

# **NORTH SHORE COASTAL WATERSHEDS**

## **2002 WATER QUALITY ASSESSMENT REPORT**



**COMMONWEALTH OF MASSACHUSETTS**  
**EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS**  
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2002 WATER QUALITY ASSESSMENT REPORT

Prepared by:

Massachusetts Department of Environmental Protection  
Division of Watershed Management

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Division of Watershed Management  
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### **STATE**

Department of Environmental Protection (MassDEP):

- Bureau of Resource Protection (BRP)

- Bureau of Strategic Policy and Technology Wall Experiment Station (WES)

- Bureau of Waste Prevention (BWP)

- Bureau of Waste Site Cleanup (BWSC)

Department of Conservation and Recreation (MA DCR)

Department of Fish and Game (MA DFG)

- Division of Fisheries and Wildlife (MDFW)

- Division of Marine Fisheries (DMF)

Department of Public Health (MA DPH)

### **FEDERAL**

United States Environmental Protection Agency (EPA)

United States Geological Survey (USGS)

Water Resources Division

United States Army Corps of Engineers (ACOE)

### **REGIONAL**

Salem Sound Coastwatch (formerly Salem Sound 2000)

Eight Towns and The Bay (8T&B)

Metro Boston Local Governance Committee (Nahant Bay/Broad Sound Subgroup)

The Massachusetts Audubon Society North Shore Conservation Advocacy Office

### **LOCAL**

Saugus River Watershed Council

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Cover photo credit: Forest River, Salem Massachusetts, Jim Blair.

## EXECUTIVE SUMMARY

### NORTH SHORE COASTAL WATERSHEDS 2002 WATER QUALITY ASSESSMENT REPORT

The Massachusetts Surface Water Quality Standards (SWQS) designate the most sensitive uses for which surface waters in the state shall be protected. The assessment of current water quality conditions is a key step in the successful implementation of the Watershed Approach. This critical phase provides an assessment of whether or not the designated uses are supported or impaired, or are not assessed, as well as basic information needed to focus resource protection and remediation activities later in the watershed management planning process.

This report presents a summary of current water quality data/information in the North Shore Coastal Watersheds used to assess the status of the designated uses as defined in the SWQS. The designated uses, where applicable, include: *Aquatic Life*, *Fish Consumption*, *Shellfish Harvesting*, *Drinking Water*, *Primary* and *Secondary Contact Recreation* and *Aesthetics*. Each use, within a given segment, is individually assessed as **supported** or **impaired**. When too little current data/information exists or no reliable data are available the use is **not assessed**. However, if there is some indication of water quality impairment, which is not “naturally-occurring”, the use is identified with an “Alert Status”. It is important to note that not all waters are assessed. Many small and/or unnamed rivers, lakes, and estuarine areas have **never been assessed**; the status of their designated uses has never been reported to the EPA in the Commonwealth’s Summary of Water Quality Report (305(b) Report) nor is information on these waters maintained in the Waterbody System (WBS) or the new Assessment Database (ADB).

