

BOSTON HARBOR 1999 WATER QUALITY ASSESSMENT REPORT



Canton Viaduct and
Factory Pond on the East
Branch



Aberjona River



Boston Light

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BOSTON HARBOR
1999 WATER QUALITY ASSESSMENT REPORT

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LIST OF ACRONYMS

7Q10	Seven day, ten year low flow
ACEC	Areas of Critical Environmental Concern
ACO	Administrative Consent Order
ACOE	United States Army Corps of Engineers
ANC	Acid Neutralizing Capacity
BDL	Below Detection Limit
BMP	Best Management Practice
BOD	Biological Oxygen Demand
BPJ	Best Professional Judgment
BRP	Bureau of Resource Protection
BUDGETS	Balancing Uses with Demands and Generating Effective Techniques for Sustainability
BWSC	Boston Water and Sewer Commission
CA/T	Central Artery Tunnel (project)
CBOD	Chemical Biological Oxygen Demand
CFU	Colony Forming Unit
CMR	Code of Massachusetts Regulations
CNOEC	Chronic No Observed Effect Concentration
CSO	Combined Sewer Overflow
CWA	Clean Water Act
CWMN	Citizen Water Monitoring Network
CZM	Massachusetts Office of Coastal Zone Management
DDT	Dichlorodiphenyltrichloroethane
DFWELE	Department of Fisheries, Wildlife, and Environmental Law Enforcement
DMF	Division of Marine Fisheries
DO	Dissolved Oxygen
DWM	Division of Watershed Management
DWP	Drinking Water Program
EOEA	Executive Office of Environmental Affairs
EPA	United States Environmental Protection Agency
FPOM	Fine Particulate Organic Matter
FRWA	Fore River Watershed Association
GIS (MassGIS)	Geographic Information System
HABA	Halls Brook Holding Area
I/I	Inflow and Infiltration
LC ₅₀	Lethal concentration to 50% of the test organisms
L-EL	Lowest Effect Level
MA DEM	Massachusetts Department of Environmental Management
MA DEP	Massachusetts Department of Environmental Protection
MassWildlife	Massachusetts Department Fisheries, Wildlife, and Environmental Law Enforcement
MDC	Division of Fisheries and Wildlife
MDL	Metropolitan District Commission
MDPH	Minimum Detection Limit
MEPA	Massachusetts Department of Public Health
MPN	Massachusetts Environmental Policy Act
MSGRP RI/FS	Most Probable Number
MWI	Multiple Source Groundwater Response Plan Remedial Investigation/Feasibility Study
MWRA	Massachusetts Watershed Initiative
MyRWA	Massachusetts Water Resource Authority
NAWQA	Mystic River Watershed Association
NCCW	National Water-Quality Assessment
NECB	Non-Contact Cooling Water
NepRWA	New England Coastal Basin
NH ₃ -N	Neponset River Watershed Association
NPDES	Ammonia-nitrogen
NON	National Pollutant Discharge Elimination System
NPS	Notice of Noncompliance
ORW	Non-Point Source
PAH	Outstanding Resource Water
PALIS	Polyaromatic Hydrocarbons
PCB	Pond and Lake Information System
PWS	Polychlorinated Biphenols
QA/QC	Public Water Supply
QAPP	Quality Assurance/ Quality Control
RBP	Quality Assurance Project Plan
ROD	Rapid Bioassessment Protocol
SARIS	Record of Decision
S-EL	Stream and River Inventory System
SCUBA	Severe Effect Level
	Self Contained Underwater Breathing Apparatus

LIST OF ACRONYMS (CONTINUED)

SOP	Standard Operating Procedure
SRF	State Revolving Fund
SSO	Sanitary Sewer Overflow
SVOC	Semi-Volatile Organic Compound
SWAP	Source Water Assessment Program
SWQS	Surface Water Quality Standards
SWPPP	Storm Water Pollution Prevention Plan
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TOXTD	MA DEP DWM Toxicity Testing Database
TPH	Total Petroleum Hydrocarbon
TRC	Total Residual Chlorine
TSS	Total Suspended Solids
UAA	Use Attainability Analysis
WBID	Waterbody Identification
WBS	Waterbody System
WMA	Water Management Act
WWTP	Waste Water Treatment Plant
USGS	United States Geological Survey
VOC	Volatile Organic Compound

LIST OF UNITS

cfs	cubic feet per second
cfsm	cubic feet per second per square mile
cfu	colony forming unit
GPM (D)	gallons per minute (day)
MGD	million gallons per day
µg/kg	microgram per kilogram
M	meter
mg/L	milligram per liter
mL/L	milliliter per liter
ng	nanogram
NTU	nephelometric turbidity units
ppb	parts per billion
ppm	parts per million
SU	standard units
TEQ/kg	toxic equivalents per kilogram
µeq/L	microequivalants per liter

EXECUTIVE SUMMARY

1999 BOSTON HARBOR WATERSHED WATER QUALITY ASSESSMENT REPORT

The Massachusetts Surface Water Quality Standards (SWQS) designate the most sensitive uses for which surface waters in the Commonwealth 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 being met (support, partial support, non-support) 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 assessment report presents a summary of current water quality data/information used to assess the status of the designated uses as defined in the Massachusetts Surface Water Quality Standards. Each use, within a given segment, is individually assessed as 1) **support**, 2) **partial support**, or 3) **non-support**. When insufficient 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 and ponds are currently **unassessed**; the status of their designated uses has never been reported to EPA in the Commonwealth's 305(b) Report nor is information on these waters maintained in the Waterbody System (WBS) database.

Mystic River Subwatershed:

There are a total of four rivers, streams, brooks or creeks (the term "rivers" will hereafter be used to include all) assessed in this subwatershed. These include: the Aberjona River, Alewife Brook, the Malden River, and the mainstem Mystic River. These assessments represent 17% of the 24 named streams and approximately 39% (18.75) of the estimated 47.7 river miles in the subwatershed. The remaining rivers are small and/or unnamed, and they are currently unassessed. Two estuarine areas, including the tidally influenced portions of the Mystic and Chelsea rivers and ten lakes, ponds, or impoundments (the term "lakes" will hereafter be used to include all) in the Mystic River Subwatershed are also included. Nearly all of the estuarine area is assessed. Ten lakes assessed in this report represent 381.9 of the 1,482.9 or 26% of the lake acreage in the Mystic River Subwatershed.

Neponset River Subwatershed:

There are a total of 31 rivers and two estuarine areas in the Neponset River Subwatershed (including the mainstem Neponset River, East Branch Neponset River, and numerous tributaries) assessed in this subwatershed. These 31 rivers represent approximately 97% of the 32 named streams and 96% of the estimated 87.1 river miles in the subwatershed. The remaining rivers are small and/or unnamed, and they are currently unassessed. Information on 33 of the subwatershed's 65 lakes is presented in this report. These 33 lakes represent 1,738 of the 1,915 or 91% of the lake acreage in the Neponset River Subwatershed.

Weymouth and Weir Subwatershed:

There are a total of 11 rivers in the Weymouth and Weir Subwatershed assessed in this subwatershed: the Weymouth Back, Weir, Monatiquot, Old Swamp, Crooked Meadow, Mill, Farm, and Cochato rivers and Furnace, Trout, and Town brooks. These 11 rivers represent approximately 30% of the 36 named streams and 55% of the estimated 59.9 river miles in the subwatershed. Four estuarine areas are also assessed. The remaining rivers are small and/or unnamed, and they are currently unassessed. Information on eight of the subwatershed's 27 lakes is presented in this report. These eight lakes represent 373.3 of the 1,204.3 or 31% of the lake acreage in the Weymouth and Weir Subwatershed.

Boston Harbor (Proper):

Eleven estuary segments totaling 47.3 square miles in Boston Harbor (Proper) are assessed in the Boston Harbor (Proper) Subwatershed. These include Boston Inner Harbor, Dorchester Bay, Quincy Bay, Hull Bay, Hingham Bay, Winthrop Bay, Pleasure Bay, and Boston Harbor.

The status of the designated uses for these waterbodies is summarized in a segment format, which includes four river segments, two estuary segments, and ten lake segments in the Mystic River Subwatershed; 31 river segments, two estuary segments, and 33 lake segments in the Neponset River Subwatershed; 11 river segments, four estuary segments, and eight lake segments in the Weymouth and Weir Subwatershed; and 11 estuary segments in Boston Harbor (Proper). The designated uses, where applicable, include: Aquatic Life, Fish Consumption, Drinking Water, Primary and Secondary Contact Recreation and Aesthetics.

AQUATIC LIFE USE – RIVERS, ESTUARIES/COASTAL EMBAYMENTS, AND LAKES

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 (non-support or partial support) may result from anthropogenic stressors that include point and/or nonpoint source(s) of pollution and hydrologic modification.

Mystic River Subwatershed – Aquatic Life Use Summary:

Only one of the 18.75 fresh water river miles assessed in this subwatershed supports the Aquatic Life Use - the Mystic River from the outlet of Lower Mystic Lake to its confluence with Alewife Brook (Figure 1). The Aquatic Life Use is assessed as impaired (non-support) for the lower 6.6 miles of the Aberjona River and the entire length of Alewife Brook.

