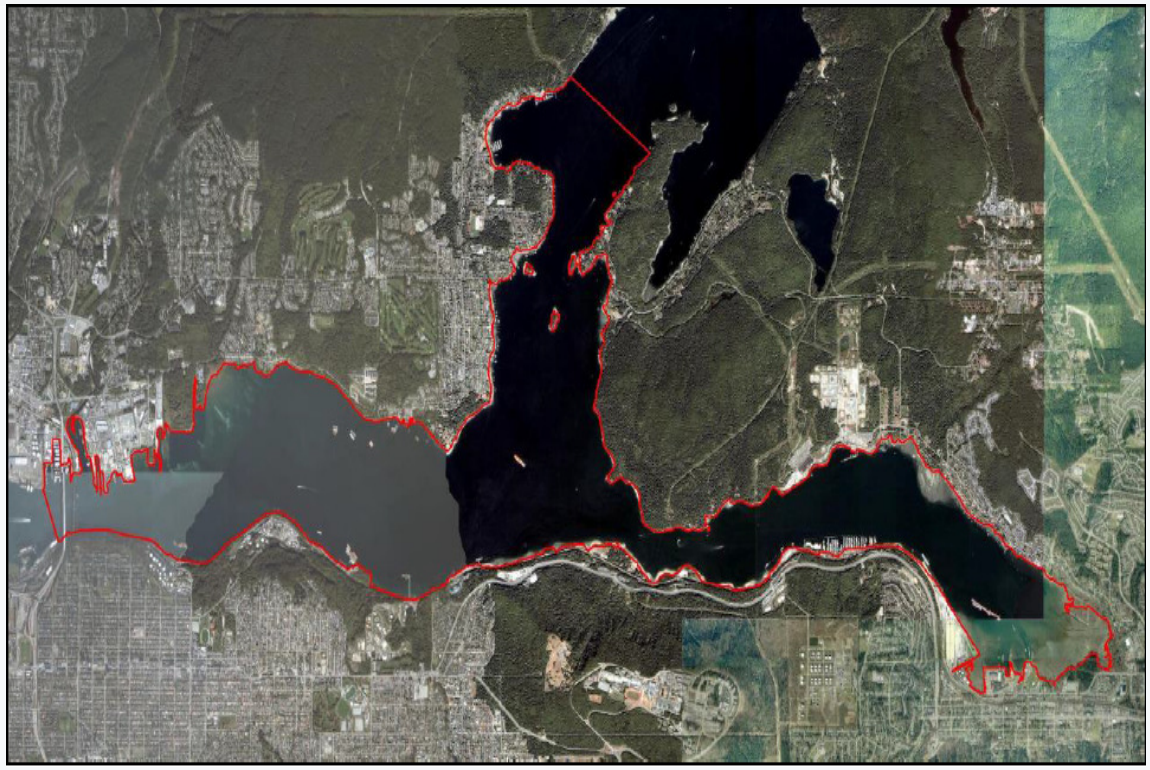
Shoreline Cleanup Assessment Technique (SCAT)

WCMRC
Western Canada Marine Response Corporation

December-1-16

Central Burrard Inlet Pre-Spill SCAT

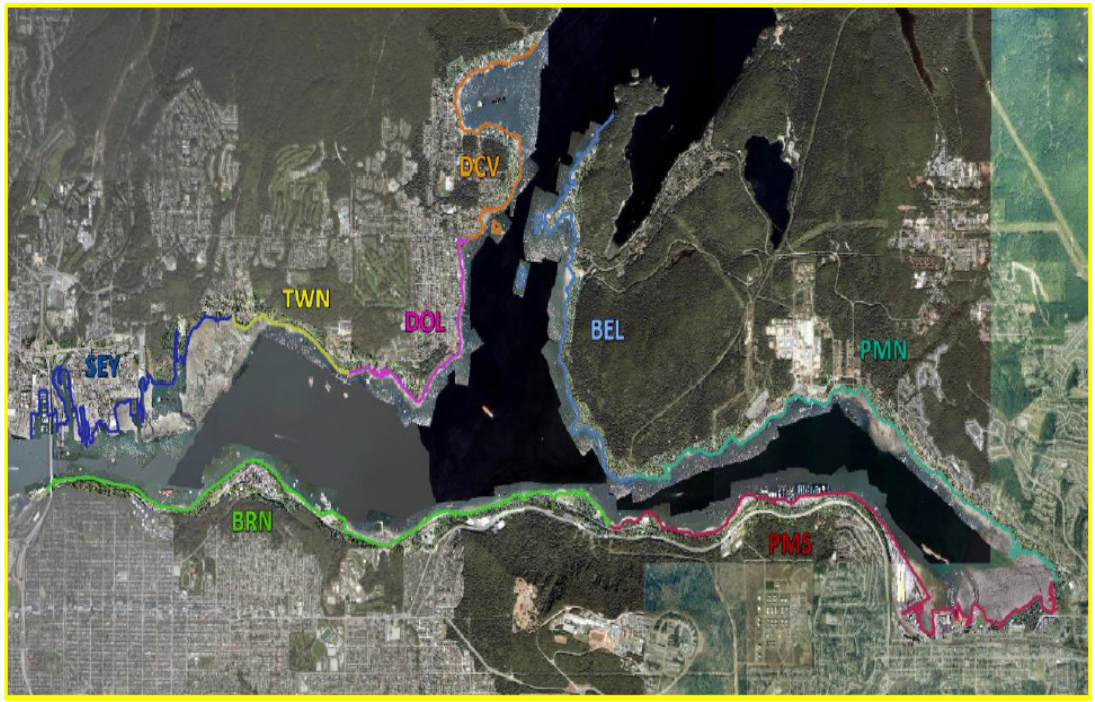


What, and Why, Pre-Spill SCAT

- Ensure a correct foundation of SCAT principles and information are immediately, e.g., segmentation and physical character of the shoreline
- Facilitate early insertion of effective response practices
- Provide in advance of a spill, information important to a marine spill response preparedness activities, in particular operational and logistical planning
- Demonstrate thorough due diligence
- Create a body of unbiased scientific documentation both before and during a spill that can support post-spill litigation

Shoreline Segmentation

- Eight segment Groups were uniquely identified within the project study area



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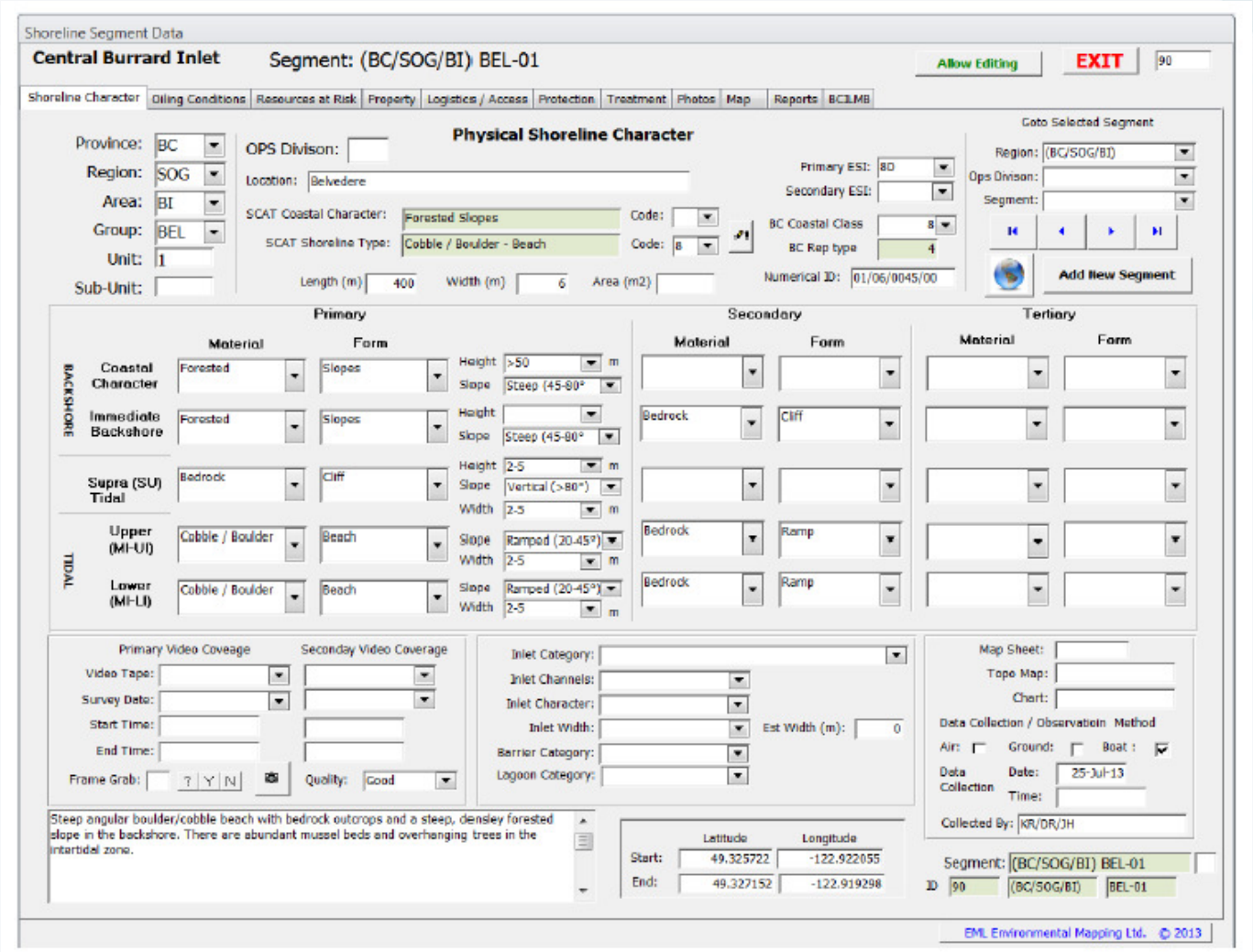

