

**Field Studies Information Sheet – July 2013**

Port Metro Vancouver is continuing field studies in July as part of ongoing environmental and technical work for the proposed Roberts Bank Terminal 2 Project.

**Roberts Bank Terminal 2 Project**

The Roberts Bank Terminal 2 Project is a proposed new multi-berth container terminal which would provide 2.4 million TEUs (twenty-foot equivalent unit containers) of additional container capacity. The project is part of the Container Capacity Improvement Program, Port Metro Vancouver's long-term strategy to deliver projects to meet anticipated growth and demand for container capacity until 2030.

No decision has been made to proceed with the proposed Roberts Bank Terminal 2 Project. Port Metro Vancouver is undertaking a comprehensive multi-round, multi-year community, stakeholder and public consultation process regarding the project, which began in June 2011 with Pre-Consultation and continued from October 22 to November 30, 2012, with Project Definition Consultation.

The proposed Roberts Bank Terminal 2 Project will be subject to a thorough and independent environmental assessment.

**Field Studies – July 2013**

An overview of field studies that will be taking place in July 2013 is below.

<b>Overview</b>
<b>Biofilm Study</b>
Regeneration Study
<b>Coastal Geomorphology</b>
Continuous Measurement of Discharge Study
<b>Coastal Seabirds</b>
Impacts of Overhead Transmission Wires and Vehicular Traffic on Coastal Seabirds Study
Shorebird Use of Fraser River Estuary during Southward Migration Study
<b>Marine Fish</b>
Remote Operated Vehicle Benthic Study
<b>Marine Invertebrates</b>
Juvenile Dungeness Crabs Study
Micro Invertebrates Study
<b>Marine Mammals</b>
Underwater Noise Study
<b>Marine Vegetation</b>
Eelgrass Productivity Study
Salt Marsh Productivity Study
Ulva Study
<b>Noise and Vibration</b>
Baseline Noise and Vibration Monitoring
Deltaport Source Measurements
<b>Terrestrial Wildlife</b>
Amphibians and Reptiles Study
Barn Owl Study
Songbird Study

<b>Sediment and Water Quality</b>
Sediment and Water Quality Study
<b>Visual Impact</b>
Visual Impact Assessment Study

Some field studies may require access to public and private land. Port Metro Vancouver will obtain permission before accessing private property. As part of the Adaptive Management Strategy developed as part of the Deltaport Third Berth Project, Port Metro Vancouver will continue studies at Roberts Bank in addition to those outlined in this information sheet.

Port Metro Vancouver will produce monthly Field Studies information sheets summarizing work to occur each month. These updates will be available at [www.portmetrovancover.com/RBT2](http://www.portmetrovancover.com/RBT2).

Study Name	Summary
<b>Biofilm – Regeneration Study</b>	<p><u>Purpose:</u> The purpose of the study is to measure re-establishment rates of biofilm on sediments over time.</p> <p><u>Study Area:</u> This study will be conducted on Roberts Bank.</p> <p><u>Methods:</u> Controlled disturbance plots will be used to assess natural re-establishment rates of biofilm over time. The following parameters will be measured in both disturbance plots and control (non-disturbed) plots:</p> <ul style="list-style-type: none"> <li>• Photopigment density</li> <li>• Carbohydrate</li> <li>• Total Organic Carbon</li> <li>• Taxonomy</li> </ul> <p><u>Timing:</u> This study will begin in July 2013 and will take place during daylight hours.</p>
<b>Coastal Geomorphology – Continuous Measurement of Discharge Study</b>  (continued from June 2013)	<p><u>Purpose:</u> The purpose of the study is to collect data relating to the flow discharge in Canoe Pass.</p> <p><u>Study Area:</u> The study area includes Canoe Pass (the southern-most arm of the Fraser River).</p> <p><u>Methods:</u> Multiple methods will be used to collect data:</p> <ul style="list-style-type: none"> <li>• Sensors and probes will be installed within the study area. These will be connected to computers to collect and monitor data.</li> </ul> <p><u>Timing:</u> This study will continue in July 2013 and will take place during daylight hours.</p>

