

sites. In April, the Kitsap Transit Board of Directors adopted a SEPA Determination of Nonsignificance (DNS) for the proposal. Following completion of the SEPA process, permit applications will be submitted to the regulatory agencies. Team members have been coordinating with the agencies to address concerns that had been previously raised about conducting a beach nourishment pilot study, and will continue to work closely with agency staff during the permitting process.

### Environmental Review of Fast Ferry Operations

Plans are being made for the preparation of an Environmental Impact Statement (EIS) following the completion of sea trials for the new research vessel. The EIS process enables government agencies and interested citizens to review and comment on proposed actions and assists the agencies and project proponents in improving their plans and decisions. This process also encourages resolution of concerns or problems.

This EIS will be geared toward evaluating the environmental effects of regular passenger only fast ferry operations on the Seattle-Bremerton route. The EIS will address the short-term and long-term impacts and benefits of fast ferry operations and evaluate measures to mitigate any adverse effects on the shoreline, aquatic habitat, aquatic organisms, and other aspects of the environment. The analyses will have a strong focus on Rich Passage, but will also evaluate the environmental effects of regular fast ferry operations along the entire ferry route.

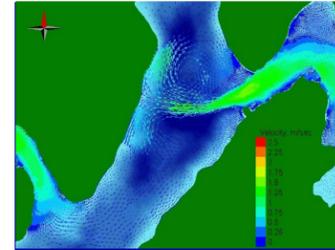
As part of this effort, a series of public scoping meetings will be held to solicit input from waterfront property owners, regulatory agencies, Tribal organizations, and the general public on issues of special concern and to comment on the scope and content of the EIS. These meetings are being planned for late fall 2009. Public notices for the scoping meetings will be distributed later this year once the meeting locations and schedules have been finalized.

### Website, Project Information & Feedback

Property owner participation is essential to the success of our research program and we encourage your input regarding this study and the plans for future work.

Further information on the study can be obtained from the project website: [www.pugetsoundfastferry.com](http://www.pugetsoundfastferry.com) or by sending e-mail to:

Marie Garrett at [marieg@pie-pllc.com](mailto:marieg@pie-pllc.com) or Pamela Bacha at [pamelab@pie-pllc.com](mailto:pamelab@pie-pllc.com)



## Newsletter for Waterfront Property Owners Rich Passage Passenger Only Fast Ferry Study

### June 2009 Fifteenth Edition

- ◆ Beach Observations Continue
- ◆ Updated Vessel Design Nears Completion
- ◆ Collaboration with Western Washington University
- ◆ Optimizing Vessel Performance
- ◆ Beach Nourishment and Biological Monitoring
- ◆ Environmental Review of Fast Ferry Operations

### Upcoming Field Work

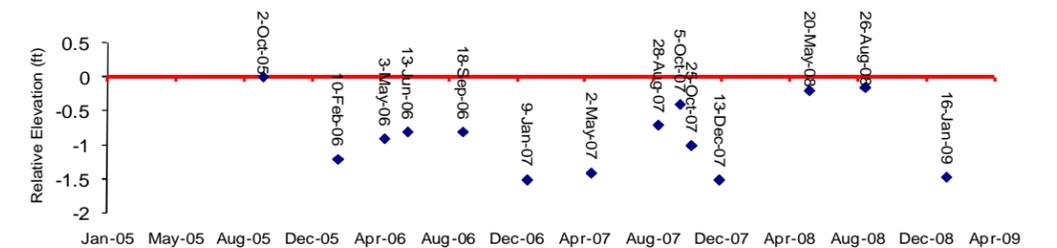
- Beach Photos  
July 6-10
- Beach Profiles  
July 20-22

For up-to-date information, please check our website at: [www.pugetsoundfastferry.com](http://www.pugetsoundfastferry.com) or call Marie Garrett at (509) 669-1800.

**Introduction:** The primary objective of the Rich Passage Passenger Only Fast Ferry (POFF) Study is to develop the scientific basis to identify and minimize the potential impacts of candidate POFF vessels on the shorelines of the Seattle-to-Bremerton ferry route. This includes the collection of data and development of predictive tools that can be applied prior to implementing a POFF operation. Not only is the study of relevance to Rich Passage, but the results and methodologies developed have application in any environmentally sensitive area where high-speed passenger ferry or commercial-scale vessel operation is being evaluated. This newsletter shares current results and progress of the study with Rich Passage waterfront property owners.