<i>Rivers</i>
5.4 miles SUPPORT
8.85 miles NON-SUPPORT
4.5 miles NOT ASSESSED

The impairment of the Aberjona River is a result of loss of habitat, an impaired benthic macroinvertebrate community, low dissolved oxygen concentrations, and elevated nutrients. Sources, where known, include hydromodification (channelization), although urban runoff/ storm sewers are also suspected. Alewife Brook is impaired by low dissolved oxygen concentrations, high nutrients, and elevated levels of trace elements in the sediments. Sources include urban runoff/storm sewers and combined sewer overflows (CSO) while illicit sewer connections are suspected as a source of impairment. The lower 2.6 miles of the Aberjona River and the entire Malden River (1.9 miles) are currently not assessed for this use.

The Aquatic Life Use is supported for 0.67 square miles of the Mystic River (Figure 1). However, the Island End section of the Mystic River is assessed as non-support due to contaminated sediments from the former Eastern Gas & Fuel Company. The entire area of Chelsea River (locally known as Chelsea Creek) is impaired (non-support) for the Aquatic Life Use due to the negative impacts of metals in the sediments, high levels of turbidity and effects of petrochemical contamination. The sources of impairment include urban runoff/storm sewers, industrial point sources, contaminated sediments, and oil spills.

<i>Estuaries</i>
0.67 square miles SUPPORT
0.53 square miles NON-SUPPORT

Only three of the twelve lakes in the Mystic River Subwatershed are assessed for the Aquatic Life Use (Figure 1). Spy Pond, Arlington is impaired (partial support) due to the presence of the non-native (exotic) Eurasian milfoil *Myriophyllum spicatum*. Winter Pond, Winchester is assessed as partial support due to elevated nutrients.

<i>Lakes</i>
120 acres PARTIAL SUPPORT
101 acres NON-SUPPORT
168.9 acres NOT ASSESSED

While sources are unknown, urban runoff/storm sewers are suspected. Lower Mystic Lake, Medford is assessed as non-support for the Aquatic Life Use due to unknown causes, organic enrichment/low dissolved oxygen, and salinity. The sources of impairment are unknown, however the lake is a meromictic lake where the noncirculating bottom layer does not mix with the circulating top waters. This noncirculating bottom layer contains saltwater from the estuarine portion of Mystic River that entered the lake prior to the construction of the Amelia Earhart Dam in 1966.

Neponset River Subwatershed – Aquatic Life Use Summary:

Approximately thirty percent of the 86.29 fresh water river miles assessed in the Neponset River Subwatershed support the Aquatic Life Use (Figure 1). The entire length of four brooks supports this use: Hawes, Traphole, Beaver Meadow, and Pequid. Additionally, the Neponset River from its headwaters at the outlet of Neponset Reservoir, Foxborough to confluence with East Branch, Canton also

<i>Rivers</i>
25.4 miles SUPPORT
17.8 miles PARTIAL SUPPORT
3.2 miles NON-SUPPORT
39.89 miles NOT ASSESSED

supports this use. The Aquatic Life Use is assessed as impaired (partial or non-support) for 21 miles in the Neponset River Subwatershed, while 39.89 river miles are currently not assessed.

The entire lengths of Mill, Germany, Meadow, unnamed tributary (locally known as Steep Hill Brook), Beaver, Massapoag, Mother, and Unquity brooks are assessed as partial support (Figure 1). Major issues contributing to the water quality impairment in the Neponset River Subwatershed include low flows and elevated nutrients. Although most sources of impairment are unknown, water withdrawals are suspected to be impacting flows, and contaminated sediments may be contributing to the elevated nutrients and to the benthic community impairments. The East Branch is assessed as non-support due to metals, organic enrichment and unknown causes. The sources of these impairments, where known, include industrial point sources and contaminated sediments. Meadow Brook is also assessed as non-support due to elevated nutrients from a municipal point source (sewers leaking into underdrains).

There are 1.02 square miles of estuarine acreage in the Neponset River Subwatershed, all of which are currently unassessed.

There are 33 lakes totaling 1,738 acres in the Neponset River Subwatershed; none of these support the Aquatic Life Use. Fourteen lakes (1,231 acres) are impaired (partial or non-support) for the Aquatic Life Use due to non-native (exotic) plant infestation (Figure 1). Cobbs Pond, Walpole and Turners Pond, Milton are assessed as non-support due to organic enrichment/low dissolved oxygen and nutrients. Ganawatte Farm Pond, Walpole/Sharon/Foxborough is assessed as non-support due to organic enrichment/low dissolved oxygen and noxious aquatic plants. Sources of impairment to these ponds are unknown, but suspected sources include urban runoff/storm sewers.

<i>Lakes</i> 1218 acres PARTIAL SUPPORT 120 acres NON-SUPPORT 395 acres NOT ASSESSED

Weymouth and Weir Subwatershed – Aquatic Life Use Summary:

The majority (61%) of the 33.2 river miles in the Weymouth and Weir Subwatershed are not assessed. The entire fresh water portion of the Weir River and the Weymouth Back River are assessed as support. The lower 2.0 miles of Old Swamp River (downstream from Mt. Hope Cemetery) are assessed as partial support based on an impaired benthic community from unidentified sources. The Monatiquot River is assessed as non-support due to a moderately impacted benthic community and the loss of habitat due to channelization. While sources of impairment are unknown, sanitary sewer overflows and urban runoff/storm sewers are suspected of contributing organic matter to the stream. Town Brook is assessed as non-support due to habitat alterations (underground and culverted).

<i>Rivers</i> 3.6 miles SUPPORT 2 miles PARTIAL SUPPORT 7.5 miles NON-SUPPORT 20.1 miles NOT ASSESSED

The Weymouth Fore and Weymouth Back rivers are assessed as support for the Aquatic Life Use (Figure 1) representing 78% (5.2 square miles) of the estuarine area in the Weymouth and Weir Subwatershed. The remaining 1.5 square miles are currently not assessed.

<i>Estuaries</i> 5.2 square miles SUPPORT 1.5 square miles NOT ASSESSED

There are a total eight lakes comprising 373.3 acres in the Weymouth and Weir Subwatershed, all of which are currently not assessed for the Aquatic Life Use.

<i>Lakes</i> 373.3 acres NOT ASSESSED

Boston Harbor (Proper) – Aquatic Life Use Summary:

Ninety three percent (43.9 square miles) of the 47.52 square miles assessed in Boston Harbor (Proper) support the Aquatic Life Use. The remaining 3.62 square miles (Pleasure Bay, Hingham Harbor and Hull Bay) are currently not assessed (Figure 1).

<i>Estuaries</i> 43.9 square miles SUPPORT 3.62 square miles NOT ASSESSED

DRINKING WATER USE – RIVERS, ESTUARIES/COASTAL EMBAYMENTS, AND LAKES

The term Drinking Water Use is used to indicate sources of public drinking water. While Drinking Water Use is not assessed in this report, information on drinking water source protection and finish water quality is available at <http://www.state.ma.us/dep/brp/dws/dwshome.htm> and from the Boston Harbor Watershed's public water suppliers. These waters are subject to stringent regulation in accordance with the Massachusetts Drinking Water Regulations. MA DEP's Drinking Water Program (DWP) has primacy for implementing the provisions of the federal Safe Drinking Water Act. The DWP has also initiated work on its Source Water Assessment Program, which requires that the Commonwealth delineate protection areas for all public ground and surface water sources, inventory land uses in these areas that may present potential threats to drinking water quality, determine the susceptibility of water supplies to contamination from these sources, and publicize the results. Except for suppliers with surface water sources for which a waiver from filtration has been granted (these systems also monitor surface water quality), public water suppliers monitor their finished water (tap water) for major categories of contaminants (e.g., bacteria, volatile and synthetic organic compounds, inorganic compounds) and report their data to the DWP.

FISH CONSUMPTION USE – RIVERS, ESTUARIES/ COASTAL EMBAYMENTS, AND LAKES

The Fish Consumption Use is supported when there are no pollutants present that result in unacceptable concentrations in edible portions of marketable fish or for the recreational use of fish, other aquatic life or wildlife for human consumption. The assessment of this 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 (MDPH), Bureau of Environmental Health Assessment (MDPH 2001a). The MDPH 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 non-support in these waters. In addition to site specific advisories, in July 2001, MDPH issued new consumer advisories on fish consumption and mercury contamination (MDPH 2001b). Because of the statewide advisories, no water can be assessed as either support or partial support for the Fish Consumption Use. MDPH's statewide advisory does not include fish stocked by the state Division of Fisheries and Wildlife or farm-raised fish sold commercially. The statewide advisories are read as follows:

The MDPH "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, MDPH 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 (MDPH 2001b)."

Additionally, MDPH "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 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 (MDPH 2001b)."

