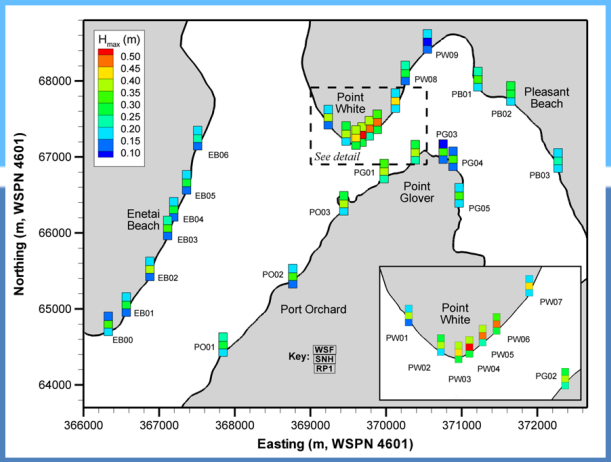
## *PROJECT* Rich Passage Fast Ferry Study




### *PROJECT DESCRIPTION*

The Rich Passage Study investigated the feasibility of restoring Passenger-Only Fast Ferry (POFF) service between Seattle and Bremerton in Puget Sound. The study was started in 2004 and was funded under federal grant programs administered by the Federal Transportation Administration and Federal Highways Administration through grants to Kitsap Transit. Coldwater was sub-contracted by the prime consultant for the project, Golder Associates Inc. of Redmond, WA, to provide a technical analysis of the potential response of the environment to the introduction of a POFF service.

### *DESIGN APPROACH*

Coldwater's component of the study involved the computer modelling of the regions hydrodynamic environment, including wake generation and transformation from a number of vessels, and the effects of this environment at the shore. Shore impact and response was modelled at 27 indicator sites using Coldwater's ProfileAnalysis model, a cross-shore model that enables long-term simulations of hydrodynamic conditions and beach evolution under combined tides, waves and wakes. The input hydrodynamic boundary conditions for the 27 models were developed by combining the results of separate models for tides, wind waves and vessel wakes. Tidal flows and levels were computed using an ADCIRC finite element tidal model, wind waves using a CMS-Wave spectral wave model and vessel wakes using Coldwater's propriety Lagrangian Super-critical Vessel (LSV) model. LSV provides accurate descriptions of the temporal and spatial wake train patterns, including hull-specific wake generation, wake train dispersion, shoaling, current and depth refraction and breaking. Vessels modelled in the study included pleasure craft, car ferries, and several fast ferries.

As part of the multi-year program, extensive field trials were conducted that validated the both model's predictive accuracy. Coldwater was involved in data collection and analysis. Long-term simulations of the effects of operational scenarios (e.g., vessel size, speed, schedule) on beach and habitat response were used to assist candidate vessel selection and to assess potential impacts prior to the re-introduction of POFF service to the area.

### *CLIENT*

Golder Associates Inc.
Redmond, WA

### *LOCATION*

Puget Sound, WA

### *DATE*

2004-2012

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