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Shoreline Segment Data

Central Burrard Inlet Segment: (BC/SOG/BI) SEY-03A

Allow Editing | EXIT | 3

Shoreline Character | Oiling Conditions | Resources at Risk | Property | Logistics / Access | Protection | Treatment | Photos | Map | Reports | BCELMB

Potential Oil Behavior Conditions

(Check for "YES")

- Natural Bay or Embayment [x]
- Tidal Inlet or Channel [ ]
- Tidal Lagoon or Estuary [ ]
- Barrier Beach / Lagoon [ ]
- Overwash Evident / Possible [ ]
- Ice onshore during winter months [ ]
- High tidal range (> 3 meters) [x]
- Fresh Water Outlet in Segment [ ] Type:
- Marsh - Wetland - Mud Flats [ ] Type:
- Natural Alongshore Barrier [ ] Type:
- Man-Made Alongshore Barrier [ ] Type:
- Natural Collection Site [ ]
- Removable Debris / Trash [ ] Type:
- Log accumulation upper shoreface [ ]
- Intertidal Kelp/Fucus: Sparse
- Intertidal Biota (Mussels - Clams: sparse
- Burial Potential (sand): Low
- Penetration Potential (pcb-riprap): Low
- Remobilization Potential (bld/riprap): Low
- Other (describe below) [ ]

Oil Residence / Exposure ORI

Oil Residence Index: Meduim-long

Exposure Category: Very Protected

Tides

Large Tide (m) / (ft)	5.06	16.61
Mean Tide (m) / (ft)	3.35	10.99

Tide Station: Port Moody

Pre-Spil Oiling Conditions (Describe Distribution and Character)

EML Environmental Mapping Ltd. © 2013

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Shoreline Segment Data

Central Burrard Inlet Segment: (BC/SOG/BI) BEL-01

Allow Editing | EXIT | 90

Shoreline Character | Oiling Conditions | Resources at Risk | Property | Logistics / Access | Protection | Treatment | Photos | Map | Reports | BCILMB

Create Treatment Record for this Segment

SHORELINE TREATMENT

AutoFill Data From Matrix | Link Ident 90

SHORELINE TREATMENT/CLEANUP - OBJECTIVE(S)

(1) Allow oiled shore zone to recover naturally? Or	○ Yes	● No
(2) Restore oiled shore zone to pre-spill condition? Or	○ Yes	● No
(3) Accelerate natural recovery of oiled shoreline?	● Yes	○ No
(4) Minimize removal of shore zone material?	● Yes	○ No
(5) Minimize remobilization of stranded oil?	● Yes	○ No
(6) Minimize biological and ecosystem damage?	○ Yes	● No
(7) Other	● Yes	● No

SHORELINE TREATMENT/CLEANUP - STRATEGY(IES)

(1) Monitor Only?	○ Yes	● No
(2) Remove oil quickly before reworked or buried?	● Yes	○ No
(3) Remove bulk oil only - Leave residue to degrade?	● Yes	○ No
(4) Minimize waste generation using in-situ techniques?	○ Yes	● No
(5) Give preference to manual treatment techniques?	○ Yes	● No
(6) Develop a segment - habitate treatment strategy ?	○ Yes	● No
(7) Other	● Yes	● No

SHORELINE TREATMENT/CLEANUP - METHODS

S1 Natural recovery	Optional	S11 Mechanical Removal	Applicable for small amounts of oil
S2 Deluge - Flooding	Preferred	S12 Vegetation removal/cropping	Applicable for small amounts of oil
S3 Low-press, ambient water wash	Preferred	S13 Passive sorbents	Applicable for small amounts of oil
S4 Low-press, warm water wash	Not recommended	S14 Wet Mixing	Impractical
S5 High-press ambient water wash	Optional	S15 Dry Mixing	Impractical
S6 High-press warm water wash	Not recommended	S16 Sediment relocation	Impractical
S7 Hot water or steam cleaning	Not recommended	S17 In situ burning	Not recommended
S8 Sand Blasting	Not recommended	S18 Washing agents/dispersants	Optional
S9 Manual Removal	Applicable for small amounts of oil	S19 Shoreline cleaners	Optional
S10 Vacuum Recovery	Optional	S20 Solidifiers	Optional
		S21 Bioremediation	Optional

Recommended Treatment Summary / Comments

This segment is coded with a primary UITZ shoreline type of Coarse (pcb)-Beach however secondary Bedrock-Cliff is coded in the Upper intertidal Zone and/or there is bedrock indicated in the UITZ that may impact treatment options.. Appropriate techniques for both sediment and Rock shorelines may need to be considered

EU/UC End Point Recomendations:


Shoreline Segment Data
Central Burrard Inlet
Segment: (BC/SOG/BI) BEL-26
Allow Editing
EXIT
115
Shoreline Character
Oiling Conditions
Resources at Risk
Property
Logistics / Access
Protection
Treatment
Photos
Map
Reports
BCILMB
Create Protection Record for this Segment
WCMRC Tactic Sheet
8-03-004 South of Belcarra Regional Park.pdf

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Central Burrard Inlet

Pre-Spill SCAT
Proposed Shoreline Treatment (STR)

Database Ident: 109

Ops Division:

Segment: **(BC/SOG/BI) BEL-19**

Segment Length (m): 165

	Latitude	Longitude
Segment Start	49.31	-122.92781
Segment End:	49.31229	-122.92672

Description (Shoreline Types)

	Primary	Secondary	Tertiary
Coastal Character:	Grass Flats	-	-
Shoreline Type:	Sand Beach	Coarse (pcb)-Veneer	RipRap-Man-Made Embankments

A wide sand beach in front of the grassy flats of the Belcarra picnic area, inside Belcarra regional park. There is a secondary veneer of coarser sediments (pebble-cobble-boulder). There is a rip rap bank in the supratidal acting as erosion control. There is both stair and ramp access to the intertidal. The park has facilities that would make it a good staging area (parking, washrooms etc).

Resources / Use

Resource	Constraints	Type	Season	Primary
Recreation	This is a very popular recreation area.	Human	All	☐

