ASL Environmental Sciences Supports Tidal Energy Projects

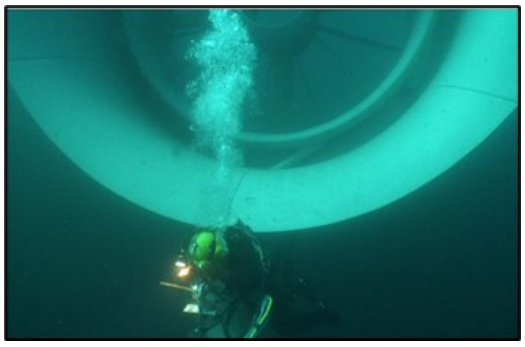
ASL Environmental Sciences supports Tidal Energy projects with site evaluation and selection, and with environmental assessment and operational needs. ASL uses advanced ocean current measurements, acoustic profiling instrumentation, and high resolution 3-D numerical models to assist developers in this emerging energy source.

Site Assessment

- Current and bathymetric transects are often conducted over a large area to identify the most promising sites. Current profiles are collected from a moving vessel to establish a 3D picture of the current regime, from the surface to the sea bed over the area of interest.
- After site selection is carried out, long time series data is collected at the most promising site(s). Current measurements are carried out for periods of 1 month to 1 year (or more) to establish tidal and seasonal variability
- In these challenging, high current environments, site specific mooring solutions are designed to withstand the harshest conditions.
- Numerical Modelling can be a useful tool for extending the data base beyond the measurements, as well as for studying "what if" scenarios.

Environmental and Operational

- ASL's acoustic backscatter profiling AZFP provides data on fish and plankton distribution. The instrument can operate continuously over several months.
- Turbidity loggers and bathymetric surveying provide data on sediment transport and scour potential.
- ASL's acoustic Ice Profiling Sonars (IPS) measure frazil ice which can be an issue with turbine operation.



Race Rocks Tidal Turbine.

Previous Tidal Energy Projects:

2005-2011 Race Rocks, Victoria, B.C. ASL collected current flow data to assist with site selection for installation of a Clean Current tidal turbine, the first ducted tidal turbine ever deployed in the world and currently on display at the Canadian Science and Technology Museum in Ottawa, Ontario, Canada.

Dent Rapids Tidal Energy study.

ASL Environmental Sciences
#1-6703 Rajpur Place
Saanichton, BC
V8M1Z5 Canada

Phone: +1 250 656-0177
Email: asl@aslenv.com
Website: aslenv.com

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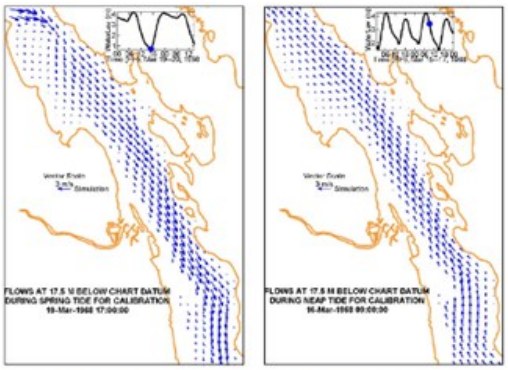
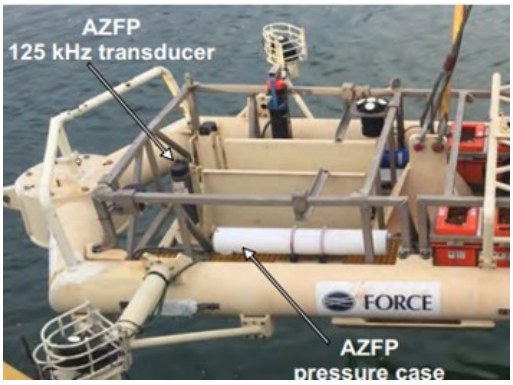
Previous Tidal Energy Projects (continued):

Discovery Passage: numerical modeling of ocean currents and water levels were carried out to assess the potential at various sites for operation of underwater turbines to generate electrical power. The modeling was supported by ocean current and water level measurements.



Discovery Passage

An ASL Acoustic Zooplankton 125 kHz Fish Profiler (AZFP) was deployed on the Fundy Ocean Research Center for Energy (FORCE) tidal energy platform in the Minas Passage in the Bay of Fundy. The AZFP data will help identify possible effects of the turbine on fish and zooplankton. Two months of 1 Hz acoustic backscatter data were collected in 2016 over the 35-45 m water column and were provided to Acadia University for analysis.



Bay of Fundy

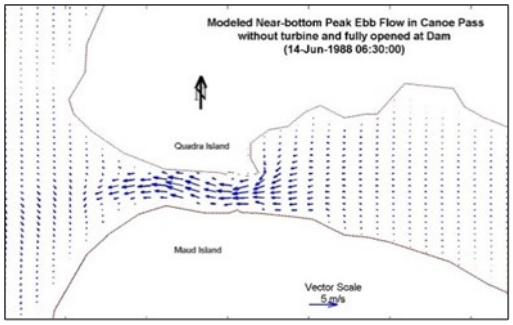
ASL supported the Water Wall Turbine on various projects culminating in the 2017 installation of a surface power plant at Dent Island, B.C.

Dent Island, B.C.

Canoe Pass B.C. features an artificial dam which blocks the passage of water between Maud and Quadra Islands. The difference in water levels on either side of the dam has the potential for significant renewable energy through installation of underwater turbines. ASL conducted numerical modeling simulations of the currents, both present, as well as predicted, should the dam be removed to allow the passage of water through an underwater turbine.

Rigolet, Nunatsiavut

2024–25. Rigolet, Nunatsiavut. Data collected by ASL, using both current profile transects and moored current meters, is being used to assist in the selection of optimal sites for installation of tidal turbines.



Canoe Pass B.C

ASL – Your Partner in Marine Renewable Energy

ASL Environmental Sciences
#1-6703 Rajpur Place
Saanichton, BC
V8M1Z5 Canada

Phone: +1 250 656-0177
Email: asl@aslenv.com
Website: aslenv.com