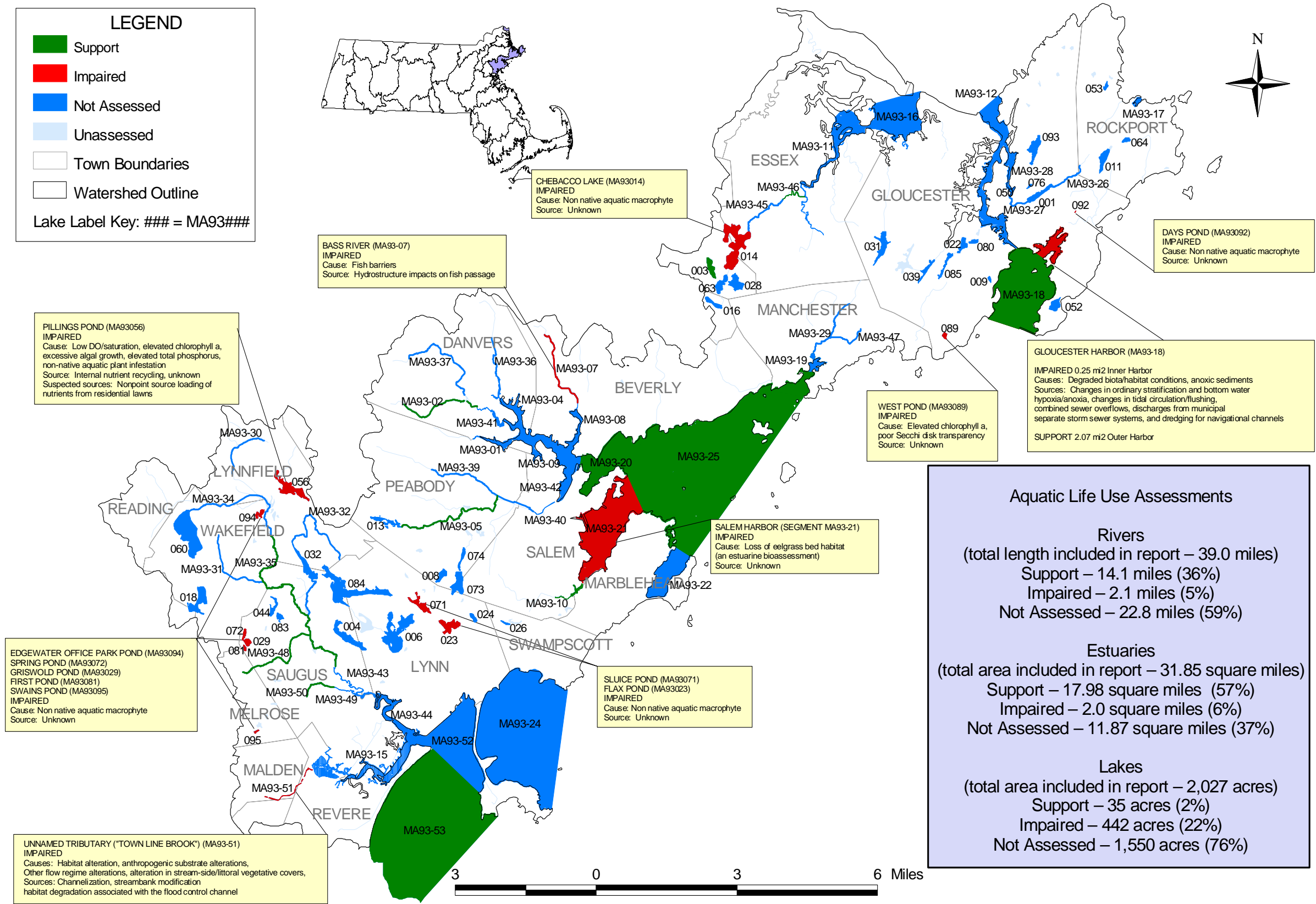
The North Shore Coastal Watersheds can be broken up into five major drainage areas excluding the northernmost portion of the area in Salisbury, MA. The Essex Bay and the Annisquam River systems (exclusive of the Blynman Canal) discharge in a northerly direction into Ipswich Bay. The Outer Cape Ann area is comprised of many small drainage systems. This rocky peninsula forms the northernmost edge of Massachusetts Bay. Salem Sound and Lynn Harbor systems are the two largest drainage areas, which also discharge into Massachusetts Bay and the larger Gulf of Maine.

The summary of the assessments for the *Aquatic Life*, *Fish Consumption*, *Primary* and *Secondary Contact Recreation*, and *Aesthetics* uses in the North Shore Coastal Watersheds segments are illustrated in Figures 1 through 5, respectively. Where sufficient data/current information was not available, the uses were not assessed.

The only use not depicted in a summary figure is the *Shellfish Harvesting Use*. This use is supported when shellfish harvested from Approved (Class SA or SB) or Conditionally Approved (Class SB) Shellfish Growing Areas are suitable for consumption without depuration and when shellfish harvested from Restricted (Class SB) Shellfish Growing Areas are suitable for consumption with depuration. The Division of Marine Fisheries (DMF) classifies all shellfishing areas in the North Shore Coastal Watersheds. The *Shellfish Harvesting Use* for the estuarine segments in this report was assessed using the DMF shellfishing classifications published on Massachusetts Geographic Information System (MassGIS) as of 1 July 2000 as well as shellfish classification changes provided by DMF personnel (Kennedy 2006a and 2006b). With the exception of three very small estuarine segments totaling 0.06 mi<sup>2</sup> (Proctor Brook, Forest River and “Town Line Brook”), that are not classified by DMF, all of the other estuary segments in the North Shore Coastal Watersheds assessed in this report are impaired for the *Shellfish Harvesting Use* (a total of 31.79 mi<sup>2</sup>). It should be noted, however, that there are many additional shellfishing areas classified by DMF in the North Shore Coastal Watersheds that are not defined as segments or reported on in this report.