SUGGESTED CLEANUP STRATEGIES AND CONSIDERATION

SUGGESTED ENDPOINTS

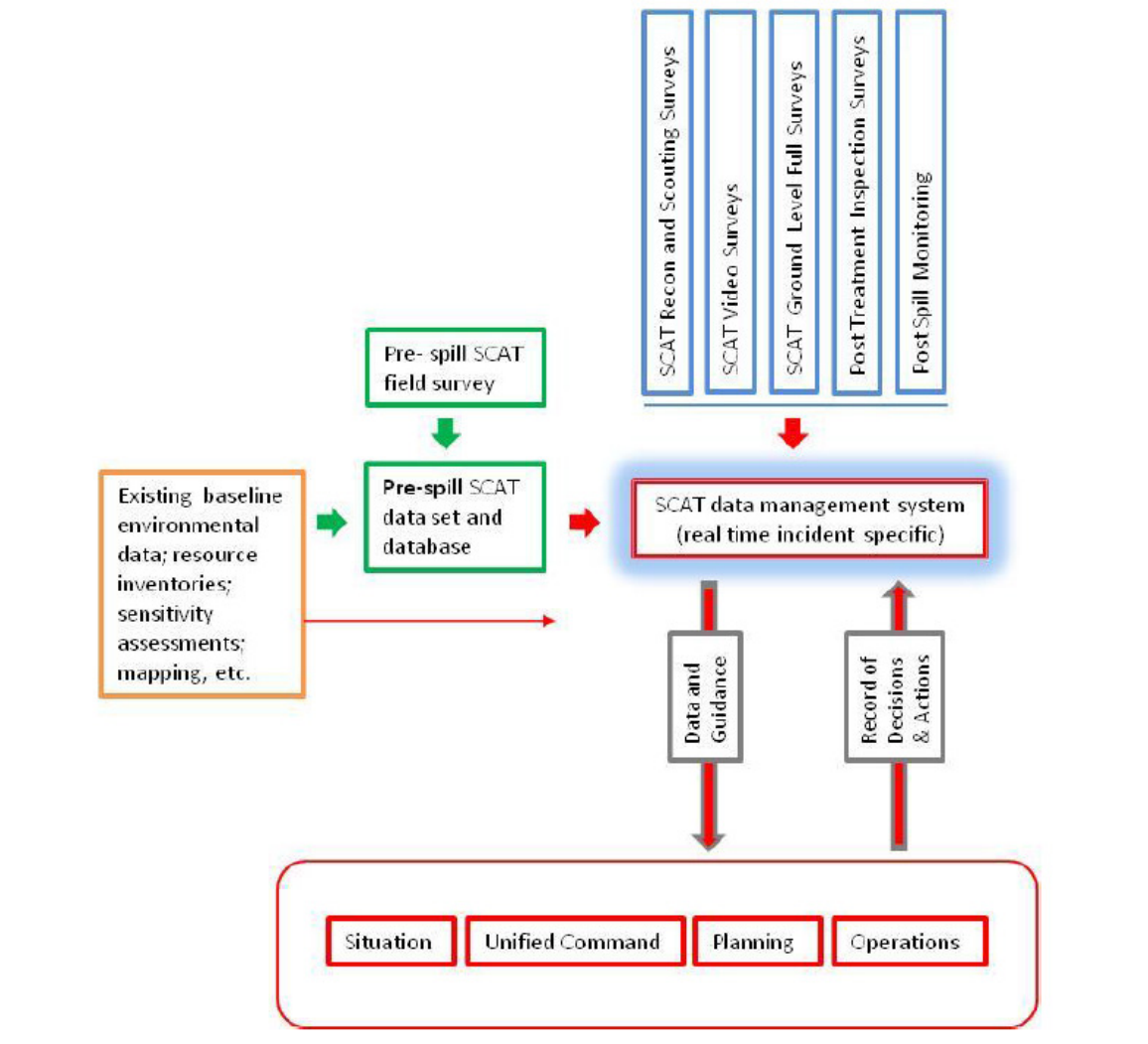
EUL: _____ UC: _____

PLANNING: _____ FN: _____

OPS: _____ ( ): _____

SCAT Pre-Spill Database Proposed STR — Wednesday, February 05, 2014

How SCAT is used in a Response



Overview of Coastal Mapping Program

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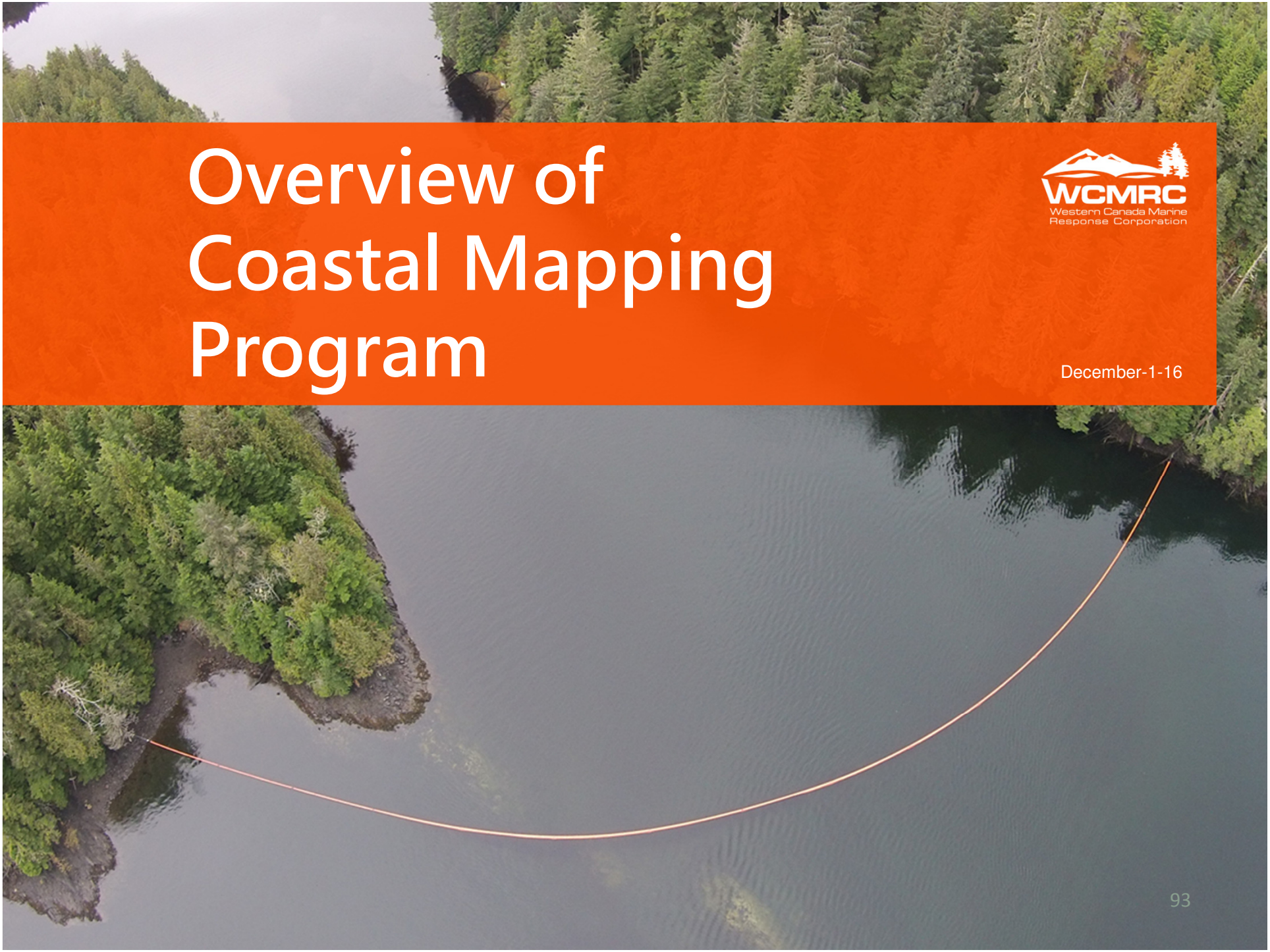
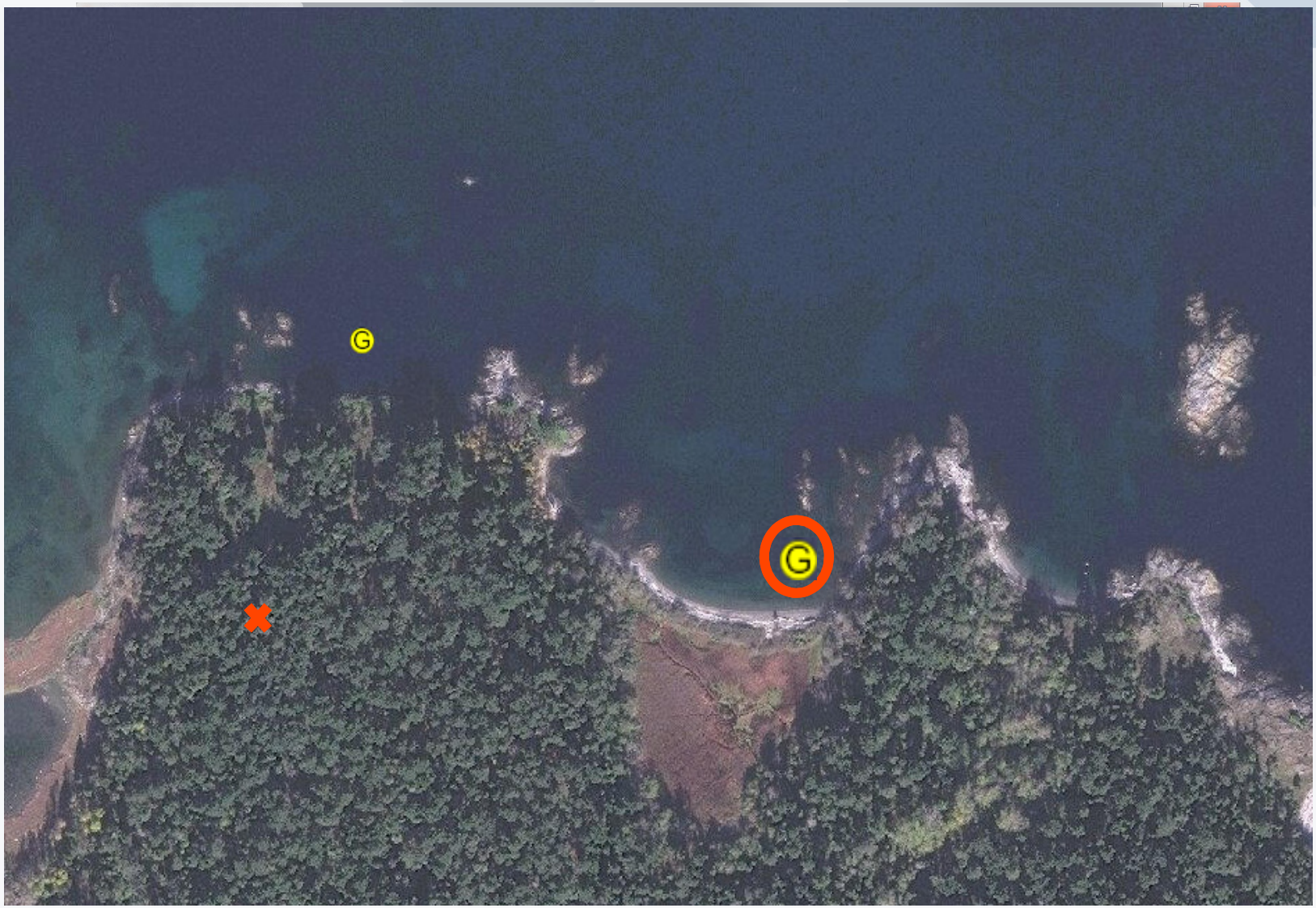
December-1-16



