Shoreline Cleanup Assessment Technique (SCAT)
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
### Potential Oil Behavior Conditions

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

### Oil Residence / Exposure

- Oil Residence Index: **Medium: 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-Spill Oiling Conditions (Describe Distribution and Character)

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**EHL Environmental Mapping Ltd. © 2012**
### Shoreline Segment Data

**Central Burrard Inlet**  
**Segment:** (BC/SOG/BI) BEL-26

<table>
<thead>
<tr>
<th>Shoreline Character</th>
<th>Oiling Conditions</th>
<th>Resources at Risk</th>
<th>Property</th>
<th>Logistics / Access</th>
<th>Protection</th>
<th>Treatment</th>
<th>Photos</th>
<th>Map</th>
<th>Reports</th>
<th>BC/IMB</th>
</tr>
</thead>
</table>

- **Create Protection Record for this Segment**
- **WCMRC Tactic Sheet**: [8-03-004 South of Belcarra Regional Park.pdf]
Central Burrard Inlet
Pre-Spill SCAT
Proposed Shoreline Treatment (STR)

Ops Division: (BC/SOG/BI) BEL-19
Segment Length (m): 165
Segment Start: 49.31 -122.92761
Segment End: 49.31229 -122.92972

Description (Shoreline Types)

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

A wide sand beach in front of the gravel flats of the Belcarra picnic area, inside Belcarra regional park. There is a secondary veneer of coarse sediments (pebble-cobble-boulder). There is a rip rap bank in the surfbeattal 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

<table>
<thead>
<tr>
<th>Resource</th>
<th>Constraints</th>
<th>Type</th>
<th>Season</th>
<th>Primary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recreation</td>
<td>This is a very popular recreation area.</td>
<td>Human</td>
<td>All</td>
<td></td>
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</tbody>
</table>

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
Mapping Application
## Reed Point Marina

**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**

### Recommended Equipment

<table>
<thead>
<tr>
<th>Amount</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Vessels (Shallow Draft)</td>
</tr>
<tr>
<td>9</td>
<td>Anchors</td>
</tr>
<tr>
<td>300 ft</td>
<td>3/2” polyethylene rope</td>
</tr>
<tr>
<td>1220 m</td>
<td>General Purpose Boom (4000 ft)</td>
</tr>
</tbody>
</table>

### Recommended Personnel

<table>
<thead>
<tr>
<th>Number</th>
<th>Personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Vessel Operators</td>
</tr>
<tr>
<td>4</td>
<td>Labourers/Deckhands</td>
</tr>
</tbody>
</table>

### Boom Locations

<table>
<thead>
<tr>
<th>Anchor</th>
<th>Lat</th>
<th>Long</th>
<th>Anchor</th>
<th>Lat</th>
<th>Long</th>
<th>Anchor</th>
<th>Lat</th>
<th>Long</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1</td>
<td>49°17.56’</td>
<td>122°53.52’</td>
<td>G2</td>
<td>49°17.56’</td>
<td>122°53.30’</td>
<td>G3</td>
<td>49°17.58’</td>
<td>122°53.12’</td>
</tr>
<tr>
<td>G4</td>
<td>49°17.58’</td>
<td>122°53.09’</td>
<td>G5</td>
<td>49°17.57’</td>
<td>122°52.78’</td>
<td>G6</td>
<td>49°17.57’</td>
<td>122°52.76’</td>
</tr>
<tr>
<td>1</td>
<td>49°17.52’</td>
<td>122°52.63’</td>
<td>2</td>
<td>49°17.55’</td>
<td>122°53.53’</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Reed Point Marina

**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. Fishy 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.

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**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

1. Compile Existing Shoreline Sensitivity Data
   - Pre-Field Stratification Form

2. Ground Truth Data

3. Industry, Government, First Nations and Community
   - Develop Geographic Response Strategy

Shoreline Sensitivities

Data Sourced

- Coastal Resource Information System (CRIMS)
- Fisheries Information Summary System (FISS)
- Habitat Wizard
- RAAD
- Independent sources
  - Mannla
  - Research facilities
  - Wildlife management areas
Ground Truth Data & Develop
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
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

- Port Alberni
- Nanaimo
- Beecher Bay
- Saanich Peninsula
- Steveston
- Burnaby
- Ucluelet

Satellite Base
Hub Base

24x7
## WCMRC Potential Growth (estimates only)