Because of elevated levels of contaminants in edible portions of fish, MDPH has issued site-specific fish consumption advisories for five lakes in the Boston Harbor Watershed because of health concerns related to mercury, PCBs, and pesticides. In the Mystic River Subwatershed, this includes Clay Pit Pond. In the Neponset River Subwatershed, these waterbodies include: Bird Pond and Willet Pond (a total of 225 acres). In the Weymouth and Weir Subwatershed, these include: Sylvan Lake and Ice House Pond (a total of 2.7 acres) (MDPH 2001a). The Fish Consumption Use is, therefore, assessed as non-support for these lakes (a total of 227.7 lake acres). MDPH also issued a fish consumption advisory due to PCB contamination for 13.5 miles of the Neponset River from the Hollingsworth and Vose Dam to the Tilestone Dam (MDPH 2001a). The Fish Consumption Use is, therefore, assessed as non-support (Figure 2). The entire length of the Cochato River in the Weymouth and Weir Subwatershed is assessed as non-support for the Fish Consumption Use due to the MDPH advisory for pesticides in fish tissue. Chelsea River, the Mystic River from the Amelia Earhart Dam to the confluence with the Chelsea River, the Neponset River from Milton Lower Falls Dam to Dorchester Bay, Dorchester Bay, Boston Inner Harbor, Quincy Bay, and Boston Harbor (Proper) are assessed as non-support for the Fish Consumption Use due to priority organics (Celona 2001). Because of the statewide advisory, the remainder of the rivers, lakes, and estuaries in the Boston Harbor Watershed default to not assessed for the Fish Consumption Use. Sources of contamination in this area are currently unknown although it is suspected that mercury contamination is due to atmospheric deposition.

Mystic River Subwatershed Rivers - 18.75 miles NOT ASSESSED Lakes- 376.9 acres NOT ASSESSED 13 acres NON-SUPPORT Estuaries- 1.2 square miles NON-SUPPORT
Neponset River Subwatershed Rivers- 13.5 miles NON-SUPPORT 72.79 miles NOT ASSESSED Lakes- 225 acres NON-SUPPORT 1508 acres NOT ASSESSED Estuaries-0.02 square miles NOT ASSESSED 1.0 square miles NON-SUPPORT
Weymouth and Weir Subwatershed Rivers- 4 miles NON-SUPPORT 29.2 miles NOT ASSESSED Lakes- 2.7 acres NON-SUPPORT 370.6 NOT ASSESSED Estuaries- 6.7 square miles NOT ASSESSED
Boston Harbor (Proper) Estuaries- 35.82 square miles NON-SUPPORT 11.7 square miles NOT ASSESSED

SHELLFISHING USE – RIVERS, ESTUARIES/ COASTAL EMBAYMENTS

The Shellfishing Use is supported when shellfish harvested from approved Open Shellfish Areas (Class SA) are suitable for consumption without depuration and shellfish harvested from approved Restricted Shellfish Areas (Class SB) are suitable for consumption with depuration. The Division of Marine Fisheries (DMF) classifies shellfishing areas in the Boston Harbor Watershed. The Shellfishing Use for this report was assessed using the DMF shellfishing closure list dated October 2000 (DFWELE 2000). Designated shellfish growing areas (as of October 2000) may be viewed using the MassGIS datalayer available from MassGIS at <http://www.state.ma.us/mgis/dsga.htm>.

The status of the 6,174.947 acres of shellfishing beds in the Mystic River Subwatershed (including areas that extend into open water and areas not specifically included in this assessment report) is as follows:

DMF Classification Type	MA DEP Use Support Status	DMF Area (acres)	% of total DMF acreage
Conditionally Restricted	Non-support	439.508	7%
Prohibited	Non-support	5,658.649	92%
Management Closure	Not Assessed	76.79	1%

The status of the shellfishing beds in the Neponset River Subwatershed (including areas that extend into open water and areas not specifically included in this assessment report) is as follows:

DMF Classification Type	MA DEP Use Support Status	DMF Area (acres)	% of total DMF acreage
Prohibited	Non-support	476.576	100%

The status of the 26,667.74 acres of shellfishing beds in the Weymouth and Weir Subwatershed (including areas that extend into open water and areas not specifically included in this assessment report) is as follows:

DMF Classification Type	MA DEP Use Support Status	DMF Area (acres)	% of total DMF acreage
Approved	Support	1.567	<1%
Conditionally Restricted	Non-support	1,955.917	7%
Prohibited	Non-support	20,563.160	77%
Management Closure	Not Assessed	4,147.094	16%

The status of the 21,215.25 acres of shellfishing beds (including areas that extend into open-water not specifically included in this assessment report) in the Boston Harbor (Proper) is as follows:

DMF Classification Type	MA DEP Use Support Status	DMF Area (acres)	% of total DMF acreage
Prohibited	Non-support	12,568.984	59%
Management Closure	Not Assessed	8,646.263	41%

Individual DMF management area classifications are provided in Appendix E of this assessment report. It should be noted that their areas are defined in acres of shellfishing habitat.

PRIMARY AND SECONDARY CONTACT RECREATIONAL USES – RIVERS, ESTUARIES/COASTAL EMBAYMENTS, AND LAKES

The *Primary Contact Recreational Use* is supported when conditions are suitable (fecal coliform bacteria densities, pH, temperature, turbidity and aesthetics meet the Surface Water Quality Standards) for any recreational or other water related activity during which there is prolonged and intimate contact with the water with a significant risk of ingestion. Activities include, but are not limited to, wading, swimming, diving, surfing and water skiing. 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 incident to shoreline activities. For lakes, macrophyte cover and/or transparency (Secchi disk depth) data are evaluated to assess the status of the recreational uses.

Mystic River Subwatershed –Recreational Use Summary

No waterbodies assessed in the Mystic River Subwatershed support the *Primary Contact Recreational Use*. Alewife Brook and the Mystic River from the outlet of Lower Mystic Lake to the Amelia Earhart Dam are impaired (partial or non-support) for both recreational uses. The lower 6.6 miles of the Aberjona River are impaired for the *Primary Contact Recreational Use* and support the *Secondary Contact Recreational Use*. Sources where known include combined sewer overflows, urban runoff/storm sewers, and industrial point sources. The lower 2.6 miles of the Aberjona River and the Malden River are currently not assessed.

<i>Rivers- Primary Contact Recreational Use</i>
5.4 miles PARTIAL SUPPORT
8.85 miles NON-SUPPORT
4.5 miles NOT ASSESSED
<i>Rivers- Secondary Contact Recreational Use</i>
6.6 miles SUPPORT
5.4 miles PARTIAL SUPPORT
2.25 miles NON-SUPPORT
4.5 miles NOT ASSESSED

Chelsea Creek is assessed as non-support for the *Primary and Secondary Contact Recreational uses* due to oil & grease and taste, odor & color. Sources of impairment include multiple oil spills, urban runoff/storm sewers, and industrial point sources. The Island End portion of the Mystic River (0.03 square miles) is impaired (non-support) for both recreational uses due to oil & grease and taste, odor & color from the former Eastern Gas and Fuel Company.

<i>Estuaries- Primary Contact Recreational Use</i>
0.66 square miles PARTIAL SUPPORT
0.54 square miles NON-SUPPORT
<i>Estuaries- Secondary Contact Recreational Use</i>
0.66 miles PARTIAL SUPPORT
0.54 miles NON-SUPPORT

Additionally, 0.01 square miles of the Mystic River in the vicinity of the Somerville Marginal CSO Treatment Facility is assessed as non-support due to elevated bacteria counts. The remaining 0.66

square miles of the Mystic River are assessed as partial support due to elevated fecal coliform bacteria counts associated with CSOs.

Only one of the ten lakes in the Mystic River Subwatershed has been surveyed for variables (i.e., bacteria data, macrophyte cover, transparency) used to assess the *Primary Contact Recreational Use*. Winter Pond is impaired (partial support) due to turbidity. While sources of impairment are unknown, urban runoff/storm sewers are suspected. Two lakes (110 acres) support the *Secondary Contact Recreational Use*. The remaining 279.9 acres are currently not assessed.

<i>Lakes- Primary Contact Recreational Use</i> 17 acres PARTIAL SUPPORT 364.9 acres NOT ASSESSED <i>Lakes- Secondary Contact Recreational Use</i> 110 acres SUPPORT 279.9 acres NOT ASSESSED

Neponset River Subwatershed –Recreational Use Summary

Twelve rivers in the Neponset River Subwatershed support both the *Primary* and *Secondary Contact Recreational* uses. Fecal coliform bacteria data were used to determine that four rivers, totaling 5.1+ miles, did not support the recreational uses. Germany Brook and the East Branch Neponset River are assessed as non-support for the *Primary Contact Recreational Use*. The Neponset River from the Hollingsworth and Vose Dam to the Tilestone Dam and Mother Brook are also impaired (non-support) for the *Primary Contact Recreational Use*. Seven rivers are impaired (partial or non-support) for the *Secondary Contact Recreational Use*. Sources of contamination, where known, include urban runoff/storm sewers, Sanitary Sewer Overflow (SSO), CSO, and illicit sewer connections/underdrains.