Mapping Application



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Reed Point Marina — GRS # 8-3-007

Location	49° 17.49'N 122° 53.04'W	Seasonality	All Seasons
Site Status	27-Aug-13		
Waterbody	Burrard Inlet		
Resources at Risk	Marinas, breakwaters, aquatic mammals.		
Strategy Objective	Exclusion	Protect marinas and sea lion research facility	

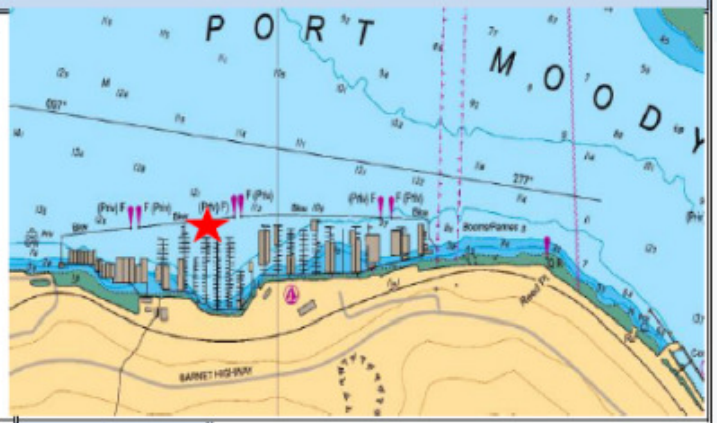
Anchor	Boom 1 - 4000 feet		Anchor	Boom		Anchor	Boom	
	Lat	Long		Lat	Long		Lat	Long
G1	49°17.56'	122°53.32'						
G1a	49°17.56'	122°53.30'						
G2	49°17.58'	122°53.12'						
G2a	49°17.58'	122°53.09'						
G3	49°17.57'	122°52.78'						
G3a	49°17.57'	122°52.76'						
1	49°17.52'	122°52.63'						
2	49°17.55'	122°53.53						

Anchor	Boom		Anchor	Boom		Anchor	Boom	
	Lat	Long		Lat	Long		Lat	Long
1								
2								
3								
4								
5								
6								
7								
8								

Recommended Equipment		Recommended Personnel	
Amount	Description	Number	Personnel
2	Vessels (Shallow Draft)	2	Vessel Operators
9	Anchors	4	Labourers/Deckhands
300 feet	1/2" polysteel rope		
1220m	General Purpose Boom (4000 feet)		

Reed Point Marina			GRS # 8-3-007
Site Access	Land or Boat	***Restrictions***	Large private marina
Implementation	Initial boom to close off gates in log breakwater (Gates 1 - 3 - 3x100' general purpose boom sections). If oil severity high or extra boom is available, you can cover the rest of the marina. Start at anchor 1 and string out to end of breakwater. String along breakwater to anchor 2 at deep end of belt boom on Suncor site. Use absorbent boom sections to close off gaps in log breakwater		
Staging Area	Large parking lot in area. Can park trailers and offload equipment. Boat Launch at rocky point. Fifity tonne travel lift on-site. Potential staging area/offload site at Suncor to the west		
Safety Notes	Marine traffic. No anchoring area for pipeline on the east side.		
Field Notes	Shoreline is ramp-steep beach. Placed cobble boulder shoreline. Non-active pipeline running across inlet on east end.700 feet of boom from anchor 1 to first marina gate. Sea lion research site and pens located at west end of Marina. Log boom gaps can be lined with absorbent booms. Marina access points marked as G anchor series. Fuel dock for boat refueling.		

Reed Point Marina. Anchor 2 on west side located on canbouy anchored to deep end of exisiting belt boom .



Site Contact Information	

Site Directions
1) Head south on Kensington Ave.
2) Turn left onto Hastings Street.
3) Continue onto Inlet Drive E.
4) Continue onto Barnet Road E.
5) Turn left onto 1st Street.
6) First Street turns left and becomes Reed Point Way.
7) Reed Point Marina is at the end of Reed Point Way.

Nearest Address
850 Barnet HWY

GRS Development Process Overview

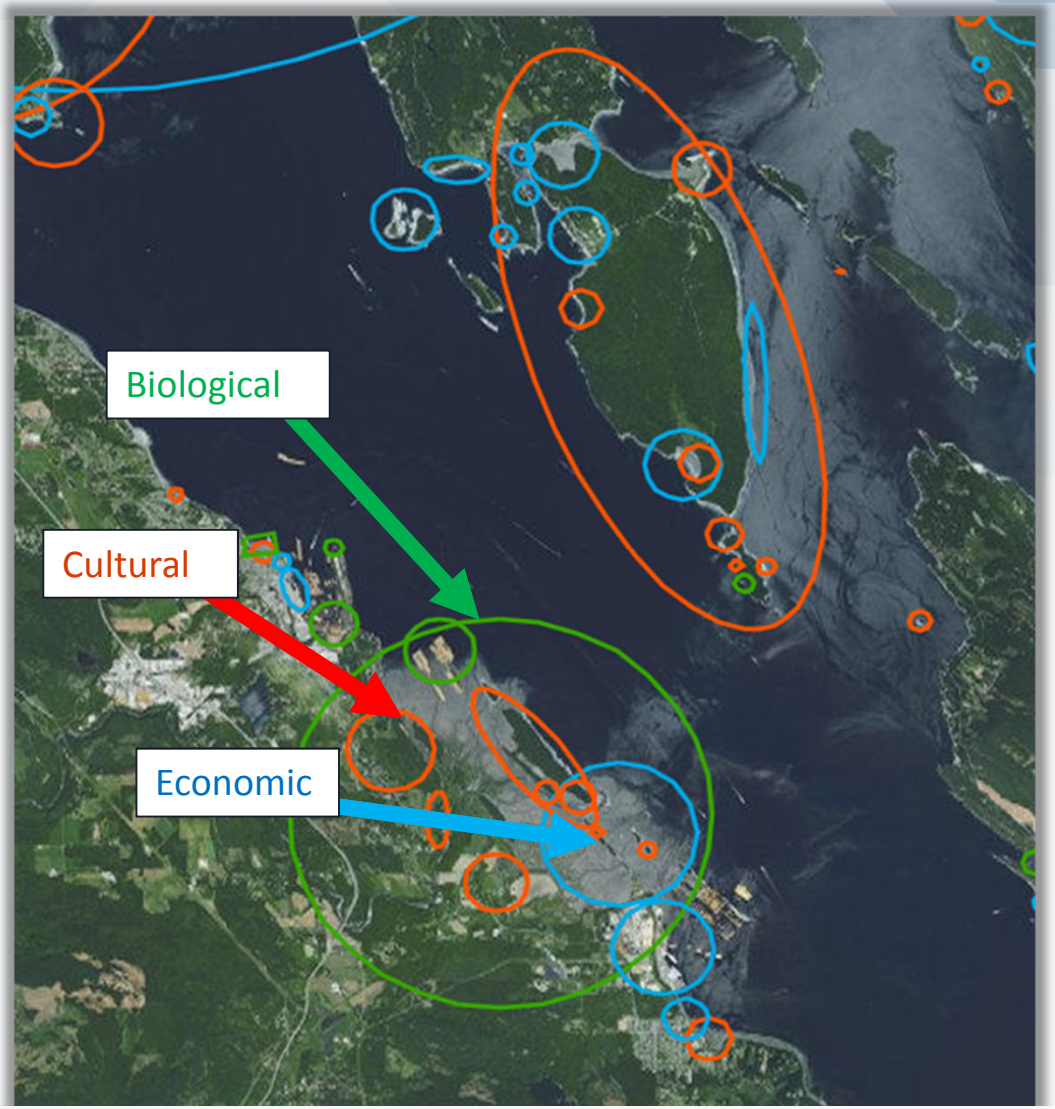
Shoreline Sensitivities

Data Sourced

- Coastal Resource Information System (CRIMS)
- Fisheries Information Summary System (FISS)
- Habitat Wizard
- RAAD
- Independent sources