<b><i>Shellfish Harvesting Use Assessment</i></b>	
<b>Estuaries</b>	
<b>(total area included in report – 31.85 mi<sup>2</sup>)</b>	
<b>Support</b>	<b>0.0 mi<sup>2</sup> (0%)</b>
<b>Impaired</b>	<b>31.79 mi<sup>2</sup> (100%)</b>
<b>Not Assessed</b>	<b>0.06 mi<sup>2</sup> (&lt;1%)</b>

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**Figure 1. Aquatic Life Use assessment summary for rivers, estuarine, and lake segments in the North Shore Coastal Watersheds.**  
 Note: The *Aquatic Life Use* is supported when suitable habitat (including water quality) is available for sustaining a native, naturally diverse, community of aquatic flora and fauna. Impairment of the *Aquatic Life Use* may result from anthropogenic stressors that include point and/or non-point source(s) of pollution and hydrologic modification. Causes and/or sources of impairments, when known, are noted in the callouts.

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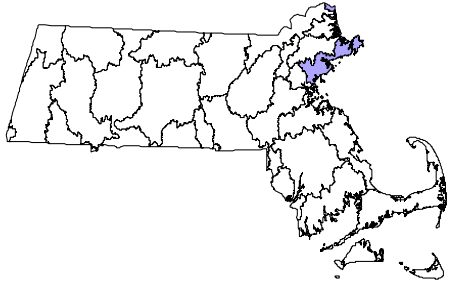


Fish Consumption Use Assessments

Rivers  
(total length included in report – 39.0 miles)  
Not Assessed – 39.0 miles (100%)

Estuaries  
(total area included in report – 31.85 square miles)  
Not Assessed 31.85 square miles (100%)

Lakes  
(total area included in report –2,027 acres)  
Impaired – 264 acres (13%)  
Not Assessed – 1,763 acres (87%)



CHEBACCO LAKE (MA93014)  
IMPAIRED  
Cause: Mercury  
Source: Unknown  
Suspected source: Atmospheric deposition

FOSTER POND (MA93026)  
IMPAIRED  
Cause: DDT  
Source: Unknown

FLAX POND (MA93023)  
IMPAIRED  
Causes: Chlordane, DDT  
Source: Unknown

The current MA DPH statewide advisory (MA DPH 2001):

In July 2001 MA DPH issued new consumer advisories on fish consumption and mercury contamination. The MA DPH "...is advising pregnant women, women of childbearing age who may become pregnant, nursing mothers, and children under 12 years of age to refrain from eating the following marine fish; shark, swordfish, king mackerel, tuna steak and tilefish. In addition, MA DPH is expanding its previously issued statewide fish consumption advisory which cautioned pregnant women to avoid eating fish from all freshwater bodies due to concerns about mercury contamination, to now include women of childbearing age who may become pregnant, nursing mothers and children under 12 years of age."

Additionally, MA DPH "is recommending that pregnant women, women of childbearing age who may become pregnant, nursing mothers, and children under 12 years of age limit their consumption of fish not covered by existing advisories to no more than 12 ounces (or about 2 meals) of cooked or uncooked fish per week. This recommendation includes canned tuna, the consumption of which should be limited to two (2) cans per week. Very small children, including toddlers, should eat less. Consumers may wish to choose to eat light tuna rather than white or chunk white tuna, the latter of which may have higher levels of mercury."

MA DPH's statewide advisory does not include fish stocked by the state Division of Fisheries and Wildlife or farm-raised fish sold commercially.

Since the statewide advisory encompasses all freshwaters in Massachusetts, the Fish Consumption Use for waterbodies cannot be assessed as support.

