

# NITROGEN MANAGEMENT



For over a decade, the Buzzards Bay National Estuary Program (BBNEP) has been a leader in helping municipalities manage the cumulative inputs of nitrogen from septic systems, agricultural lands, and point sources by helping them map, remediate, and regulate polluted discharges in their communities.

Progress is evident in some areas of Buzzards Bay despite having no legal mechanism in place for towns and cities to enforce limits on non-point source pollution discharges. For example, while new nitrogen limits proposed by the BBNEP carried no legal weight, some municipalities responded and Buzzards Bay saw some improvements in zoning and wastewater facility upgrades to meet recommended goals. However, soon the entire region will have to act. Total Maximum Daily Loads (TMDLs) are on the horizon (TMDLs specify the maximum amount of a pollutant a water body can receive and still meet water quality standards) and municipalities will be required to comply. Adhering to the framework of Section 303(d) of the Clean Water Act, the Massachusetts Estuaries Project adopted the BBNEP's nitrogen loading modeling approach but linked this data to water quality and ecosystem response models to develop site-specific TMDLs planned for 89 Massachusetts embayments.

This time, compliance with the new standards goes well beyond the sewer treatment plant upgrades of the 1980s and '90s. In fact, managing non-point sources of nitrogen discharges through watershed level TMDLs presents one of the most challenging and costly responsibilities facing coastal managers today and has left some local officials worried about how they will implement and fund measures to meet the new standard.

## THE NATIONAL ESTUARY PROGRAM IN ACTION

Reducing nitrogen outputs is a top priority and central goal of the Buzzards Bay Management Plan that will require the participation of government, the private sector, and individuals. Leading the effort, BBNEP has already laid some important groundwork that towns and cities will need to develop effective nitrogen management programs. In addition,

the BBNEP is now helping guide local government to make decisions that are more supportive and protective of water quality.

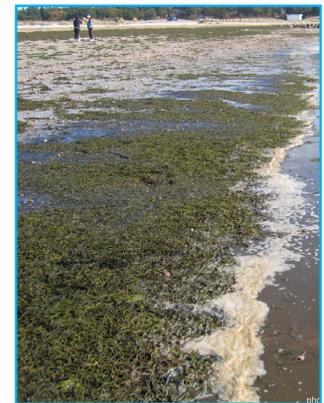
- The BBNEP created, funded, and oversaw a water-quality monitoring program to systematically evaluate 30 Buzzards Bay embayments. Managed

by a citizens' group, staffed by volunteers, and with data analyzed by a university laboratory, the program enabled BBNEP to develop a water-quality index that identified eutrophic waters in Buzzards Bay embayments. The monitoring program is now fully managed by the citizens' group and funded by the state legislature and is considered

## Buzzards Bay National Estuary Program

one of the most successful in the United States.

- The BBNEP led an effort to develop the Atlas of Stormwater Discharges in Buzzards Bay. This large database and atlas maps every stormwater pipe in the watershed that leads to a wetland, river, or the bay. While the EPA's MS4 Phase II permits for



Codium accumulation on Little Harbor Beach on Great Neck near the village of Onset in Wareham, MA. Codium has declined during the past two years and this decline may be related to reduction in nitrogen discharges to the Wareham River estuary.

EFFECTIVE



EFFICIENT



ADAPTIVE



COLLABORATIVE

stormwater mandate this kind of mapping today, the towns had a leg up, having started the arduous process—identifying several thousand stormwater discharges and more than 16,000 catch basins—long before it was mandated.

- The BBNEP helped establish the Massachusetts Alternative Septic Test Center (MASTC) to evaluate the performance and operation costs of innovative wastewater disposal technologies and assist vendors in getting their technologies approved more quickly and less expensively. The effort, funded by an EPA Environmental Technology Initiative grant, section 319 grant funds, and other monies, introduced and implemented alternatives to conventional septic systems that are effective in reducing nitrogen concentrations in wastewater discharges. This

initiative, together with regulatory changes recommended by the NEP in the 1990s, has led to the installation of nearly 2,000 of these systems in the region.

- The BBNEP drafted bylaws for the Wareham Board of Selectmen to submit to town meetings that would have set strict nitrogen standards (expressed as allowable pounds per acre of nitrogen discharge) across the town, and requiring nitrogen-removing septic systems for most new growth. The standards would have also led to smart growth techniques like Transfer of Development Rights and forms of nitrogen trading. (Although attempts to pass the town-wide bylaws failed by narrow margins at the semiannual town meetings, the town is continuing to pursue the strategy.)

As the coastal watershed nitro-

gen TMDLs are established in Massachusetts, with state agencies encouraging or requiring no-net nitrogen increase goals, individuals and citizen groups pressing for action, and local government officials seeking to preserve and protect their water quality and natural resources, the stage is set for action.

Visit [www.buzzardsbay.org](http://www.buzzardsbay.org) to learn more about this and other BBNEP efforts.

*EPA's National Estuary Program (NEP) is a unique and successful coastal watershed-based program established in 1987 under the Clean Water Act Amendments. The NEP involves the public and collaborates with partners to protect, restore, and maintain the water quality and ecological integrity of 28 estuaries of national significance located in 18 coastal states and Puerto Rico.*

*For more information about the NEP go to [www.epa.gov/owow/estuaries](http://www.epa.gov/owow/estuaries).*