

Qualifications Summary

- Provides strategic advice and a high level of service to key clients
- Manages multi-disciplinary projects
- Maintains diverse technical expertise related to coastal and environmental sciences and engineering
- Completes QA/QC review of deliverables
- Possesses strong writing and verbal communication skills
- Delivers short and long-term sales objectives
- Establishes and implements strategic plans for corporate growth

ROBERT P. HAMILTON JR., M.C.E., B.S.

Vice President of Business Development
Coastal Engineer

Professional Affiliations

Northeast Shore and Beach Preservation Association, Director
Marine and Ocean Technology Network, Director
American Society of Civil Engineers

Fields of Expertise

Business and Project Management in Environmental Consulting sector with focus on coastal and oceanographic environments. Business and client development in government, private, power utilities, oil and gas, and manufacturing markets. Technical specialty solving problems and managing projects related to planning, engineering design and environmental permitting for shore protection, dredging, habitat restoration, and infrastructure development (e.g., seawalls, pipelines) in the coastal zone. Advanced technical skills related to numerical modeling, data collection and analysis, and integration with environmental policy and stakeholder requirements to solve complex, multi-disciplinary problems.

Higher Education

M.C.E., Civil Engineering-University of Delaware (1994)
B.S., Civil Engineering-Lehigh University (1992)

Employment History

2003- Present	Vice President, Business Development, Woods Hole Group, Inc.
2001-2003	Vice President, Scientific Operations, Woods Hole Group, Inc.
1998-2001	Business Unit Director, Woods Hole Group, Inc.
1994-1998	Coastal Engineer, Aubrey Consulting, Inc.
1993-1994	Teaching and Research Assistant, University of Delaware
1991-1992	Civil Engineering Assistant, KCI Technologies, Inc.

Key Projects

Environmental Planning and Consulting Services Task Order Contract, US Army Corps of Engineers New England District – Senior Engineer/Corporate Support

Woods Hole Group is the prime contract holder for a Task Order contract with USACE NED that will extend up to 5 years and \$15M beginning in November 2008. The scope of work includes a diverse suite of environmental consulting services, such as field data collection and monitoring, laboratory studies, risk assessments, EIS preparation, HTRW site support, and other specialty service areas as required by NED and other Districts within the North Atlantic Division (e.g., oceanography, coastal modeling, environmental economics, archaeology, etc.). Mr. Hamilton developed the team, led the proposal effort, and completed the contract negotiation process. He will support the ongoing Program in a corporate function, and provide project management and technical support for some of the individual Task Orders.

Hydraulic Study to Assess Feasibility of Tidal Restoration within Stony Brook, Town of Brewster, MA – Coastal Engineer/Project Manager

Completed a field data collection and numerical modeling investigation of the Stony Brook system upstream from Rte. 6A to assess the potential for restoration of salt marsh habitat and the anadromous fish run. The scope of work included collection of synoptic tide and salinity data, calibration of a hydrodynamic and salinity model (EFDC), evaluation of restoration alternatives, and recommendations for conceptual engineering alternatives and potential environmental impacts. Woods Hole Group also made a contribution to the Corporate Wetlands Restoration Partnership (CWRP) in the form of bathymetric data collection, land surveying, and numerical modeling.

Reverse Osmosis Water Treatment Facility Discharge Dilution Analysis and Environmental Impact Assessments, Various Locations in Florida as Prime and Subcontractor– Engineer/Project Manager

Demand for potable drinking water has spurred a need for desalination facilities to supplement the local freshwater supply in Florida. For communities in the Town of Jupiter, Palm Coast, Tarpon Springs, City of Melbourne, and the South Martin Regional Utility, Woods Hole Group has conducted dilution studies of reverse osmosis discharge concentrate. The scopes of work have been diverse, involving field data collection (water quality and circulation parameters), numerical modeling (CORMIX and EFDC), and environmental impact studies. Contaminants of interest have included heavy metals, radionuclides, and overall acute toxicity. Results from the work include support for environmental permit approvals, including mixing zones, and engineering recommendations for diffuser configurations to support expansion of water treatment facilities while minimizing environmental impacts.