<table>
<thead>
<tr>
<th></th>
<th>Personnel</th>
<th>Vessels</th>
<th>Barges</th>
<th>Mini Barges</th>
<th>Bases</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current</strong></td>
<td>60</td>
<td>32</td>
<td>3</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td><strong>Business as Usual</strong></td>
<td>15</td>
<td>5</td>
<td>1 Refit</td>
<td>2</td>
<td>----</td>
</tr>
<tr>
<td><strong>Trans Mountain</strong></td>
<td>90-100</td>
<td>26</td>
<td>3</td>
<td>10</td>
<td>4*</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td>155 - 165</td>
<td>62</td>
<td>6</td>
<td>17</td>
<td>8 – 9</td>
</tr>
</tbody>
</table>

*plus enhancements to 2 bases
## WCMRC Capacity

<table>
<thead>
<tr>
<th></th>
<th>Canada Shipping Requirements</th>
<th>WCMRC 2016</th>
<th>WCMRC + TMEP Enhancements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boom (m)</td>
<td>14,300</td>
<td>36,050</td>
<td>89,930</td>
</tr>
<tr>
<td>Skimming (t/hr)</td>
<td>27</td>
<td>550</td>
<td>840</td>
</tr>
<tr>
<td>Shoreline clean- (m/day)</td>
<td>500</td>
<td>1,500</td>
<td>3,000</td>
</tr>
<tr>
<td>Storage (t)</td>
<td>3,040</td>
<td>8,100</td>
<td>25,260</td>
</tr>
<tr>
<td>Sweep systems</td>
<td>2</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>10,000</strong></td>
<td><strong>26,000</strong></td>
<td><strong>62,890</strong></td>
</tr>
</tbody>
</table>
INCIDENT RESPONSE
Notifications

<table>
<thead>
<tr>
<th>Team Member</th>
<th>Notification Groups / Activites</th>
</tr>
</thead>
</table>
| 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

Unified Command

- Local and Aboriginal IC
- Federal IC
- KMC IC
- Provincial IC
- Other Agency IC

Operations Section
- Pipeline Repair Branch
  - Wildlife Branch
    - Recovery Branch
      - On Water Group
      - Shoreline Group
      - Disposal Group
      - Decon Group
    - In Situ Burning
- Staging Area Manager
  - Air Operations

Planning Section
- Environmental Unit
  - Science Table
- Technical Specialist
  - Air Monitoring
- Situation Unit
  - Wildlife Management
- Resource Unit
  - Demobilization Unit

Documentation Unit
- Information Officer
- Safety Officer
- Joint Information Centre (Information)

Logistics Section
- Service
- Support

Liaison Officer
- Convergent Volunteer Lead

Legal Officer

Western Canada Marine Response Corporation (WCdMRC)
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 m³ 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

<table>
<thead>
<tr>
<th>Exercise Type</th>
<th>Frequency</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notification</td>
<td>Quarterly</td>
<td>To verify the notification and callout process for members of WCMRC’s Response Management Team and the spill response contractors in the area.</td>
</tr>
<tr>
<td>Tier 1 Exercise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment Deployment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tier 1 Exercise in a Designated Port, up to 150 tonnes</td>
<td>Annual</td>
<td>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.</td>
</tr>
<tr>
<td>Tabletop Tier 2 Exercise in a Designated Port or GAR, up to 1,000 tonnes</td>
<td>Annual</td>
<td>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.</td>
</tr>
<tr>
<td>Equipment Deployment Tier 3 Exercise in a Designated Port or GAR, up to 2,500 tonnes</td>
<td>Every 2 Years</td>
<td>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.</td>
</tr>
<tr>
<td>Tabletop Tier 4 Exercise, up to 10,000 tonnes</td>
<td>Every 3 Years</td>
<td>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.</td>
</tr>
</tbody>
</table>
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*
## CONTACT US: Trans Mountain Expansion Project

<table>
<thead>
<tr>
<th>Email</th>
<th>Phone</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="mailto:info@transmountain.com">info@transmountain.com</a></td>
<td>1.866.514.6700</td>
<td>transmountain.com</td>
</tr>
<tr>
<td>@TransMtn</td>
<td></td>
<td>youtube.com/transmtn</td>
</tr>
<tr>
<td></td>
<td></td>
<td>soundcloud.com/transmountain</td>
</tr>
</tbody>
</table>

Provide Your Feedback On Construction Planning:
- [transmountain.com/construction-survey](https://transmountain.com/construction-survey)

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