<i>Rivers- Primary Contact Recreational Use</i> 42.6 miles SUPPORT 11.1 miles PARTIAL SUPPORT 15.4 miles NON-SUPPORT 17.19 miles NOT ASSESSED <i>Rivers- Secondary Contact Recreational Use</i> 51.8 miles SUPPORT 13.1 miles PARTIAL SUPPORT 9.1 miles NON-SUPPORT 12.29 miles NOT ASSESSED

The estuarine portion of the Neponset River is assessed as non-support for both the *Primary* and *Secondary Contact Recreational Use* due to elevated bacteria counts associated with urban runoff/ storm sewers and CSOs. Gulliver Creek is currently not assessed due to the lack of available bacteria data.

Seven of the 33 lakes in the Neponset River Subwatershed were assessed for the recreational uses; none support the *Primary Contact Recreational Use* and only one supports the *Secondary Contact Recreational Use* (Figure 3). With the exception of three lakes (Turners Pond, Milton, Cobbs Pond, Walpole, and Ganawatte Farm Pond, Walpole/Sharon/Foxborough) that DWM sampled in 1999, assessments are based on 1994 macrophyte mapping. Turners Pond in Milton is assessed as partial support for the *Primary Contact Recreational Use* and support for the *Secondary Contact Recreational Use*. The other six lakes are assessed as non-support for both recreational uses due to the presence of non-native (exotic) plant species, noxious aquatic plants, and visual observations of turbidity. Sources of impairment are unknown, but nutrient enrichment from storm water runoff is likely to contribute to increased macrophyte productivity, resulting in impairments to this use.

<i>Lakes- Primary Contact Recreational Use</i> 12 acres PARTIAL SUPPORT 397 acres NON-SUPPORT 1,325 acres NOT ASSESSED <i>Lakes- Secondary Contact Recreational Use</i> 11 acres SUPPORT 397 acres NON-SUPPORT 1,325 acres NOT ASSESSED

Weymouth and Weir Subwatershed –Recreational Use Summary

The *Primary* and *Secondary Contact Recreational* uses are impaired (partial or non-support) for the entire length of four rivers in the Weymouth and Weir Subwatershed (Figure 3). Old Swamp River is assessed as partial support for both uses while the Monatiquot and Weymouth Back rivers and Town Brook are assessed as non-support. The Weir River is impaired (partial support) for the *Primary Contact Recreational Use* while the *Secondary Contact Recreational Use* is assessed as support. The majority

<i>Rivers- Primary Contact Recreational Use</i> 7.2 miles PARTIAL SUPPORT 8.3 miles NON-SUPPORT 17.7 miles NOT ASSESSED <i>Rivers- Secondary Contact Recreational Use</i> 2.8 miles SUPPORT 4.4 miles PARTIAL SUPPORT 8.3 miles NON-SUPPORT 17.7 mile NOT ASSESSED

(53%) of the river miles in the Weymouth and Weir Subwatershed are not assessed.

The Weymouth Back River, from the Old Colony Railroad tracks to its mouth between Lower Neck and Wampatuck Road in Hingham, supports both recreational uses. The Weymouth Fore

<i>Estuaries- Primary and Secondary Contact Recreational uses</i> 1.9 square miles SUPPORT 3.3 square miles NON-SUPPORT 1.5 square miles NOT ASSESSED

River is assessed as partial support for both the *Primary* and *Secondary Contact Recreational* uses due to elevated bacteria counts. The source of the bacteria contamination is currently unknown, however, SSOs and Smelt Brook Siphon overflows, which are common in this subwatershed, are suspected.

None of the eight lakes in the Weymouth and Weir Subwatershed have been recently surveyed for variables (i.e., bacteria data, macrophyte cover, transparency) used to assess the *Primary* and *Secondary Contact Recreational* uses, therefore, the 373.3 acres of lakes are currently not assessed.

Boston Harbor (Proper) –Recreational Use Summary

Seventy percent (33.32 square miles) of the estuarine areas in Boston Harbor (Proper) support both the *Primary* and *Secondary Contact Recreational* uses (Figure 3). Two waterbodies (Boston Inner Harbor and Dorchester Bay) are

<i>Estuaries- Primary and Secondary Contact Recreational uses</i> 33.32 square miles SUPPORT 6.1 square miles PARTIAL SUPPORT 4.7 square miles NON-SUPPORT 3.4 square miles NOT ASSESSED

assessed as partial support for both recreational uses. Pleasure Bay is assessed as partial support for the *Primary Contact Recreational Use*, but supports *Secondary Contact Recreational Use*. Only the Quincy Bay segment that includes Wollaston Beach is assessed as non-support for both recreational uses. This area received direct discharges of storm water and treated sanitary discharge from the former Nut Island Waste Water Treatment Plant (WWTP). The City of Quincy has undertaken extensive projects to survey, repair, and rehabilitate the sewer and storm drain system. The Nut Island discharge is now conveyed through an inter-basin tunnel to the Deer Island WWTP and discharged to Massachusetts Bay.

AESTHETICS USE – RIVERS, ESTUARIES/COASTAL EMBAYMENTS, LAKES

The Aesthetics Use is supported when surface waters are free from pollutants in concentrations or combinations that settle to form objectionable deposits; float as debris, scum or other matter to form nuisances; produce objectionable odor, color, taste or turbidity; or produce undesirable or nuisance species of aquatic life.

Mystic River Subwatershed –Aesthetics Use Summary

One mile of the Mystic River, from the outlet of Lower Mystic Lake to the confluence with Alewife Brook, and the lower 6.6 miles of the Aberjona River support the *Aesthetics Use* (Figure 4). Alewife Brook and the Malden River are assessed as non-support for the *Aesthetics Use* due to objectionable deposits, trash & debris, taste, odor, & color, and oil & grease. Sources include urban runoff/storm sewers and CSOs.

<i>Rivers</i> 7.6 miles SUPPORT 4.15 miles NON-SUPPORT 7 miles NOT ASSESSED

Chelsea River is a designated port area and its banks are home to numerous oil tank farms. The entire length of the river is assessed as non-support for the *Aesthetics Use* due to oil & grease, taste, odor & color, and trash & debris. Turbidity is also suspected. Sources of impairment include urban runoff/storm

<i>Estuaries</i> 0.53 square miles NON-SUPPORT 0.67 square miles NOT ASSESSED

sewers, industrial point sources, spills, and CSOs. The Island End portion of the Mystic River is also assessed as non-support due to noxious odors and sheens emanating from contaminated sediments. The source of this impairment is an industrial point source, the former Eastern Gas & Fuel Company.

Winter Pond and Lower Mystic Lake are assessed as support for the *Aesthetics Use* (Figure 4). No current information is available to assess the remaining lakes in this subwatershed.

<i>Lakes</i> 110 acres SUPPORT 271.9 acres NOT ASSESSED

Neponset River Subwatershed – Aesthetics Use Summary

In the Neponset River Subwatershed, 53% of the river miles support the *Aesthetics Use* (Figure 4). Seven segments are impaired (partial or non-support) for this use. Trash & debris and taste, odor & color associated with storm water runoff are the most common cause of impairment in this subwatershed.

<i>Rivers</i>
46.1 miles SUPPORT
14.2 miles PARTIAL SUPPORT
5.8 miles NON-SUPPORT
20.19 miles NOT ASSESSED

The estuarine area of the Neponset River is impaired (partial support) for the *Aesthetics Use* due to poor water clarity (turbidity) and trash and debris associated with urban runoff/storm sewers. Gulliver Creek is currently not assessed.

Only seven of the lakes in the Neponset River Subwatershed are assessed for the *Aesthetics Use* (Figure 4). Only Turners Pond in Walpole supports the *Aesthetics Use*. Six lakes are impaired (non-support) for this use due to noxious aquatic plants, non-native (exotic) plants, and/or turbidity. Sources of impairment are currently unknown, but nutrient inputs from storm water runoff most likely contribute to increased macrophyte growth.

<i>Lakes</i>
11 acres SUPPORT
397 acres NON-SUPPORT
1,325 acres NOT ASSESSED

Weymouth and Weir Subwatershed – Aesthetics Use Summary

Due to too little current information, the majority of the Weymouth and Weir Subwatershed (8 rivers, three estuarine areas, and all eight lakes) is currently not assessed for the *Aesthetic Use* (Figure 4). The *Aesthetics Use* is assessed as support for the 11.5 river miles and the estuarine area of the Weymouth Back River downstream from the Old Colony Railroad tracks.

Boston Harbor (Proper) – Aesthetics Use Summary

73 % of the estuarine areas (34.6 square miles) in Boston Harbor (Proper) support the *Aesthetics Use* (Figure 4). Dorchester Bay is impaired (partial support) for the *Aesthetics Use* due to objectionable deposits of trash and debris associated with storm water runoff. 8.32 square miles (17%) are currently not assessed for this use.