Optimize the Massachusetts Estuaries Project’s Linked Modeling Approach, MA Department of Environmental Protection – Engineer/Project Manager

Woods Hole Group has a contract with the MA DEP to evaluate and optimize the linked modeling approach used by the MA Estuaries Project (MEP). The scope of work includes preparation of a protocol that Towns and stakeholders can implement to obtain appropriate information from the MEP team, and perform independent analysis. Woods Hole Group also is charged with testing the protocol on a particular embayment, ensuring that the protocol can reproduce the MEP results, and testing the sensitivity of the model to certain input parameters. This contract is of high importance to the participating communities that are dependent upon the MEP findings to plan large-scale

Key Projects (continued)

wastewater facilities improvement projects. The contract is currently expected to be completed in 2009.

Dubai Arabian Canal Design Support and Water Quality Analysis, Confidential Client – Engineer/Project Manager

A private developer is planning to develop the biggest and most complex civil engineering project in the Middle East, called the Dubai Arabian Canal, which is a 75 km man-made waterway that will be a focal point for mixed use development, cultural attractions, and recreation. Woods Hole Group supported the conceptual design by investigating alternatives to improve circulation in the canal and help enhance water quality. A phased numerical modeling approach (RMA-2 and EFDC) was implemented to evaluate flushing times and particle pathways for various alternatives involving flow control structures. The problem was made complex because there is little natural tidal difference between the two ends of the proposed canal. Results were used to recommend a conceptual operational plan for phasing the opening and closing of flow control structures within the canal to optimize net circulation.

Environmental Impact Statement (EIS) for the HubLine Natural Gas Pipeline, Massachusetts Bay, MA, Federal Energy Regulatory Commission (FERC) c/o Foster Wheeler, Inc. – Project Manager

Prepared marine portion of the EIS for the controversial HubLine pipeline working under tight scheduling constraints. Compiled data and formulated environmental impact assessment of impacts related to physical oceanography, sediment transport and geology, marine benthic habitat, as well as marine fisheries and shellfish. The scope included preparation and approval of an expanded Essential Fish Habitat (EFH) Assessment. Close cooperation with Foster Wheeler and FERC was required. The document was accepted by the federal authorities, and provided the basis for the state and local level environmental impact report, permits, and monitoring/mitigation protocols. The project was constructed.

Revetment Reconstruction Planning, Design and Permitting, New Seabury, MA, Private Landowners – Project Advisor

Worked with the community to assemble a cooperative group of individual land owners, condominium associations, and community groups to plan, design, permit, and construct a revetment repair project. Special provisions were required to secure environmental permits, as well as access and escrow agreements for utilization of private property for construction vehicles and materials. The coastal engineering design was improved to ensure more lasting protection than previously realized. Contractor bids were selected and screened, and a preferred contractor was selected. The project was constructed.

Beach Nourishment Planning, Siasconset Beach, Nantucket, MA, Siasconset Beach Preservation Fund – Project Manager

Lead technical team to prepare conceptual design, borrow site investigation, and environmental impact assessment for large-scale beach nourishment project. The conceptual design included a design template, plan form layout, and sand volume quantity calculations and cost estimates for a beach nourishment project to include approximately 2 million c.y. of sand. The conceptual design also included an evaluation of various sand retaining structures, designs, and cost estimates to extend the design life of the nourishment. Borrow site identification work included bathymetry, side scan

Key Projects (continued)

sonar, and sub-bottom surveys, as well as sediment sampling and coring to delineate potential sand sources of sufficient quality and quantity. Environmental assessment field work included collection and analysis of benthic grab samples, fisheries trawls, and bottom habitat mapping, along with compilation of existing fisheries data and statistics and fishermen surveys. Data, interpretations, and conclusions were prepared, and incorporated into a Draft Environmental Impact Report (DEIR).