- Marina
- Research facilities

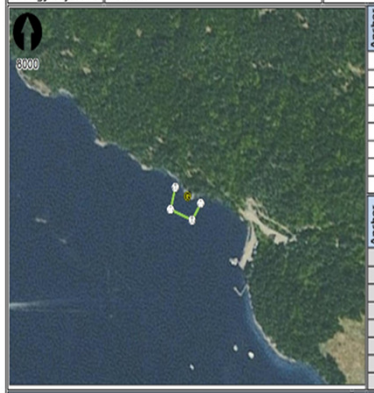
10) Wildlife management areas



Ground Truth Data & Develop

Burgoyne Bay 2 — GRS # 07-03-052

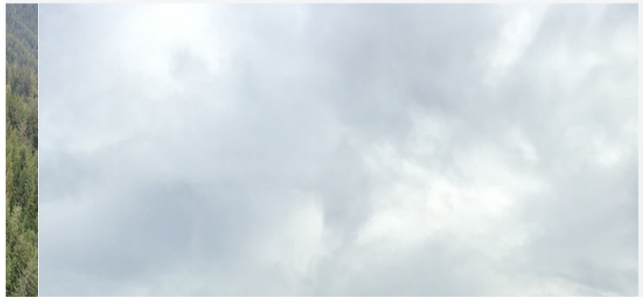
Location	48° 47' 41.387" N, 123° 31' 24.528" W	Seasonality	All Seasons
Site Status	Field Visit 2015-03-16	Phyident	01/08/0522
Waterbody	Burgoyne Bay		
Resources at Risk	Cultural features, Aquatic Mammals		
Strategy Objective	Exclusion		



Anchor	Boom 1 - 600 feet Lat	Long	Anchor	Boom 2 - Lat	Long	Anchor	Boom 3 - Lat	Long
1	48° 47' 41"	123° 31' 26"						
2	48° 47' 41"	123° 31' 23"						
3	48° 47' 40"	123° 31' 27"						
4	48° 47' 40"	123° 31' 24"						

Anchor	Boom 4 - Lat	Long	Anchor	Boom 5 - Lat	Long	Anchor	Boom 6 - Lat	Long

Recommended Equipment		Recommended Personnel	
Amount	Description	Number	Personnel
600feet	General Purpose Boom	1	Supervisor
100 feet	3/8" Polysteel rope	2	Labourers
2	"Minimum"- Danforth Anchor kits and 2 shorellne ties	1	Vessel Operator
1	Landing Craft	1	Vessel operator
1	Broadwater Craft		

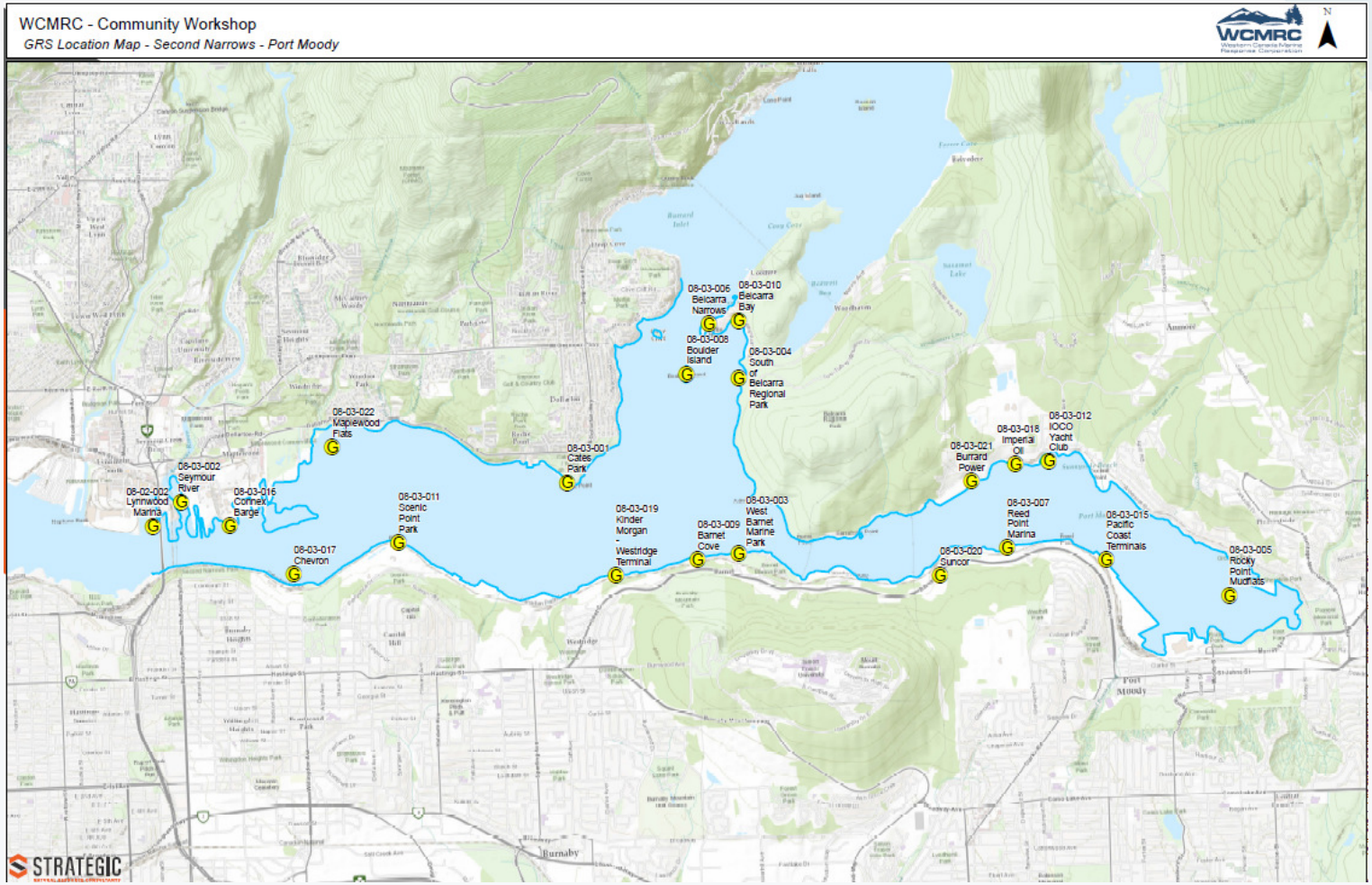


Burgoyne Bay 2 — GRS # 07-03-052

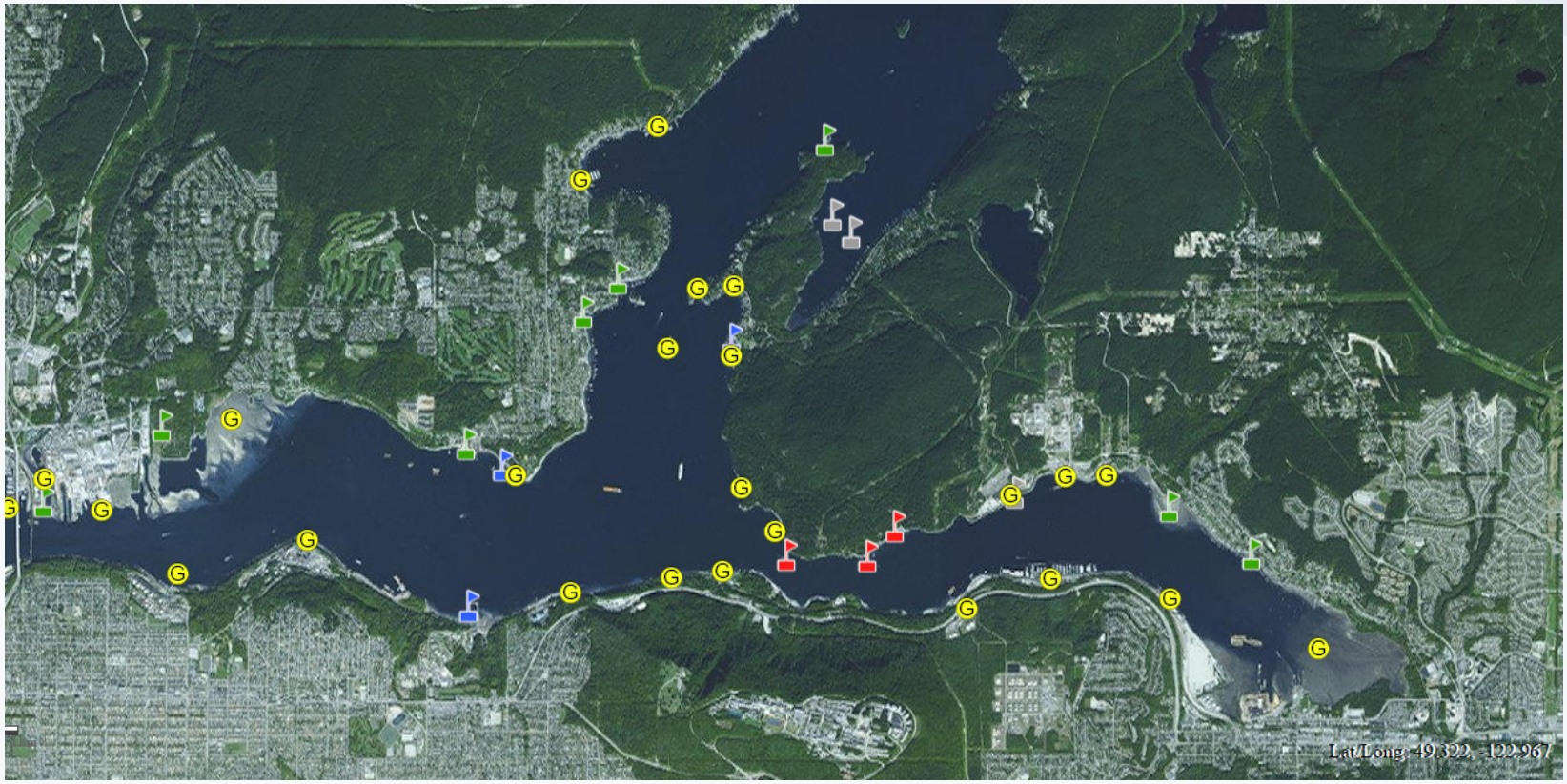
Site Access	Boat	Restrictions	Boat only, no nearby staging area.
Implementation	Set an exclusion boom tied off to beach at either end and anchor offshore to exclude oil from beach.		
Staging Area	Maple Bay Marina		
Safety Notes	Slips trips and falls.		
Field Notes	Low priority - site highly degraded if present. Steep rocky shores		

