



The Problem

The Massachusetts Estuaries Project (MEP) technical report (available at www.oceanscience.net/estuaries/) indicates the Wild Harbor system exceeds its critical threshold for nitrogen, resulting in impaired water quality. A nitrogen total maximum daily load (TMDL) has not been established by MassDEP or US EPA, but Wild Harbor is listed on the 2012 Integrated List of impaired waters for fecal coliform (available at www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf).

- **MEP TECHNICAL REPORT STATUS:** Final
- **TMDL STATUS:** In Progress
- **TOTAL WASTEWATER FLOW:** 88 MGY (million gal per year)
 - Treated WW Flow: 13 MGY
 - Septic Flow: 75 MGY
- **UNATTENUATED TOTAL NITROGEN LOAD:** 10,370 kg/Y (kilograms per year)
- **ATTENUATED TOTAL NITROGEN LOAD:** 9,178 kg/Y
- **SOURCES OF CONTROLLABLE NITROGEN (MEP):**
 - 72% Septic Systems
 - 7% Lawn Fertilizer
 - 8% Stormwater From Impervious Surfaces

- 13% Golf Course Fertilizer

CONTRIBUTING TOWNS

- **FALMOUTH**
- **BOURNE (JBCC)**
- **SANDWICH (JBCC)**
- **DISCUSSION:** The land area in Bourne and Sandwich, and a portion of the land area in Falmouth, is not in the control of the towns as it is part of Joint Base Cape Cod (JBCC), which is served by a wastewater treatment facility and discharged outside of the watershed.

THE MEP RESTORATION SCENARIO

- **WATERSHED TOTAL NITROGEN REDUCTION TARGET:** 32%
- **WATERSHED SEPTIC REDUCTION TARGET:** 43%
(The scenario represents the aggregated sub-embayment percent removal targets from the MEP technical report)

WILD HARBOR ESTUARY

- **EMBAYMENT AREA:** 103 acres
- **EMBAYMENT VOLUME:** 61 million cubic feet

The Wild Harbor estuary and embayment system is has shoreline located entirely in the Town of Falmouth. The system is comprised of Wild Harbor Proper and Wild Harbor River. The Harbor supports a variety of recreational uses including boating, swimming, shell fishing

- **2012 INTEGRATED LIST STATUS:** Category 4a for fecal coliform
 - Category 4a: TMDL is complete
 - www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf

WILD HARBOR WATERSHED

- **ACRES:** 2,117
- **PARCELS:** 1,711
- **% DEVELOPED RESIDENTIAL PARCELS:** 86%
- **PARCEL DENSITY:** 1.2 acres per parcel (approx.)
- **WASTEWATER TREATMENT FACILITIES:** 1
 - New Silver Beach wastewater treatment facility

Freshwater Sources

PONDS

- **IDENTIFIED SURFACE WATERS:** 12
- **NUMBER OF NAMED FRESHWATER PONDS:** 4

- **PONDS WITH PRELIMINARY TROPHIC CHARACTERIZATION:** 1
(Listed In Appendix 4C, Ponds With Water Quality Data)
- **2012 INTEGRATED LIST STATUS:** None listed

STREAMS

- **SIGNIFICANT FRESHWATER STREAM OUTLETS:** 1
Dam Pond Discharge:
 - Average Flow: 1,979 cubic meters per day (m³/d)
 - Average Nitrate Concentrations: 0.32 milligrams per liter (mg/L)
- **DISCUSSION:** Characterization of fresh water streams like these is a regular part of the MEP technical reports. These concentrations are higher than areas of the aquifer with less than 0.05 mg/L background concentrations that are evident in public supply wells located in pristine areas. This provides evidence of the impact of non-point source nitrogen pollution from residential areas on the aquifer and receiving coastal waters.