Scarborough Marsh Restoration, Maine Department of Inland and Marine Fisheries and US Army Corp of Engineers c/o Normandeau Associates, Inc. - Project Manager

Completed data collection, numeral modeling, and alternatives analysis required to develop viable marsh restoration alternatives. Data collection included tides, current and salinity gauge deployments, as well as current (ADCP) and bathymetry surveys. Circulation (RMA-2) and salinity (analytical dispersion) models were developed, including wetting and drying of the marsh plain for existing conditions and restoration alternatives. A conceptual design for marsh restoration, including waterfowl and fisheries habitat enhancements and minimization of *Phragmites* encroachment, was presented. Marsh channels and bridge openings were sized, and the potential for upland flooding was modeled (DYNLET). Design recommendations were incorporated to a USACE cost/benefit analysis to select the preferred alternative. Funding is pending for final design, permitting and construction.

Evaluation of Thermal Discharge and Intake Processes and Regulatory Compliance at Salem and Hope Creek Stations, Newark, NJ, Public Service Electric and Gas Co. - Coastal Engineer/Project Manager

Key member of a multi-disciplinary team conducting 316(a) and 316(b) federal water quality standards regulatory demonstrations. Performed numerical modeling, data analysis, and technical writing to support a comprehensive hydrothermal and biothermal assessment of a cooling water discharge system in an Estuary. Completed analysis of the region of influence of cooling water intake on circulation patterns and waterborne eggs and larvae. Completed extensive and innovative scope of work of unprecedented scientific and engineering defensibility within required fast-track schedule. Excellent communication with team members and the client was essential for the successful completion of this project. NJDEP granted approval based on comprehensive materials that demonstrated compliance with 316(a) and 316(b) requirements.

Natural Resources and Beach Management Plan for Sandy Neck Beach, Town of Barnstable, MA - Project Scientist and Manager

Lead multi-disciplinary team to develop a management plan for a controversial set of beach users related to ORV use, private property access, endangered species protection (i.e., piping plovers, least terns, and diamondback terrapins), recreational use, and municipal management and revenue needs/objectives. Conducted research, site assessments, public and environmental regulatory workshops; prepared documents; held public hearings; and obtained environmental permits. Final management plan was used to resolve pending appeals of environmental permits, resolve stakeholder conflicts, and secure new permits for beach use.

Beach Profile Monitoring, Siasconset Beach, Nantucket, MA, Siasconset Beach Preservation Fund – Project Manager

Worked with a technical team to conduct quarterly beach profile surveys and annual bathymetry surveys for six (6) years and continuing. Analyzed data to compute beach volume change as basis

Key Projects (continued)

for evaluating success of shore protection measures. Prepared technical reports for wide range of stakeholders, including regulatory agencies and private landowners.

Peer Review of Comprehensive Coastal Management Plan, Palm Beach, FL, Town of Palm Beach - Coastal Engineer/Project Manager

Served as Town's expert Coastal Engineering Peer Review Consultant. Reviewed long-term comprehensive management plans, and presented targeted recommendations to improve the performance and cost-effectiveness of future shore protection projects. Key recommendations included a phased approach to a 30-year barrier-wide shoreline erosion management plan, including specific beach nourishment and coastal structures projects. An adaptive management and monitoring strategy also was incorporated to improve the design of future projects based on the performance of past projects. The resulting plan allowed for high priority projects to be permitted and constructed in the short-term, and provided the basis for substantial savings of municipal and state tax dollars.

Identification of 1-, 10-, 20-, and 50-Year Design Wave Conditions for the Deer Island Waste Water Treatment Facility Shoreline Protection, Boston, MA, Parsons Brinckerhoff - Coastal Engineer/Project Manager

Completed storm wave modeling and analysis to support the design of extensive shore protection structures for a large wastewater treatment facility in Boston, MA. The scope of work included specification of offshore wave conditions in Massachusetts Bay, wave diffraction/refraction modeling (REF/DIF) into Boston Harbor, and site-specific extremal analysis to calculate design conditions for wave height, period, runup and overtopping. Results were used to size armor stone, and specify revetment toe depth and crest elevation. Maintained long-term support throughout the duration of the project.

