

WATER THREAT LEVEL
LOW

WATERSHEDS: LOWER CAPE Namskaket and Little Namskaket Creeks



The Problem

The Massachusetts Estuaries Project (MEP) technical report indicates that most areas within Namskaket Creek and Little Namskaket Creek are supporting infauna habitat typical of organic rich New England salt creeks. Based upon all lines of evidence it appears that the estuary has not exceeded its threshold nitrogen level for assimilating additional nitrogen without impairment.

Namskaket Creek

- **MEP TECHNICAL REPORT STATUS:** Final
- **TMDL STATUS:** TMDL Not Required
- **TOTAL WASTEWATER FLOW:** 45 MGY (million gal per year)
 - Treated WW Flow: 11 MGY
 - Septic Flow: 34 MGY
- **UNATTENUATED TOTAL NITROGEN LOAD (MEP):** 7,421 Kg/Y (kilograms per year)
- **ATTENUATED TOTAL NITROGEN LOAD (MEP):** 5,047 Kg/Y
- **SOURCES OF CONTROLLABLE NITROGEN (MEP):**
 - 65% Septic Systems
 - 8% Lawn Fertilizer
 - 7% Stormwater from Impervious Surfaces
 - 20% Wastewater Treatment Facilities

CONTRIBUTING TOWNS

- BREWSTER
- ORLEANS

THE MEP RESTORATION SCENARIO

- **WATERSHED TOTAL NITROGEN REDUCTION TARGET:** -262%*
*Represents excess nitrogen capacity
- **WATERSHED SEPTIC REDUCTION TARGET:** Watershed has excess nitrogen capacity (The scenario represents the aggregated sub-embayment percent removal targets from the MEP technical report)

NAMSKAKET CREEK ESTUARY

- **EMBAYMENT AREA:** 10 acres
- **EMBAYMENT VOLUME:** 10 million cubic feet
- **2012 INTEGRATED LIST STATUS:** Category 4A for fecal coliform
 - Category 4a: TMDL completed www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf

The Namskaket and Little Namskaket Creeks are located in the Towns of Orleans and Brewster. According to the Massachusetts Estuaries Project (MEP), both are saltwater dominated estuaries and subject to significant tidal range (up to 9 feet); therefore, they retain little standing water during low tide. These creeks are important nurseries for offshore fisheries, storm buffers, and nutrient sinks. The MEP has indicated that Namskaket and Little Namskaket Creeks have capacity to assimilate additional nitrogen.

NAMSKAKET CREEK WATERSHED

- **ACRES:** 1,566
- **PARCELS:** 741
- **% DEVELOPED RESIDENTIAL PARCELS:** 73%
- **PARCEL DENSITY:** 2.1 acres per parcel (approx.) (approx.)
- **WASTEWATER TREATMENT FACILITIES:** 1
 - Tri-Town Septage Treatment Plant: 11 MGY

Little Namskaket Creek

- **MEP TECHNICAL REPORT STATUS:** Final
- **TMDL STATUS:** TMDL Not Required
- **TOTAL WASTEWATER FLOW:** 24 MGY
 - Treated WW Flow: 6 MGY
 - Septic Flow: 18 MGY
- **UNATTENUATED TOTAL NITROGEN LOAD (MEP):** 2,866 Kg/Y
- **ATTENUATED TOTAL NITROGEN LOAD (MEP):** 2,822 Kg/Y
- **SOURCES OF CONTROLLABLE NITROGEN (MEP):**
 - 87% Septic Systems
 - 6% Lawn Fertilizer
 - 6% Stormwater from Impervious Surfaces
 - 1% Wastewater Treatment Facilities

CONTRIBUTING TOWNS

- **ORLEANS:** 100%

THE MEP RESTORATION SCENARIO

- **WATERSHED TOTAL NITROGEN REDUCTION TARGET:** -65%*
*Represents excess nitrogen capacity

- **WATERSHED SEPTIC REDUCTION TARGET:**
Watershed has excess nitrogen capacity
(The scenario represents the aggregated sub-embayment percent removal targets from the MEP technical report)