LEGEND

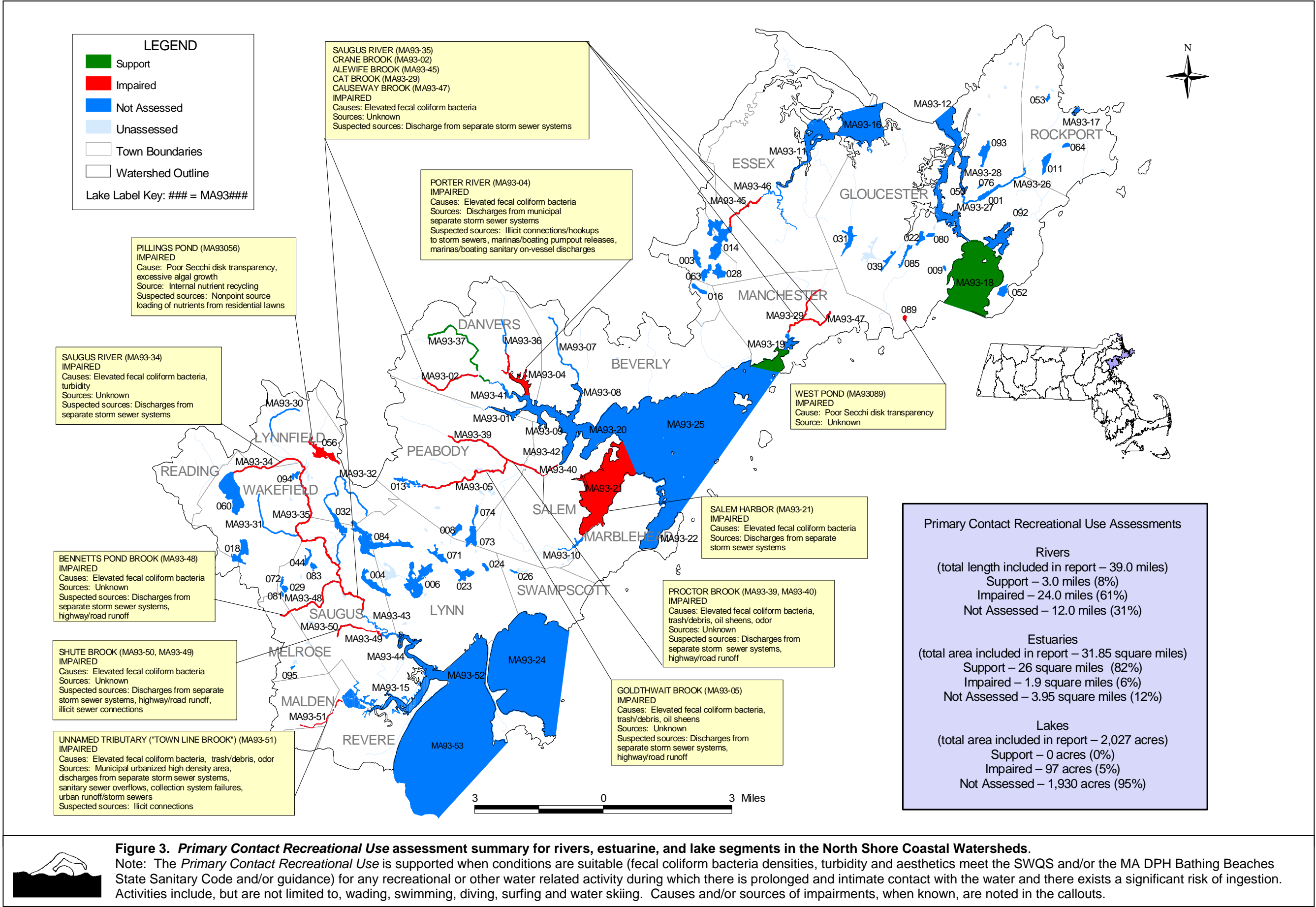
- Support
- Impaired
- Not Assessed
- Unassessed
- Town Boundaries
- Watershed Outline

Lake Label Key: ### = MA93###

**Figure2. Fish Consumption Use assessment summary for rivers, estuarine, and lake segments in the North Shore Coastal Watersheds.**

Note: The *Fish Consumption Use* is supported when there are no pollutants present that result in unacceptable concentrations in edible portions (as opposed to whole fish - see *Aquatic Life Use*) of fish, other aquatic life or wildlife for human consumption. The assessment of the *Fish Consumption Use* is made using the most recent list of Fish Consumption Advisories issued by the Massachusetts Executive Office of Health and Human Services, Department of Public Health (MA DPH), Bureau of Environmental Health Assessment (MA DPH 2004a). The MA DPH list identifies waterbodies where elevated levels of a specified contaminant in edible portions of freshwater species pose a health risk for human consumption; hence, the *Fish Consumption Use* is assessed as impaired in these waters. In July 2001 MA DPH issued new consumer advisories on fish consumption and mercury contamination (MA DPH 2001). Because of these statewide advisories no waters can be assessed as support for the *Fish Consumption Use*. These waters default to "not assessed". Causes and/or sources of impairments, when known, are noted in the callouts.

