can provide its members with marine oil spill response services; including field response and Incident Management personnel.

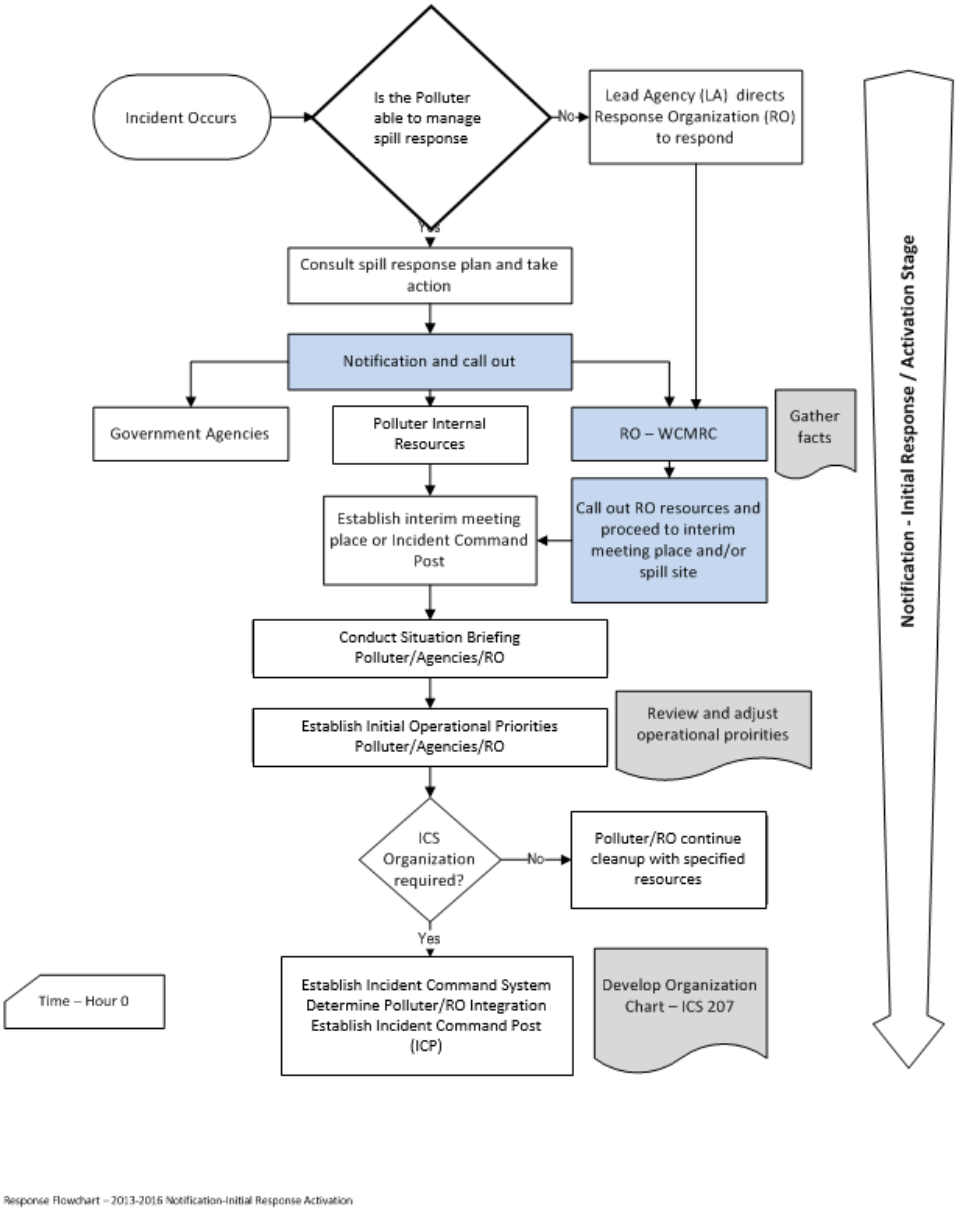
Initial response actions typical for spills include those shown in the following pages: Initial Response Flowchart (Figure 17-1), Planning Cycle (Figure 17-2). The emergency response phase is characteristic of the steps undertaken during the first one to two days. The major parts of the initial response which WCMRC would be involved include: site assessment, safety, resource mobilization, control and containment, protection and recovery operations. Other parts of the response would be functions carried out by the member experiencing the spill or government agencies notified and involved in the response.

Upon initial response to any spill, the WCMRC Spill Response Manager (SRM) will assess the incident according to WCMRC's Incident Management Plan, and establish communication and coordination with the Polluter, CCG and other government agencies involved as soon as possible. This coordination is often guided under the approach established in CCG's Integrated Response Plans, covering the coast of BC. WCMRC will activate and deploy an operational and Incident Management Team response level appropriate to the incident complexity, and other factors. Incident complexity should be continuously assessed, especially in the initial hours of response as more information is gathered and the nature of the situation becomes more clear. In alignment with industry best practice, the WCMRC approach is to 'front load' or 'over respond' in the initial stages based on the potential for escalation, as it is far easier to scale down and demobilize unnecessary, inefficient or ineffective response measures than it is to continuously try to catch up to a developing situation when impact is already occurring.

As a result of the infinite number of combinations of locations, oil types, environmental conditions and numerous other factors, no two spills will be identical. Each spill must be assessed independently on the basis of incident specific conditions. In all cases, the safety of the response personnel will have the highest priority (see Sections 15.0 and 16.0, Health and Safety – All Operations and Health and Safety – Oil Spill Response).

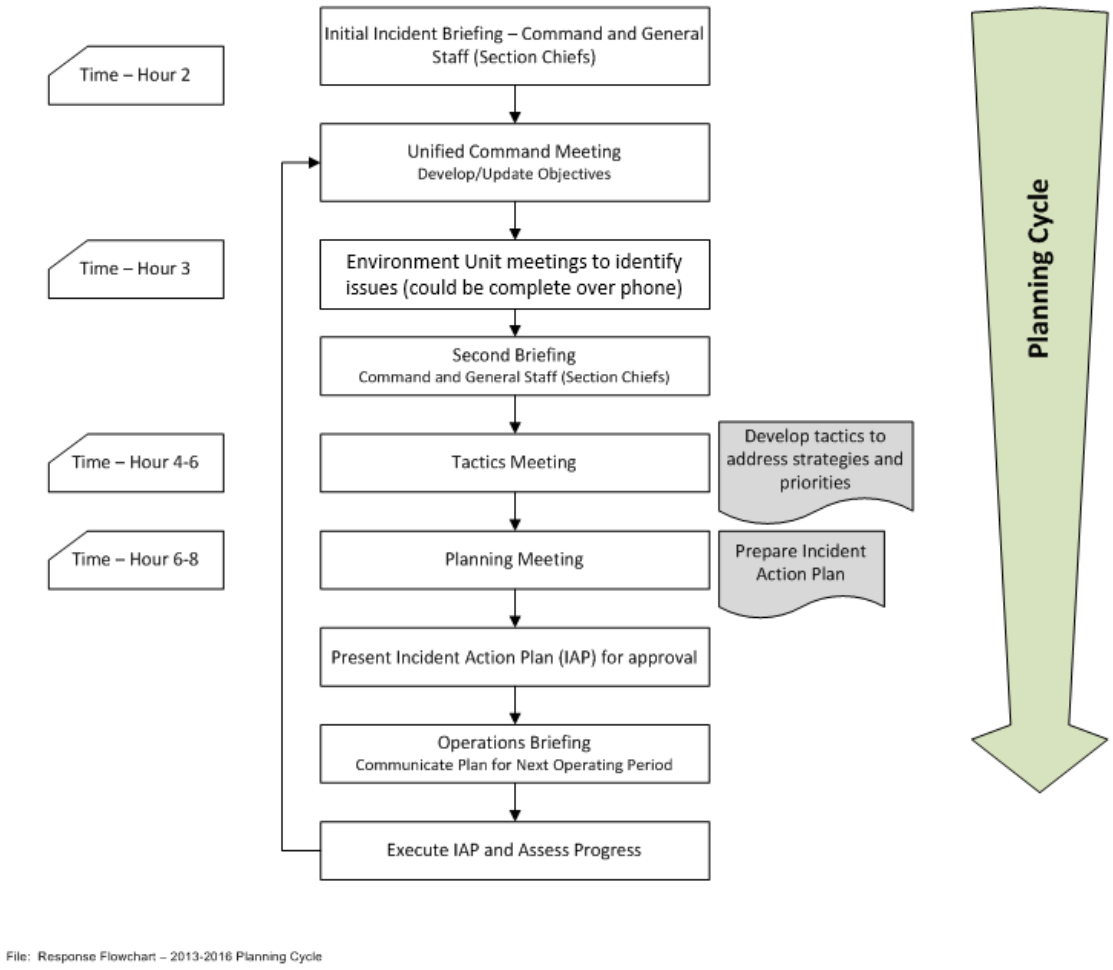
[20] Canada Shipping Act, 2001: Response Organizations Regulations: 3.(2)(l); 3.(2)(m)

Figure 17-1: Initial Response Flowchart



Response Flowchart – 2013-2016 Notification-Initial Response Activation

Figure 17-2: Planning Cycle



File: Response Flowchart – 2013-2016 Planning Cycle

The assessment process includes consideration of the numerous factors which can influence complexity and potential for escalation, outlined in the Incident Management Plan. Some examples include:

- Safety considerations (product, environmental, operational, situational hazards)
- Type of oil (eg. Persistent, non-persistent, potential to sink, weathering, fate and effects)
- Source control
- Location, remoteness or distance from infrastructure to support response efforts
- Environmental factors (weather, wind, sea conditions, exposure)
- Oil slick direction and trajectory
- Potential impact to wildlife, sensitivities, areas of concern
- Shoreline impacts
- Operational considerations, appropriate types and quantity of resources
- Communications considerations
- Logistical considerations
- Planning considerations

- Polluter or Unified Command requirements or expectations
- Non-spill response incident considerations (SAR, fire, HNS, salvage)
- Proximity to international border with USA

Generally, the CCG will immediately dispatch on-water personnel to evaluate the incident when possible, and if practical or appropriate will activate aerial surveillance assets in the form of Transport Canada's National Aerial Surveillance Program (NASP) aircraft, or a CCG helicopter. Aerial surveillance is a primary tool to track, locate, and direct cleanup resources to oil concentrations. This surveillance is also fundamental to monitoring and validating oil movement and identifying potential shoreline contact points for planning purposes.

17.2 Source Control

Stopping the oil loss at its source is critical to minimize the potential effects of the spill and hazards to the general public or natural resources, chiefly by preventing or reducing further spillage. Source control is the responsibility of the Polluter in conjunction with Transport Canada and CCG. Depending on the nature of the spill, source control could take several forms: shutting off or isolating pumps or valves; plugging vents; patching or otherwise repairing damage; transferring product to other internal tanks in a vessel, or other tanks within a facility; lightering or otherwise removing product from a damaged tank or vessel. The Polluter will often employ a salvor to assist with developing and implementing plans in conjunction with Transport Canada.

Although not a direct responsibility of WCMRC, it is important to recognize that source control is always a priority of response; importantly, although WCMRC may not be directly involved in source control or other salvage efforts, it is critical to be involved and aware of planning processes around source control operations, to ensure that activities can be accounted for in other response plans, and that any necessary WCMRC input to contingency plans can be considered.

17.3 Containment

As source control is being attempted or established, responders should also be focusing on taking actions to ensure containment of the spill at or near the source. The strategy, tactic and equipment used is variable and dependent on geographic constraints, environmental conditions, logistics, personnel, site safety conditions, product type as well as the nature and magnitude of the incident. Regardless of the method used, the objective is the same: to prevent or minimize further spread of the oil, helping to maximize the ability to recover or remove the oil from the environment, and minimize further impacts.

WCMRC's primary method of containing oil spills on water is through the use of floating booms. There are several types of floating boom differentially designed for a specific set of wave, current and wind conditions. Despite their slight differences, all have a similar structure with a float that floats above the water and a skirt that hangs below, weighted by a chain. The rigidity and size of skirt and float vary depending on the area of operation, with boom specifically designed for fixed installations, shoreline, sheltered or unsheltered environments. WCMRC's approach to containment is detailed in the Marine Response Plan. More information regarding containment strategies, tactics and boom types can be found in Section 12.0 of this OSRP.

Containment efforts will likely be initiated by a Polluter as part of their own initial response plans, using spill equipment that they have on hand, which could include boom or sorbents, or pre-situated containment may be in place, for example fixed ponding boom at an oil handling facility. As another example, spills from tankers may be contained either onboard or on the water. If the spill occurred on the deck of the vessel, the crew should take actions to confine the product to the deck space, therefore preventing it from entering

the water. If a spill enters the water and cannot be readily absorbed, containment boom may be used to confine the product to a smaller area, lessening the overall impact. In a case where a Polluter is able to establish initial containment of a spill, WCMRC will likely augment containment by deploying a secondary, and possibly a tertiary boom to mitigate entrainment of oil.

17.4 Recovery

Oil spill recovery activities involve a wide range of strategies, tactics and resources. A combination of booms, skimmers, sorbents and other equipment will likely be used to ensure maximum effect. In an actual spill, the decisions to use specific recovery techniques will depend upon the circumstances of the spill, the size, location and potential movement of the spill, the type of oil spilled, geographic constraints, environmental conditions, and logistics, as well as the availability of equipment and human resources.

WCMRC's approach to on-water recovery is outlined in the Marine Response Plan; in general, the principal objective is to maximize the recovery of spill oil, by utilizing best practices to ensure as effective and efficient a response as possible. Considerations for this approach can include:

- 'Front loading' recovery efforts in the initial stages of a response, to maximize the effectiveness of recovery operations prior to the slick impacting shorelines or spreading out or weathering to a degree that it is non-feasible to recover efficiently, or non-recoverable.
- Utilizing the appropriate boom type and capability for the on-scene conditions and operating environment, to maximize collection and minimize entrainment
- Utilizing the appropriate skimmer head or skimmer type for the product; operating the skimmer at an appropriate speed to maximize efficiency and reduce free water recovery
- Maximizing swath width and encounter rate by deploying boom sweeps or other high speed sweep systems, especially in the unsheltered or offshore operating environment
- Targeting the leading edge, or thickest part of the slick through close coordination with aerial surveillance assets (see WCMRC's Surveillance Plan for further details)
- Ensuring continuous recovery operations are possible by deploying sufficient shuttle storage support and maintaining sufficient temporary storage capacity
- Judiciously utilizing sorbents where appropriate and effective, in order to reduce the amount of waste generated as part of the response

Various different booming, sweeping and skimming strategies and arrangements are described in Section 12.0 of this OSRP.

