

## Effectiveness of Early Actions in Accelerating a Harbor-Wide Monitored Natural Recovery Remedy in Esquimalt Harbour

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Esquimalt Harbour is a large working harbor located on Vancouver Island, British Columbia. It was identified as a Class 1 Contaminated Site and is being remediated by DND through FCSAP. It's the home of the RCN Pacific Fleet, necessitating that remedial objectives align with operations. The remedial strategy identified for the site includes a phased approach of early remedial actions, with MNR of the majority of the harbor. Over the past 7 years, 11 early remedial actions have been completed as part of the first phase of harbor-wide cleanup. Comprehensive data were collected during all phases to confirm their effectiveness and identify potential ongoing sources of recontamination. Multiple studies have been conducted

throughout the harbor to identify trends and early indications of natural recovery processes. Sediment sampling and deployment of sediment traps to characterize deposition and resuspension, and coring to assess vertical trends. Additionally, tissue sampling and analysis, has been conducted at all phases. Multiple lines of evidence will be presented confirming that exposure concentrations are either declining or being maintained at levels below risk thresholds. Results of recent investigations will be discussed. Surface sediment in remediated areas is equilibrating to harbor background levels, consistent with recontamination modeling and sediment trap results. Crab tissue concentrations increased during early actions; potential causes will be presented. Based on findings to date, MNR is a viable strategy for remediation of the majority of the harbor, with potential need for additional source control and/or supplemental remediation in limited areas. Lessons learned will be discussed.

### Rob Thomas

Rob is an Environmental Geoscientist based in Victoria BC. His background is in Contaminated Site Assessment and Remediation with a focus on marine projects. He has worked from the field level on a variety of dredging and intertidal remediations and site investigations and has managed a variety of marine and terrestrial field investigations and remediations. His masters research focused on modeling the spatial distribution of metals in sediment under sparse data conditions to aid in remedial planning. He now works as an Environmental Specialist for Public Services and Procurement Canada primarily on the Esquimalt Harbour Remediation Project for DND.