

Deltaport third berth Adaptive Management Strategy summary

The Adaptive Management Strategy is one of several significant environmental programs that were undertaken as part of the Deltaport Third Berth Project, a project to add additional cargo-handling ability to Canada's largest container terminal, located at Roberts Bank in Delta, B.C.

The strategy was developed in consultation with, and approved by, Environment Canada, and it allowed for the early detection of changes in the inter-causeway ecosystem (between Deltaport Way and Highway 17) so that potentially significant negative ecosystem trends attributable to the project could be prevented or mitigated.

History of AMS

The Deltaport Third Berth Project was comprehensively reviewed by federal and provincial government agencies through a harmonized environmental assessment process facilitated by the B.C. Environmental Assessment Office. The process welcomed participation of stakeholders and the public.

The environmental assessment concluded that no significant adverse environmental effects would occur as a result of the project, as long as recommended mitigation measures identified in the application were implemented. Initial review by Environment Canada led to a recommendation that an Adaptive Management Strategy be developed to provide practical advance warning of any potential emerging negative ecosystem trends during project construction and operation, and to establish actions that the port authority would undertake to stabilize or mitigate negative trends.

The objective of the strategy was to undertake a science-based systematic approach to monitor and manage the Roberts Bank inter-causeway ecosystem. The specific goal of the program was to reduce scientific uncertainty and to assess the potential for the occurrence of marine eutrophic events (nutrient imbalances in the water column leading to ecosystem changes) and dendritic channelization leading to erosion that could result in significant negative trends in the ecosystem.

The monitoring program was initiated in 2007, as berth construction was beginning, and continued through 2014, for a total of eight years of monitoring. An advisory committee comprised of three scientists was established at the start of the strategy in order to provide independent scientific and technical advice and recommendations. The committee members were appointed by Port Metro Vancouver and Environment Canada, and all three original members remained on the committee through the entire duration of the monitoring program.

Program findings

The strategy was designed to look specifically for changes to the nutrient balance in the water, and for potential erosion effects, both of which could negatively affect the ecosystem of the area located between the Roberts Bank and Highway 17 causeways in

Delta. To do that, the program focused in on several main study areas. The 2014 report is the final program report and provides a summary of the strategy and the key findings in each study area.

Coastal geomorphology

Coastal geomorphology looks at the development and evolution of the coast under the influence of winds, waves, currents, and sea-level changes, and in the case of the Adaptive Management Strategy, attempts to tease out those changes that might be attributable to the Deltaport Third Berth Project from those changes that are either naturally occurring or are attributable to non-project related causes.

Construction-related activities in 2007 led to the formation of new drainage channels in a localized area of the mud flats adjacent to the terminal perimeter dyke. The Adaptive Management Strategy responded by increasing monitoring activities in this area to determine whether the site would naturally recover or would require mitigation. The results of the studies has concluded that this area has remained stable since 2008 and no mitigation was recommended.

Other ongoing changes within the inter-causeway were detected through the monitoring program, however, with the exception of the above, it was concluded that these changes within the inter-causeway were not attributed to terminal construction.

Surface water and sediment quality

The Adaptive Management Strategy included nine surface water and sediment quality monitoring stations, including both inter-causeway and reference stations. Overall, the water and sediment quality data collected over the eight years of the program were generally consistent across years, and the data did not indicate any significant negative ecosystem trends attributable to the Deltaport Third Berth Project that required mitigation, with one exception as outlined below.

While it was concluded there was no evidence of eutrophication throughout the inter-causeway as a result of construction or berth operation, there were localized changes in water and sediment quality in a small area behind the tug basin. Additional studies in this area were conducted, which concluded that the cause was likely restricted drainage leading to poor water quality in this area. Port Metro Vancouver responded by installing a swale in the tug basin berm in 2014 to increase drainage and tidal flushing of the area. Early monitoring results indicated that the mitigation measure has been successful in improving water quality in the area.

Eelgrass

The distribution of eelgrass in the inter-causeway area has varied over the course of the eight-year monitoring program in response to environmental variation in climate and summer tidal conditions. The areas that have varied the most are located close to shore, not near the Deltaport terminal.

The conclusion of the monitoring program is there was no indication the construction or operation of the Deltaport third berth has affected eelgrass distribution except in the area behind the tug basin. The restricted drainage in this area led to poor water quality, which in turn impacted eelgrass. The installation of a swale in the tug basin berm has mitigated the drainage and water quality issues in this area, and early monitoring results indicated that the eelgrass shows signs of recovering.

Port Metro Vancouver will be conducting an additional monitoring event in the summer of 2016 to assess whether the mitigation method to create a swale has continued to improve eelgrass health in this area.

For more information and detailed findings from the Adaptive Management Strategy, please refer to the [program's 2014 and final report](#).