Figure 17-3 - Current Buster High Speed Sweep System

Figure 17-4 - Operating a Skimming Vessel with a Mini-Barge

Figure 17-5 - Operating a skimmer close to shore

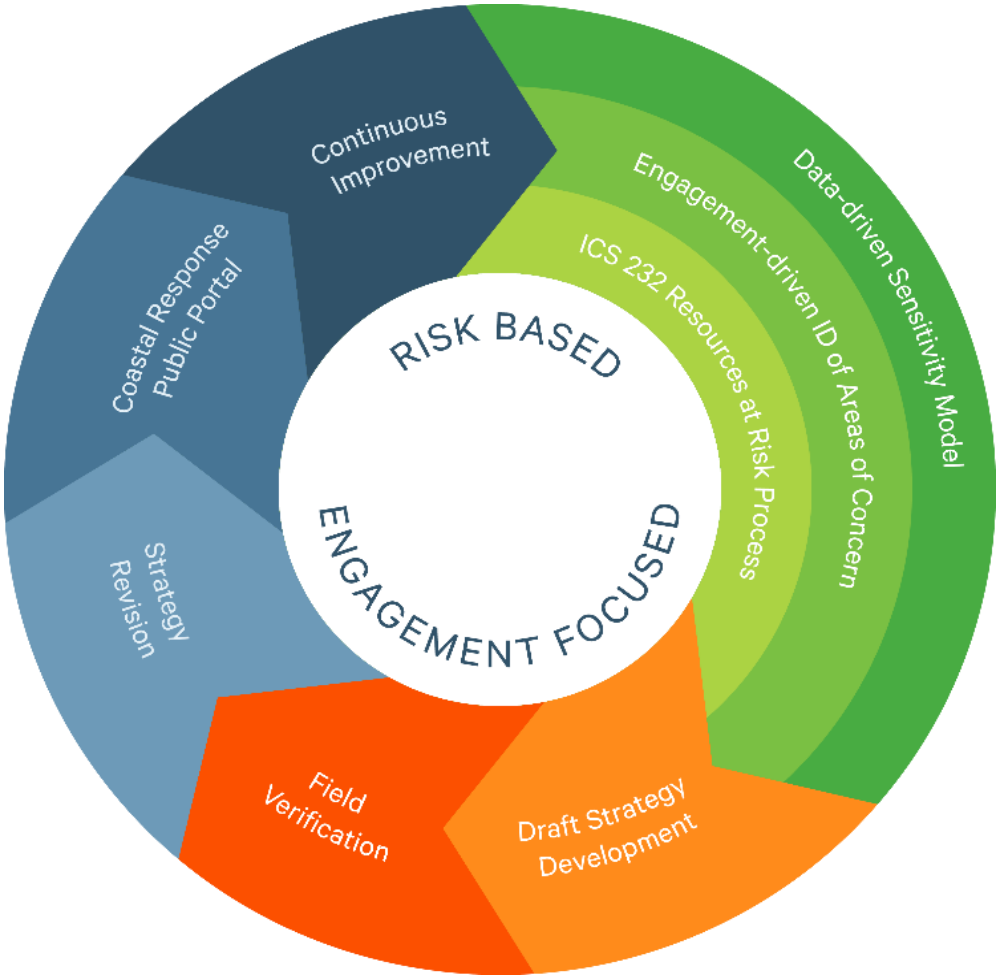
17.5 Determining Environmental Sensitivities

A priority in spill response is to minimize the possible impacts of the spill on biological, cultural-archeological and socio-economic sensitivities or areas of concern. While sensitivities can be determined (and will typically be re-assessed) at the time of an incident, to ensure as much preparedness as possible, it is industry best practice to pre-identify sensitivities ahead of a spill where possible and practical. In order to ensure the best level of preparedness possible, WCMRC instituted and manages the Geographic Response Strategies (GRS) Program, a collaborative, engagement based approach to identifying sensitivities and areas of concern, and developing strategies that can be employed to protect them in the initial stages of an incident. The GRS Program, approach and methodologies are detailed in full in WCMRC's Geographic Response Strategies Standards and Procedures Manual.

GRSs are localized site-specific response plans tailored to identify sensitive shoreline features threatened by an oil spill and describe how to protect them by preventing oil from reaching the shoreline

WCMRC takes a holistic, risk-based approach to GRS development that focuses on engagement with local communities, First Nations and government, and internal collaboration between WCMRC's Response Readiness and Operations groups. With this approach steps may be skipped or revisited at a later date depending on the specific circumstances – the key to the approach is to maintain the principles as a guideline and continually advance the work in a project or focus area to the next stage in the process.

Figure 17-6 - GRS Development Approach



WCMRC uses three parallel approaches to identify sensitivities:

- Data-driven sensitivity model, incorporating existing datasets from government or other sources into a Geographic Information System (GIS) analysis
- Engagement-driven identification of areas of concern, collaborating directly with coastal First Nations and communities to incorporate local and traditional knowledge into preparedness
- ICS 232 Resources at Risk process, employing standard ICS process utilized by the Environment Unit at the time of spill to assess and identify sensitivities on a just-in-time basis; WCMRC utilizes this approach to identify sensitivities where no previous assessment has been conducted, or to support exercises or training activities

At the time of a spill, the Environment Unit (typically led by a Federal or Provincial Representative) provides a mechanism whereby parties with interests and responsibilities for protection of the environment can provide input, recommendations, and guidance concerning environmental sensitivities and response priorities. During a spill incident, an Environment Unit will typically be activated on site at the Incident Command Post, where it will integrate with the rest of the Incident Management Team into the ICS structure; additionally, remote support may be provided by Environment and Climate Change Canada or other applicable government agencies through the National Environmental Emergencies Centre (NEEC), or the formation of a Science Table, who can provide additional data or guidance. Among other tasks, the Environment Unit will identify and prioritize sensitive areas, utilizing the ICS 232 Resources at Risk process

and form, which will be briefed to the Planning and Operations Section in order for strategies and tactics to be developed to mitigate impact.

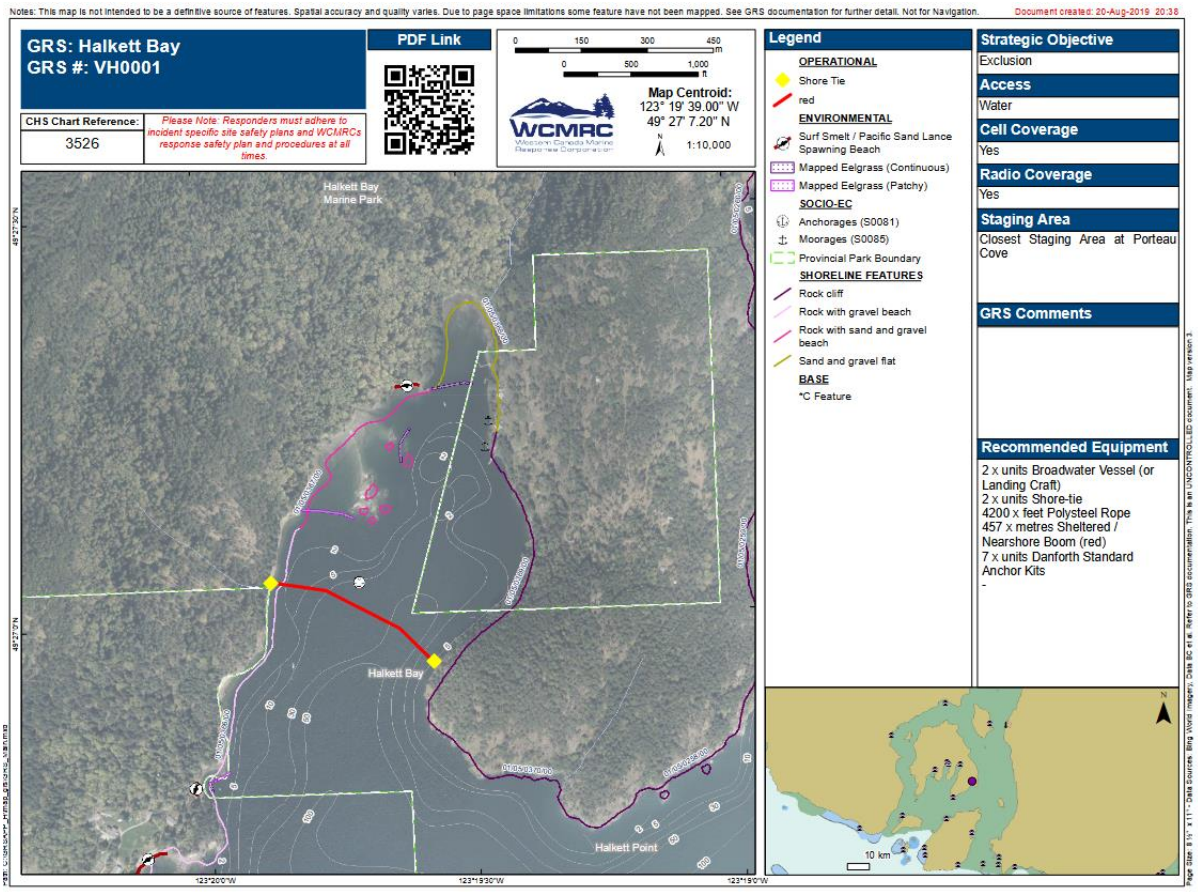
17.6 Protection

Alongside efforts to control the source, contain the spill and recover spilled oil, responders will take actions to minimize impacts to coastal sensitivities by undertaking protection measures and strategies. This includes booming techniques such as exclusion and deflection which prevent spilled product from coming into direct contact with resources of concern, or prioritizing the operation of on-water recovery assets in the vicinity of a sensitive area to mitigate impacts. WCMRC's GRS Program is intended to develop site-specific protection strategies for pre-identified sensitive areas, detailing the strategy to be employed, and the resources and tactic to be used to establish protection. GRS are intended to reduce decision making time and enable quicker response actions in the initial stages of a spill response. GRS are managed by WCMRC's Readiness Department, and data is stored in WCMRC's GIS and Flowfinity databases.

GRS are intended to be operationally focused documents to provide key information to responders and support or supplement ICS documentation such as the ICS 204 Work Assignment. GRS can be printed as a paper copy, or can be accessed digitally on mobile devices to maximize accessibility and ease of use.

Figure 17-7 - Exclusion boom being deployed during training

Figure 17-8- Example of a GRS



17.7 Shoreline Cleanup

In most instances, shoreline cleanup efforts are not subject to the same time constraints as on-water response operations, in that it may be necessary to develop and implement a long term plan for treatment and recovery. However, in the initial stages of response, shoreline recovery at affected areas is implemented as rapidly as possible to reduce the potential for remobilization of stranded oil, and the potential subsequent migration to clean or unaffected shorelines.

WCMRC's approach to shoreline cleanup operations is outlined in WCMRC's Shoreline Response Plan. Further detail on shoreline cleanup equipment and WCMRC's preparedness can be found in Section 12.0 of this OSRP. WCMRC also utilizes the Environment Canada Field Guide to Shoreline Cleanup Response as a tactical guidance document.

Shoreline cleanup planning will be coordinated through the Environment Unit, with support from the Shoreline Cleanup Group in Operations. WCMRC's mandate to be prepared to treat up to 500m of shoreline per day means that WCMRC responders, contractors and equipment resources will be a key element of cleanup efforts, and WCMRC will typically play a key role within the Shoreline Cleanup group to manage shoreline operations. The general approach is to mobilize teams with expertise in Shoreline Cleanup Assessment Technique (SCAT) to survey and assess impacted shorelines, and develop recommendations for treatment to be implemented by Operations. The objective of the shoreline cleanup should be to remove as much oil as possible, while causing minimal extra damage to the environment. The general steps in cleanup are:

- Identify the extent of the impact (usually accomplished by SCAT field assessment surveys of the shore following oiling);
- Develop Shoreline Treatment Recommendations, keeping in mind best practices and net environmental benefit, for Unified Command review;
- Conduct and monitor the cleanup; long term treatment and monitoring efforts typically form part of the project phase of the response, and may continue after WCMRC resources have been demobilized

Various shoreline cleanup techniques are appropriate to the shorelines of BC; different shoreline types, various cleanup techniques, as well as decision making guidelines and tools are outlined in the Environment Canada Field Guide to Shoreline Cleanup Response

17.8 Surveillance

During an oil spill response, surveillance encompasses numerous methods of getting information on: what **has** happened, what **is** happening, and what **may** happen. Responders want this information to be as up-to-date and accurate as possible – the better the information, the better responders can plan, deploy and direct resources.

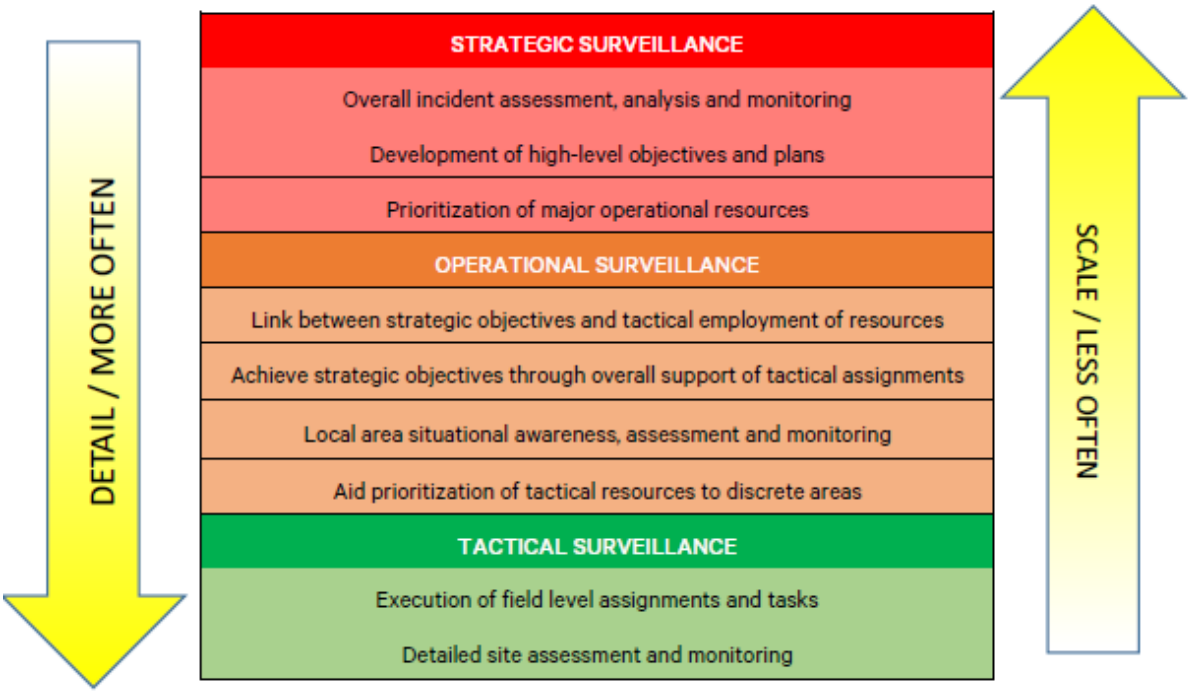
WCMRC has developed and maintains the Surveillance Plan to provide guidance and outline the approach to surveillance. The Surveillance Plan was developed, and is to be maintained by WCMRC in collaboration with relevant subject matter experts, and has been workshopped and reviewed by relevant government agencies. The plan is intended to be available for use by the response community as a whole and implemented by a Polluter and/or Unified Command. The plan is built upon industry best practice for surveillance during an oil spill, and outline various measures and strategies which can be employed to support effective planning and response.

In general, surveillance can be seen to have three main goals:

- Incident Assessment and Volume Estimation, aid responders to continually assess the scale, complexity and potential for escalation of a spill incident, and monitor response effective and progress
- Situational Awareness and Change Detection, support planning efforts, decision making, prioritization and resource allocation
- Tactical Support of Operations, maximize the efficiency and effectiveness of various other response options

The approach outlined in the plan utilizes the concept of a layered approach to surveillance; many different surveillance options or methods are combined in order to provide the most accurate, up to date and complete picture of the situation, and provide as much information as possible for planners, responders and decision makers. Different methods can provide information at different levels of detail, scale and frequency, so must be combined – in complex spills, there is no single method which will provide the necessary information at the frequency necessary to support decision making.

Figure 17-9 - Layered Surveillance Concept



Surveillance methods overviewed in the plan include:

- Spill modelling
- Field observations / assessments
- Drifter buoys
- Satellite surveillance
- Fixed wing aircraft
- Helicopters
- Unmanned Aerial Vehicles (UAVs)
- Aerostats
- Wildlife Reconnaissance
- Shoreline Cleanup Assessment Technique (SCAT) surveys
- Underwater Seabed Cleanup Assessment Technique (uSCAT) surveys
- Sampling
- Weather forecasting

17.9 Alternative Countermeasures

There is no formal definition for Alternative Countermeasures (ACMs), also known as Alternative Response Measures (ARMs) in Canada. In the context of the Canadian spill response regime and community, they are generally understood and considered to be measures outside the usual methods of spill response by Response Organizations and the Canadian Coast Guard, which is historically limited to mechanical containment and recovery using booms, skimmers and sorbent materials, as well as various shoreline cleanup techniques. These measures include, but are not strictly limited to strategies such as dispersants, shoreline treatment agents, in-situ or shoreline burning, and decanting.

