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**Kirk F. Bosma, P.E., M.C.E, Team Leader/Coastal Engineer**

**Project Role: Task 2 Hydrodynamic Modeling Technical Lead/Project Manager**

Mr. Bosma is a Coastal Engineer at Woods Hole Group (since 1997) with specialization in the areas of numerical modeling, sediment transport, littoral processes, and beach profile evolution and analysis. He received his M.C.E. in the field of Coastal Engineering from the University of Delaware in 1996 and his B.S. in the field of Civil Engineering from Calvin College in 1994. Mr. Bosma currently serves as the Team Leader of the Coastal Sciences, Engineering, and Planning Division, and has managed projects and engineered solutions related to beach nourishment, beach management, coastal structures, inlet stabilization, water quality, environmental permitting, and wave, tide, and current data collection. He is an active member of the American Society of Civil Engineers, American Shore & Beach Preservation Association, and the Association of Coastal Engineers.

Mr. Bosma has extensive experience developing and employing numerical models for sediment transport, nearshore spectral wave transformation, particle transport, bathymetric evolution, and two- and three-dimensional hydrodynamic processes. He has implemented technically advanced data analysis techniques to assess the coastal and oceanographic environment, including wave, tide, current, sediment and particle transport processes. Developing both data collection and numerical modeling programs, Mr. Bosma regularly uses results to guide coastal engineering design (e.g., beach nourishment, inlets, and coastal structures), determine impacts of dredging, define estuarine processes, develop marsh restoration plans, and complete sediment fate and transport studies. He has extensive experience with Unix- and PC-based software packages and programming code to solve engineering and scientific problems.

**Jeffrey C. Cornwell, Ph.D., Biogeochemist/Research Professor**

**Project Role: Task 1 Benthic Flux Technical Lead/Project Manager**

Jeffrey Cornwell's laboratory at the University of Maryland Horn Point Laboratory has carried out a large number of sediment biogeochemical projects in lakes/reservoirs, marshes and estuaries since the late 1980's. Techniques have included 1) utilization of state of the art core incubation techniques for sediment-water solute and gas exchange, 2) measurements of denitrification using membrane inlet mass spectrometric analysis of gas ratios, 3) estimation of sedimentation and nutrient burial using radionuclide-based sediment dating, and 4) characterization of dredge materials for utilization for marsh creation.

Cornwell has served on the Boston Harbor/Massachusetts Bay Model Evaluation Group as a benthic biogeochemical expert. He participated in the evaluation of the coupled physical/biogeochemical model for Florida Bay (for the South Florida Water Management District). More recently, he has been the local organizer and a member of the steering committee for a workshop on the measurement of denitrification (see [denitrification.org](http://denitrification.org)). Dr. Cornwell is a member of the American Chemical Society; American Geophysical Union; American Society for Limnology and Oceanography; Estuarine Research Federation; Geochemical Society; Sigma Xi; and the Society of Wetland Scientists.

**Robert Hamilton, Jr., M.C.E, Vice President, Senior Civil/Coastal Engineer**

**Project Role: Project Manager**

Mr. Hamilton is a Civil/Coastal Engineer and Vice President for Business Development at the Woods Hole Group. He's been with the Woods Hole Group since 1994, and has previously served as Coastal Engineer, Business Unit Director, and V.P. for Scientific Operations. He is also a Director for the Northeast Shore & Beach Preservation Association as well as the Marine & Ocean Technology Network. He earned a B.S. in Civil Engineering from Lehigh University, and a M.S. from the University of Delaware Center for Applied Coastal Research. He is focused on development of business relationships for multi-disciplinary projects and client management. His extensive market and contracting experience includes government agencies, architectural/engineering partners, offshore oil and gas producers, private

owners/developers, power utilities, and manufacturing industries. He has strong technical, analytical, and problem-solving skills combined with an effective leadership, communication, negotiation, and personnel management approach.

His technical expertise is on solving problems related to shoreline erosion, coastal structures, water quality, environmental permitting, and the transport and dilution of thermal discharges and contaminants released into the marine environment. He also has multi-jurisdictional regulatory experience, including preparing EIS documents under NEPA, and has served as an expert witness. Mr. Hamilton also is Project Manager for a DEP contract to develop a protocol for Towns to apply the MEP linked-model approach.

**John M. Teal, Ph.D., P.W.S., Ecologist**

**Project Role: Task 3 Eel Grass and Benthic Community Technical Lead/PM**

Dr. John M. Teal is an ecologist who has spent most of his professional career at Woods Hole Oceanographic Institution. He is a Certified Wetland Professional, past president of the Society of Wetland Scientists and has received the 1999 National Wetlands Award for Science Research (co-sponsored by the Environmental Law Institute, U.S.EPA, U.S. Fish & Wildlife Service, and National Marine Fisheries Service) and the 1999 Odum Award from The Estuarine Research Federation. He also has served on multiple National Research Council expert committees.

His areas of expertise are broad and include:

- wetland and coastal ecology
- submerged aquatic vegetation and benthic habitats
- salt and brackish marsh ecosystem structure and function
- fish nursery value, nutrient cycling, hydrology, productivity, eutrophication
- marsh restoration
- pollution effects and environmental risk
- groundwater influences on water bodies
- ground water contamination with nutrients
- wastewater treatment by natural and artificial wetlands
- petroleum pollution and hydrocarbon biogeochemistry
- nutrient dynamics
- marine birds and over-ocean migration of land birds
- coastal marine ecology including dune and beach ecology
- physiological ecology of fishes
- aquaculture and fisheries

He has served as a qualified expert witness in federal and state courts. He is the author of co-author of over 140 scientific publications. His 1969 book -- *Life and Death of a Salt Marsh* (Boston: Little Brown) -- has introduced the general public to the mysteries and importance of these fragile ecosystems.

Since 1993, Teal has been the principal wetlands consultant for the 20,000 acre salt and brackish marsh restoration and preservation project being conducted by Public Service Electric & Gas of New Jersey on the shores of Delaware Bay. This project involves the restoration of marshes degraded by both *Phragmites* invasion and/or by diking (restriction of circulation and exchange with the bay). He has been a consultant to the Wetland Restoration and Banking Program in Massachusetts, and for the Massachusetts Water Resources Authority and the US Army Corps of Engineers. He has also consulted on marsh restoration projects in North Carolina, Louisiana, and California.