RECOMMENDATIONS – Rivers, Estuaries/Coastal Embayments, and Lakes

In addition to specific issues for the individual segments, the evaluation of current water quality conditions in the Boston Harbor Watershed has revealed the need for the following:

- Conduct a preliminary analysis to prioritize the need for collecting quality-assured data to fully assess all designated uses of segments in the Boston Harbor Watershed. Follow the strategy presented in the United States Geological Survey (USGS) Statewide Water-Quality Network Report for examples of the monitoring necessary to completely assess all uses (USGS 2001).
- Inspections should be conducted of facilities with general storm water permits to determine if storm water protection plans have been developed and implemented.
- Conduct in lake monitoring (e.g., fecal coliform bacteria, Secchi disk depth) to assess the Primary and Secondary Contact Recreational uses and collect water chemistry data (e.g., dissolved oxygen and temperature profiles, total phosphorus, chlorophyll a) to assess the Aquatic Life Use. Conduct all monitoring under an approved quality assurance project plan (QAPP). As part of any lake water quality evaluation, include mapping of macrophyte cover in order to evaluate the status of the Aquatic Life, Recreational and Aesthetic uses.
- Track the progress of illegal sewer connection identification and removal programs being implemented throughout the Boston Harbor Watershed.

- Track the progress of storm water management plans and implementation of best management practices as required under the National Pollutant Discharge Elimination System (NPDES) permitting program.
- Work with local citizens, watershed associations, and the EOE Team to remove/reduce the trash and debris through the Boston Harbor Watershed and support the Boston Harbor Marine Debris Salvage Program
- Track the progress of sewer separation projects being conducted by the Massachusetts Water Resource Authority (MWRA) and the municipalities throughout the Watershed. Conduct bacteria monitoring to determine the effectiveness of these projects.
- Track the progress of CSO abatement projects in the Mystic River Subwatershed and Boston Harbor Proper and conduct bacteria monitoring to determine the effectiveness of these projects.

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BOSTON HARBOR WATERSHED AQUATIC LIFE USE ASSESSMENT SUMMARY RIVERS AND ESTUARIES/COASTAL EMBAYMENTS

Details of *Aquatic Life Use* Impairments of river and estuary segments in the Boston Harbor Watershed

MYSTIC RIVER SUBWATERSHED

WBID	Use Assessment
MA71-01	Not Assessed upper 2.6 miles NON-SUPPORT lower 6.6 miles
MA71-03	NON-SUPPORT 0.03 square miles
MA71-04	SUPPORT 0.67 square miles NON-SUPPORT
MA71-06	NON-SUPPORT

Causes (Sources)
Organic enrichment/low DO, other habitat alterations, unknown (Urban runoff/storm sewers) Priority organics, PAHs, metals, other inorganics (Contaminated sediments) Organic enrichment/low DO, nutrients, metals (Urban runoff/storm sewers, CSO Suspected: Illicit sewer connections) Priority organics, unknown, metals, turbidity (Urban runoff/storm sewers, industrial point sources, contaminated sediments, spills)

NEPONSET RIVER SUBWATERSHED

WBID	Use Assessment
MA73-05	NON-SUPPORT
MA73-08	PARTIAL SUPPORT
MA73-15	PARTIAL SUPPORT
MA73-19	PARTIAL SUPPORT
MA73-21	PARTIAL SUPPORT
MA73-26	PARTIAL SUPPORT
MA73-28	PARTIAL SUPPORT
MA73-32	PARTIAL SUPPORT
MA73-33	NON-SUPPORT

Causes (Sources)
Unknown, metals, organic enrichment (Unknown, industrial point source, contaminated sediments) Unknown, flow alteration (Unknown, Suspected: water withdrawal) pH, nutrients (Unknown) Unknown, low flow (Unknown) Unknown, nutrients, low flow (Unknown) Nutrients, habitat alteration, low pH (Hydromodification, unknown Suspected: urban runoff/storm sewers) Organic enrichment/low DO, nutrients, flow alteration (Unknown, hydromodification Suspected: urban runoff/storm sewers) Unknown, nutrients, pH (Unknown) Nutrients (Municipal point source -illicit connections/underdrains)

WEYMOUTH AND WEIR SUBWATERSHED

WBID	Use Assessment
MA74-03	Not Assessed upper 2.4 miles PARTIAL SUPPORT lower 2.0 miles
MA74-08	NON-SUPPORT
MA74-09	NON-SUPPORT

Causes (Sources)
Unknown (Unknown; Suspected: SSO) Unknown, habitat alteration (Unknown, Hydromodification Suspected: SSO, urban runoff/storm sewers) Habitat alteration, unknown (Hydromodification, unknown)

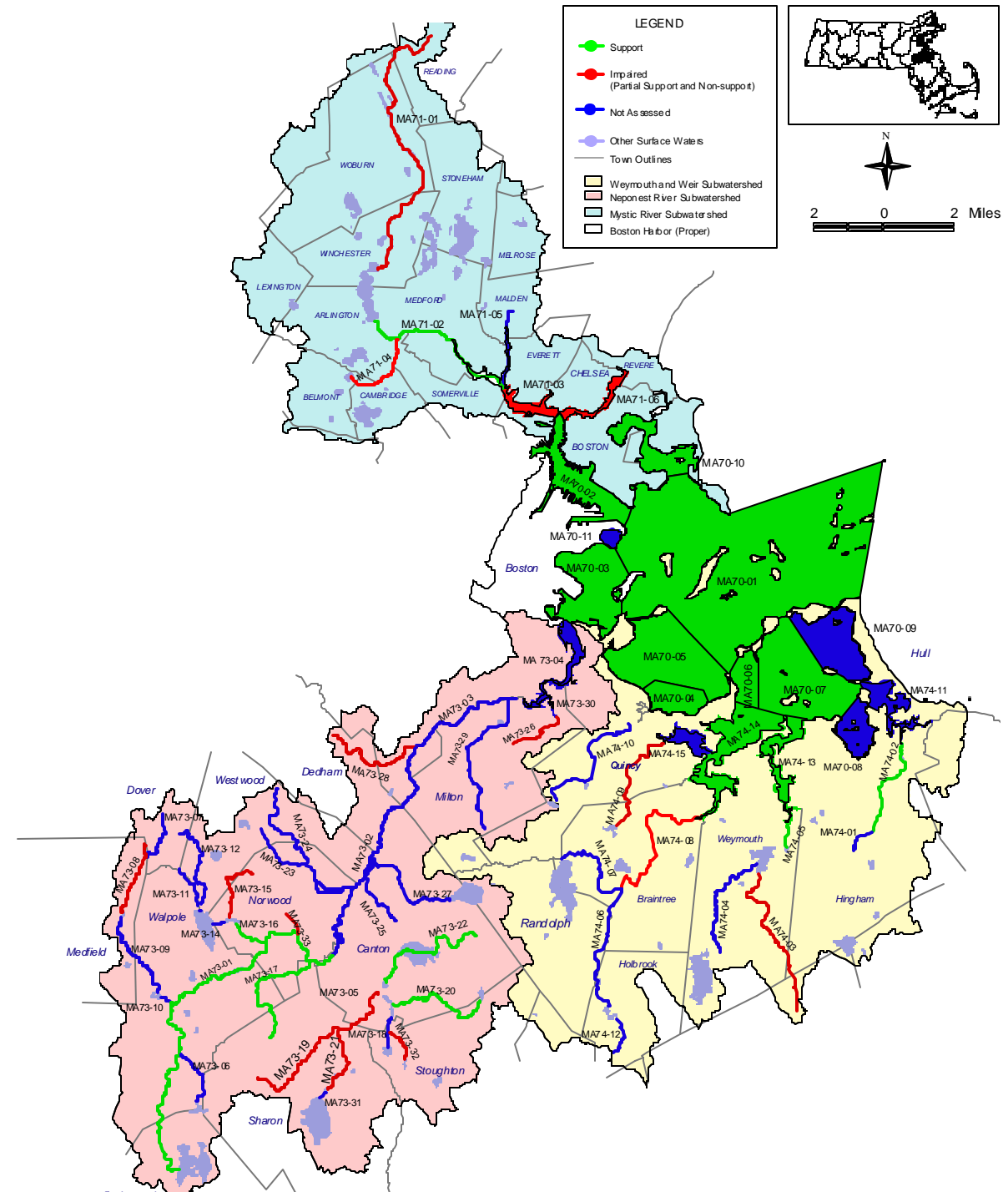


Figure 1. Boston Harbor Watershed *Aquatic Life Use* Assessment Summary— Rivers and Estuaries

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BOSTON HARBOR WATERSHED AQUATIC LIFE USE ASSESSMENT SUMMARY LAKES

Details of *Aquatic Life Use* Impairment for Lakes in the Boston Harbor Watershed

MYSTIC RIVER SUBWATERSHED

WBID	Use Assessment	Causes (Sources)
MA71027	NON-SUPPORT	Unknown, organic enrichment/low DO, salinity (salt water)
MA71040	PARTIAL SUPPORT	Exotic Species
MA71047	PARTIAL SUPPORT	Unknown, nutrients

NEPONSET RIVER SUBWATERSHED

WBID	Use Assessment	Causes (Sources)
MA73003	PARTIAL SUPPORT	Exotic species
MA73005	PARTIAL SUPPORT	Exotic species
MA73008	NON-SUPPORT	Exotic species
MA73009	NON-SUPPORT	Organic enrichment/low DO, nutrients
MA73018	PARTIAL SUPPORT	Exotic species
MA73028	PARTIAL SUPPORT	Exotic species
MA73030	PARTIAL SUPPORT	Exotic species
MA73034	PARTIAL SUPPORT	Exotic species
MA73037	NON-SUPPORT	Organic enrichment/low DO, noxious aquatic plants
MA73039	NON-SUPPORT	Exotic species
MA73040	PARTIAL SUPPORT	Exotic species
MA73043	PARTIAL SUPPORT	Exotic species
MA73048	PARTIAL SUPPORT	Exotic species
MA73055	PARTIAL SUPPORT	Exotic species
MA73056	PARTIAL SUPPORT	Exotic species
MA73058	PARTIAL SUPPORT	Noxious aquatic plants, exotic species
MA73059	NON-SUPPORT	Organic enrichment/low DO, nutrients
MA73065	NON-SUPPORT	Exotic species

WEYMOUTH AND WEIR SUBWATERSHED

All lakes in the Weymouth and Weir Subwatershed are currently not assessed for the *Aquatic Life Use*.