While these measures are commonly used, often as primary response measures in other countries and parts of the world, they are considered 'alternative' in Canada, as either no framework for their use exists in the form of applicable or practical legislation or regulation, or existing legislation or regulations are unclear or contradictory regarding their use. As such, under the current regime they are generally not considered recognized or approved response measures to be undertaken; although various working groups have been established to consider these measures, no policy is yet in force, and any consideration of these measures must assessed under a case-by-case basis by relevant government agencies, and possible exemptions to legislation would have to be given to allow their use.

Although not required or stipulated under regulation, WCMRC has opted to maintain procedures to respond using unconventional methods, which WCMRC has determined to be dispersants, shoreline treatment agents, in-situ burning, shoreline burning, and decanting; while this does not necessarily enable the use of these measures, it recognizes the obligation of WCMRC, as oil spill response experts to a Polluter or Unified Command, to be able to advise on all possible measures to ensure a successful response, according to industry best practice. As such, WCMRC has developed the Alternative Countermeasures Plan to meet this requirement. The plan contains decision making guidelines to determine the appropriateness of a strategy, best practices for effective deployment, and proposed submission processes to seek approval for use.

This plan was developed and is to be maintained by WCMRC in collaboration with relevant subject matter experts. The plan is intended to be available for use by the response community as a whole and implemented by a Polluter and/or Unified Command. The plans are built upon industry best practice for relevant response measures during an oil spill, and outline roles and responsibilities of the Polluter, and relevant government agencies, as well as areas where WCMRC can support the response as appropriate. As there is not currently a path forward for the development of framework around these measures, WCMRC has not invested significantly in capability or building relationships for their use.

Dispersants

Dispersants are chemical agents comprised of surfactants and solvents, sprayed onto marine oil spills to enhance natural dispersion of the oil into the upper metres of the water column. The solvent reduces the viscosity of dispersants for spraying and helps surfactant molecules penetrate the oil slick.

Surfactant molecules have a hydrophilic (water-seeking) headgroup and an oleophilic (oil-seeking) tail group, orientating themselves at the oil/water interface so that the tail group attaches to the oil and the headgroup is pulled to the water. This reduces surface tension so that when wave energy is added, very small droplets break away from the slick, stay suspended and spread beneath the surface.

Dispersants are viewed as an effective way to mitigate shoreline impacts from an oil spill, by attempting to maximize dispersion of the oil offshore. As such, it would be an effective means to respond to a spill in an unsheltered or operating environment where there are limitations and constraints on the safe or effective operation of mechanical containment and recovery techniques.

Figure 17-10 – Different stages of oil dispersion

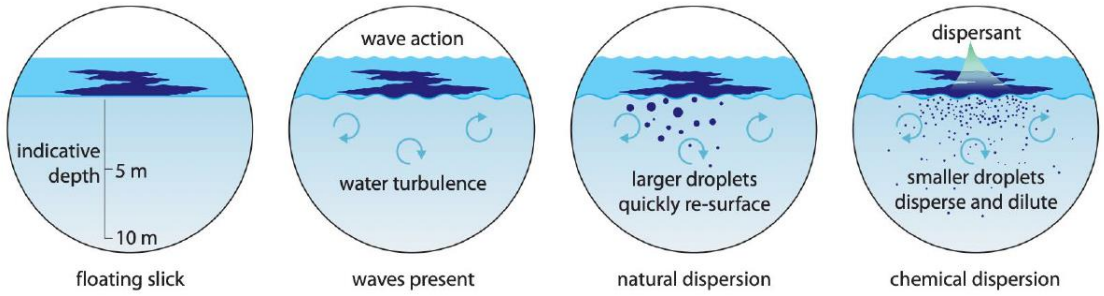


Figure 17-11 - Aerial application of dispersants to an oil slick

Shoreline Treatment Agents

Shoreline treatment agents, or beach cleaners, are formulations of surfactants designed to remove oil from solid surfaces. As they are designed to remove oil rather than to disperse it, treatment agents contain surfactants with higher hydrophilic-lipophilic balance (HLB) than that of dispersants. Most treatment agents are formulated not to disperse oil into the water column, but to release oil from the surface where it floats.

Shoreline treatment agents are acknowledged as a potential shoreline treatment method in the Environment Canada Field Guide to Shoreline Cleanup Response, and WCMRC has successfully employed shoreline treatment agents during response to heavy oil spills, utilizing a process further developed in the Alternative Countermeasures Plan. The general approach is to utilize the shoreline treatment agents to supplement or enhance the effectiveness of shoreline flushing operations, whereby oil is remobilized from the shoreline into a contained area, where it can be recovered from the water.

In-Situ Burning (On-Water)

In-situ burning is the controlled combustion or burning of spilled oil's hydrocarbon vapours in place, and it is the oil vapours that provide the fuel to support combustion. The vaporisation process of oil must be sufficient to yield steady state burning, in which vaporisation and burn rates are similar. The burn rate is limited by the amount of oxygen available, and the heat radiated back to the oil, and will also rely on the type of oil and its degree of weathering. If vapours are insufficient, the oil will not ignite or will quickly extinguish once ignited. The amount of vapour produced is dependent on the amount of heat radiated back to the oil, which is estimated to be about 2–3% of the heat produced.

Fresh crude oil needs to be at least 1 mm thick to yield enough vapours to allow ignition on water, while oil that has undergone extensive weathering may need to be between 2–5 mm thick. Heavy fuel oils will need

to be contained to maintain a slick thickness of around 10 mm before they can be ignited. Once ignited, the heat radiated back to a slick will usually be sufficient to allow the burn to continue until the oil slick is around 2–3 mm thick. As a slick thins, its insulating capacity weakens and more heat is lost to the water beneath, eventually resulting in insufficient heat to continue to vaporise the oil and sustain combustion. Weathered or emulsified oil can be difficult to ignite as a greater quantity of energy is needed to remove water before it is able to heat the oil.

Objectives of In-Situ Burning:

- To rapidly and efficiently dispose of large quantities of oil which would otherwise pose a threat to environmentally sensitive areas;
- To dispose of oil from sources such as sunken vessels which would be difficult to recover mechanically;
- To prevent oil from reaching shorelines and sensitive areas;
- To dispose of oil which otherwise presents logistical challenges.

It is important to emphasise that the combustion of spilled oil is not seen as a substitute for the containment and physical removal of spilled oil. Conventional booming and skimming operations will always be conducted wherever they can be implemented safely and with a reasonable degree of effectiveness.

Figure 17-12: In-situ Burning

Shoreline Burning

Shoreline burning is primarily used for oiled combustible materials, such as logs or debris, that can be collected and piled to facilitate burning. It can also be used when vegetation has been oiled, such as in a salt marsh or wetland. In limited circumstances, direct burning of oil on a beach can be carried out if the oil is pooled or concentrated by an onshore breeze, in sumps, trenches or other types of containers.

Shoreline burning is typically considered as a component of shoreline cleanup operations, and is reflected as such in the Environment Canada Field Guide to Shoreline Cleanup Operations. It is important to distinguish shoreline burning from the concept of incineration, which is typically considered as an element of waste management to reduce the amount of waste which has to be transported, for example from remote or difficult to access locations.

Decanting

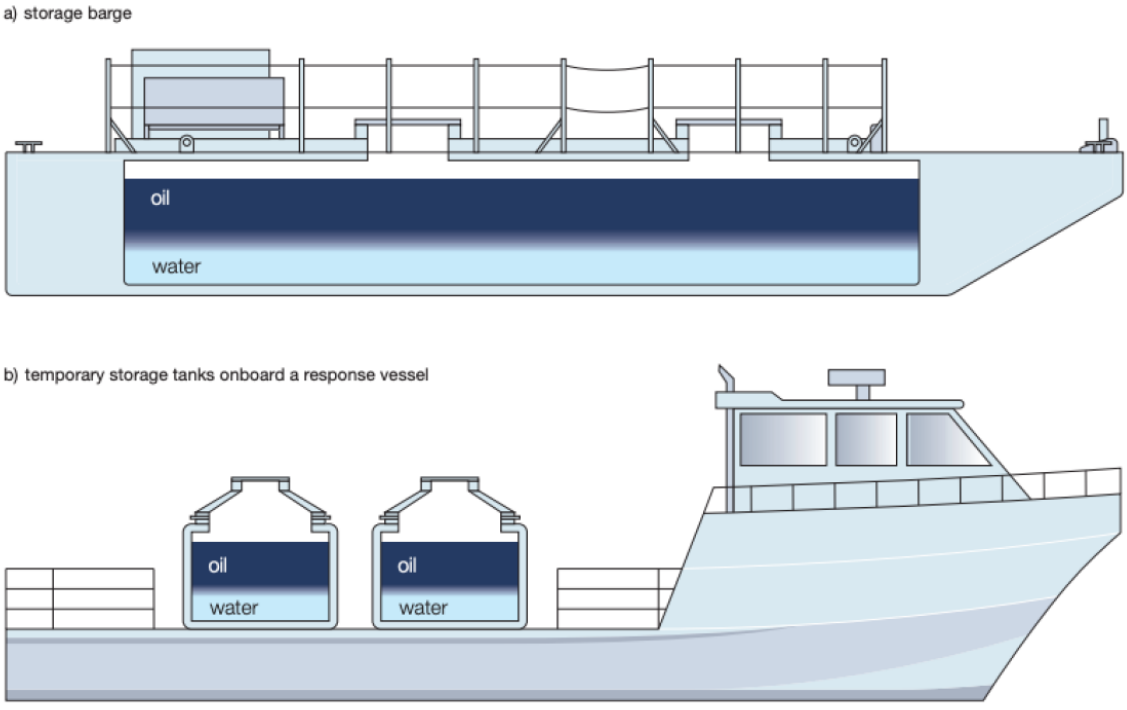
The use of decanting is an effective way to maximise the oil recovered during mechanical containment and recovery operations, by removing free water from a tank once the liquid has had an opportunity to settle

and separate. It greatly simplifies the logistical requirements of waste management for on-water recovery operations, by reducing the amount of temporary storage necessary; it can also be used to mitigate bottlenecks in the downstream waste management organization, by reducing the transport and disposal capacity necessary to manage the recovered liquid.

Approval to decant recovered water frees up valuable storage capacity in the temporary storage device, which would otherwise have to be emptied before response operations can continue. Decanting the recovered water can serve to increase the temporary storage space available by up to 200–300% (S.L. Ross, 2005). This is particularly important in the early stages of a response when the 100% utilization of recovery and skimming equipment should be given 100% priority until the appropriate storage can be delivered in to the field of operation. Prioritizing the utilization of recovery and skimming equipment has a very clear and defined benefit for the protection of the environment.

When contained within the relatively low-energy environment of the temporary storage device, the recovered mix of oil and water will start to separate into layers by a process of gravity separation. The use of baffles to reduce the free surface effect will help speed up separation and prevent remixing of oil and water. Once this separation has occurred it is possible to decant the bottom layer of free water, using pumps or valves, whilst retaining the recovered hydrocarbon. Decanting is intended to be done into a contained area, to prevent further contamination of the environment by the oil that was originally spilled.

Figure 17-13 - Examples of settling and separation of oil and water in temporary storage tanks



17.10Waste Management

The Polluter is accountable for waste disposal under the BC Hazardous Waste Regulations, and will collaborate with BC Ministry of Environment to develop an incident specific waste management plan. WCMRC has opted to maintain plans and procedures to guide management of oiled waste; while this does not reassign any responsibility onto WCMRC, it recognizes the obligation of WCMRC, as oil spill response experts to a Polluter or Unified Command, to be able to advise on necessary response actions, according

to industry best practice. It also recognizes the importance of WCMRC to consider, plan and possibly facilitate downstream waste management measures, in order to ensure effective recovery operations. WCMRC considers and contributes to the waste management planning process important operational plans and considerations regarding the ongoing recovery operations, temporary storage, transportation, and disposal at an approved facility. WCMRC has developed and maintains the Waste Management Plan to provide guidance on waste management.

The Waste Management Plan was developed, and is to be maintained by WCMRC in collaboration with relevant subject matter experts, and has been workshopped and reviewed by relevant government agencies. The plan is intended to be available for use by the response community as a whole and implemented by a Polluter and/or Unified Command. The plan is built upon industry best practice for waste management during an oil spill, and outline roles and responsibilities of the Polluter, government agencies, and areas where WCMRC must coordinate with the Polluter and BCMoE to ensure successful recovery operations.

Physical recovery of oil and oiled debris from the environment commonly produces volumes of waste much larger than the volume of the initial spill. After the oil waste is recovered, it must be recycled, reused or disposed of. Appendix 6 of the B.C. Marine Oil Spill Contingency Plan, "Guidelines for Waste Disposal", outlines the strategy, objectives, and authority for waste treatment/disposal. Additional information and guidance can be found in Waste Management Guidelines for Marine Oil Spill Response in British Columbia, prepared by the BC Ministry of Environment.

17.11 Sunken and Submerged Oil

The recovery of sunken and submerged oil creates unique circumstances that are specific to the conditions at the time of the spill. The success of the response relies heavily on the use of good common sense, as well as an understanding of the limitations of the equipment. When responding to sunken and submerged oil, an appreciation for the various types of oils and applicable strategies that might work with various oils and conditions is required.

Some specific oils at risk of sinking or submerging are low API bunker, cat fractionator bottoms and asphalt.

Recovery of sunken or submerged oil in sheltered or unsheltered waters creates circumstances that vary with the weather, location and oil type. Although conventional response techniques and equipment may not be effective when attempting to recover sunken oil, some WCMRC equipment and many of the management functions and support services of conventional oil spill response are applicable to situations where oil may sink.

Oil which has a specific gravity at, or higher than that of water, might sink to the bottom or remain suspended in the water column as globules or patches of oil (this section is not relevant to oils that become suspended or dispersed in water as a result of mixing or going into solution). Oil that has sunk or become suspended may resurface when the water conditions change (temperature, salinity) or when the oil itself changes. A sizeable component of the sunken can separate and float to the surface. The strategy for recovery of this portion of the spilled oil is identical to any surface recovery.

Sunken and submerged oil is usually one of the following types:

- Oil that sinks to the bottom but remains pumpable;
- Oil that sinks to the bottom and solidifies;
- Oil that initially floats and with the up-take of sand or a change in density because of emulsification or evaporation becomes more dense and sinks;
- Oil that sinks below the surface of the water and is suspended in the water column as globules or patches.

Response to sunken and submerged oil will be driven by two main practices:

- WCMRC's Sunken and Submerged Oil Plan, which outlines the techniques and methods available to contain and recover sunken and submerged oil when safe and practical; this plan would be implemented by Unified Command and the Incident Management Team who would source the requisite service providers to execute assigned tasks related to the response. In general, this plan establishes that WCMRC's focus will remain on-water containment and recovery to reduce the spread of spilled oil and reduce the risk or impact of sinking, while enabling the Polluter and Unified Command to assess the risk of sinking oil, and implement an appropriate response as required.
- Underwater Seabed Assessment Technique (uSCAT) Manual and Guide, which provides a method to assess the risk of oil sinking or submerging given the prevailing conditions, as well as outlining the means and methodology to detect and delineate sunken oil. These measures are incorporated into WCMRC's Sunken and Submerged Oil Plan as best practice to determine and establish appropriate response in the initial stages of an incident and assess the risk of oil sinking.

WCMRC maintains an agreement with subject matter experts, who can provide technical and management expertise when activated to support a response to sunken and submerged oil; this contact can be facilitated to a Polluter or Unified Command in order to implement the Sunken and Submerged Oil Plan.

17.12 Compliance Testing

To describe the measures that the response organization will take in response to an oil spill, to protect, recover and treat areas of environmental sensitivities within the affected operating environment.