Tidal Flushing and Water Quality Assessment of Cape Cod Estuaries, Cape Cod Commission and Municipalities - Coastal Engineer/Project Manager

Designed and participated in field data collection programs related to bathymetric surveying and tide gauging. Completed numerical modeling of tidal circulation (RMA-2) and water quality (RMA-4) processes, and technical report writing. Work was completed within the Three Bays Estuary, Popponesset Bay, Centerville River, Upper Bass River, Pleasant Bay, Red Brook Harbor, and West Falmouth Harbor. Presented results at public meetings. Results included residence time calculations that were used by the Cape Cod Commission to determine impacts of current and future developments. Results also provided a basis for the Massachusetts Estuaries Program to evaluate manageable nutrient loading rates and needs for wastewater management facilities.

Historical Investigation of Industrialization and Sediment Contamination, Newark, NJ, Confidential Client - Coastal Engineer/Project Manager

Conducted in-depth historical investigation of industrialization, including identification of the number and types of industries and characteristics of waste streams. Correlated the industrial development history with historical records of contamination in sediment cores. Developed relational database and GIS to query and visualize vast data sets. Used by client as strategic planning tool for managing environmental liabilities.

Key Projects (continued)

Field Data Collection and Numerical Modeling of Circulation Patterns in the Delaware Estuary, Salem, MA, Public Service Electric and Gas Co. - Coastal Engineer/Field Data Collection

Completed a large-scale data collection and numerical modeling study of the Delaware Estuary. The data collection program consisted of wave, tide, current, bathymetry, salinity, temperature, and meteorological instrument deployments and surveys. Some data were reported real-time via a cable link to the shoreline. The vast data set was consolidated and used to calibrate a three-dimensional numerical circulation model (RMA-10) of the Estuary-wide processes. Particular emphasis was placed on characterizing circulation patterns in the vicinity of a cooling water intake and discharge system to identify processes contributing to the accumulation of detritus in the intake basin. Recommendations were provided for improving station operations to prevent detritus accumulation, which resulted in safer and more cost-effective operations, and helped reduce operational down time.

Shoreline Erosion and Management Planning and Beach Nourishment Performance Monitoring, Town of Jupiter Island, FL – Coastal Engineer/Project Manager

The Town of Jupiter Island has a long-term commitment to managing coastal erosion through beach nourishment by dredging sand from the offshore regions and placing sand on its beaches. Woods Hole Group worked with the Town to develop a large-scale beach nourishment design. Mr. Hamilton completed the bulk of the technical work for the project, including wave data collection and analysis, wave modeling (REF/DIF), sediment transport modeling, and shoreline change modeling (GENESIS). The models were developed and calibrated to the Jupiter Island coast from St. Lucie Inlet south to Jupiter Inlet. The calibrated models then were applied to simulate a range of shore protection alternatives, including various beach nourishment design configurations, and combinations of coastal structures to hold the sand on the beaches. Beach nourishment projects were constructed in 1996 and in 2003 according to the updated design. Beach profile monitoring data were collected and analyzed, and demonstrated that the new project design provides improved protection, including hurricane flood damage control. Substantial costs were saved by nourishing longer stretches of the shoreline, over-nourishing at historical hot-spots of beach erosion, and insisting on a course grain size. The more robust design also proved effective at minimizing hurricane damage. The design also qualified the project for damage claims from FEMA in response to storm-induced erosion.

Winthrop Shores Restoration Program - Coastal Engineer/Project Manager

Served as WHG project manager for this public lands improvement project, responsible for the analysis of coastal processes and design of shore protection measures, primarily beach replenishment. Other considerations of the project included roadway and public access, and improvement of a marsh wetland area. The project required a careful combination of technical expertise with practical public considerations.

Offshore Disposal Site Selection, Salisbury, MA, Massachusetts Department of Environmental Management - Coastal Engineer/Project Manager

Collected bathymetry and side scan sonar data. Conducted wave and sediment transport modeling and analyses to select an appropriate nearshore site for dredged material disposal. Data collected under challenging winter marine environmental conditions so that schedules could be maintained. Permits were successfully obtained for the project.