LITTLE NAMSKAKET CREEK ESTUARY

- **EMBAYMENT AREA:** 1.5 acres
- **EMBAYMENT VOLUME:** 1 million cubic feet
- **2012 INTEGRATED LIST STATUS:** Category 4a for fecal coliform
 - Category 4a: TMDL is completed
 - www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf

LITTLE NAMSKAKET CREEK WATERSHED

- **ACRES:** 483
- **PARCELS:** 311
- **% DEVELOPED RESIDENTIAL PARCELS:** 70%
- **PARCEL DENSITY:** 1.5 acres per parcel (approx.)
- **WASTEWATER TREATMENT FACILITIES:** 2
 - Community of Jesus
 - Skaket Corners Shopping Plaza

Freshwater Sources

PONDS

- **IDENTIFIED SURFACE WATERS:** 25
- **NUMBER OF NAMED FRESHWATER PONDS:** 12
- **PONDS WITH PRELIMINARY TROPHIC CHARACTERIZATION:** 8
(Listed In Appendix 4C, Ponds With Water Quality Data)

- **2012 INTEGRATED LIST LISTED FOR NUTRIENTS:**
None listed
 - www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf

STREAMS

- **SIGNIFICANT FRESHWATER STREAM OUTLETS:** 2
Namskaket Creek:
 - Average Flow: 4,050 cubic meters per day (m3/d)
 - Average Nitrate Concentrations: 0.35 milligrams per liter (mg/L)Little Namskaket Creek:
 - Average Flow: 203 m3/d
 - Average Nitrate Concentrations: 0.54 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:** 2
 - Orleans Water Department
 - Brewster Water Department
- **GRAVEL PACKED WELLS:** 0
- **SMALL VOLUME WELLS:** 0
- **DISCUSSION:** A portion of residents in Brewster are served by private wells.

Degree of Impairment and Areas of Need

Overall, the MEP technical report indicates that most areas within the Namskaket and Little Namskaket Creeks are supporting infauna habitat typical of organic rich New England salt marshes. Based upon all lines of evidence it appears that the estuary has not exceeded its threshold nitrogen level for assimilating additional nitrogen without impairment. However, both creeks are listed on the 2012 Integrated List of Impaired Waters as category 4a waters for fecal coliform.

LOCAL PROGRESS

ORLEANS

The Town of Orleans contributes approximately 100% of the attenuated wastewater nitrogen load to Little Namskaket Creek and 23% to Namskaket Creek. Brewster contributes the balance of the wastewater nitrogen load to the Namskaket Creek watershed.

The town's Comprehensive Wastewater Management Plan (CWMP) was approved in 2011. The CWMP proposes collection of an annual wastewater flow of 0.64 million gallons per day (MGD) from 2,800 properties, to serve 53% of the town. The project would be implemented in six

phases over a 15-20 year period. The CWMP proposed the discharge of treated effluent to the Namskaket and Little Namskaket Creeks watersheds. Although the proposed plan was approved under the Joint Massachusetts Environmental Policy Act (MEPA)/Development of Regional Impact (DRI) review, it did not receive town meeting approval and the Town is presently re-evaluating the hydrogeologic conditions and impacts of such proposed uses in the Namskaket watersheds, as well as alternative discharge options.

The Tri-Town Septage Treatment Facility is located in the Namskaket Creek watershed. The facility is jointly operated by Orleans, Brewster and Eastham through

special legislation developed in 1988. The towns are evaluating what role the facility will play in the future.

BREWSTER

The Town of Brewster contributes approximately 77% of the attenuated wastewater nitrogen load to the Namskaket Creek watershed. The town is presently developing an Integrated Water Resources Management Plan (IRWMP). The IRWMP Phase II report was issued in 2012, with assessments and recommendations addressing nitrogen loading to Pleasant Bay, existing and future drinking water, and stormwater and freshwater pond needs.

Local efforts in these towns are described in Chapter 6.