Study Name	Summary
<p><b>Coastal Seabirds – Impacts of Overhead Transmission Wires and Vehicular Traffic on Coastal Seabirds Study</b></p> <p>(continued from June 2013)</p>	<p><u>Purpose:</u> Bird diverters are special units installed on power lines that help birds see power lines and avoid potentially fatal collisions. The purpose of the study is to calculate the effectiveness of existing bird diverters, while identifying opportunities to further reduce bird collisions with transmission wires and vehicular traffic.</p> <p><u>Study Area:</u> The study area is comprised of the Roberts Bank causeway and the northern side of Westshore Terminals and Deltaport along the transmission wire and road.</p> <p><u>Methods:</u> The study will examine flight patterns, distribution, abundance and behaviour of birds as they cross the Roberts Bank transmission line. Where bird collisions do occur within 20 metres of the transmission wire and road, birds will be collected and studied.</p> <p><u>Timing:</u> Flight surveys will be undertaken every two weeks at each station, raptor surveys will be conducted every week and collision searches will take place every four days. Assessments will occur during daylight hours, weather permitting. This study began in mid-April 2012 and will continue in July 2013.</p>
<p><b>Coastal Seabirds – Shorebird Use of Fraser River Estuary During Southward Migration Study</b></p> <p>(continued from September 2012)</p>	<p><u>Purpose:</u> The purpose of this study is to determine the abundance and distribution of shorebirds across the Fraser River Estuary during the southward migratory period.</p> <p><u>Study Area:</u> The study area is comprised of mudflats within three sites of the Fraser River Estuary:</p> <ul style="list-style-type: none"> <li>• Sturgeon Bank</li> <li>• Roberts Bank</li> <li>• Boundary Bay</li> </ul> <p><u>Methods:</u> The number and distribution of bird use will be assessed by counting droppings at low tide within 1m<sup>2</sup> quadrants. Bird count surveys will also be conducted.</p> <p><u>Timing:</u> The study will continue in July 2013 and will take place during daylight hours.</p>

Study Name	Summary
<p><b>Marine Fish – Remote Operated Vehicle Benthic Study</b></p>	<p><u>Purpose:</u> The purpose of this study is to collect invertebrate and fish density and habitat use data for evaluating benthic (ocean floor) ecological communities.</p> <p><u>Study Area:</u> Offshore of Deltaport at Roberts Bank.</p> <p><u>Methods:</u> A remote operated vehicle (ROV) will be used to record video data on invertebrate and fish density and habitat use of benthic species across a range of depths.</p> <p><u>Timing:</u> The study will begin in July 2013.</p>
<p><b>Marine Invertebrate – Juvenile Dungeness Crab Study</b></p> <p>(continued from August 2012)</p>	<p><u>Purpose:</u> The purpose of the Juvenile Dungeness Crab Study is to determine the density of juvenile crabs in various habitat types throughout Roberts Bank.</p> <p><u>Study Area:</u> The study will focus on Roberts Bank.</p> <p><u>Methods:</u> Juvenile Dungeness crabs will be counted and measured by a team of biologists within the study area at randomly selected sampling locations. Crab size, life history stage and sex will be measured and recorded.</p> <p><u>Timing:</u> The study will continue in July 2013 and will take place during daylight hours.</p>