Canada Shipping Act, 2001: Response Organizations Regulations: 3.(2)(l); 3.(2)(m)

18.0 WILDLIFE

The purpose of this section is to list the equipment for scaring off birds from an oil spill location and of the measures available in support of the wildlife activities of other parties.[21]

18.1 Oiled Wildlife Preparedness

Under its mandate through the Transport Canada Response Organization Regulations, WCMRC is not responsible for response to oiled wildlife; rather, the responsibility is upon the Polluter, in collaboration with relevant government agencies, including Environment and Climate Change Canada (ECCC), Department of Fisheries and Oceans (DFO), Canadian Wildlife Service (CWS), and BC Ministry of Environment (BCMoE) to ensure effective response and minimize the impact to wildlife. Under the Regulations and Standards, an RO is required to maintain equipment for hazing and deterrence of birds, in order to support ongoing wildlife response activities. WCMRC will provide or deploy this equipment under the guidance and request of relevant government agencies or other wildlife subject matter experts.

WCMRC has opted to maintain plans and procedures to guide response to, and treatment of oiled wildlife; while this does not reassign any responsibility onto WCMRC, it recognizes the obligation of WCMRC, as oil spill response experts to a Polluter or Unified Command, to be able to advise on necessary response actions, according to industry best practice. As such, WCMRC has developed two plans in order to meet this requirement:

- Oiled Wildlife Strategic Response Plan
- Marine Mammal Oil Spill Response Protocol

These plans were developed, and are to be maintained by WCMRC in collaboration with relevant subject matter experts, and have been workshopped and reviewed by government agencies and First Nations. The plans are intended to be available for use by the response community as a whole and implemented by a Polluter and/or Unified Command. The plans are built upon industry best practice for all elements of response to wildlife during an oil spill, and outline roles and responsibilities of the Polluter, government agencies, local communities and First Nations; areas where WCMRC can support a wildlife response are outlined in the plans.

18.2 Wildlife Hazing and Deterrence

WCMRC maintains hazing equipment that is available for use during a response to deter wildlife and minimize impact. If requested under the direction of the Polluter or Unified Command, and with the appropriate approvals through the Environment Unit and the Scientific Support Coordinator, WCMRC will activate the equipment for hazing and deterring wildlife from oiled shorelines, and if possible from oil on water. The Environment Unit will guide and direct WCMRC's bird hazing activities and locations. Hazing and rehabilitation of marine mammals requires special expertise and equipment, and thus, may be undertaken by organizations such as the Department of Fisheries and Oceans, and the Vancouver Aquarium or contracted organizations with the required expertise and permitting.

Bird species respond differently to hazing techniques, and their behavior is further influenced by the local geography. In recognition of this fact, WCMRC will consult the Environment Unit for advice concerning the target bird species and the area's geography before implementing a specific hazing plan. No federal permits are required for non-lethal deterrence of migratory birds unless using firearms and/or aircraft (Note: this

[21] Canada Shipping Act 2001: Response Organizations Regulations: 3.(2)(k)

exemption does not apply to endangered species.) Canada's Species At Risk Act does not specifically authorize deterrence and preemptive capture of endangered species. Specific authorization for hazing of marine mammals would be required from Department of Fisheries and Oceans. Authorization for deterrence may also be required by provincial regulatory or wildlife agencies. WCMRC has identical hazing packages designed for rapid deployment in the Geographical Area of Response (GAR).

Figure 18-1: Hazing Package

Kit contents include:

- Hazing tools: Zon gun (propane cannon) and instructions; air horn; mylar tape; Safety circle measurement rope; Scary Eye Bird Distracters; Safety circle posts; Safety Circle instructions; hazing signs;
- Personal protective equipment (PPE): hard hats; eye protection; hearing protection; hearing protection signs; gloves; rain suits; safety boots; first aid kit; fire extinguisher; caution tape;
- Tools: deci-damps; zap straps; duct tape; multi-head screwdriver; sledgehammer; crescent wrench; exacto knife

Kit locations:

- Burnaby: Breco buoy + Hazing kit (9)
- Prince Rupert: Hazing Kit (4)
- Queen Charlotte City: Hazing Kit (2)
- Shearwater: Hazing Kit (2)
- Kitimat: Hazing Kit (2)
- Hatch Point: Hazing Kit (2)
- Nanaimo: Hazing Kit (2)
- Ridley Island: Hazing Kit (2)

18.3 Oiled Wildlife Society of B.C.

WCMRC provides support to the Oiled Wildlife Society of B.C. (OWSBC), a group composed primarily of non-government organizations involved in oiled bird rehabilitation. The Society supports the West Coast Protocol in Oiled Bird Rehabilitation. WCMRC assists by being caretaker for two oiled bird response trailers (see below Figure 18-2). The equipment contained within the trailers is owned and maintained by the OWSBC.

In the event of a spill response requiring wildlife operations, trained rehabilitation personnel and volunteers are activated by the Polluter with the assistance of the Environment Unit, Department of Fisheries and Oceans, Canadian Wildlife Service and the British Columbia Ministry of Environment.

The Polluter must complete a rental agreement and receive the approval of two members of the OWSBC Board of Directors before equipment will be dispatched by the Society.

Figure 18-2: Wildlife Response Units

Table 18-1: Oiled Wildlife Contacts

ORGANIZATION	SERVICES	LOCATION
Oiled Wildlife Society of B.C.	Equipment, recovery and rehabilitation, facility development, contingency planning, preparedness and training	Vancouver
Focus Wildlife	Oiled wildlife assessment, deterrence, recovery and rehabilitation, response management, equipment, facility development, contingency planning, preparedness and training	North Vancouver
Tri-State Bird Rescue & Research	Oiled wildlife assessment, deterrence, recovery and rehabilitation, response management, equipment, facility development, contingency planning, preparedness and training	Newark, Delaware

18.4 Compliance Testing

The purpose of this section is to list the equipment for scaring off birds from an oil spill location and of the measures available in support of the wildlife activities of other parties.

Canada Shipping Act 2001: Response Organizations Regulations: 3.(2)(k)

APPENDIX A
INTRODUCTION TO SPILL SCENARIOS

1.0 INTRODUCTION

Scenarios are one method of illustrating the manner in which the Response Organization's (ROs) resources may be used for control, containment, protection and cleanup under various hypothetical situations. The scenarios have been selected to provide information suitable for estimating early response capabilities of Western Canada Marine Response Corporation (WCMRC). The scenarios represent a range of conditions that may be expected from spills, with the emphasis in the Primary Area of Response (PAR) and the Enhanced Response Area (ERA). The scenarios describe possible situations and response actions, and are used to convey to the reader a typical sequence of events, as might unfold during an actual event. These scenarios have been used as the setting for WCMRC exercises and as the basis for WCMRC operational plans. The situations described, equipment used, and response times and actions indicated are illustrative only, and are not intended to be prescriptive for use during an incident.

2.0 NUMBER OF SCENARIOS

Five scenarios were selected to illustrate the range of response that may be expected of WCMRC. This number of scenarios provides examples of the major areas of consideration for the Response Organization (RO):

- Designated Port (Appendix B)
- Primary Area of Response (Appendix C)
- Enhanced Response Area (Appendix D)
- Area outside of the PAR or ERA (Appendix E)
- Inland Area/Riverine Environment (Appendix F)

Scenario Locations

Specific locations for the scenarios are based upon areas of navigational risk. These locations of higher risk are based on historical spill/accident locations and on results of the B.C./States Oil Spill Task Force study of spill risks. Scenarios for Haro Strait, Chatham Sound, and the Juan de Fuca Strait are similar to those described by Dickins et al., (1990). More recent risk assessments conducted by Transport Canada in support of the Southern Portion of British Columbia Area Risk Assessment (2016) and Regional Risk Assessment of Ship-Source Oil Spills in Northern Shelf Bioregion (2019) support these scenario locations and risks.

Time of Scenario

Each season is represented by the proposed scenarios, including two for winter conditions. Spill events are selected for daytime hours ranging from 0600 to 2100.

Spill Size

The spill sizes in the following scenarios are either 1,000 tonnes, 2,500 tonnes, or 10,000 tonnes. WCMRC recognizes that response planning for a 10,000 tonne spill is a pre-requisite for a Response Organization, and has illustrated in the plan its capability to meet those requirements. The spill sizes of 1,000 and 2,500 tonnes were selected to illustrate response according to Tiers 2 and 3.

Oil Types

Representative oil types are used to illustrate response strategies appropriate to distinct oils. The oils used are marine diesel (Bunker B), a heavier bunker oil (Bunker C), and crude oil (Alaska North Slope).

Scope of Scenario

Scenarios have been developed for the first 18 hours of response. The Tier 3 (18 hour) scope of response was selected as it generally represents the emergency phase of response, supported primarily through in-region resources. Response, would of course, continue as necessary until the Unified Command had recognized that cleanup efforts were complete. Description of the response beyond 18 hours, however, is not included in the scenarios, as it would involve cascading of equipment, resources, and manpower, possibly from out-of-region and under planned direction from the Unified Command. Personnel and resources would be expected from potential sources of Mutual Aid from US OSROs and Canadian ROs, as needed. After 18 hours, Incident Management Team planning and resource management would begin to fall generally into the project phase of response as Incident Action Plans would be developed and implemented.

3.0 METHODS

Format for Scenario

Each scenario consists of a description of the scenario setting, conditions at the spill site, and a general description of sensitive resources in the area. References are provided for further information of sensitive resources. Each scenario is then developed as a sequence of events beginning with the spill and initial notifications.

Timelines

The scenarios are developed as a time line of events, generally described in terms of response time after notification (equivalent to Tiers 1 through 3, within the PAR). The use of the term 'Tier' is intended as an aid in overall response, however, Tiers 1-2 do not apply in the PAR/ERA nor do any tiers apply outside the Designated Port/PAR/ERA. Initially, the response is described as events that elapse during 0 to 1 or 2 hours after the initial spill. The scenarios reflect the time elapsed between the actual spill event and notification to agencies and to WCMRC. The narrative portion of the scenario then describes action taken by WCMRC after its notification. The narrative and tables used to illustrate the arrival of spill response resources is based on elapsed time after notification at WCMRC.

Elapsed times between notification and arrival of equipment are calculated using a mobilization delay and the travel time from equipment location to the spill site or staging area. Actual vessel speeds are used for these scenarios. Equipment in trailers may have delays associated with ferry crossings and timetables. These types of delays are accounted, where appropriate, for the arrival times of equipment by land. Further information on mobilization times of equipment can be found in Section 12.0 Equipment.

Spill Characteristics

The scenarios describe the spreading and movement of oil during the first 18 hours of the response effort. These trajectories are estimated from slick movement controlled by tidal currents, non-tidal currents, and approximately 3% of the wind velocity. Tidal currents were obtained for each scenario given the scenario date and using OilMapWeb software for each location. Information of non-tidal currents was obtained from Thomson (1981).

Spreading dimensions are estimated from similar scenarios developed and modelled in 2016 and 2019 under Transport Canada Risk Assessment projects. Oil evaporation and emulsification are not taken into consideration for these scenarios; however, both may be expected to be important aspects of oil weathering, fate and behaviour. As stated in the guidelines for preparation of the response organization plan, the net loss of oil to evaporation is assumed to be replaced by volume gained from emulsification.

Sensitivities

Sensitive areas are provided for each of the scenarios. These sensitive areas are not intended to be fully comprehensive, nor do they account for the variability at both spatial and temporal scales. Sensitive areas were described for a potentially affected area as a result of the spills' likely track and spreading. Sensitive areas were then identified from existing databases on oil spill sensitivities, where these exist, or from atlases (i.e. oil spill atlases for the southern Strait of Georgia and southwest Vancouver Island) or spill response/countermeasures/protection/cleanup manuals. These sensitivities are therefore based on the best information that is available from federal and provincial sources, and are only intended as examples of the type of data that is available for the scenario at that particular time of the year. For actual spill response, this information will be provided by the Environment Unit and NEEC once an Incident Management Team is established.

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APPENDIX B
DESIGNATED PORT – VANCOUVER HARBOUR

1.0 GENERAL

Location:	English Bay anchorage		
Latitude:	49° 18.8' N	**Longitude:**	123° 11' W
Time:	0600	**Date:**	September 30
Spill Size:	1,000 tonnes		

Loss: Continuous (loss over 4- to 6-hour period)

Oil Type: Marine Diesel (Bunker B)

Weather Conditions: Calm, fog

Oceanographic Conditions: Near low tide. Calm seas.

2.0 ACCIDENT DESCRIPTION

Dry cargo vessel at anchor is hit by a barge. Tanks rupture aboard the barge and vessel.

3.0 SENSITIVE AREAS

Information concerning sensitivities is readily available from federal and provincial sources, NEEC priority maps and sensitivity atlases such as Oil Spill Resource Information Service (OSRIS). First Nations Traditional Territory information is based on the BC Consolidated database.

Socio-Economic:

- Stanley Park, north shore beaches, Sea Bus, Second/Third English Bay beaches, Royal Vancouver Yacht Club, False Creek. Substantial commercial operations and property in Port of Vancouver; large proportion of southern shore is public beaches; residential and commercial property in False Creek.

Biological:

- Birds - potentially significant congregations of waterfowl, eagles, or Canada geese at the mouths of salmon streams and along English Bay and Beaches of Stanley Park.
- Commercial Invertebrates - crabs sub-tidally, no specific locations.
- Fish - Cypress, Capilano, Lynn, and Seymour salmon streams likely have adults in estuaries. Capilano River hatchery and herring spawning grounds at False Creek.
- Marine mammals - seals present but no specific haul-outs identified.

4.0 ENVIRONMENTAL SETTING AND MOVEMENT

Current data was obtained from OilMapWeb software and general currents from Thomson (1981). The prevailing currents in Burrard Inlet are tidal, with velocities generally of 0.5 to 1 knots though speeds can exceed 5 knots through First Narrows. At the time of the spill, tidal currents are near peak ebb, at typical velocities of 1.3 knots.

The wind data for this trajectory analysis was assumed to calm to light. Given this assumption, the tidal currents will dominate the transport. Trajectory modeling will be requested through NEEC to support the response efforts.

5.0 ELAPSED TIME

0 – 1 Hours	Notifications/Callout, Mobilization, Assessment, Incident Command

6.0 NOTIFICATIONS AND CALLOUT

The vessel master or person in charge of the vessel at the time of the accident and spill notifies the appropriate supervisor(s) or dispatch personnel and the Canadian Coast Guard (CCG) through the Marine Communications and Traffic Services (MCTS).

The supervisor or the person in charge then makes all other necessary notifications as required by provincial and federal law. Upon being informed that a collision has occurred, the CCG advises WCMRC. The vessel and barge companies initiate their internal callouts to define the effects of the accident and the nature of the problem, including the spill. Companies' callouts also include WCMRC according to their SOPEP requirements.

Total time delay from collision and spill to WCMRC notification was 15 minutes.

WCMRC initiates its own internal/contractor callout and personnel begin to mobilize for the response. WCMRC mobilizes skimmers by water and other equipment by road from Vancouver area and Burnaby and notifies marine and land contractors who dispatch people by road from Vancouver Harbour area. A dispatch delay of 30 minutes for WCMRC vessel crew and 2 hours for the contractors is anticipated. The vessel skimmers are dispatched with anticipated transit time of 1.5 hours to incident location, and skimmers are expected to be deployed within 6 hours.

Potential responders in addition to WCMRC:

POLLUTER/REPRESENTATIVES	FEDERAL	PROVINCIAL / LOCAL
Vessels Owner(s), P&I Clubs	TC, CCG, DFO, ECCC	BCMoE, City of Vancouver, Port of Vancouver, Fire, Police, Public Works, First Nations

7.0 INITIAL RESPONSE ACTIONS

On-board Safety Procedures

Initial on-board safety procedures are the responsibility of the vessel Master and/or Polluter and representatives. WCMRC will ensure safe conditions exist or are defined on site at time of response to the spill.

Surveillance

Overflight - An initial surveillance flight is arranged as soon as possible to aid in the spill assessment and tracking. This may be the Transport Canada NASP aircraft activated through CCG if available, or a CCG or chartered helicopter.

