



Cleaning Up Our Coastal Waters

A Workshop on TMDLs and Managing Nitrogen Pollution

Wednesday, April 18, 2012

9:00 AM - 12:30 PM

Waquoit Bay Reserve, 149 Waquoit Highway

What is a TMDL? Do you understand why the state of Massachusetts is investing tremendous resources into developing and implementing these standards? Do the terms nitrate, nitrification and denitrification cause you to raise your eyebrows? Can you explain these concepts clearly and accurately to others? Be honest! If you would like to enhance your understanding of and improve your ability to communicate about these core issues, this workshop is for you.

Leaving a legacy of clean water for our kids involves making sound decisions about how best to improve water quality. The science to be discussed at this workshop will be relevant to developing solutions.

For additional information please contact Tonna-Marie Rogers at 508-457-0495 x110; tonna-marie.surgeon-rogers@state.ma.us

This workshop is intended to provide local officials, municipal boards, and community members with a solid understanding of nitrogen cycling and pollution budgets (Total Maximum Daily Loads-TMDLs) in the coastal environment. It will provide the background on how human actions are dramatically changing the coastal landscape and why cleaning up our coastal waters is such a big concern. It will delve beyond just explaining how excess nitrogen affects our bays and ponds, to unpacking the nitrogen cycle, sources of nitrogen, how nitrogen moves through watersheds and demonstrating how these issues are inter-related. We will examine why land-based



sources of nitrogen need to be controlled and ways to reduce nitrogen loads to coastal ecosystems. Presenters will also address some of the common misconceptions about nitrogen pollution. Participants will learn about TMDLs for water quality, how they are calculated and what they mean for our communities. Understanding these fundamental concepts is crucial to underpinning sound decision-making related to managing wastewater and stormwater and cleaning up our coastal waters.

In addition to learning more about the science related to nitrogen and TMDLs, participants will also be introduced to a new tool being developed by the Cape Cod Commission to help towns with wastewater planning. Commission staff will demonstrate a prototype of this new wastewater planning application that, in the future, will help planners, municipalities, and policy makers explore options for wastewater management on Cape Cod. The application combines GIS mapping, land use, water use, and costs and will allow a user to visualize potential approaches that include small-scale, large-scale, and green infrastructure approaches.

Whether you are a seasoned local official or a new board member you will learn science that will be relevant to your work. The information to be presented will be useful to anyone who works on or wants to learn more about coastal water quality issues.

Please register online

www.waquoitbayreserve.org

Space is limited. Register early!





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Meet the Speakers

Dr. Jennifer Bowen is an Assistant Professor of Biology at the University of Massachusetts, Boston. Her research focuses on many aspects of the interaction between humans and the environment, particularly as it relates to nitrogen cycling and coastal eutrophication. Her work runs the gamut from modeling how changing land use on watersheds alters the geochemistry of receiving waters to understanding how urbanization alters the structure and geochemical function of microbial communities and the ecological services that the microbes provide.

Dr. Bowen has been actively involved in research on Cape Cod for several years. She currently has students engaged in research on: i) the microbial controls on nitrous oxide fluxes in Sippewissett Marsh, ii) the role of nitrogen load in altering the structure of microbial communities in sediments and estuarine waters of Waquoit Bay, and iii) how permeable reactive barriers designed to intercept groundwater work to promote nitrogen removal. Her previous work in Waquoit Bay focused on developing and applying a series of tools for resource planners that could be used to predict how changing land use would alter the supply of nitrogen entering receiving estuaries. Dr. Bowen holds a Ph.D. from the University of Boston and a B.A. from Colby College.

Dr. Daniel Rogers is a geomicrobiologist interested in the interplay of the nitrogen and sulfur cycles, and understanding the biological signatures imparted by organisms involved in these cycles in the environment. Dr. Rogers uses modern molecular microbiological and state-of-the-art stable isotope techniques to decipher the players (who), processes (what) and rates of reaction (how fast) within the environmental context. His work spans both coastal and deep sea environments.

Dr. Rogers holds a Masters degree in Biological Oceanography from the University of Connecticut. He received his Ph.D. through the MIT-WHOI Joint Program in Chemical Oceanography where his thesis work focused on the "Geomicrobiology of Nitrogen in a Coastal Aquifer: Isotopic and Molecular Methods to Examine Nitrification and Denitrification in Groundwater." He is currently a Postdoctoral Fellow in the Department of Earth and Planetary Sciences at Harvard University.

Rick Dunn is an Environmental Engineer with the MassDEP, Bureau of Resource Protection. Rick has worked for MassDEP for 33 years in a variety of water quality related programs. Currently he is the supervisor of the Watershed Planning Program, which has the primary responsibility for monitoring and assessing the waters of the Commonwealth and developing the state list of impaired waters (known as the "Integrated List of Waters"). His program is also responsible for developing State Water Quality Standards, water quality modeling, and developing pollution budgets more

commonly known as Total Maximum Daily Loads (TMDLs) in the regulatory world. Formerly, Rick was also responsible for developing and implementing a wastewater operator training program and state regulations dealing with sewage sludge management.

Erin Jackson is a Special Projects Coordinator at the Cape Cod Commission, the Cape's regional land use planning and regulatory agency. Ms. Jackson coordinates the efforts toward development of the Cape Cod Regional Wastewater Management Plan (RWMP). Prior to the Commission, Ms. Jackson worked for two years as the Project Assistant at the University-National Oceanographic Laboratory System. Ms. Jackson has a B.S. in Marine Science from Rutgers University (New Brunswick, NJ) and a M.A. in Marine Affairs from the University of Rhode Island (Kingston, RI).

Anne Reynolds is the GIS Manager of the Cape Cod Commission, the Cape's regional land use planning and regulatory agency. Prior to becoming Manager, she served as a GIS Analyst at the Commission from 2005 to 2008. Ms. Reynolds manages all GIS projects for the Cape Cod Commission and works with municipal, private and state agencies, to map and analyze information, and to support the development of electronic records and datasets. Prior to joining the Commission, Ms. Reynolds worked for four years at the Waquoit Bay National Estuarine Research Reserve as the Information and Technology Coordinator. Ms. Reynolds has a B.A. in Geography from Humboldt State University (Arcata, CA).