### Beach Observations Continue

The research team has continued beach profile monitoring surveys and beach photo observations on a quarterly basis within the study area to characterize baseline seasonal variations and conditions. Beaches exhibited their typical winter profile and sediment distributions; the relative elevation of sediment at the toe of the bulkhead decreased at most locations, but no extreme scarping or erosion was observed. These observations are in keeping with typical seasonal cycles of beach elevation change within Rich Passage. The photo comparison below shows the elevation difference between the summer condition (May 20, 2008) and the winter condition (January 16, 2009) at a bulkhead on the southeast side of Point White. Above the photos is a timeline of the beach elevation relative to October 2005 levels. The timeline shows the largest amount of downcutting at the bulkhead occurring in February 2006, January 2007, December 2007, and January 2009, and recovery every following summer.

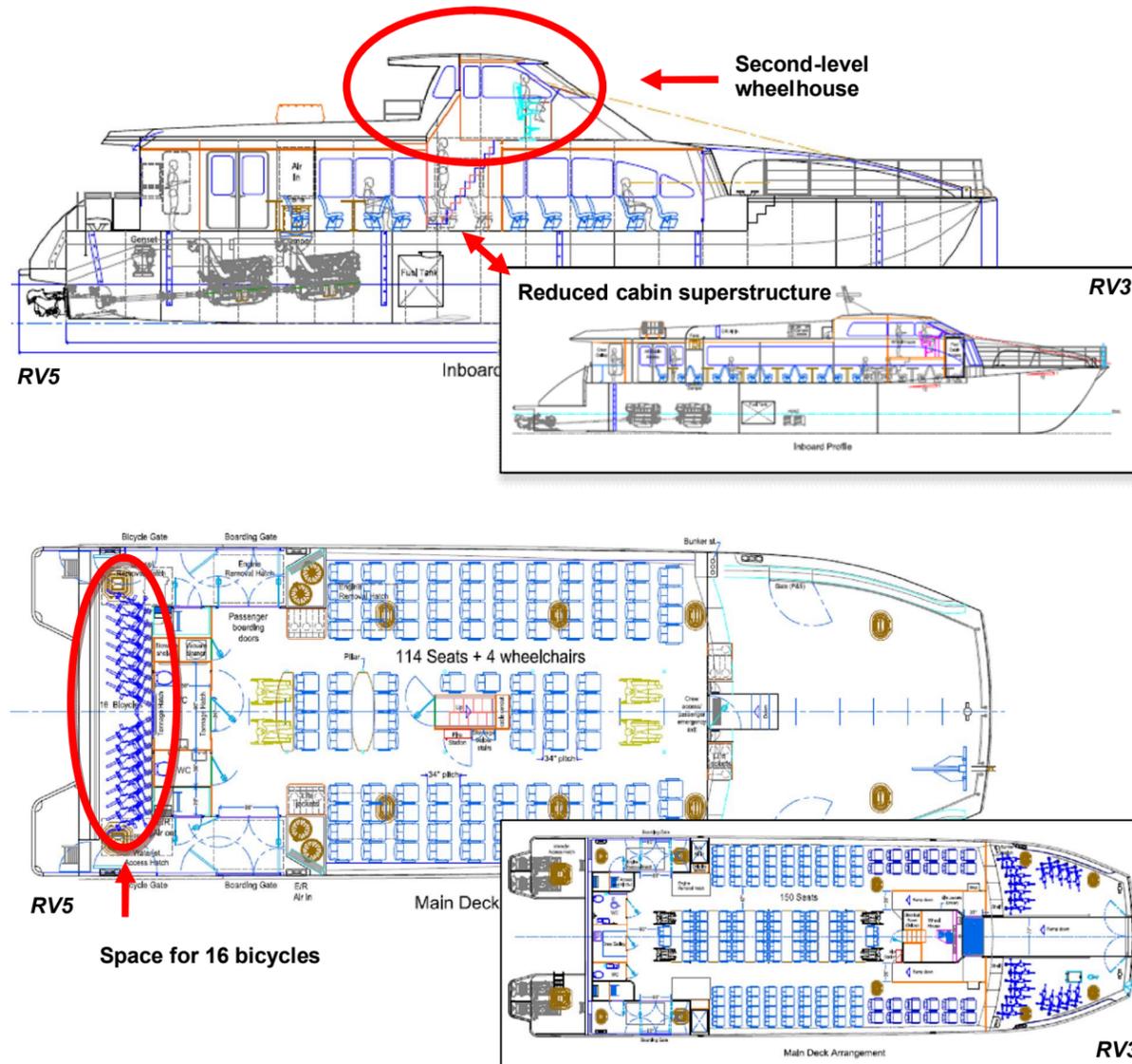


Bulkhead on southeast side of Point White, Bainbridge Island. May 20, 2008 (left) and January 16, 2009 (right)

## Updated Vessel Design Nears Completion

It was recognized in August 2008 that an optimized design for a 29.7-m 150-passenger vessel would produce wakes approximately equivalent to that of *Spirit* owing to the larger size and displacement of the vessel relative to *Spirit*. Based on previous trials with *Spirit*, it was understood that

the wakes for the new research vessel would need to be significantly improved relative to *Spirit* in order to minimize impacts and potential shoreline effects. Therefore, the project team revisited the mission and criteria for the new vessel and determined that a smaller vessel should be explored.