Spill Assessment

- Oil type - Both the barge and ship companies notify WCMRC that the only oil in tanks is marine diesel (Bunker B). A copy of the product Safety Data Sheet (SDS) is obtained from both companies;
- Safety hazards - Medium grade oil - low fire hazard, vapour hazard based on wind direction, potential toxicity hazard for personnel handling the oil during cleanup;
- Spill size - size is estimated from tanks affected by collision.

- Spill movement - An initial estimate of the spill movement is made, based on tide stage and expected tidal current, and wind speed and direction. This estimate indicates that after one hour (0700), the leading edge of the slick is observed to have travelled approximately to the west and southwest and is nearing a landfall at Locarno Beach.
- Response options - Due to the location of the spill, the options of dispersant use and in-situ burning are not pursued. Mechanical containment and recovery, and protection of sensitive areas are chosen as the best options for the situation;
- Equipment/personnel needs - Land-based contractors and vessels of opportunity are notified to stand by for potential call out.

TIER 1 1 – 6 Hours	Manpower and Equipment Resources, Communications, Control and Response Priorities

8.0 SETUP OF INCIDENT COMMAND POST

Due to the proximity of the spill location to WCMRC facilities in Burnaby, the main training room is established as an initial WCMRC Emergency Operations Centre for communications, planning and spill management activities. According to procedures outlined within the Greater Vancouver Integrated Response Plan (GVIRP), CCG and BCMoE will hold a coordination call with representatives of the Polluter, and will designate an Incident Command Post location which WCMRC will integrate into.

9.0 MEETINGS

An initial coordination call is held with the Polluter, CCG and BCMoE to provide situation assessment and to determine response priorities. It is assumed that at the time of this call, the CCG has already been in communication with ECCC and other members of the federal response community. Subsequent calls are planned to be held on a regular basis (twice per day) to assess information coming in about the spill and to update on the day's response activities. Once the Incident Management Team has been convened at the Incident Command Post, the ICS Planning P will be initiated, however coordination calls may continue if required.

10.0 WCMRC RESOURCES

Personnel and equipment resources on scene within 6 hours of notification are listed in tables B – 1 Workforce, B – 2 Equipment.

11.0 OIL OBSERVATIONS AND MOVEMENTS

Approximately 300 tonnes was released during the first hour (1 tonne = approx. 7.8 bbl of marine diesel). Mobilization time from the incident to initiation of on-site containment operations is 1-2 hours, by which time an estimated 200 tonnes have left the spill site. The leading edge of the westerly moving slicks have reached 1 km from the spill site by the end of hour 1 (0700) and cover an area of approximately 10 km^2.

Between 1 and 3 hours (0700 to 0900) the slick continues to move west with the ebbing tidal currents. In English Bay, oil in the nearshore moves west along the south shore of English Bay from Locarno Beach towards Point Grey.

The first phase of the response strategy is in two parts:

- The skimmers with the largest recovery capacities (Seymour Sentinel, MJ Green) are deployed at the site of the incident, where the encounter rate is greatest. These are operated in a coordinated manner with general purpose booms to contain and recover oil as it is released from the tanks on the barge and vessel.
- The remaining resources are deployed to exclude oil from the Royal Vancouver Yacht Club and to divert oil at Locarno Beach as it reaches the shore and moves to the west to a collection point where it can be recovered with portable skimmers.

As more equipment arrives, the second phase of the response strategy is to protect False Creek by diversion booming, and to divert oil moving along shore at Stanley Park to the north to a collection point near Third Beach.

After 0900, the slicks on English Bay move easterly with the flooding tide towards the First Narrows, and by hour 6 (1200) oil has stranded on the eastern shores of English Bay between Third Beach and Prospect Point. Oil continues to approach this section of shore for the remainder of the flooding tide (until approximately 1600).

12.0 RESPONSE STRATEGIES

The primary response strategies are to establish containment boom around the casualty vessels and recover free oil as effectively and efficiently as possible. Currents may cause entrainment of static booms, so when practical, mobile skimmers will be paired with sweep systems to increase their encounter rate and efficiency. Contracted services would be engaged to assist with offloading recovered oil from skimmers and transporting for disposal.

Away from the spill site, booms are deployed and positioned to protect primary areas of:

- Royal Vancouver Yacht Club - exclusion (keep oil out) and deflection (deflect oil away);
- Locarno Beach shoreline - onshore diversion (divert oil into collection); and
- Diversion at the entrance to False Creek.

Secondary protection areas, all with good access to the shoreline, identified as:

- English Bay Beach (divert oil onto shore);
- Second Beach (divert oil onto shore);
- Third Beach (divert oil onto shore); and
- Ambleside Park Beach (divert oil onto shore).
- Skimmers and remaining boom not used at spill site or at primary/secondary protection locations are used for on-water recovery operations away from spill site. Numerous seaslugs, floating collar tanks and port-a-tanks would be mobilized to support recovery operations.

TIER 2 6 – 12 Hours	Manpower and Equipment Resources, Containment and Protection Measures, Cleanup

Response focus continues on source control, lightering, containment and protection.

The total volume lost from the vessels is estimated at 1,000 tonnes (7,800 bbl) of which an estimated 650 tonnes has been recovered or contained at or near the spill site.

Oil continues to approach the section of shore between Third Beach and Prospect Point for the remainder of the flooding tide (until approximately 1600 - hour 10) and is carried through the First Narrows. Slick movement is eastward with the flood until 1600 (hour 10) after which it flows westerly with the ebb.

Diversion boom placed at First Narrows to direct oil on flood tide to the skimmer on Vancouver Harbour side.

A public information system is established by the companies involved to handle calls. A Wildlife response contractor would be activated by the Polluter to respond.

Personnel and equipment resources on scene within 12 hours of notification are listed in tables B – 1 Workforce, B – 2 Equipment.

12 – 18 Hours	Manpower and Equipment Resources, Containment and Protection Measures, Cleanup, Planning

Slick movement is towards the west with the ebbing tide until 2200 (hour 16) when the tide turns to the flood. Most of the boom has been deployed for containment and skimming operations, and for protection of sensitive areas. Shoreline cleanup crews assemble and carry out flushing operations, sorbent boom and pad deployment, and collection of oiled debris.

Personnel and equipment resources on scene within 18 hours of notification are listed in tables B – 1 Workforce, B – 2 Equipment.

Response strategies are to continue skimmer operations and collection from containment and diversion booming operations. Shoreline cleanup crews continue operations and concentrate efforts on maintaining skimmers and shoreline boom. Incident Command prepares for crew change at 2000 hours. Rotations will comprise night and day shifts, on a 12-hour schedule. Safety Officer establishes lighting and shelter requirements for night operations.

TABLE B - 1 WORKFORCE		
Tier 1 : 0 - 6 hours		
Personnel Resources	**Personnel (approx.)**	**Assignments**
Management	5	Incident Management
On-Water Operations	16	Vessel Crew
Shoreline Operations	20	Trailer mobilization, boom tenders and shoreline operations
Total	**41**	
Tier 2 : 6 - 12 hours		
Personnel Resources	**Personnel (approx.)**	**Assignments**
Management	16	Incident Management
On-Water Operations	31	Vessel Crew
Shoreline Operations	40	Boom tenders and shoreline operations
Total	**87**	
12 - 18 hours		
Personnel Resources	**Personnel (approx.)**	**Assignments**
Management	24	Incident Management
On-Water Operations	54	Vessel Crew
Shoreline Operations	60	Boom tenders and shoreline operations
Total	**138**	

TABLE B - 2 EQUIPMENT				
Tier 1 : 0 - 6 hours				
Asset	**Boom Length (m)**	**Derated Capacity (t/hr)**	**Storage Capacity (t)**	**Assignments**
Texada Sentinel	360			Site Assessment, Containment Booming
Seymour Sentinel		16.2	12	On-Water Recovery
MJ Green		32.8	10	On-Water Recovery
Sentinel 208			40	Recovered Oil Storage
TRL 188		12.6	3.8	Shoreline Operations, Portable Skimmer Recovery
TRL 219		4	15.7	Shoreline Operations, Portable Skimmer Recovery
Seaslug			10	Recovered Oil Storage
Port-a-Tank			4.5	Recovered Oil Storage
Port-a-Tank			4.5	Recovered Oil Storage
TRL 225	1524			Containment / Protection Booming
TRL 250	305			Containment / Protection Booming
Total at 6 hours	**2189**	**65.6**	**100.5**	

TABLE B - 2 EQUIPMENT				
Tier 2 : 6 - 12 hours				
Asset	**Boom Length (m)**	**Derated Capacity (t/hr)**	**Storage Capacity (t)**	**Assignments**
Pacific Sentinel	457	49.2	30	On-Water Recovery
Sentinel 205			40	Recovered Oil Storage
Sentinel 302	915	30	4000	Recovered Oil Storage
Harbour Sentinel	412			Shuttle Storage Operations
Sentinel 202			40	Recovered Oil Storage
Sentinel 24				Containment / Protection Booming
Sentinel 25				Containment / Protection Booming
Vessel of Opportunity				Shuttle Storage Operations
Vessel of Opportunity				Shuttle Storage Operations
Vessel of Opportunity				Containment / Protection Booming
Vessel of Opportunity				Containment / Protection Booming
Port-a-Tank			5.7	Recovered Oil Storage
Port-a-Tank			5.7	Recovered Oil Storage
Seaslug			10	Recovered Oil Storage
Seaslug			10	Recovered Oil Storage
TRL 222				PPE Supplies
TRL 303				Decontamination Setup
TRL 511				Staging Area Management
Total at 12 hours	**3973**	**144.8**	**4241.9**	
12 - 18 hours				
Asset	**Boom Length (m)**	**Derated Capacity (t/hr)**	**Storage Capacity (t)**	**Assignments**
Port-a-Tank			5.7	Recovered Oil Storage
Port-a-Tank			5.7	Recovered Oil Storage
Seaslug			10	Recovered Oil Storage
Seaslug			10	Recovered Oil Storage
TRL 215	121		5.7	Shoreline Operations
TRL 703	1524			Containment / Protection Booming
TRL 709	1524			Containment / Protection Booming
TRL 301				Incident Command Post Setup
Total at 18 hours	**7142**	**144.8**	**4279**	
Required at 12 hours	**2938**	**2.12**	**765**	

APPENDIX C

VANCOUVER PAR – HARO STRAIT

1.0 GENERAL

Location:	Haro Strait (Kelp Reefs)		
Latitude:	48° 33' N	**Longitude:**	123° 15' W
Time:	0700	**Date:**	5 August
Spill Size:	1,000 tonnes		

Loss: Continuous leak 100 tonnes/hr. for first 5 hours, thereafter 50 tonnes/hour for 10 hrs.

Oil Type: Marine Diesel (Bunker B)

Weather Conditions: Winds from SE at 5 knots. Low overcast.

Oceanographic Conditions: Near low tide. Sea state 1, light chop and low (<30 cm) swell

2.0 ACCIDENT DESCRIPTION

Dry bulk carrier suffers mechanical breakdown. Currents carry vessel onto Kelp Reefs, puncturing fuel tank.

3.0 SENSITIVE AREAS

Information concerning sensitivities is readily available from federal and provincial sources, NEEC priority maps and sensitivity atlases such as Oil Spill Resource Information Service (OSRIS). First Nations Traditional Territory information is based on the BC Consolidated database.

Socio-Economic:

- Important Vessel Traffic / Ferry Route, recreational/commercial usage

Biological:

- Birds – High Relative Importance for various bird species
- Invertebrates – nearby clam beds
- Marine mammals – seal and sea lion haulouts, killer whale habitat
- Plants – presence of kelp and eelgrass beds

4.0 ENVIRONMENTAL SETTING AND MOVEMENT

Current data was obtained from OilMapWeb software and general currents from Thomson (1981). The prevailing currents in Haro Strait are tidal, with velocities exceeding 2 knots along the west coast of San Juan Island. At the time of the spill, tidal currents are approximately 1.2 knots near peak ebb.

The wind data for this trajectory analysis was assumed to 5 knots from the SE. Given this assumption, winds initially are working against the ebb tide for spill transport. As tides reach slack and reverse to flood, SE winds will assist to transport oil in a northerly direction. Trajectory modeling will be requested through NEEC to support the response efforts.

5.0 ELAPSED TIME

0 – 1 Hours	Notifications/Callout, Mobilization, Assessment, Incident Command

6.0 NOTIFICATIONS AND CALLOUT

The vessel master or authorized person notifies the Canadian Coast Guard (CCG) then makes all necessary other notifications as required by provincial and federal law. Due to the proximity with U.S. waters, the Canadian Coast Guard (CCG) notifies the United States Coast Guard (USCG) and the Joint Plan (CANUSPAC) may be invoked. The company's internal callout is then initiated and WCMRC is requested to respond, according to SOPEP requirements. WCMRC initiates its own internal call-out and personnel begin to mobilize for the response. WCMRC personnel are underway within 45 minutes, with expected arrivals on-scene within 6 hours.

Potential responders in addition to WCMRC:

POLLUTER/REPRESENTATIVES	FEDERAL	PROVINCIAL / LOCAL
Vessels Owner(s), P&I Clubs	TC, CCG, DFO, ECCC	BCMoE, City of Sidney, City of Victoria, Islands Trust, local Fire, Police, Public Works, First Nations

If the spill crosses into U.S. waters the Canada/US Joint Contingency Plan will be invoked and both the Coast Guards will become On-Scene Commanders.

7.0 INITIAL RESPONSE ACTIONS

On-board Safety Procedures

Initial on-board safety procedures are the responsibility of the vessel Master and/or Polluter and representatives. WCMRC will ensure safe conditions exist or are defined on site at time of response to the spill.

Surveillance

Overflight - An initial surveillance flight is arranged as soon as possible to aid in the spill assessment and tracking. This may be the Transport Canada NASP aircraft activated through CCG if available, or a CCG or chartered helicopter.

Spill Assessment

- Oil type - Direct communication between the ship and CCG confirms that the only oil in the affected tanks is marine diesel (Bunker B). A copy of the product Safety Data Sheet (SDS) is obtained from the spiller.
- Safety hazards - Medium grade oil - low fire hazard, vapour hazard based on wind direction, potential toxicity hazard for personnel handling the oil during cleanup.
- Spill size - is estimated from tanks affected by collision and by the volume being lost before control and salvage operations successfully stop the flow of oil.
- Spill movement - An initial estimate of the spill movement is made based on tide stage and expected tidal current, and wind speed and direction. This estimate indicates the general movement of the leading edge of the slick is north and south with the tide, and offset to the west due to the prevailing wind.
- Response options - Due to the location of the spill, the options of dispersant use and in-situ burning are not pursued. Containment and recovery, and protection of sensitive areas are chosen as the best options for the situation
- Equipment/personnel needs - Land-based contractors and vessels of opportunity are notified to stand by for potential call out.

TIER 1 1 – 6 Hours	Manpower and Equipment Resources, Communications, Control and Response Priorities

8.0 SETUP OF INCIDENT COMMAND POST

Due to the proximity of the spill location to WCMRC facilities on Vancouver Island, meeting rooms in Victoria and Nanaimo bases are established as an initial WCMRC Emergency Operations Centres for communications, planning and spill management activities. According to current CCG and BCMoE practice, the agencies will hold a coordination call with representatives of the Polluter, and will designate an Incident Command Post location which WCMRC will integrate into. WCMRC can mobilize the mobile Communications Centre to facilitate response planning and coordination of activities if required.

9.0 MEETINGS

An initial coordination call is held with the Polluter, CCG and BCMoE to provide situation assessment and to determine response priorities. It is assumed that at the time of this call, the CCG has already been in communication with ECCC and other members of the federal response community. Subsequent calls are planned to be held on a regular basis (twice per day) to assess information coming in about the spill and to update on the day's response activities. Once the Incident Management Team has been convened at the Incident Command Post, the ICS Planning P will be initiated, however coordination calls may continue if required.

10.0 WCMRC RESOURCES

Personnel and equipment resources on scene within 6 hours of notification are listed in tables C – 1 Workforce, C – 2 Equipment.