Study Name	Summary
<p><b>Marine Invertebrates – Micro Invertebrates Study</b></p> <p>(continued from May 2013)</p>	<p><u>Purpose:</u> The purpose of the study is to determine the density and diversity of small marine invertebrates (meiofauna and macrofauna) living in the sediment at Roberts Bank, Sturgeon Bank and Boundary Bay. This study will also look at the role of small marine invertebrates as food for coastal birds.</p> <p><u>Study Area:</u> The study area includes:</p> <ul style="list-style-type: none"> <li>• Roberts Bank</li> <li>• Sturgeon Bank</li> <li>• Boundary Bay</li> </ul> <p><u>Methods:</u> Invertebrate field samples will be collected from a total of 60 intertidal sampling locations. Samples will be collected using syringes and will be sent to a laboratory for processing and analysis.</p> <p><u>Timing:</u> This study will continue in July 2013 and will take place during daylight low tide intervals.</p>
<p><b>Marine Mammals – Underwater Noise Study</b></p> <p>(continued from June 2013)</p>	<p><u>Purpose:</u> The purpose of this study is to capture baseline data on ambient underwater noise levels and southern resident killer whale (SRKW) presence at Roberts Bank.</p> <p><u>Study Area:</u> The study area is the waters in the vicinity of Roberts Bank.</p> <p><u>Methods:</u> At Roberts Bank, both ambient noise levels and Marine Mammal vocalizations will be recorded continuously for one year using a hydrophone cabled to shore.</p> <p><u>Timing:</u> Acoustic recordings at Roberts Bank will continue in July 2013.</p>

Study Name	Summary
<p><b>Marine Vegetation – Eelgrass Productivity Study</b></p>	<p><u>Purpose:</u> The purpose of this study is to determine the summer and winter productivity (grams of carbon per square metre) of eelgrass (<i>Zostera marina</i> and <i>Zostera japonica</i>) at Roberts Bank.</p> <p><u>Study Area:</u> This will focus on known eelgrass habitat to the north and south of Roberts Bank causeway.</p> <p><u>Methods:</u> At each sampling location, eelgrass shoot density, reproductive shoot density, and shoot length and width will be measured from within randomly placed quadrats. A number of representative shoot samples will also be collected for laboratory analysis.</p> <p><u>Timing:</u> This study will begin in July 2013 and will take place during daylight hour low tide events.</p>
<p><b>Marine Vegetation – Saltmarsh Productivity Study</b></p>	<p><u>Purpose:</u> The purpose of this study is to determine summer salt marsh productivity (grams of carbon per square metre) of five prevalent salt marsh plant species at Roberts Bank.</p> <p><u>Study Area:</u> The study will be conducted at salt marsh habitat across Roberts Bank, but will focus on Brunswick Point where diverse salt marsh habitat is located.</p> <p><u>Methods:</u> Within randomly placed quadrats, aerial coverage of individual vegetative species will be estimated and the number of stems/shoots of target species will be counted. A number of shoot samples will also be collected for laboratory analysis.</p> <p><u>Timing:</u> This study will begin in July 2013 and will take place during daylight hours.</p>

Study Name	Summary
<p><b>Marine Vegetation – Ulva Study</b></p> <p>(continued from September 2012)</p>	<p><u>Purpose:</u> Ulva is thin flat green algae, also commonly known as sea lettuce. The purpose of the Ulva study is to:</p> <ul style="list-style-type: none"> <li>• Determine the density of Ulva; and</li> <li>• Determine the percent cover of Ulva.</li> </ul> <p><u>Study Area:</u> The study will focus on Roberts Bank.</p> <p><u>Methods:</u> Teams will walk to randomly generated sampling locations and quantify the percent cover and distribution of Ulva within the sampling locations.</p> <p><u>Timing:</u> The study will continue in July 2013 and will take place during daylight hours.</p>
<p><b>Noise and Vibration – Baseline Noise and Vibration Monitoring</b></p>	<p><u>Purpose:</u> The purpose of this study is to measure baseline noise and vibration levels within potentially impacted residential areas.</p> <p><u>Study Area:</u> This study will be conducted in areas around Deltaport, Tsawwassen First Nation land, Tsawwassen and some communities of Delta in close proximity to Deltaport.</p> <p><u>Methods:</u> Sound and vibration level meters will be used to conduct continuous 48-hour noise level measurements at residential properties.</p> <p><u>Timing:</u> This work will be conducted over a 48-hour period in the month of July 2013.</p>
<p><b>Noise and Vibration - Deltaport Source Measurements</b></p>	<p><u>Purpose:</u> The purpose of this study is to measure close-up “source” measurements within Deltaport.</p> <p><u>Study Area:</u> This study will be conducted at Deltaport.</p> <p><u>Methods:</u> Sound and vibration level meters will be used to conduct source noise measurements to document the level of different noise sources.</p> <p><u>Timing:</u> This study will be conducted in July 2013.</p>