Site Contact Information	Driving Directions
None	Located on west Saltspring island, the site is within Burgoyne Bay. Access is limited to boat only. Maple bay marina is the closest boat launch. Trailer can be staged here. Boat Launch available in Cowichan Bay as well.
Nearest Address	
Burgoyne Bay road, Salt Spring Island, BC V8K 2A6	From Maple Bay, Head north out of the bay, East to Saltspring and into Burgoyne bay. Note siginificant boat moorage and traffic in this area.

GRS Locations in Central Burrard Inlet

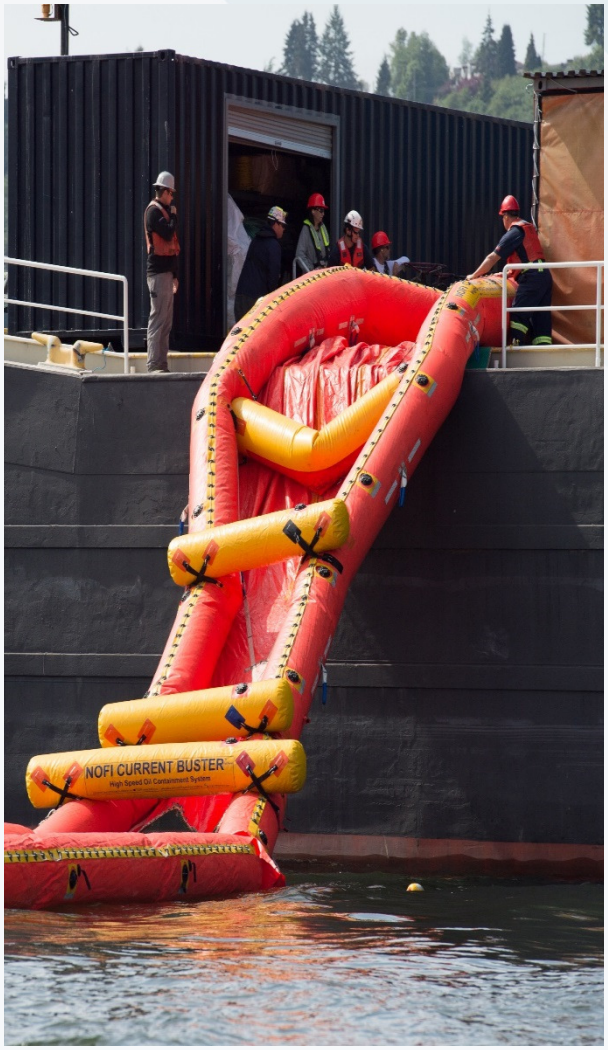


GRS and Community Input Layers



WCMRC Response Equipment

- 32 vessels, including – 7 barges
- 3 mobile command centres
- 33,500 m of boom
- 80 portable skimmers
- 50+ response trailers
- Over 26,000 t of capacity
- 11 coastal caches and 3 bases



Around the Harbour

Spill Response – Enhancements

TMEP has recommended spill response enhancements as part of the NEB facilities application. KMC is working with WCMRC on a principle-based approach:

Augment capacity within the existing regime

- Expansion of WCMRC's resources

Response capacity should reflect the risks

- Risk-based system with ability to cascade resources
- Geographic Response Planning

Investments should benefit affected communities

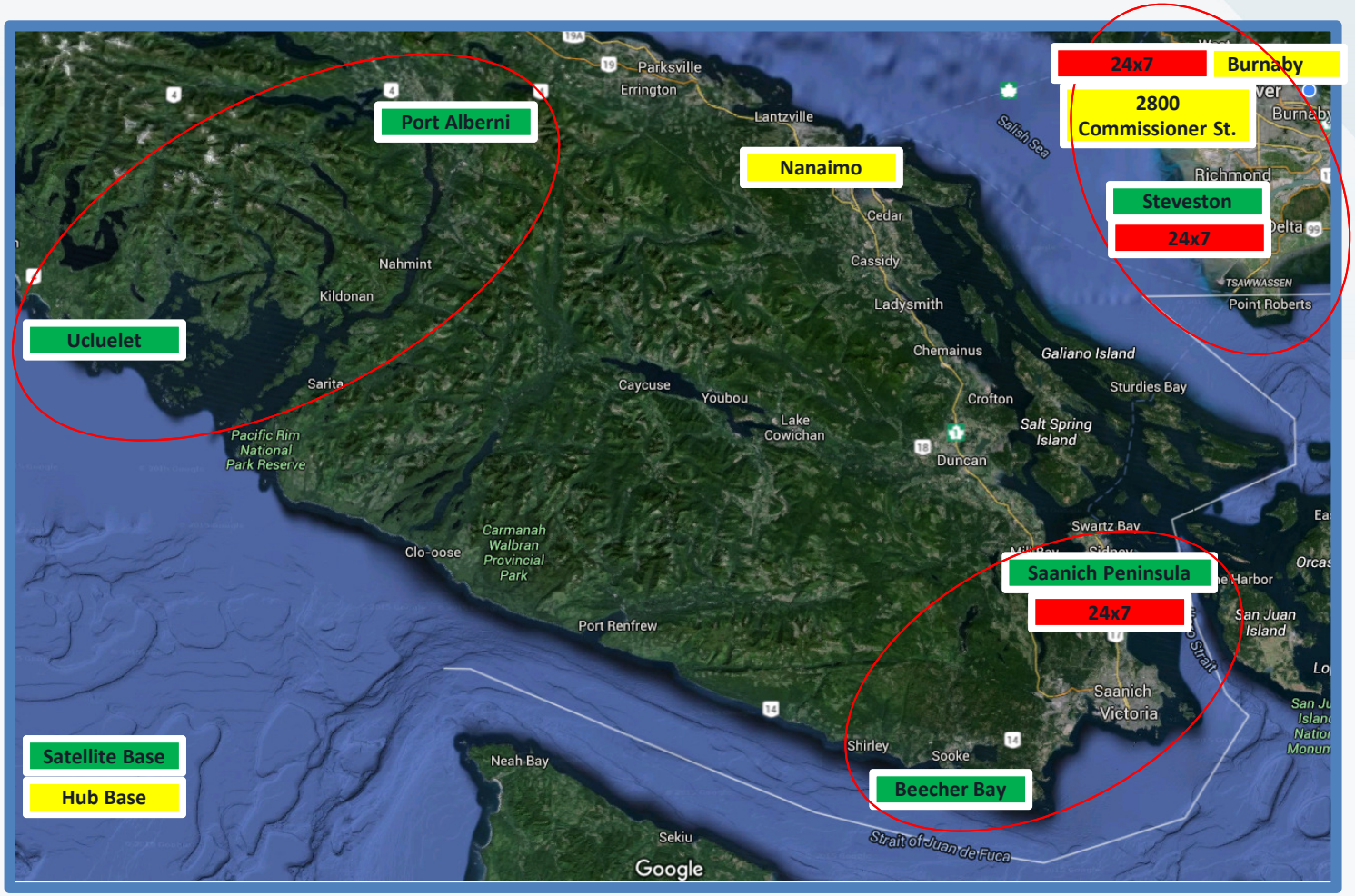
- Create opportunities for Aboriginal and marine communities to participate