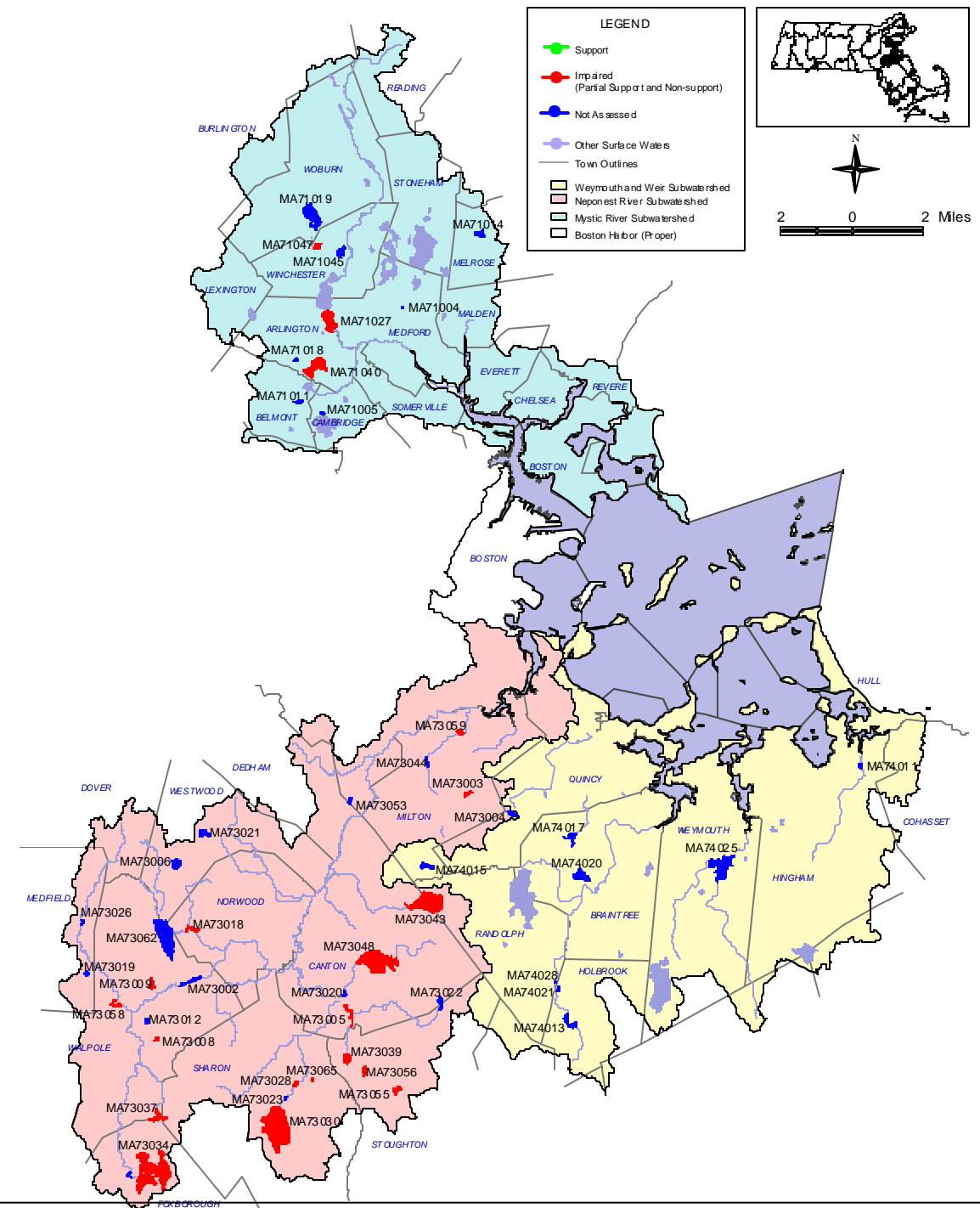


Figure 2. Boston Harbor Watershed *Aquatic Life Use* Assessment Summary— Lakes

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BOSTON HARBOR WATERSHED FISH CONSUMPTION USE ASSESSMENT SUMMARY RIVERS, ESTUARIES/COASTAL EMBAYMENTS, AND LAKES

In July 2001, the Massachusetts Department of Public Health (MDPH) issued new consumer advisories on fish consumption and mercury contamination (MDPH 2001b).

The MDPH “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, MDPH 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 (MDPH 2001b).”

Additionally, MDPH “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 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 (MDPH 2001b).”

MDPH’s statewide advisory does not include fish stocked by MassWildlife or farm-raised fish sold commercially. The advisory encompasses all freshwaters in Massachusetts and, therefore, the *Fish Consumption Use* for lakes in the Boston Harbor Watershed cannot be assessed as support or partial support.

MDPH issued five site-specific lake advisories in the Boston Harbor Watershed:

NAME	WBID	CAUSE
Clay Pit Pond	MA71011	Chlordane
Bird Pond	MA73002	PCBs
Willet Pond	MA73062	Mercury
Sylvan Lake	MA74021	Pesticides
Ice House Pond	MA74028	Pesticides

Additionally, MDPH issued site-specific advisories for the following river and estuary segments in the Boston Harbor Watershed:

NAME	WBID	USE ASSESSMENT	CAUSE
Mystic River	MA71-03	NON-SUPPORT	Priority organics
Chelsea River	MA71-06	NON-SUPPORT	Priority organics
Neponset River	MA73-01	Not Assessed upper 9 miles NON-SUPPORT lower 4.7 miles	PCBs
Neponset River	MA73-02	NON-SUPPORT	PCBs
Neponset River	MA73-03	NON-SUPPORT upper 0.9 miles Not Assessed lower 2.8 miles	PCBs
Neponset River	MA73-04	NON-SUPPORT	Priority organics
Cochato River	MA74-06	NON-SUPPORT	Pesticides
Boston Harbor	MA70-01	NON-SUPPORT	Priority organics
Boston Inner Harbor	MA70-02	NON-SUPPORT	Priority organics
Dorchester Bay	MA70-03	NON-SUPPORT	Priority organics
Quincy Bay	MA70-04	NON-SUPPORT	Priority organics
Quincy Bay	MA70-05	NON-SUPPORT	Priority organics
Pleasure Bay	MA70-11	NON-SUPPORT	Priority organics

All sources of contamination are unknown, although mercury contamination is believed to be due to atmospheric deposition.