11.0 OIL OBSERVATIONS AND MOVEMENT

Approximately 100 tonnes has leaked from the vessel during the first hour (1 tonne = approx. 7.8 bbl of marine diesel). The leading edge of the slick has moved southwest a distance of approximately 1.5 km in that time.

The ebb currents have continued to carry the leading edge of the slick to the southwest by the turn of the tide at hour 4 (1100 PDT). At this time, the oil has stranded along the coast between Cordova Bay and Cadboro Point. Oil continues to leak from the vessel at approximately 100 tonnes/hour, for a total of 600 tonnes by hour 6.

12.0 RESPONSE STRATEGIES

The primary response strategies are to establish containment boom around the casualty vessel and recover free oil as effectively and efficiently as possible. Currents may cause entrainment of static booms, so when practical, mobile skimmers will be paired with sweep systems to increase their encounter rate and efficiency. Portable skimmers and additional vessels will be mobilized to initiate recovery of oil within the containment boom. Contracted services would be engaged to assist with offloading recovered oil from skimmers and transporting for disposal. Numerous seaslugs, floating collar tanks and port-a-tanks would be mobilized to support recovery operations.

Additional response strategies initiated include deployment of protection strategies for shoreline resources at risk along the coast of Vancouver Island north of Cadboro Point, as well as the Gulf Islands north of the incident location.

TIER 2 6 –12 Hours	Manpower and Equipment Resources, Containment and Protection Measures, Cleanup

Spill response efforts focus on continued source control, lightering, containment and protection.

Source control and lightering operations have successfully diminished the spill rate of oil, now at 50 tonnes/hour. By hour 12, approximately 900 tonnes of oil have spilled.

As the tide began to flood at hour 4, the light south-easterly wind accelerates the westerly drift and by the turn of the tide (at 1830 - hour 12), the oil is present along the nearshore from Cadboro Point to Sidney on the Vancouver Island coast and on the shores of Sidney Island and D'Arcy Island.

A public Information system is established by the ship owner to handle calls. A Wildlife response contractor would be activated by the Polluter to respond. Vacuum and tank trucks are directed to Victoria and Sidney to initiate skimmer/bladder/barge offloading.

Personnel and equipment resources on scene within 12 hours of notification are listed in tables C – 1 Workforce, C – 2 Equipment.

12 –18 Hours	Manpower and Equipment Resources, Containment and Protection Measures, Cleanup, Planning

Ebbing tides after hour 12 move oil south from the Sidney area and to the southwest from the spill site. By hour 18, oil has stranded on much of the coastline.

Boom is deployed to divert and/or exclude oil from high priority sensitive areas, as identified through the Unified Command. Major on-water assets continue recovery operations. Workboats and support vessels assist with containment booming and skimming. Shoreline cleanup crews assemble and carry out flushing operations, sorbent boom and pad deployment, and collection of oiled debris.

Incident Command prepares for crew change at 2000 hrs. (13 hours). Rotations will comprise night and day shifts, on a 12-hour schedule. Planning and Logistics plan to begin rotations the next morning. The Safety Officer establishes lighting and shelter requirements for night operations.

Personnel and equipment resources on scene within 18 hours of notification are listed in tables C – 1 Workforce, C – 2 Equipment.

TABLE C - 1 WORKFORCE		
Tier 1 : 0 - 6 hours		
Personnel Resources	**Personnel (approx.)**	**Assignments**
Management	5	Incident Management
On-Water Operations	16	Vessel Crew
Shoreline Operations	20	Trailer mobilization, boom tenders and shoreline operations
Total	**41**	
Tier 2 : 6 - 12 hours		
Personnel Resources	**Personnel (approx.)**	**Assignments**
Management	16	Incident Management
On-Water Operations	31	Vessel Crew
Shoreline Operations	40	Boom tenders and shoreline operations
Total	**87**	
12 - 18 hours		
Personnel Resources	**Personnel (approx.)**	**Assignments**
Management	24	Incident Management
On-Water Operations	54	Vessel Crew
Shoreline Operations	60	Boom tenders and shoreline operations
Total	**138**	

TABLE C - 2 EQUIPMENT				
Tier 1 : 0 - 6 hours				
Asset	**Boom Length (m)**	**Derated Capacity (t/hr)**	**Storage Capacity (t)**	**Assignments**
Discovery Sentinel	305			Site Assessment, Containment Booming
Hecate Sentinel	457	49.2	30	Containment Booming, On-Water Recovery
Sentinel 207			40	Recovered Oil Storage
TRL 182		2	8.7	Shoreline Operations, Portable Skimmer Recovery
Sentinel 30				Containment / Protection Booming
Sentinel 31				Containment / Protection Booming
Seaslug			10	Recovered Oil Storage
Seaslug			10	Recovered Oil Storage
Port-a-Tank			4.5	Recovered Oil Storage
TRL 700	1524			Containment / Protection Booming
TRL 228	305			Containment / Protection Booming
Total at 6 hours	**2591**	**51.2**	**103.2**	
Tier 2 : 6 - 12 hours				
Asset	**Boom Length (m)**	**Derated Capacity (t/hr)**	**Storage Capacity (t)**	**Assignments**
GM Penman	457	49.2	30	On-Water Recovery
Sentinel 206			40	Recovered Oil Storage
Salish Sentinel		22	79.5	On-Water Recovery
Sentinel 200			15.9	Recovered Oil Storage
TRL 507	35			Deploy Current Buster 4
Vessel of Opportunity				Tow Current Buster 4 Sweep
Vessel of Opportunity				Tow Current Buster 4 Sweep
Vessel of Opportunity				Shuttle Storage Operations
Vessel of Opportunity				Shuttle Storage Operations
Island Sentinel	412			Shuttle Storage Operations
Vessel of Opportunity				Containment / Protection Booming
Vessel of Opportunity				Containment / Protection Booming
TRL 221				Decontamination Setup
TRL 600		30		Containment Boom Recovery
Vessel of Opportunity				Skimming Platform
Seaslug			10	Recovered Oil Storage
Seaslug			10	Recovered Oil Storage
Total at 12 hours	**3495**	**152.4**	**288.6**	

TABLE C - 2 EQUIPMENT				
12 - 18 HOURS				
Asset	**Boom Length (m)**	**Derated Capacity (t/hr)**	**Storage Capacity (t)**	**Assignments**
Sentinel 302	915	30	4000	Recovered Oil Storage
TRL 214	92		4.5	Shoreline Operations
TRL 196	2103			Containment / Protection Booming
TRL 202	305			Containment / Protection Booming
TRL 194	610		9.5	Shoreline Operations
TRL 198	457	2.4	13.7	Shoreline Operations, Portable Skimmer Recovery
Seaslug			10	Recovered Oil Storage
Seaslug			10	Recovered Oil Storage
TRL 306				Incident Command Post Setup
Total at 18 hours	**7977**	**184.8**	**4336.3**	
Required at 12 hours	**2938**	**2.12**	**765**	

APPENDIX D

ERA – JUAN DE FUCA

1.0 GENERAL

Location:	Approx. 15 km East of Port Renfrew		
Latitude:	48° 27.5 ' N	**Longitude:**	124° 24.5' W
Time:	2100	**Date:**	30 January
Spill Size:	2,500 tonnes		
Oil Type:	Alaska North Slope Crude		

Weather Conditions: Winds from West at approx.7knots. Rain showers. Temperature 4°C.

Oceanographic Conditions: Current near peak ebb. Water temperature 7.5°C.

2.0 ACCIDENT DESCRIPTION

Fire/explosion aboard a tanker leads to rupture of wing tank.

3.0 SENSITIVE AREAS

Information concerning sensitivities is readily available from federal and provincial sources, NEEC priority maps and sensitivity atlases such as Oil Spill Resource Information Service (OSRIS). First Nations Traditional Territory information is based on the BC Consolidated database.

Socio-Economic:

- Vessel traffic route
- Nearshore fisheries
- Botanical Beach Provincial Park (Moderate Sensitivity ranking) - sea urchins harvested
- Intertidal subsistence harvesting
- Heritage sites in Botanical Beach Provincial Park and Port San Juan - would require cultural resource support for Shoreline Cleanup Assessment Team (SCAT) survey
- West Coast Trail
- Juan de Fuca Marine Trail
- Surfing and sea-kayaking

Biological:

Anadromous streams:

- Walbran Creek (124 deg 39' W) and Carmanah Creek (124 deg 44' W)
- Port San Juan
- Two key anadromous streams - Jordon and San Juan Rivers; would require protection from March onwards through the summer

Birds:

- No major risks at this time of year except gulls, swans, geese and ducks near mouths of the two anadromous streams

Mammals:

- Orcas sighted at any time of the year
- Grey whales frequently sighted at this time of year
- Harbour seal haulout off Owen Point from May onwards

- Stellar sea lions haulout at Carmanah point year-round

4.0 ACCESS

On the West Coast of Vancouver Island - only land access for heavy vehicles is a narrow gravel road which reaches within 50-100 m of the coast at Botanical Beach; there is no land access west of Jordan River to Port San Juan.

Best access and boat launch at Port Renfrew, which would be a major staging area for this section of coast.

5.0 ENVIRONMENTAL SETTING AND MOVEMENT

Current data was obtained from OilMapWeb software and general currents from Thomson (1981). The prevailing currents in Juan de Fuca Strait are tidal with a net outflow current. Tidal currents velocities in the area of the spill can reach speeds of 1.5 to 2.5 knots. At the time of the spill, tidal currents are approximately 0.8 knots near peak ebb.

The wind data for this trajectory analysis was assumed to 7.5 knots from the west. Given this assumption, the winds initially are working against the ebb tide for spill transport. As tides reach slack and reverse to flood, the westerly winds add a shoreward component to the trajectory direction. Trajectory modeling will be requested through NEEC to support the response efforts.

6.0 ELAPSED TIME

0 – 1 Hours	Notifications/Callout, Mobilization, Assessment, Incident Command

7.0 NOTIFICATIONS AND CALL-OUT

The vessel master or authorized person notifies the Canadian Coast Guard (CCG) then makes all necessary other notifications as required by provincial and federal law. Due to the proximity with U.S. waters, the Canadian Coast Guard (CCG) notifies the United States Coast Guard (USCG) and the Joint Plan (CANUSPAC) may be invoked. The company's internal callout is then initiated and Western Canada Marine Response Corporation (WCMRC) is requested to respond, according to SOPEP requirements. WCMRC initiates its own internal call-out and personnel begin to mobilize for the response.

Potential responders in addition to WCMRC:

Polluter/Representatives	Federal	Provincial / Local
Vessels Owner(s), P&I Clubs	TC, CCG, DFO, ECCC	BCMoE, First Nations, local Fire, Police

8.0 INITIAL RESPONSE ACTIONS

On-board Safety Procedures

Initial on-board safety procedures are the responsibility of the vessel Master and/or Polluter and representatives. WCMRC will ensure safe conditions exist or are defined on site at time of response to the spill.

Surveillance

Overflight - An initial surveillance flight is arranged as soon as possible to aid in the spill assessment and tracking. This may be the Transport Canada NASP aircraft activated through CCG if available, or a CCG or chartered helicopter.

Spill Assessment

- Oil type - Direct communication between the ship and CCG confirms that the oil carried by the tanker is Alaska North Slope crude. A copy of the product Safety Data Sheets (SDS) is obtained from the ship owner.
- Safety hazards - Crude oil - initial potential fire hazard, vapour hazard based on wind direction, potential toxicity hazard for personnel handling the oil during cleanup. Explosion has caused some oil to burn. Smoke plume to be avoided by overflight and response personnel.
- Spill size - size is estimated from manifest load of the tanker and soundings.
- Spill movement - An initial estimate of the spill movement is made based on tide stage and expected tidal current, and wind speed and direction. This estimate indicates that the general movement of the leading edge of the slick NE to SW with the tides and offset to the north by the prevailing wind.
- Response options - Due to the location of the spill, dispersant use and in-situ burning are considered applicable response options – as the Incident Management Team is being formed, WCMRC will make recommendations to the Polluter, CCG and ECCC that this avenue should be explored as soon as possible. Mechanical containment, recovery, and protection of sensitive areas are initiated as primary response measures
- Equipment/personnel needs - Land-based contractors and vessels of opportunity are notified to stand by for potential call out.

TIER 1 1 – 6 Hours	Manpower and Equipment Resources, Communications, Control and Response Priorities

9.0 SETUP OF INCIDENT COMMAND POST

Due to the remoteness of the spill location to WCMRC facilities, WCMRC will establish a 'virtual' initial Emergency Operations Centre for communications, planning and spill management activities. According to current CCG and BCMoE practice, the agencies will hold a coordination call with representatives of the Polluter, and will designate an Incident Command Post location which WCMRC will integrate into. WCMRC can mobilize the mobile Communications Centre to facilitate response planning and coordination of activities if required.

10.0 MEETINGS

An initial coordination call is held with the Polluter, CCG and BCMoE to provide situation assessment and to determine response priorities. It is assumed that at the time of this call, the CCG has already been in communication with ECCC and other members of the federal response community. Subsequent calls are planned to be held on a regular basis (twice per day) to assess information coming in about the spill and to update on the day's response activities. Once the Incident Management Team has been convened at the

Incident Command Post, the ICS Planning P will be initiated, however coordination calls may continue if required.

11.0 WCMRC RESOURCES

Personnel and equipment resources on scene within 6 hours of notification are listed in tables D – 1 Workforce, D – 2 Equipment.

12.0 OIL OBSERVATIONS AND MOVEMENT

Within an hour of the accident, the leading edge of the slick has travelled approximately north-north west a distance of 2-3 km.

Initial shoreline stranding on the south coast of Vancouver Island occurs just before hour 3 (2400 hrs. on the 30th / 0000 hrs. on the 31st) in the Port San Juan area. As the tide changes to the flood at 0100, the oil moves east along the coast and by hour 6 (0300) is approaching Sombrio Point.

13.0 RESPONSE STRATEGIES

Due to the remoteness of the region, primary response strategies during this phase of the response will be conducting an initial site assessment, monitoring and observing the movement of oil on the water (assisted by modeling and overflights), and mobilizing appropriate resources to establish containment, recovery and protection operations when possible and feasible.

The ship owner will focus initial spill response efforts on source control and lightering/transfers in order to prevent further release and preserve ship stability.

TIER 2 6 –12 Hours	Manpower and Equipment Resources, Containment and Protection Measures, Cleanup

Between 0300 and 0900 (hours 6 - 12) the slick has moved west and has oiled approximately 10-15 km of coast between Sombrio Point and just west of Owen Point.

Upon arrival of resources on scene and confirmation of safe working conditions with sufficient light and favourable conditions, spill response efforts will focus on continued source control, and initiating establishment of containment booming, recovery operations and protection of sensitivities.

In Port San Juan responders would attempt diversion of oil in the nearshore onto the coast, e.g. at Woods Nose, to protect the Jordon and San Juan rivers.

A public information system is established by ship owner to handle calls. A Wildlife response contractor would be activated by the Polluter to respond. Vacuum and tank trucks are directed to Port Renfrew to support skimmer/bladder/barge offloading.

Most response activities consist of on-water recovery operations and shoreline containment and protection booming. Shoreline response and cleanup crews will be mobilized to standby for cleanup following the first SCAT surveys. Field decontamination sites and temporary waste handling sites are established by WCMRC personnel.

Personnel and equipment resources on scene within 12 hours of notification are listed in tables D – 1 Workforce, D – 2 Equipment.

TIER 3 12 –18 Hours	Manpower and Equipment Resources, Containment and Protection Measures, Cleanup

By 1500 (hour 18) the slick has moved farther west and has oiled approximately 20-25 km of coast between Sombrio Point and Carmanah Point. Operations continue to be focused toward containment around the vessel, sweep and on-water recovery operations, and deployment of protection boom at sensitive areas.

The Planning and Logistics Sections prepare for crew change at 1600 hrs. Rotations will comprise night and day shifts, on a 12-hour schedule. The Safety Officer establishes safety, lighting and other requirements for night operations. In order to meet the additional personnel needs necessitated by 24-hour operations, WCMRC response personnel will be supplemented by additional personnel arranged by the Logistics Section.