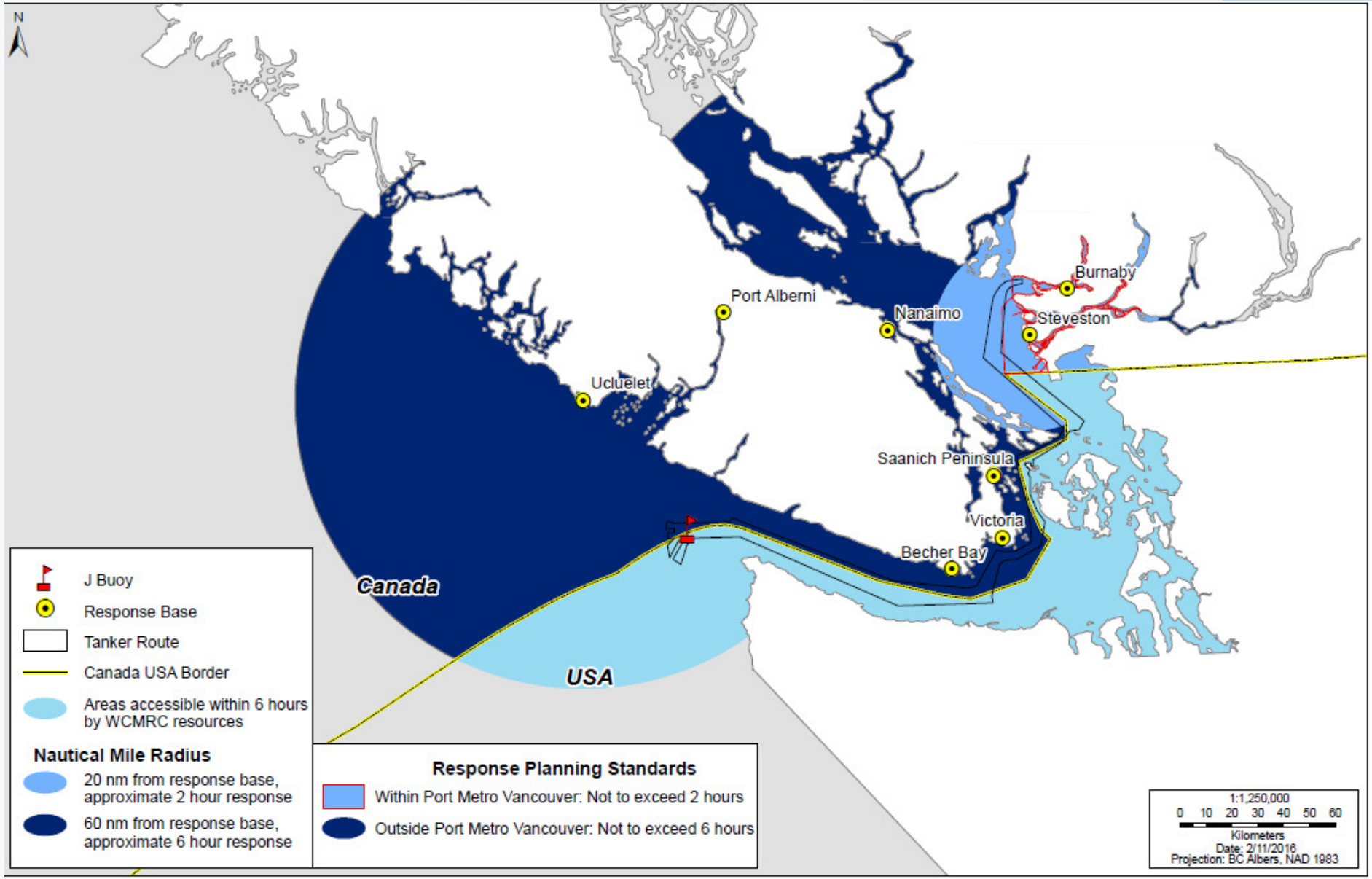
Spill Response – Costs

WCMRC is developing an implementation plan for the proposed enhancements. Estimates suggest:

- $100 million of additional capital
- $15-20 million of additional O&M
- Approx. 100 new employees
- 5-6 new bases including 24/7 operations

Potential Response Base Locations




N
Port Alberni
Nanaimo
Burnaby
Steveston
Ucluelet
Saanich Peninsula
Victoria
Becher Bay
Canada
USA
J Buoy
Response Base
Tanker Route
Canada USA Border
Areas accessible within 6 hours by WCMRC resources
Nautical Mile Radius
20 nm from response base, approximate 2 hour response
60 nm from response base, approximate 6 hour response
Response Planning Standards
Within Port Metro Vancouver: Not to exceed 2 hours
Outside Port Metro Vancouver: Not to exceed 6 hours
1:1,250,000
0 10 20 30 40 50 60
Kilometers
Date: 2/11/2016
Projection: BC Albers, NAD 1983

WCMRC Potential Growth (estimates only)

	Personnel	Vessels	Barges	Mini Barges	Bases
Current	60	32	3	5	3
Business as Usual	15	5	1 Refit	2	----
Trans Mountain	90-100	26	3	10	4*
Total:	155 - 165	62	6	17	8 – 9

*plus enhancements to 2 bases

WCMRC Capacity

	Canada Shipping Requirements	WCMRC 2016	WCMRC + TMEP Enhancements
Boom (m)	14,300	36,050	89,930
Skimming (t/hr)	27	550	840
Shoreline clean-(m/day)	500	1,500	3,000
Storage (t)	3,040	8,100	25,260
Sweep systems	2	4	11
Total:	**10,000**	**26,000**	**62,890**

INCIDENT RESPONSE

Notifications*

Team Member	Notification Groups / Activites
On-Call EHS Representative	• National Energy Board (NEB) • Transportation Safety Board • Provincial environmental emergencies reporting line
Liaison Officer	• Provincial Emergency Management agencies • Various other regulatory agencies (MOE, Federal and Provincial Fisheries) • Aboriginal Groups • Local government
Information Officer	• Issues initial media statement • Activate communication plan specific to incident