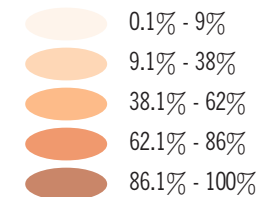
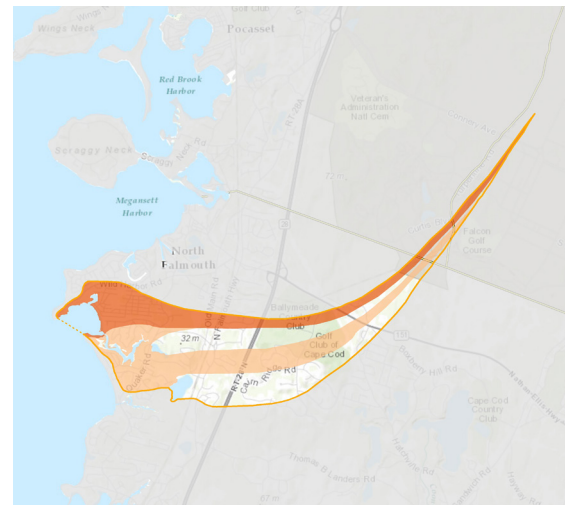
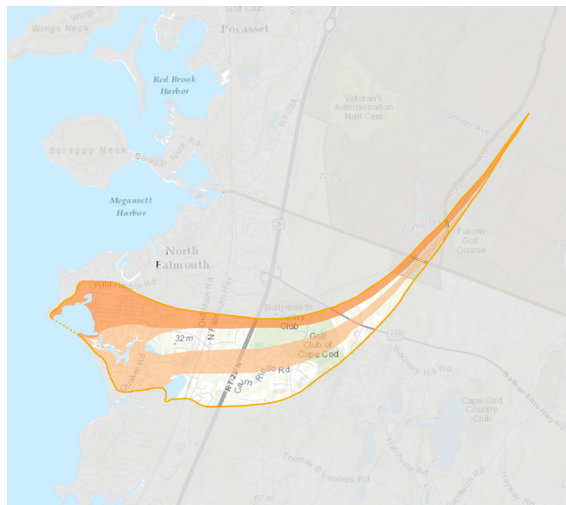
DRINKING WATER SOURCES

- **WATER DISTRICTS:** 1
 - Falmouth Water Department
- **GRAVEL PACKED WELLS:** 0
- **SMALL VOLUME WELLS:** 0

Degree of Impairment and Areas of Need

For the purposes of the §208 Plan Update, areas of need are primarily defined by the amount of nitrogen reduction required as defined by the TMDL and/or MEP technical report. In watersheds where a MEP technical report has been completed but the watershed lacks an established TMDL the nitrogen loading values identified in the MEP report are used. These were referred to above as 43% of the septic nitrogen load and 32% of the total nitrogen load to the watershed.

The MEP technical report also provides specific targeted



Subwatersheds with Total Nitrogen Removal Targets

Figure 4-1 WH

Subwatersheds with Septic Nitrogen Removal Targets

Figure 4-2 WH

WILD HARBOR

reduction values by subwatershed as shown in Figure 4-1 WH Subwatersheds with Total Nitrogen Removal Targets and Figure 4-2 WH Subwatersheds with Septic Nitrogen Removal Targets.

The nitrogen load from the watershed exceeds the threshold for Wild Harbor, resulting in impaired water quality. The ecological health of a water body is determined from water quality, extent of eelgrass, assortment of benthic fauna, and dissolved oxygen and ranges from 1-severe degradation, 2-significantly impaired, 3-moderately impaired, 4- healthy habitat conditions.

LOCAL PROGRESS

FALMOUTH

The town of Falmouth contributes 100% of the nitrogen load to Wild Harbor. The Town recently completed a Comprehensive Wastewater Management Plan (CWMP) for the South Coastal embayments. Conditions of the CWMP approval require a review of the Town's wastewater management approach, pending the results of the first five years of implementation. The Town completed the New Silver Beach wastewater facility to address Title 5 compliance issues for residential development along the coastal beach.

Local efforts in the town of Falmouth are described in more detail in Chapter 6.

MEP ECOLOGICAL CHARACTERISTICS AND WATER QUALITY

- **OVERALL ECOLOGIC CONDITION:** Healthy to Significantly Impaired
- **OUTER BASIN:** Moderately Impaired
- **INNER BASIN:** Moderately Impaired to Significantly Impaired
- **RIVER:** Healthy Habitat Conditions
- **SENTINEL STATIONS:**
 - Total Nitrogen Concentration Threshold: 0.35 mg/L
 - Total Nitrogen Concentration Existing: 0.45 mg/L (As reported at the MEP sentinel water-quality monitoring stations)