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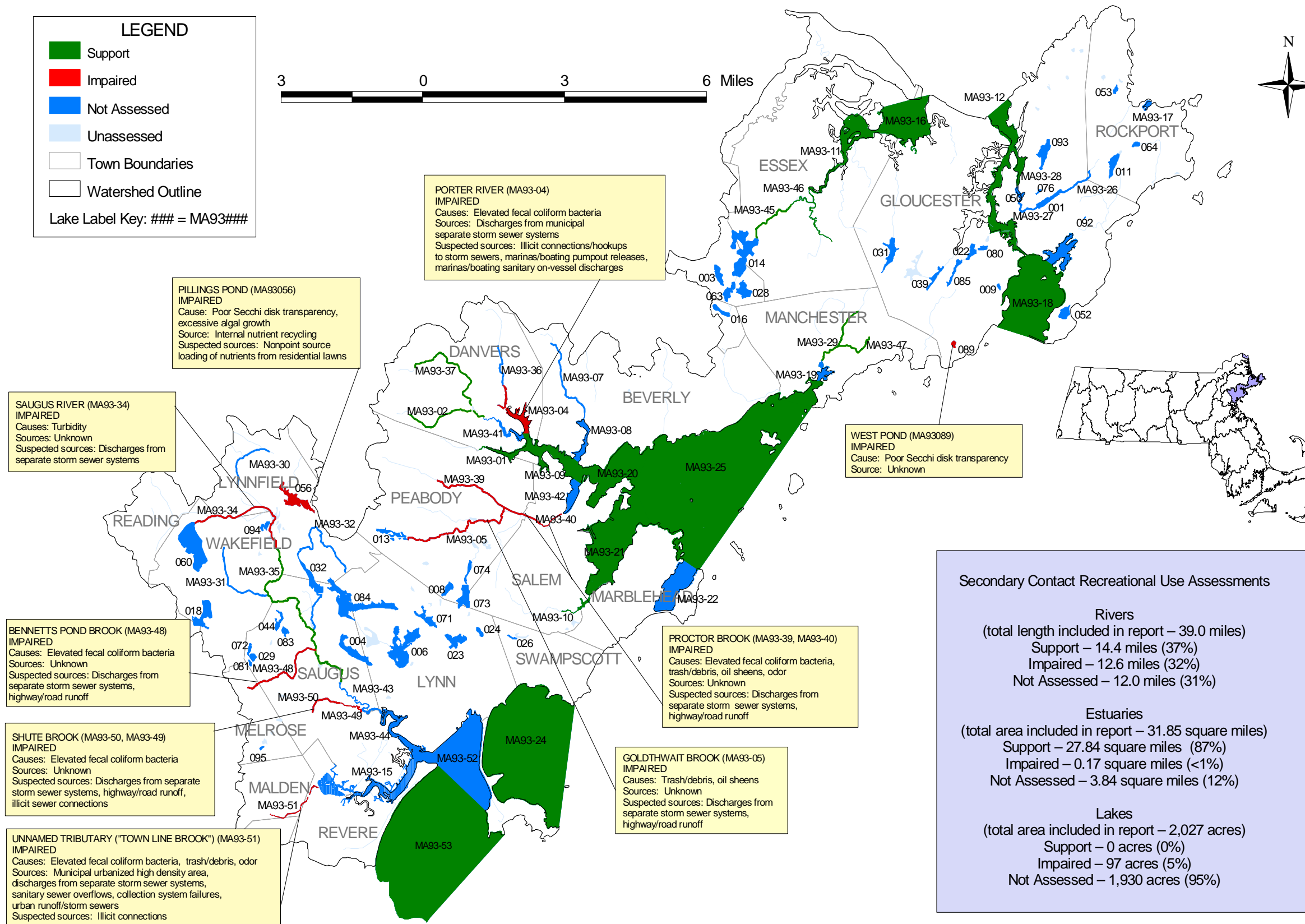
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**LEGEND**

- Support
- Impaired
- Not Assessed
- Unassessed
- Town Boundaries
- Watershed Outline

Lake Label Key: ### = MA93###



#### Secondary Contact Recreational Use Assessments

**Rivers**  
(total length included in report – 39.0 miles)  
Support – 14.4 miles (37%)  
Impaired – 12.6 miles (32%)  
Not Assessed – 12.0 miles (31%)

**Estuaries**  
(total area included in report – 31.85 square miles)  
Support – 27.84 square miles (87%)  
Impaired – 0.17 square miles (<1%)  
Not Assessed – 3.84 square miles (12%)