Key Projects (continued)

Evaluation of Dissolved Oxygen Processes and Regulatory Compliance at Big Bend Station, Tampa Electric Company - Project Manager

Provided strategic environmental management advice and technical support services for permit applications and consent order implementation. A variety of compliance vehicles were evaluated, including consistency with governing water quality standards, mixing zone definition, and a variance from otherwise applicable standards. Technical aspects included data collection (DO, temperature, currents, tides, bathymetry, sediments), and numerical/analytical modeling of 3-D circulation, water quality, and particle transport. Results provided the technical basis to negotiate with the Florida DEP regarding appropriate water quality monitoring and compliance standards.

Sediment Transport Study - Evaluation of Causeway on Coastal Processes, Westport, Massachusetts, Massachusetts Department of Environmental Management – Coastal Engineer/Modeler

Task leader for comprehensive wave and sediment transport modeling investigation. Completed detailed wave refraction, diffraction and breaking model (REF/DIF) that simulated nearshore wave transformations around a long causeway/island system. Integrated the wave modeling results into a detailed longshore sediment transport model that included sandy and cobble beaches, as well as rocky intertidal shoreline. Completed cross-shore beach profile modeling for a range of average and storm conditions. Calibrated and verified model results with measurements of bathymetry, beach profiles, and historical analysis of shoreline change data. Evaluated a range of shore protection alternatives as the basis for a beach management plan.

Publications and Presentations

Ivanov, L.I., B.A. Magnell, R.A. Catalano, R.P. Hamilton, and L. Fagan. 2007. “Met-Ocean Measurements and Seasonal Variability of the Wind Profile in Nantucket Sound.” American Wind Energy Association, Conference Presentation and Proceedings

Hamilton, R.P. Jr., Z. Willis, R. Lunde, R. Rayner, B. Magnell, and H. Kite-Powell. 2007. “Ocean Observing Systems Overview and Business Opportunities.” OceanTech Expo. Panel Moderator.

Hamilton, R.P. Jr. 2006. “Using Real-Time Environmental Data to Manage Maritime Emergencies.” Ocean Innovation Conference. Invited Speaker.

Hamilton, R.P. Jr., B. Caufield, L. Ivanov, and C. Johnsen. 2006. “Beach Monitoring and Beach Nourishment Design at Siasconset, MA.” National Conference on Beach Preservation Technology, Florida Shore and Beach Preservation Conference Presentation.

Hamilton, R.P. Jr., C. Bryant, J. Spurgeon, and M. Utku. 2000. “Beach Replenishment Performance at Jupiter Island, FL.” Florida Shore and Beach Preservation Conference Presentation.

Ramsey, J.S. and R.P. Hamilton Jr. 1997. “Analysis of Sediment Transport Patterns and Shore Protection Alternatives at Westport, MA.” National Conference on Beach Preservation Technology, Florida Shore and Beach Association, Conference Proceedings.

Publications and Presentations (continued)

- Hamilton, R.P. Jr., J.S. Ramsey, and D.G. Aubrey. 1996. "Numerical Predictions of Erosional Hot-Spots and Optimization of Shore Protection Alternatives at Jupiter Island, FL." National Conference on Beach Preservation Technology, Florida Shore and Beach Association, Conference Proceedings.
- Ramsey, J.S., R.P. Hamilton, Jr. and D.G. Aubrey. 1995. "Nested Three-Dimensional Hydrodynamic Modeling of the Delaware Estuary." 4th International Conference on Estuarine and Coastal Modeling, ASCE Waterway, Port Coastal and Ocean Division.
- Hamilton, R.P. Jr., R.A. Dalrymple, J. Oltman-Shay, and U. Petrevu. 1994. "Wave Group Forcing of Low Frequency Surf Zone Motion." American Geophysical Union, Fall Meeting, San Francisco, CA.
- Hamilton, R.P. Jr. and R.A. Dalrymple. 1994. "Estimating Two-Dimensional Wave Spectra: Application of the Maximum Likelihood and Maximum Entropy Methods, CACR." University of Delaware, Newark, DE.