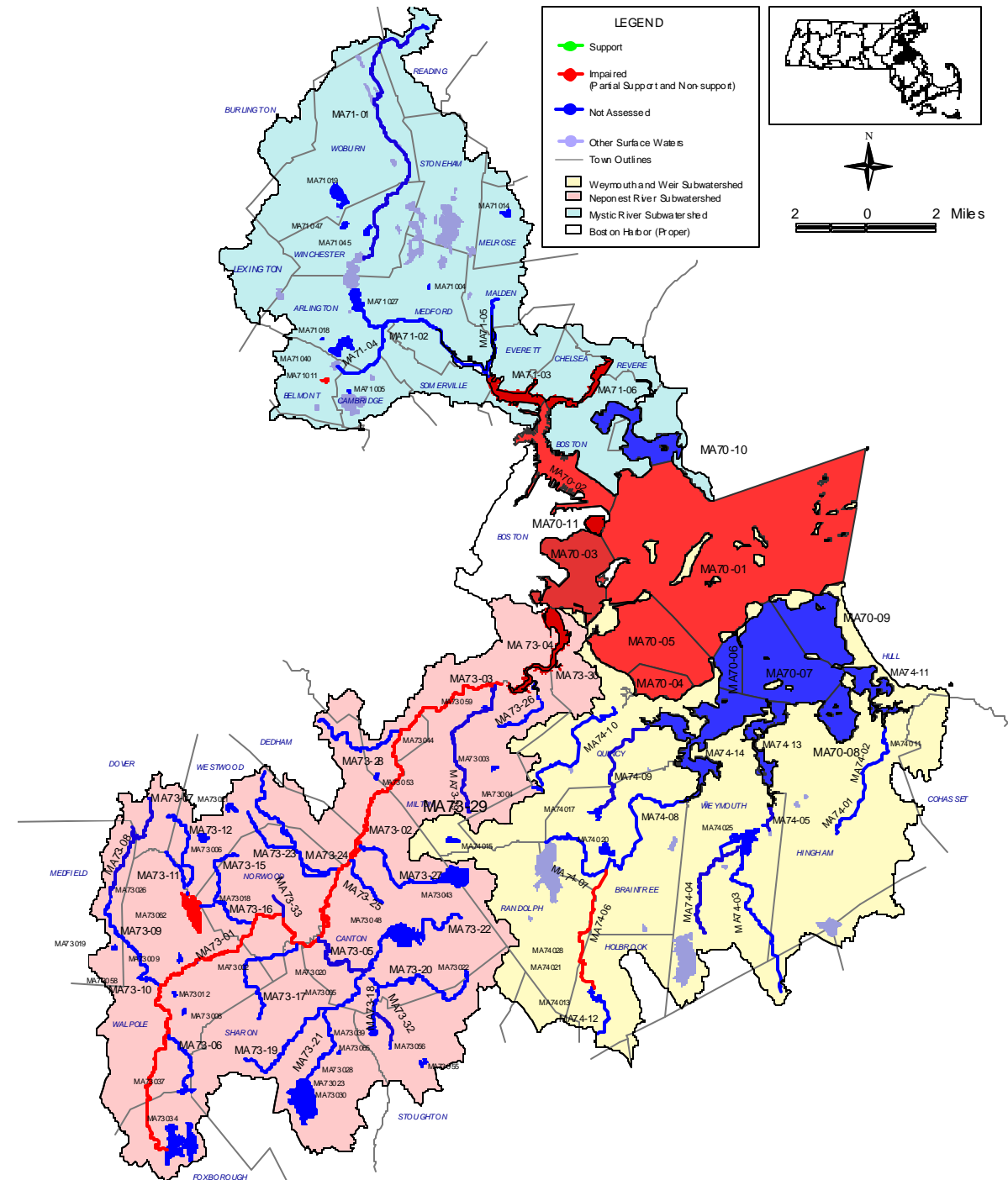
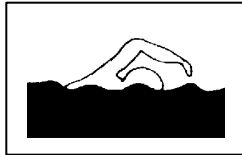
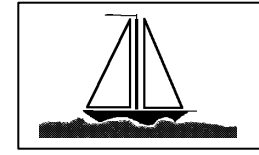


Figure 3. Boston Harbor Watershed *Fish Consumption Use* Assessment Summary—Rivers, Estuaries, and Lakes
Boston Harbor Watershed 1999 Water Quality Assessment Report
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BOSTON HARBOR WATERSHED PRIMARY AND SECONDARY CONTACT RECREATIONAL USE ASSESSMENT SUMMARY RIVERS, ESTUARIES/COASTAL EMBAYMENTS, AND LAKES



Details of Recreational Use Impairments for the Boston Harbor Watershed

1°= Primary Contact Recreation Use
2°=Secondary Contact Recreation Use

MYSTIC RIVER SUBWATERSHED

WBID	Use Assessment	Cause (Sources)
MA71-01	1°- NON-SUPPORT (6.6 miles) 2°- SUPPORT (6.6 miles) 1, 2°-Not Assessed (2.6 miles)	Pathogens (Unknown; Suspected: Illicit sewer connections, waterfowl)
MA71-02	1, 2°- PARTIAL SUPPORT	Pathogens (CSO; Suspected: Urban runoff/storm sewers)
MA71-03	1, 2°- PARTIAL SUPPORT 0.66 square miles 1, 2°- NON-SUPPORT 0.04 square miles	Pathogens (CSO) Pathogens (CSO)
MA71-04	1, 2°- NON-SUPPORT	Pathogens (CSO; Suspected: Illicit sewer connections)
MA71-06	1, 2°- NON-SUPPORT	Pathogens (Oil & grease, taste, odor, & color, unknown, turbidity, pathogens) (Urban runoff/storm sewers, industrial point source, spills, CSO)
MA71047	1°- PARTIAL SUPPORT 2°- SUPPORT	Turbidity (Unknown)

NEPONSET RIVER SUBWATERSHED

WBID	Use Assessment	Cause (Sources)
MA73-02	1, 2°- PARTIAL SUPPORT	Pathogens (Urban runoff/storm sewers)
MA73-03	1, 2°- NON-SUPPORT	Pathogens (Urban runoff/storm sewers)
MA73-04	1, 2°- NON-SUPPORT	Pathogens (Urban runoff/storm sewers)
MA73-05	1°- NON-SUPPORT 2°- PARTIAL SUPPORT	Pathogens (Urban runoff/storm sewers) Pathogens (Urban runoff/storm sewers)
MA73-15	1°- NON-SUPPORT 2°- PARTIAL SUPPORT	Pathogens (Urban runoff/storm sewers) Pathogens (Urban runoff/storm sewers)
MA73-16	1°- NON-SUPPORT 2°- SUPPORT	Pathogens (SSO)
MA73-26	1, 2°- PARTIAL SUPPORT	Pathogens (Municipal point source, SSO, urban runoff/storm sewers)
MA73-28	1°- PARTIAL SUPPORT 2°- SUPPORT	Pathogens (Urban runoff/storm sewers)
MA73-29	1, 2°- NON-SUPPORT	Pathogens (Illicit connections, municipal point source)
MA73-33	1, 2°- NON-SUPPORT	Pathogens (Illicit connections/underdrains)
MA73009	1, 2°- NON-SUPPORT	Noxious aquatic plants, turbidity (Unknown)
MA73021	1, 2°- NON-SUPPORT	Noxious aquatic plants (Unknown)
MA73034	1, 2°- NON-SUPPORT	1° exotic species, turbidity, 2° Exotic species, (Unknown)
MA73037	1, 2°- NON-SUPPORT	1° Noxious aquatic plants, turbidity, 2° noxious aquatic plants, (Unknown)
MA73039	1, 2°- NON-SUPPORT	Exotic species (Unknown)
MA73059	1°- PARTIAL SUPPORT 2°- SUPPORT	Turbidity (Unknown)
MA73065	1, 2°- NON-SUPPORT	Exotic species (Unknown)

WEYMOUTH AND WEIR SUBWATERSHED

WBID	Use Assessment	Cause (Sources)
MA74-02	1°- PARTIAL SUPPORT 2°- SUPPORT	Pathogens (Unknown)
MA74-03	1, 2°- PARTIAL SUPPORT	Pathogens (SSO)
MA74-05	1, 2°- NON-SUPPORT	Pathogens (SSO)
MA74-08	1, 2°- NON-SUPPORT	Pathogens (Unknown, urban runoff/storm sewers, SSO)
MA74-09	1, 2°- NON-SUPPORT	Pathogens (Unknown; Suspected: Urban runoff/storm sewers)
MA74-14	1, 2°- PARTIAL SUPPORT	Pathogens (SSO)

Boston Harbor (Proper)

WBID	Use Assessment	Cause (Sources)
MA70-03	1, 2°- PARTIAL SUPPORT	Pathogens (CSO)
MA70-05	1, 2°- NON-SUPPORT	Pathogens (Urban runoff/storm sewers, municipal point source)
MA70-10	1, 2°- PARTIAL SUPPORT	Pathogens (Unknown; Suspected: Urban runoff/storm sewers)
MA70-11	1°- PARTIAL SUPPORT 2°- SUPPORT	Pathogens (Unknown; Suspected: Urban runoff/storm sewers)