*May request co-ordination call through provincial emergency management agencies

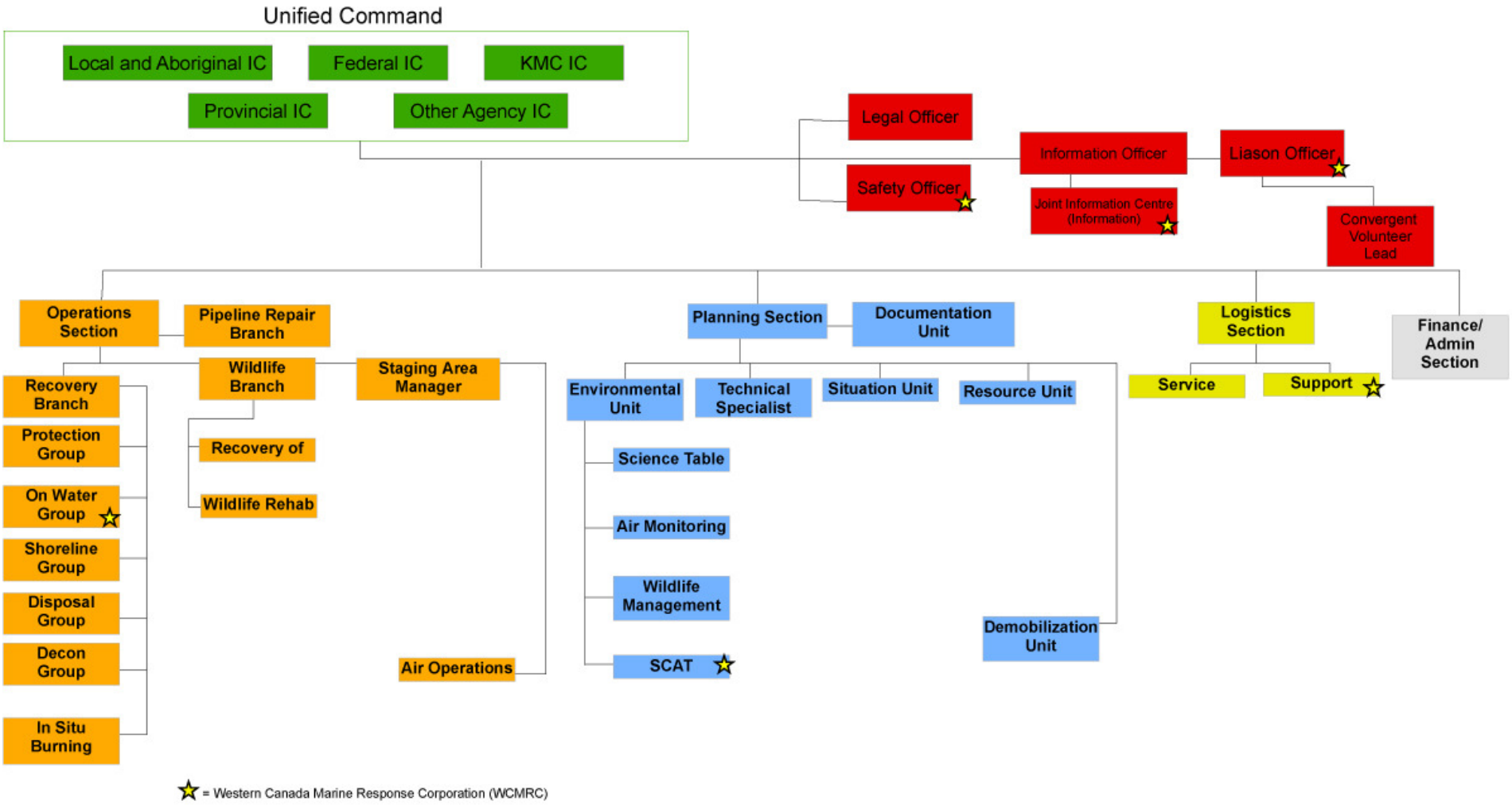
Public Notifications

- Public Notifications and Public Safety Actions
  - Priorities are determined based on the type of incident and the impacts the incident may have on the safety of the public
  - KMC provides technical advice to local authorities to aid in the determination of appropriate public safety actions, including evacuations (shelter in place)

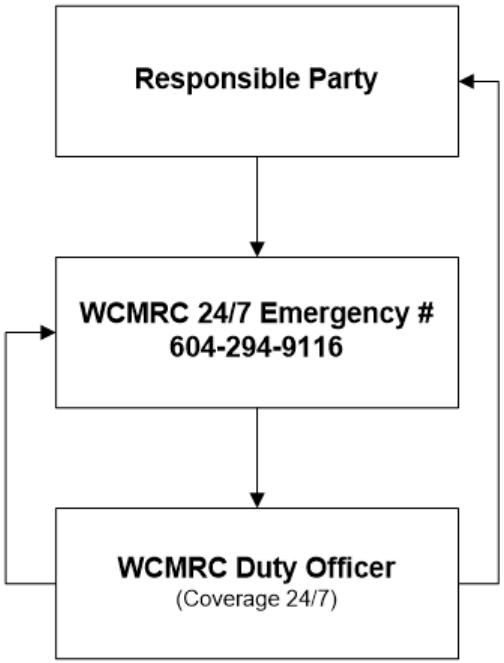
- Impacted Landowners/Occupants
  - Contacted through direct notification via in-person visits, notices or telephone calls
  - Claims process will be quickly in place to ensure expenses associated with the incident are covered

Incident Management

KMC Incident Command Post – External Participation



Notification and Callout



File: Initial Response Process and Questions

Initial Incident Information – Form - ICS 201 Enhanced

- ☑ Time and date of call: _____
- ☑ Person reporting spill:_____
- ☑ Authorized company representative: _____
- ☑ Contact numbers: #1_____Backup#_____
- ☑ Company/Vessel reporting spill: _____
- ☑ Type of membership, if any: _____
- ☑ Location of spill: _____
- ☑ Product spilled: _____
- ☑ Source: _____
- ☑ Source controlled: _____
- ☑ Volume spilled: _____
- ☑ Receiving medium-land, vessel deck, fresh water, salt water, etc.?
- ☑ **Is the product spilled on the MARPOL list?**
- ☑ **Is MSDS available?**
- ☑ **What is the operating environment-on water sheltered, unsheltered, onshore, is it safe to respond, etc.?**
- ☑ **Weather conditions-is it safe to respond?**
- ☑ **Prevailing marine conditions-is it safe to respond?**
- ☑ Who has been notified?

Hi-lited questions are the initial Health and Safety tests and determine if a response can be started.

Roles WCMRC will fill in a KMC event

- Provision of effective spill response management
- Provision of personnel and equipment resources
- Execution of response plan following identified objectives, strategies and tactics
- Effective safety program for WCMRC personnel and subcontractors
- Report to KMC Incident Commander and Section Chiefs
- Integrate WCMRC personnel into ICS support roles

EDUCATION AND TRAINING

Public Awareness*

- Elements
  - Community Awareness Emergency Response (CAER)
  - Public information sharing
  - Joint training opportunities, including KMC participation in external exercises/events
  - Direct communication/consultation either by phone, email or face-to-face meeting
  - Specific training (tank fire awareness, ICS)
  - Community events (OSCAR demo, school presentations)

* Includes first responders and emergency management specialists

Exercise and Training Program

- **KMC Exercise Standard**: outlines the number and type of exercises conducted each year

- **Exercise Planning Process**
  - Annual Exercise and Training Plan
  - Event Planning
  - Planning Tasks
    - Exercise Committee
    - Emergency Management Group
  - Planning Timeline – guidance on timing of exercise development activities
  - External Invitations

Regulatory Required Exercises*

1. Five Equipment Deployment Exercises
   - One per year per district in Canada (four total)
   - One per year at Westridge with a boom deployment of <1 Hour
2. Table Top Exercises
   - One per year in Canada
3. Full-Scale Exercises
   - One per year in differing locations
   - Includes relevant training session the day before the exercise (ICS, tank fires, spill response, safety, etc.)
4. Communication Exercises
   - One per year – unless communications system has been used
   - Tests the KMC internal Emergency Response Line (ERL) system

* Minimum exercises scheduled per year

Westridge Exercise Requirements

- Annual boom deployment of <1 hour
- Full scale every three years
- Condition of the Project:
  - Pre-operations, exercise scenario of a 160 m^3 diluted bitumen release into Burrard Inlet from the Westridge Marine Terminal
  - Must consider response planning for a release that exceeds a credible worst- case scenario spill event

WCMRC Exercise Program

Exercise Type	Frequency	Objectives
Notification Tier 1 Exercise	Quarterly	To verify the notification and callout process for members of WCMRC's Response Management Team and the spill response contractors in the area.
Equipment Deployment Tier 1 Exercise in a Designated Port, up to 150 tonnes	Annual	To demonstrate the initial response capability, utilizing a defined scenario, of WCMRC equipment in the designated port. This exercise will include the activation of members of the response team, and the deployment of a representative sample of WCMRC equipment.
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 including notification, spill assignments, and the activation of spill management personnel for a managed response to a spill of up to 1,000 tonnes.
Equipment Deployment Tier 3 Exercise in a Designated Port or GAR, up to 2,500 tonnes	Every 2 Years	To demonstrate the response capability, utilizing a defined scenario including notification, spill assignments, the deployment of a representative sample of WCMRC equipment, and may include spill management personnel for a managed response to a spill of up to 2,500 tonnes.
Tabletop Tier 4 Exercise, up to 10,000 tonnes	Every 3 Years	To demonstrate the response capability, utilizing a defined scenario including notification, spill assignments, and the activation of spill management personnel for a managed response to a spill of up to 10,000 tonnes.

2015 Exercises

- 150 Tonne On-Water Deployment- October 15, 2015
  - Vancouver Harbour
- 1,000 Tonne Tabletop Exercise- April 22, 2015
  - Naniamo Harbour
- 2,500 Tonne September 22, 2015
  - Vancouver Harbour
- 10,000 Tonne May 26-27, 2015
  - Naniamo Harbour

2016 Exercises

- 1,000 Tonne Tabletop Exercise —June 28, 2016
  - Vancouver Harbour
- 150 Tonne On-water deployment—October 18, 2016
  - Vancouver Harbour
- Multi day unannounced drills (outside of certification)
- ICS Workshops and ICS training

Break Out Session #3

Three Stations (30 minutes)

1. **Incident Command System**
   - Where does your organization fit into ICP?
   - Expectations of KMC in your EOC/ICP?
2. **Notifications**
   - Is the co-ordination call an appropriate way to notify? Supplement notification? If not, why not?
   - How do you effectively disseminate public safety information to the public in a co-ordinated fashion?
   - How coordinating with multiple agencies?
3. **Geographical Response Strategies Input**
   - Provide input to areas of high consequence and protection strategies
4. **Equipment Locations & Booming Strategy (optional)**
   - Equipment locations and equipment staging
   - Q&A and provide feedback on proposed booming strategy

Next Steps

- **Short Term (2016)**
  - Available to continue the consultation on EMP enhancements in smaller groups or individual agencies
  - Schedule follow-up conversations to discuss in detail emergency response strategies and tactics

- **Long Term (2017 and beyond)**
  - Update and consult on the enhancements made to:
    - Emergency Management Program
    - Emergency Response Plan

Please complete survey before you leave. We value your feedback

TRANSMOUNTAIN

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