Study Name	Summary
<p><b>Terrestrial Wildlife – Amphibians and Reptiles Study</b></p> <p>(continued from June 2013)</p>	<p><u>Purpose:</u> The purpose of this study is to determine the presence/non-detection of selected reptile species (garter snakes) within the study area.</p> <p><u>Study Area:</u> The study area includes the road shoulders on either side of Deltaport Way from the base of the Roberts Bank causeway, east towards 72<sup>nd</sup> Street.</p> <p><u>Methods:</u> Presence/non-detection in the study area will be determined using direct observation techniques by searching under previously deployed coverboards, which provide ideal refuge for garter snakes within their preferred habitat.</p> <p><u>Timing:</u> This study will continue in July 2013 and will take place during daylight hours.</p>
<p><b>Terrestrial Wildlife – Barn Owl Study</b></p> <p>(continued from June 2013)</p>	<p><u>Purpose:</u> The purpose of this study is to collect baseline data on barn owl use of habitats in the study area.</p> <p><u>Study Area:</u> The study area is 10 kilometres long, and will include a 500-metre buffer on either side of the existing Roberts Bank rail corridor between the shore end of the Roberts Bank causeway and the east end of the Fisher Yard.</p> <p><u>Methods:</u> Roadside surveys will be conducted along existing infrastructure to understand barn owl use of open habitat near existing road and rail lines. Biologists will record:</p> <ul style="list-style-type: none"> <li>• General barn owl behaviour,</li> <li>• Number of barn owls (plus location), and</li> <li>• Age of barn owls, if possible.</li> </ul> <p>Barn owl nest and roost availability, and occupancy studies will also be conducted in June, within one kilometre either side of the rail line.</p> <p><u>Timing:</u> This study will continue in July 2013 and will take place during daylight and nighttime hours.</p>



Study Name	Summary
<p><b>Sediment and Water Quality – Sediment and Water Quality Study</b></p> <p>(continued from June 2013)</p>	<p><u>Purpose:</u> The purpose of the study is to collect data on sediment and water quality throughout the study area. Furthermore, the study will examine the connection between water and sediment quality and the health of:</p> <ul style="list-style-type: none"> <li>• Marine invertebrates,</li> <li>• Biofilm,</li> <li>• Eelgrass,</li> <li>• Sea pens, and</li> <li>• Biological resources and communities.</li> </ul> <p><u>Study Area:</u> The study area is comprised of three sites within the Fraser River Estuary:</p> <ul style="list-style-type: none"> <li>• Sturgeon Bank</li> <li>• Roberts Bank</li> <li>• Boundary Bay</li> </ul> <p><u>Methods:</u> Throughout the study area, water and sediment samples will be taken during daylight hours and sent to a laboratory to determine the sample’s physical and chemical characteristics.</p> <p><u>Timing:</u> This study will continue in July 2013 and will take place during daylight hours.</p>
<p><b>Visual Impact – Visual Inventory Study</b></p>	<p><u>Purpose:</u> The purpose of this study is to gather baseline data to assess the existing aesthetic conditions at Roberts Bank.</p> <p><u>Study Area:</u> This study will be conducted from both shore based and offshore viewpoints surrounding Deltaport Terminal.</p> <p><u>Methods:</u> Multiple digital photos will be taken of Deltaport Terminal at distances ranging from 1 to 8 kilometres. The data collected will be used to inform desktop studies.</p> <p><u>Timing:</u> This study will be conducted in July 2013 during daylight hours.</p>

**For Further Information**

For further information, please visit our website at [www.portmetrovancover.com/RBT2](http://www.portmetrovancover.com/RBT2) or contact us:

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