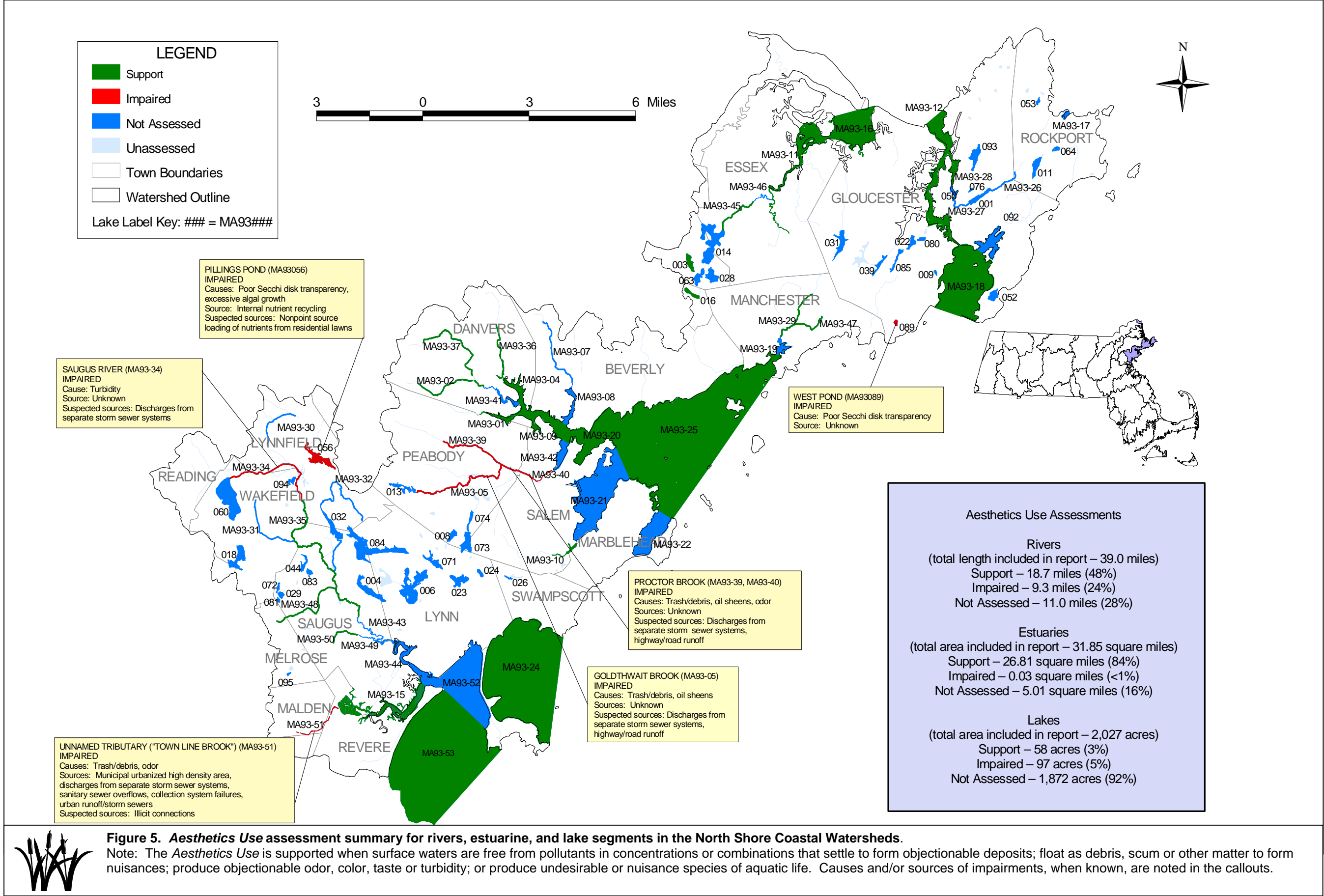
**Lakes**  
(total area included in report – 2,027 acres)  
Support – 0 acres (0%)  
Impaired – 97 acres (5%)  
Not Assessed – 1,930 acres (95%)



**Figure 4. Secondary Contact Recreational Use assessment summary for rivers, estuarine, and lake segments in the North Shore Coastal Watersheds.**

Note: The *Secondary Contact Recreational Use* is supported when conditions are suitable for any recreational or other water use during which contact with the water is either incidental or accidental. These include, but are not limited to, fishing, boating and limited contact related to shoreline activities. For lakes, non-native aquatic macrophyte cover and/or transparency data (Secchi disk depth) are evaluated to assess the status of the recreational uses. Causes and/or sources of impairments, when known, are noted in the callouts.

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