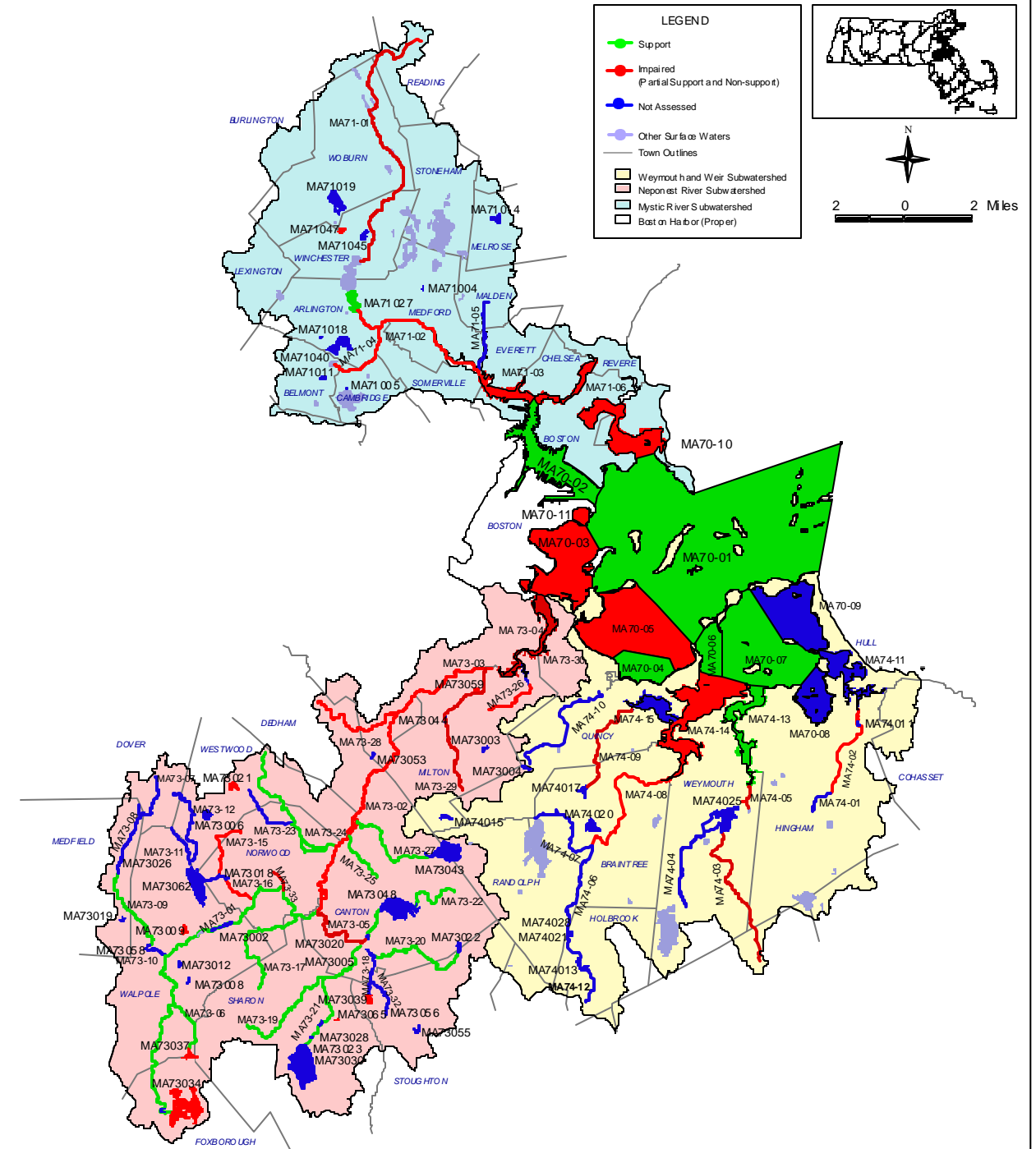


Figure 4. Boston Harbor Watershed Primary and Secondary Contact Recreational Use Assessment Summary – Rivers, Estuaries, and Lakes

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BOSTON HARBOR WATERSHED AESTHETICS USE ASSESSMENT SUMMARY RIVERS, ESTUARIES/COASTAL EMBAYMENTS, AND LAKES

Details of *Aesthetics Use* Impairment for the Boston Harbor Watershed

MYSTIC RIVER SUBWATERSHED

WBID	Use Assessment	Causes (Sources)
MA71-03	NON-SUPPORT 0.03 miles	Odors, oil sheens (Municipal point source)
MA71-04	Not Assessed 0.67 miles	
MA71-05	NON-SUPPORT	Objectionable deposits, taste and odor, oil & grease (Urban runoff/storm sewers, CSO)
MA71-06	NON-SUPPORT	Objectionable deposits, taste and odor, oil & grease (Urban runoff/storm sewers)
MA71-06	NON-SUPPORT	Oil & grease, taste and odor, unknown, trash and debris, turbidity (Urban runoff/storm sewers, industrial point sources, spills, CSO)

NEPONSET RIVER SUBWATERSHED

WBID	Use Assessment	Causes (Sources)
MA73-02	PARTIAL SUPPORT	Trash and debris (Urban runoff/storm sewers)
MA73-03	NON-SUPPORT	Trash and debris (Urban runoff/storm sewers)
MA73-04	PARTIAL SUPPORT	Trash and debris (Urban runoff/storm sewers)
MA73-15	PARTIAL SUPPORT	Color, trash and debris (Urban runoff/storm sewers; Suspected: landfill)
MA73-16	PARTIAL SUPPORT	Trash and debris, odors (Urban runoff/storm sewers)
MA73-26	NON-SUPPORT	Trash and debris, sedimentation (Urban runoff/storm sewers)
MA73-28	PARTIAL SUPPORT	Trash and debris, odors (Urban runoff/storm sewers)
MA73-33	NON-SUPPORT	Taste, odor, and color (Illicit connections/underdrains)
MA73009	NON-SUPPORT	Noxious aquatic plants (Unknown)*
MA73021	NON-SUPPORT	Noxious aquatic plants (Unknown)*
MA73034	NON-SUPPORT	Exotic species, turbidity (Unknown)*
MA73037	NON-SUPPORT	Noxious aquatic plants, turbidity (Unknown)*
MA73039	NON-SUPPORT	Exotic species (Unknown)*
MA73065	NON-SUPPORT	Exotic species (unknown)*

Boston Harbor (Proper)

WBID	Use Assessment	Causes (Sources)
MA70-03	PARTIAL SUPPORT	Turbidity, suspended solids, trash and debris (CSO)

*A suspected source of lake impairments is urban runoff/storm sewers.

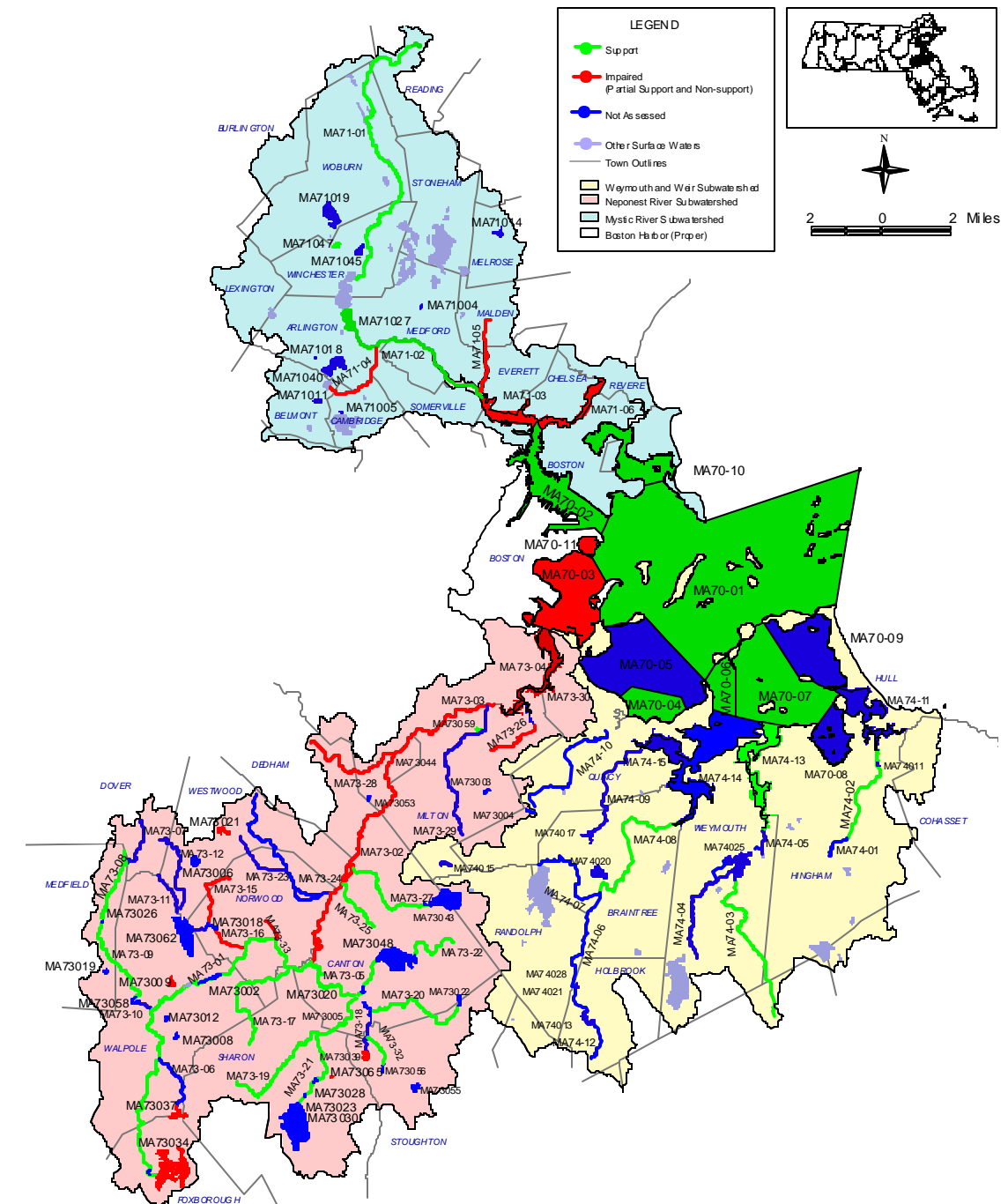


Figure 5. Boston Harbor Watershed *Aesthetics Use* Assessment Summary— Rivers, Estuaries, and Lakes

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