The Safety Officer will continue to emphasize the safety of operating personnel during 24 hour operations, including the hours of darkness and will ensure that safe working practices are followed at all times. Dedicated surface craft and vehicles will be allotted for personnel rescue or medical evacuation.

During night operations, WCMRC will emphasize the placement of artificial lighting in working areas and the availability of additional containment and recovery equipment required to cover downtime and breakdowns. The Logistics Section will procure generators and lighting units from its warehouse, equipment trailers, vessels, contractors and lighting suppliers. Infrared cameras will be utilized to support night operations.

Personnel and equipment resources on scene within 18 hours of notification are listed in tables D – 1 Workforce, D – 2 Equipment.

TABLE D - 1 WORKFORCE		
Tier 1 : 0 - 6 hours		
Personnel Resources	**Personnel (approx.)**	**Assignments**
Management	5	Incident Management
On-Water Operations	16	Vessel Crew
Shoreline Operations	20	Trailer mobilization, boom tenders and shoreline operations
Total	**41**	
Tier 2 : 6 - 12 hours		
Personnel Resources	**Personnel (approx.)**	**Assignments**
Management	16	Incident Management
On-Water Operations	31	Vessel Crew
Shoreline Operations	40	Boom tenders and shoreline operations
Total	**87**	
Tier 3 : 12 - 18 hours		
Personnel Resources	**Personnel (approx.)**	**Assignments**
Management	24	Incident Management
On-Water Operations	54	Vessel Crew
Shoreline Operations	60	Boom tenders and shoreline operations
Total	**138**	

TABLE D - 2 EQUIPMENT				
Tier 1 : 0 - 6 hours				
Asset	**Boom Length (m)**	**Derated Capacity (t/hr)**	**Storage Capacity (t)**	**Assignments**
Cortes Sentinel				Site Assessment, Containment Booming
Sentinel 32				Containment / Protection Booming
Sentinel 33				Containment / Protection Booming
TRL 137	305			Containment / Protection Booming
TRL 502	305			Containment / Protection Booming
Seaslug			10	Recovered Oil Storage
Seaslug			10	Recovered Oil Storage
Port-a-Tank			4.5	Recovered Oil Storage
Total at 6 hours	**610**		**24.5**	
Tier 2 : 6 - 12 hours				
Asset	**Boom Length (m)**	**Derated Capacity (t/hr)**	**Storage Capacity (t)**	**Assignments**
GM Penman	457	49.2	30	On-Water Recovery
Sentinel 206			40	Recovered Oil Storage
Salish Sentinel		22	79.5	On-Water Recovery
Sentinel 200			15.9	Recovered Oil Storage
Hecate Sentinel	457	49.2	30	On-Water Recovery
Sentinel 207			40	Recovered Oil Storage
Pacific Sentinel	457	49.2	30	On-Water Recovery
Sentinel 205			40	Recovered Oil Storage
MJ Green		32.8	10	On-Water Recovery
Sentinel 208			40	Recovered Oil Storage
Discovery Sentinel	305			
TRL 507	35			Deploy Current Buster 4
Island Sentinel	412			Tow Current Buster 4 Sweep
Harbour Sentinel	412			Tow Current Buster 4 Sweep
TRL 221				Decontamination Setup
TRL 710	1524			Containment / Protection Booming
TRL 704	610	7.6	14	Containment / Protection Booming
TRL 211	550	7.6	14	Containment / Protection Booming
Seaslug			10	Recovered Oil Storage
Seaslug			10	Recovered Oil Storage
Total at 12 hours	**5829**	**217.6**	**427.9**	

TABLE D - 2 EQUIPMENT				
Tier 3 : 12 - 18 hours				
Asset	**Boom Length (m)**	**Derated Capacity (t/hr)**	**Storage Capacity (t)**	**Assignments**
Sentinel 302	915	30	4000	Recovered Oil Storage
Vessel of Opportunity				Containment / Protection Booming
Vessel of Opportunity				Containment / Protection Booming
Vessel of Opportunity				Shuttle Storage Operations
Vessel of Opportunity				Shuttle Storage Operations
Vessel of Opportunity				Shuttle Storage Operations
Vessel of Opportunity				Shuttle Storage Operations
TRL 600		30		Containment Boom Recovery
Vessel of Opportunity				Skimming Platform
TRL 214				Shoreline Operations
TRL 194	610		9.5	Shoreline Operations
TRL 198	457	2.4	13.7	Shoreline Operations, Portable Skimmer Recovery
Seaslug			10	Recovered Oil Storage
Seaslug			10	Recovered Oil Storage
Total at 18 hours	**7811**	**280**	**4471.1**	
Required at 18 hours	**7338**	**6.33**	**2280**	

APPENDIX E

PRINCE RUPERT

1.0 GENERAL

Location: Dundas Island, NW Chatham Sound

Latitude:	54° 35' N	**Longitude:**	130° 41.5' W
Time:	1630	**Date:**	1 March
Spill Size:	2500 tonnes		

Loss: Pulse (pumped by tides)

Oil Type: Bunker C

Weather Conditions: Winds from south at 11 knots. Air temperature 3°C. Low overcast with occasional light rain.

Oceanographic Conditions: Tidal currents in ebb cycle. Water temperature 6.6°C.

2.0 ACCIDENT DESCRIPTION

Barge entering Chatham Sound loses control and grounds, spilling cargo from forward outer and centerline tanks.

3.0 SENSITIVE AREAS

Information concerning sensitivities is readily available from federal and provincial sources, NEEC priority maps and sensitivity atlases such as Oil Spill Resource Information Service (OSRIS). First Nations Traditional Territory information is based on the BC Consolidated database.

Socio-Economic:

- Vessel traffic route; anchorages for vessels calling on Prince Rupert Harbour
- Sport fishing lodges (not in season)

Biological:

- Birds - Resident colonies and migrating seabirds, especially on isolated rocks and small islands.
- Invertebrates - Significant clam beaches along entire eastern shores.
- Fish - Peak spawning period of herring; potential juvenile salmon rearing.
- Mammals - Migration route for killer whales; harbour seals present; no known haul-outs in study area.

4.0 ENVIRONMENTAL SETTING AND MOVEMENT

The prevailing currents in the Dundas Island and Dixon Strait regions are tidal with a net outflow current produced from freshwater runoff. Tidal currents velocities in the area of the spill can reach speeds of 1.25 knots. At the time of the spill, tidal currents are approximately 0.6 knots, partially into the ebb cycle.

The wind data for this trajectory analysis was assumed to be 11 knots from the south. Given this assumption, the winds initially are working against the ebb tide. As tides reach slack and reverse to flood, the south winds add a northward component to the trajectory direction toward U.S. waters. Trajectory modeling will be requested through NEEC to support the response efforts.

5.0 ELAPSED TIME

0 – 1 Hours	Notifications/Callout, Mobilization, Assessment, Incident Command

6.0 NOTIFICATIONS AND CALLOUT

The vessel master or authorized person notifies the Canadian Coast Guard (CCG) then makes all necessary other notifications as required by provincial and federal law. Due to the proximity with U.S. waters, the Canadian Coast Guard (CCG) notifies the United States Coast Guard (USCG) and the Joint Plan (CANUSDIX) may be invoked. The company's internal callout is then initiated and Western Canada Marine Response Corporation (WCMRC) is requested to respond, according to SOPEP requirements. WCMRC initiates its own internal call-out and personnel begin to mobilize for the response.

Potential responders in addition to WCMRC:

Polluter/Representatives	Federal	Provincial / Local
Vessels Owner(s), P&I Clubs	TC, CCG, DFO, ECCC	BCMoE, Port of Prince Rupert, City of Prince Rupert, First Nations, local Fire, Police

7.0 INITIAL RESPONSE ACTIONS

On-board Safety Procedures

Initial on-board safety procedures are the responsibility of the vessel Master and/or Polluter and representatives. WCMRC will ensure safe conditions exist or are defined on site at time of response to the spill.

Surveillance

Overflight - An initial surveillance flight is arranged as soon as possible to aid in the spill assessment and tracking. This may be the Transport Canada NASP aircraft activated through CCG if available, or a CCG or chartered helicopter.

Spill Assessment

- Oil Type - Direct communication between the tug and CCG confirms that the oil in the barge is bunker C. A copy of the product Safety Data Sheets (SDS) is obtained from the ship owner.
- Safety hazards - Bunker C - no potential fire hazard, vapour hazard is low, potential toxicity hazard for personnel handling the oil during cleanup.
- Spill size - size is estimated from appearance of oil on water and size of slick. Periodic loss from barge complicates volume loss estimates.
- Spill movement - An initial estimate of the spill movement is made based on tide stage and expected tidal current, and wind speed and direction. This estimate indicates a general movement of the leading edge of the slick to the north and south, with the tide, and offset to the west under prevailing current flow.
- Response options - Due to the remote location of the spill and limited resources, Dispersant use and in-situ burning are not considered. Mechanical containment, recovery, and protection of sensitive areas are initiated as primary response measures
- Equipment/personnel needs - Land-based contractors and vessels of opportunity are notified to stand by for potential call out.

TIER 1 1 – 6 Hours	Manpower and Equipment Resources, Communications, Control and Response Priorities

8.0 SETUP OF INCIDENT COMMAND POST

The CCG base at Prince Rupert is established as the Incident Command Post (ICP), and WCMRC will quickly integrate Incident Management staff from the Prince Rupert base to collaborate with CCG responders. However, due to the remoteness of the spill location to WCMRC facilities, WCMRC will establish a 'virtual' initial Emergency Operations Centre for communications, planning and spill management activities as the full Incident Management team is mobilized. According to current CCG and BCMoE practice, the agencies will hold a coordination call with representatives of the Polluter, and will designate an Incident Command Post location which WCMRC will integrate into. WCMRC can mobilize the mobile Communications Centre to facilitate response planning and coordination of activities if required.

9.0 MEETINGS

An initial coordination call is held with the Polluter, CCG and BCMoE to provide situation assessment and to determine response priorities. It is assumed that at the time of this call, the CCG has already been in communication with ECCC and other members of the federal response community. Subsequent calls are planned to be held on a regular basis (twice per day) to assess information coming in about the spill and to update on the day's response activities. Once the Incident Management Team has been convened at the Incident Command Post, the ICS Planning P will be initiated, however coordination calls may continue if required.

10.0 WCMRC RESOURCES

Personnel and equipment resources on scene within 6 hours of notification are listed in tables E – 1 Workforce, E – 2 Equipment.

11.0 OIL OBSERVATIONS AND MOVEMENT

The overflight at two hours after the spill indicates the slick covers approximately 26 hectares (ha), of which 2.8 ha is heavy oil.

12.0 RESPONSE STRATEGIES

The barge owner will focus initial spill response efforts on source control and lightering/transfers in order to prevent further release and preserve ship stability; crew have initiated transfer of oil from the grounded vessel. Primary response strategies during this phase of the response will be conducting an initial site assessment, monitoring and observing the movement of oil on the water (assisted by modeling and overflights), and mobilizing appropriate resources to establish containment, recovery and protection operations when possible and feasible. Deflection boom is to be deployed for southeast Dundas Island, Melville Island and accessible areas along the northwest Tsimpsean Peninsula in attempts to mitigate the migration of oil out of the incident area and prevent further shoreline impacts.

Due to the remoteness of the incident area and the lack of road access, contracted ramp and deck barges will be sourced in order to facilitate the movement of equipment, supplies and resources to the spill location.

Tier 2 6 –12 Hours	Manpower and Equipment Resources, Containment and Protection Measures, Cleanup

At 6 hours, the estimated volume lost from the barge is 1,000 tonnes. The leading edge of the slick has split and part has moved south and southwest into Hudson Bay Passage. During the flood tide, commencing at 2200 (+5.5 hours), the oil reverses in Hudson Bay Passage, oiling SW-facing shorelines. At the spill site, oil continues to be released. Approximately 2,000 barrels (320 tonnes) of oil are estimated to be in the water. A slick has developed northward of the site, parallel to the shoreline of Dundas Island.

Additional resources arrive on scene with boom suitable for the unsheltered operating environment, which is placed around the existing containment boom to provide a second line of containment until daylight. At daylight, vessels initiate boom sweep operations to increase encounter rate and collect heavier concentrations of oil. A public information system is established by barge owner to handle calls. A Wildlife response contractor would be activated by the Polluter to respond. Vacuum and tank trucks are directed to Prince Rupert to support skimmer/bladder/barge offloading, and may be transported as close to the operation as possible by placing them on ramp barges.

Personnel and equipment resources on scene within 12 hours of notification are listed in tables E – 1 Workforce, E – 2 Equipment.

Tier 3 12 –18 Hours	Manpower and Equipment Resources, Containment and Protection Measures, Cleanup, Planning

Efforts to secure barge and spill are successful at 1000 (approximately +16 hours). The total oil volume lost from the tanks is estimated at 2,500 tonnes. Flood tide to ebb has carried oil both through Hudson Bay Passage and toward Lord Rock, in U.S. waters; the USCG may activate and mobilize SEAPRO or its own resources to response to potential impact to U.S. waters and shorelines.

Personnel and equipment resources on scene within 18 hours of notification are listed in tables E – 1 Workforce, E – 2 Equipment.

Due to the distance of the incident location, and being outside the PAR/ERA, additional WCMRC resources will be cascaded in from WCMRC bases in the south, and may take 24-72 hours to arrive on scene; of note, WCMRC's response barge the Sentinel 302 will require approximately 72 hours travel time to reach the area of the incident and deploy sufficient primary and secondary storage capacity to meet the requirements.

TABLE E - 1 WORKFORCE		
Tier 1 : 0 - 6 hours		
Personnel Resources	**Personnel (approx.)**	**Assignments**
Management	5	Incident Management
On-Water Operations	16	Vessel Crew
Shoreline Operations	20	Trailer mobilization, boom tenders and shoreline operations
Total	**41**	
Tier 2 : 6 - 12 hours		
Personnel Resources	**Personnel (approx.)**	**Assignments**
Management	16	Incident Management
On-Water Operations	31	Vessel Crew
Shoreline Operations	40	Boom tenders and shoreline operations
Total	**87**	
Tier 3 : 12 - 18 hours		
Personnel Resources	**Personnel (approx.)**	**Assignments**
Management	24	Incident Management
On-Water Operations	54	Vessel Crew
Shoreline Operations	60	Boom tenders and shoreline operations
Total	**138**	

TABLE E - 2 EQUIPMENT				
Tier 1 : 0 - 6 hours				
Asset	**Boom Length (m)**	**Derated Capacity (t/hr)**	**Storage Capacity (t)**	**Assignments**
Gil Sentinel	305			Site Assessment, Containment Booming
Eagle Bay Sentinel		32.8	10	On-Water Recovery
Sentinel 203			40	Recovered Oil Storage
Kaien Sentinel				Skimming Platform
MM30 Skimmer		10.6		Containment Boom Recovery
Sentinel 101	365			Containment / Protection Booming
Sentinel 21				Containment / Protection Booming
Sentinel 29				Containment / Protection Booming
Seaslug			10	Recovered Oil Storage
Seaslug			10	Recovered Oil Storage
Seaslug			10	Recovered Oil Storage
Seaslug			10	Recovered Oil Storage
Total at 6 hours	**670**	**43.4**	**90**	

TABLE E - 2 EQUIPMENT				
Tier 2 : 6 - 12 hours				
Asset	**Boom Length (m)**	**Derated Capacity (t/hr)**	**Storage Capacity (t)**	**Assignments**
TRL 233	305			Containment / Protection Booming
TRL 131	305			Containment / Protection Booming
TRL 210	1524			Containment / Protection Booming
TRL 193	610		20	Containment / Protection Booming
TRL 195	457		15.2	Containment / Protection Booming
TRL 708	610	7.6	13.7	Containment / Protection Booming
TRL 713	610	4	21.4	Containment / Protection Booming
TRL 302				Decontamination Setup
TRL 307				PPE Supplies
TRL 508	35			Deploy Current Buster 4
TRL 509	35			Deploy Current Buster 4
Vessel of Opportunity				Tow Current Buster 4 Sweep
Vessel of Opportunity				Tow Current Buster 4 Sweep
Vessel of Opportunity				Tow Current Buster 4 Sweep
Vessel of Opportunity				Tow Current Buster 4 Sweep
Vessel of Opportunity				Shuttle Storage Operations
Vessel of Opportunity				Shuttle Storage Operations
Vessel of Opportunity				Shuttle Storage Operations
Vessel of Opportunity				Containment / Protection Booming
Vessel of Opportunity				Containment / Protection Booming
Sentinel 204			40	Recovered Oil Storage
Sentinel 209			40	Recovered Oil Storage
Total at 12 hours	**5161**	**55**	**240.3**	
Tier 3 : 12 - 18 hours				
Asset	**Boom Length (m)**	**Derated Capacity (t/hr)**	**Storage Capacity (t)**	**Assignments**
TRL 705				Shoreline Operations
TRL 208	457			Containment / Protection Booming
TRL 706	610	7.6	13.7	Containment / Protection Booming
Total at 18 hours	**6228**	**62.6**	**254**	

TABLE E - 2 EQUIPMENT				
Required at 18 hours (plus travel time)	7338	6.33	2280	

APPENDIX F

DESIGNATED PORT – FRASER RIVER

13.0 GENERAL

Location:	New Westminster		
Latitude:	49° 11' N	**Longitude:**	122° 55.4' W
Time:	1900	**Date:**	5 May
Spill Size:	10,000 tonnes		

Loss: Catastrophic

Oil Type: Marine Diesel (Bunker B)

Weather Conditions: Light breeze at 5 knots from west. Air temperature 17°C.