### RV5 Specifications

<b>Length (Demi-hull)</b>	23.55 m (77.3 ft)	<b>Service Speed</b>	34-37 knots
<b>Beam (Moulded)</b>	8.55 m (28 ft)	<b>Passengers</b>	118
<b>Engines</b>	Caterpillar C-18 ACERT	<b>Builder</b>	All American Marine
<b>Rating</b>	65 I kW/2200 rpm	<b>Construction</b>	High Strength Aluminum
<b>Propulsion</b>	HJ 403 Waterjet	<b>Survey</b>	USCG, Subch. T

Since August 2008, the project team has continued to work with the Iowa Institute of Hydraulics Research (IIHR), Teknikraft, All American Marine, and Four Seasons Marine to refine the vessel design. The team has worked through a number of iterations of conceptual design and performance optimization using the IIHR's Computational Fluid Dynamics models to evaluate resistance and wavemaking. A number of alternatives of varying lengths, displacements, and hull and foil geometry and position were considered to optimize the configuration of the new vessel for both power requirements and passenger capacity and to reduce cost and weight. This included consideration of reducing the seat pitch to save space, smaller aisles, and capacity for fewer bicycles. In terms of the hull modifications, we analyzed the impact of varying hull length, beam, displacement, and foil position on wake performance.

In late November a 112-passenger-capacity single-deck design (*RV4B*) was found to create acceptable wake performance but created a cabin that still left significant unused space. A modification, *RV5*, achieved improved wake performance by reducing cabin superstructure and using a broader beam (hull separation). The wheelhouse was also shifted up to a second deck and reduced in footprint with a relatively small cost of increased weight. Agreement has now been reached on the overall hull design and cabin/wheelhouse configuration as well as a number of minor cabin layout refinements. The team has also explored the possibility of constructing the cabin superstructure with glass fibre-reinforced composite material instead of aluminum to reduce weight.

Similar to the model commonly used for high-speed ferry design in other confined waterways, the vessel will have a relatively long overall hull (77.3 ft) with a smaller, wider cabin placed aft of a relatively broad foredeck. Smaller and lighter weight than *RV3*, the current design is expected to be both an improvement in terms of wake performance as well as less costly to build and will use American-built Caterpillar C-18 engines. In accordance with the revised operating specifications, the new design will accommodate approximately 118 passengers, including four tie-down wheelchairs and 16 bicycles.

Pending available funds, final design of the new vessel is scheduled to begin shortly, with construction to be completed by the end of the first quarter of 2010.

## Collaboration with WWU to produce lightweight, higher stiffness composite hydrofoil

The new research vessel will be an optimized foil-assisted catamaran that will include a composite hydrofoil with half the weight and improved mechanical properties as compared to a similar stainless steel foil. The research team is working with the Western Washington University (WWU) Plastics Engineering Technology faculty and students in Bellingham, WA, and All American Marine to develop the innovative hydrofoil. WWU is currently completing materials research and testing to ensure the proper materials selection. Laboratory-scale models are being tested under a variety of loading scenarios to determine which materials and configurations will be appropriate for the technical requirements. The hydrofoil will be instrumented with pressure and strain sensors that will provide feedback on the performance of the selected materials. The upper deck and super structure for the new vessel will also be constructed from composite material in order to reduce weight. The reduction in weight is expected to improve wave making performance and also improve fuel efficiency.

## Dynamically Adjustable Interceptors and Foil to Optimize Vessel Performance

The new research vessel will include transom interceptors and a partially submerged foil which work together to control the vessel trim and draft, and to reduce drag. The interceptors and foil on the research vessel will be dynamically adjustable by a computer-controlled hydraulics system that will automatically adjust vessel trim and draft depending on input from pitch and roll sensors and based on the GPS-derived sailing location. This will enable the vessel to be optimized for wake generation through wake sensitive areas of the route as well as for fuel efficiency and rider comfort in the non-wake-sensitive reaches. The research team will conduct detailed wake and vessel performance trials prior to conducting the wake impact studies on the ferry route in order to collect the data needed to "train" the trim and draft control system.

## Beach Nourishment and Biological Monitoring

A renewed effort is underway to obtain permits for the beach nourishment demonstration project. The study involves placement of select materials on beaches at Point White and Point Glover, and monitoring subsequent changes in sediments and biological communities at the