Oceanographic Conditions: River at high stage from spring with current speeds in the Fraser River up to 3 knots. Tide on ebb. Water temperature 10°C.

14.0 ACCIDENT DESCRIPTION

Ship develops crack in tank while bunkering. Oil is lost from tank abruptly as ship was being repositioned.

15.0 SENSITIVE AREAS

Information concerning sensitivities is readily available from federal and provincial sources, NEEC priority maps and sensitivity atlases such as Oil Spill Resource Information Service (OSRIS). First Nations Traditional Territory information is based on the BC Consolidated database.

Socio-Economic:

- Vessel traffic route (commercial and recreational)
- Substantial commercial operations (terminals, log sorts etc.)
- Fishing (commercial, recreational)

Biological:

- Birds - Lower Fraser Delta provides habitat for waterfowl, shallow-water waders, and raptors.
- Fish - Period of juvenile salmon runs (pink, coho, chum, chinook, and sockeye)
- Mammals - Generally low risk to river otters, but harbour seals may be found in numbers as the salmon migration takes place.

16.0 ENVIRONMENTAL SETTING AND MOVEMENT

Current data and river discharge is provided by Canadian Hydrographic Service (CHS). CHS advises that runoff is approximately 6,000 cubic meters per second in Fraser River, with in river flow velocities in excess of 3 knots at some locations.

The wind data for this trajectory analysis was assumed to 5 knots from the west. Low wind speeds will have little bearing on the oil trajectory downstream until reaching the mouth of the Fraser, except to accentuate the flood tides. Trajectory modeling will be requested through NEEC to support the response efforts.

17.0 ELAPSED TIME

0 – 1 Hours	Notifications/Callout, Mobilization, Assessment, Incident Command

18.0 NOTIFICATIONS AND CALLOUT

The operator of the bunkering barge notifies their supervisor and the person in charge of the vessel. The vessel captain initiates the necessary notifications including the Canadian Coast Guard (CCG) through the Marine Communications and Traffic Services (MCTS). According to SOPEP requirements, the company internal callout is then initiated including a callout to Western Canada Marine Response Corporation (WCMRC). Total time delay from spill detection to WCMRC notification is 20 minutes.

WCMRC initiates its own internal/contractor callout and personnel begin to mobilize for the response. WCMRC personnel mobilize within 30 minutes of notification. Contractors initiate mobilization within two hours of their activation.

WCMRC mobilizes equipment by road from the Vancouver area and Burnaby and notifies marine and land contractors who dispatch personnel by road from Vancouver Harbour area. A dispatch delay of 15 minutes for WCMRC and 30 minutes for the contractors is anticipated.

Potential responders in addition to WCMRC:

Polluter/Representatives	Federal	Provincial / Local
Vessels Owner(s), P&I Clubs	TC, CCG, DFO, ECCC	BCMoE, City of New Westminster, Port of Vancouver, Fire, Police, Public Works, First Nations

19.0 INITIAL RESPONSE ACTIONS

On-scene Safety Procedures

Initial on-board safety procedures are the responsibility of the vessel Master and/or Polluter and representatives. WCMRC will ensure safe conditions exist or are defined on site at time of response for the spill. Police and Fire Departments cordon off area around the terminal. The Port of Vancouver and CCG issue a notice to shipping of vessel traffic delays and re-routing. The Safety Officer establishes lighting and shelter requirements for night operations.

Surveillance

Overflight - An initial surveillance flight is arranged as soon as possible to aid in the spill assessment and tracking. This may be the Transport Canada NASP aircraft activated through CCG if available, or a CCG or chartered helicopter.

Spill Assessment

- Oil type - direct communication between the bunkering vessel and the Canadian Coast Guard (CCG) confirms that the oil lost is marine diesel (Bunker B). The bunkering company provides a Safety Data Sheet (SDS) to the CCG and WCMRC.
- Safety hazards - medium grade oil - low fire hazard, vapour hazard based on wind direction, potential toxicity hazard for personnel handling the oil during cleanup.

- Spill size - size is estimated initially from appearance of oil on water. Subsequent analysis calculates the difference between the oil estimated as having been delivered to the tank prior to rupture and the volume remaining in the tank as sounded
- Spill movement - spill movement is downstream, aided by high runoff and an ebbing tide. The strength of the river flow keeps most of the oil concentrated in mid-channel as it moves downstream. With reported currents as high as 3 knots in the river, the leading edge of the slick could travel as much as 6 km/hour downstream if the oil is in the zone of maximum flow.
- Response options - due to the nearby presence of human use areas, populated areas, and water intakes, spill treating agents and in-situ burning are not considered as viable countermeasures. Containment at the vessel, deflection booming, and some protection booming are deemed most effective response tools, until the oil reaches the offshore areas of the delta where skimmer vessels are more effective.
- Equipment/personnel needs - WCMRC callout includes land and marine contractors and technical advisors.

TIER 1 1 – 6 Hours	Manpower and Equipment Resources, Communications, Control and Response Priorities

20.0 SETUP OF INCIDENT COMMAND POST

Due to the proximity of the spill location to WCMRC facilities in Burnaby, the main training room is established as an initial WCMRC Emergency Operations Centre for communications, planning and spill management activities. According to current CCG and BCMoE practice, the agencies will hold a coordination call with representatives of the Polluter, and will designate an Incident Command Post location which WCMRC will integrate into. WCMRC can mobilize the mobile Communications Centre to facilitate response planning and coordination of activities if required.

21.0 MEETINGS

An initial coordination call is held with the Polluter, CCG and BCMoE to provide situation assessment and to determine response priorities. It is assumed that at the time of this call, the CCG has already been in communication with ECCC and other members of the federal response community. Subsequent calls are planned to be held on a regular basis (twice per day) to assess information coming in about the spill and to update on the day's response activities. Once the Incident Management Team has been convened at the Incident Command Post, the ICS Planning P will be initiated, however coordination calls may continue if required.

22.0 WCMRC RESOURCES

Personnel and equipment resources on scene within 6 hours of notification are listed in tables F – 1 Workforce, F – 2 Equipment.

23.0 RESPONSE STRATEGIES

The decision is made that the first priority will be containment adjacent to the source, and that the second priority will be to keep oil in the main channel and to prevent oil from entering the Annacis Channel or Ladner Slough.

The first wave of resources are expected arrive on site at approximately 3 hours. Time is 2200, sunset was at 1936.

The primary response strategies are to establish containment boom around the casualty vessel and recover free oil as effectively and efficiently as possible. Portable skimmers will be mobilized to initiate recovery of oil within the containment boom. Contracted services would be engaged to assist with offloading recovered oil from skimmers and transporting for disposal. Numerous seaslugs, floating collar tanks and port-a-tanks would be mobilized to support recovery operations. Recognizing the longer term (72 hours) need for additional storage, WCMRC would engage contracted support to mobilize storage barges.

Additional boom is deployed off the southwest tip of Annacis Island to first deflect oil into the mainstream, and later exclude oil from Annacis Channel and Ladner Slough. Most other equipment is directed to locations downstream in preparation for collection and cleanup at daylight; ideal collection points can be determined through pre-identified locations in WCMRC's GRS program, or by identifying natural collection sites where logs, leaves and other debris collect.

Currents and flow may cause entrainment of static booms, so when practical, mobile skimmers will be paired with sweep systems to increase their encounter rate and efficiency, operating when possible and safe closer to the middle of the channels.

TIER 2 6 –12 Hours	Manpower and Equipment Resources, Containment and Protection Measures, Cleanup

Spill assessment observations and calculations indicate that the leading edge of the slick will have nearly reached the mouth of the Fraser River, generally following the main channel to the Albion Dyke (0700 - sunrise is at 0446).

Response vessels and equipment suitable for sweep and recovery operations in the marine environment will be directed to the mouth of the Fraser River, in preparation of the oil reaching open water; Current Buster and other sweep systems will be deployed in order to rapidly and effectively recover the slick before it has the opportunity to spread and impact marine shorelines; special consideration will have to be given to tides and depths at the mouth of the river due to the shallowness of the banks.

The main focus of activities is protection of marshes and diversion of oil into the main channel. Diversion booms are positioned to exclude the oil from contacting Deas Island Regional Park or from entering the numerous sloughs downstream of this point. Recovery operations are initiated by teams equipped with containment boom and skimmers to collect oil trapped against the shore.

A public information line would be established by the Polluter to respond to public inquiries. A Wildlife response contractor would be activated by the Polluter to respond.

Personnel and equipment resources on scene within 12 hours of notification are listed in tables F – 1 Workforce, F – 2 Equipment.

12 –18 Hours	Manpower and Equipment Resources, Containment and Protection Measures, Cleanup, Planning

The focus of activities continues to be protection of marshes and diversion of oil into the main channel. On-water recovery operations are underway in the delta region, where safe and possible to do so. Recovery operations are continued by teams equipped with containment boom and skimmers to collect oil trapped against the shore.

Unified Command prepare for a crew change at 1200. Rotations will comprise two shifts on a 12-hour schedule, with an offset between spill management and field teams.

Additional equipment resources and personnel located within the PAR/ERA will be cascaded in, primarily from locations on Vancouver Island to support the response; mobilization methods would include a combination of passenger/freight ferries and ramp barges as required and possible.

Personnel and equipment resources on scene within 18 hours of notification are listed in tables F – 1 Workforce, F – 2 Equipment.

TABLE F - 1 WORKFORCE		
Tier 1 : 0 - 6 hours		
Personnel Resources	**Personnel (approx.)**	**Assignments**
Management	5	Incident Management
On-Water Operations	16	Vessel Crew
Shoreline Operations	20	Trailer mobilization, boom tenders and shoreline operations
Total	**41**	
Tier 2 : 6 - 12 hours		
Personnel Resources	**Personnel (approx.)**	**Assignments**
Management	16	Incident Management
On-Water Operations	31	Vessel Crew
Shoreline Operations	40	Boom tenders and shoreline operations
Total	**87**	
Tier 3 : 12 - 18 hours		
Personnel Resources	**Personnel (approx.)**	**Assignments**
Management	24	Incident Management
On-Water Operations	54	Vessel Crew
Shoreline Operations	60	Boom tenders and shoreline operations
Total	**138**	

TABLE F - 2 EQUIPMENT				
Tier 1 : 0 - 6 hours				
Asset	**Boom Length (m)**	**Derated Capacity (t/hr)**	**Storage Capacity (t)**	**Assignments**
Texada Sentinel	360			Site Assessment, Containment Booming
Seymour Sentinel		16.2	12	On-Water Recovery
MJ Green		32.8	10	On-Water Recovery
Sentinel 208			40	Recovered Oil Storage
Sentinel 24				Containment / Protection Booming
Sentinel 25				Containment / Protection Booming
TRL 188		12.6	3.8	Shoreline Operations, Portable Skimmer Recovery
TRL 219		4	15.7	Shoreline Operations, Portable Skimmer Recovery
Seaslug			10	Recovered Oil Storage
Port-a-Tank			4.5	Recovered Oil Storage
Port-a-Tank			4.5	Recovered Oil Storage
TRL 134	1524			Containment / Protection Booming
TRL 707	305			Containment / Protection Booming
TRL 227	396			Containment / Protection Booming
TRL 185	305	4.2	14	Containment / Protection Booming
Total at 6 hours	**2890**	**69.8**	**114.5**	

TABLE F - 2 EQUIPMENT				
Tier 2 : 6 - 12 hours				
Asset	**Boom Length (m)**	**Derated Capacity (t/hr)**	**Storage Capacity (t)**	**Assignments**
Pacific Sentinel	457	49.2	30	On-Water Recovery
Sentinel 205			40	Recovered Oil Storage
Sentinel 302	915	30	4000	Recovered Oil Storage
Harbour Sentinel	412			Shuttle Storage Operations
Island Sentinel	412			Shuttle Storage Operations
Sentinel 202			40	Recovered Oil Storage
GM Penman	457	49.2	30	On-Water Recovery
Sentinel 206			40	Recovered Oil Storage
Salish Sentinel		22	79.5	On-Water Recovery
Sentinel 200			15.9	Recovered Oil Storage
Hecate Sentinel	457	49.2	30	On-Water Recovery
Sentinel 207			40	Recovered Oil Storage
Discovery Sentinel	305			Containment / Protection Booming
Cortes Sentinel				Containment / Protection Booming
TRL 510	35			Deploy Current Buster 4
Vessel of Opportunity				Tow Current Buster 4 Sweep
Vessel of Opportunity				Tow Current Buster 4 Sweep
Vessel of Opportunity				Tow Current Buster 6 Sweep
Vessel of Opportunity				Tow Current Buster 6 Sweep
Vessel of Opportunity				Shuttle Storage Operations
Vessel of Opportunity				Shuttle Storage Operations
Vessel of Opportunity				Shuttle Storage Operations
Vessel of Opportunity				Shuttle Storage Operations
Vessel of Opportunity				Containment / Protection Booming
Vessel of Opportunity				Containment / Protection Booming
TRL 225	1524			Containment / Protection Booming
TRL 703	1524			Containment / Protection Booming
TRL 709	1524			Containment / Protection Booming
TRL 213	610	7.6	15.2	Shoreline Operations, Portable Skimmer Recovery
TRL 250	305			Containment / Protection Booming

TABLE F - 2 EQUIPMENT				
Tier 2 : 6 - 12 hours				
Port-a-Tank			5.7	Recovered Oil Storage
Port-a-Tank			5.7	Recovered Oil Storage
Seaslug			10	Recovered Oil Storage
Seaslug			10	Recovered Oil Storage
TRL 222				PPE Supplies
TRL 303				Decontamination Setup
TRL 511				Staging Area Management
Total at 12 hours	**11827**	**277**	**4506.5**	
Tier 3 : 12 - 18 hours				
Asset	**Boom Length (m)**	**Derated Capacity (t/hr)**	**Storage Capacity (t)**	**Assignments**
Port-a-Tank			5.7	Recovered Oil Storage
Port-a-Tank			5.7	Recovered Oil Storage
Seaslug			10	Recovered Oil Storage
Seaslug			10	Recovered Oil Storage
TRL 215	121		5.7	Shoreline Operations
Sentinel 301	1372		30	Containment / Protection Booming
TRL 301				Incident Command Post Setup
Total at 18 hours	**13320**	**277**	**4573.6**	
Required at 72 hrs	**14300**	**25.33**	**9120**	