Appendix 10
Boston Harbor: Weymouth & Weir River Watershed and Coastal Drainage Area
Assessment and Listing Decision Summary

Final Massachusetts Integrated List of Waters for the Clean Water Act 2018/2020 Reporting Cycle

CN: 505.1

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2018/20 Cycle Impairment Changes

Waterbody	AU_ID	2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
Accord Brook	MA74-16	5	5	Dissolved Oxygen		Added
Accord Brook	MA74-17	4c	5	Benthic Macroinvertebrates		Added
Cochato River	MA74-06	5	5	Chlordane in Sediment		Added
Cochato River	MA74-06	5	5	Copper		Added
Cochato River	MA74-06	5	5	DDT in Sediment		Added
Cochato River	MA74-06	5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Changed
Cochato River	MA74-06	5	5	Fecal Coliform	R1_MA_2019_01	Changed
Cochato River	MA74-06	5	5	Lead		Added
Farm River	MA74-27	--	5	(Fish Passage Barrier*)		Added
Farm River	MA74-28	--	5	(Fish Passage Barrier*)		Added
Furnace Brook	MA74-10	5	5	Benthic Macroinvertebrates		Added
Great Pond	MA74012	--	4c	(Fish Passage Barrier*)		Added
Hingham Harbor	MA74-18	5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Changed
Hingham Harbor	MA74-18	5	5	Fecal Coliform	R1_MA_2019_01	Changed
Mill River	MA74-04	5	4a	Escherichia Coli (E. Coli)	R1_MA_2019_01	Changed
Mill River	MA74-04	5	4a	Fecal Coliform	R1_MA_2019_01	Changed
Mill River	MA74-04	5	4a	(Fish Passage Barrier*)		Added
Monatiquot River	MA74-08	5	5	(Curly-leaf Pondweed*)		Added
Monatiquot River	MA74-08	5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Changed
Monatiquot River	MA74-08	5	5	Fecal Coliform	R1_MA_2019_01	Changed
Monatiquot River	MA74-08	5	5	(Fish Passage Barrier*)		Added
Old Swamp River	MA74-03	5	4a	Escherichia Coli (E. Coli)	R1_MA_2019_01	Changed
Old Swamp River	MA74-03	5	4a	Fecal Coliform	R1_MA_2019_01	Changed
Old Swamp River	MA74-03	5	4a	(Fish Passage Barrier*)		Added
Smelt Brook	MA74-24	--	4c	(Fish Passage Barrier*)		Added
Smelt Brook Pond	MA74018	--	4c	(Fish Passage Barrier*)		Added
Town Brook	MA74-09	5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Changed
Town Brook	MA74-09	5	5	Fecal Coliform	R1_MA_2019_01	Changed
Town River Bay	MA74-15	5	5	Enterococcus	R1_MA_2019_01	Changed
Town River Bay	MA74-15	5	5	Fecal Coliform	R1_MA_2019_01	Changed
Unnamed Tributary	MA74-19	3	5	Temperature		Added
Weir River	MA74-02	5	5	(Curly-leaf Pondweed*)		Added
Weir River	MA74-02	5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Changed
Weir River	MA74-02	5	5	Fecal Coliform	R1_MA_2019_01	Changed
Weir River	MA74-02	5	5	(Fish Passage Barrier*)		Added
Weir River	MA74-11	5	5	Fecal Coliform	R1_MA_2019_01	Changed
Weymouth Back River	MA74-05	5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Changed

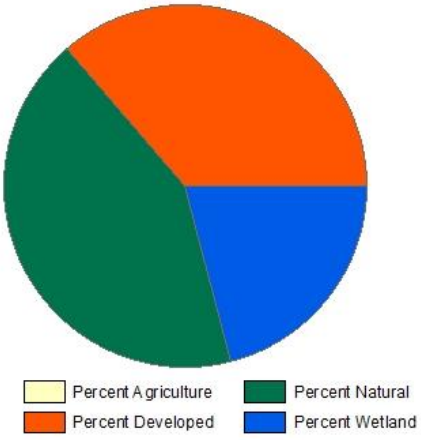
Waterbody	AU_ID	2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
Weymouth Back River	MA74-05	5	5	Fecal Coliform	R1_MA_2019_01	Changed
Weymouth Back River	MA74-13	5	5	Fecal Coliform	R1_MA_2019_01	Changed
Weymouth Fore River	MA74-14	5	5	Enterococcus	R1_MA_2019_01	Changed
Weymouth Fore River	MA74-14	5	5	Fecal Coliform	R1_MA_2019_01	Changed
Whitmans Pond	MA74025	5	5	(Curly-leaf Pondweed*)		Added
Whitmans Pond	MA74025	5	5	(Fanwort*)		Added
Whitmans Pond	MA74025	5	5	(Non-Native Aquatic Plants*)		Removed

Accord Brook (MA74-16)

Location:	Headwaters, outlet Accord Pond, Hingham to water supply intake (4131000-02S Accord Brook) south of South Pleasant Street, Hingham.
AU Type:	RIVER
AU Size:	3.2 MILES
Classification/Qualifier:	A: PWS, ORW

Accord Brook - MA74-16

Watershed Area: 3.883531 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	3.74	3.7	1.76	1.75
Agriculture	0.48%	0.48%	0.3%	0.31%
Developed	36.17%	36.2%	24.2%	24.19%
Natural	42.55%	42.29%	38.84%	38.75%
Wetland	20.8%	21.03%	36.66%	36.75%
Impervious Cover	12.35%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Dissolved Oxygen		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting

According to DMF biologists, Accord Pond (at the upstream end of this AU) "*MAY have been part of a river herring fishery, but way back before 1800. Mills and water supply actions may have stopped fish from reaching that far for over 300 years*" (Chase March 12, 2020). Although they also mention that there is typically no outflow over the Accord Pond Dam, given the tenuous evidence of a fishery, no impairment decision is being made at this time.

DFG conducted a fish survey (4036) upstream of the Rt 228 crossing (Hingham) in August 2012. The small sample (n=11) was 45% moderately tolerant redfin pickerel. MassDEP conducted water quality / benthic surveys (W2037/B0748) in the vicinity of Prospect St (Hingham) during summer 2009. A multiprobe was deployed for three 2-day periods and recorded low DO concentrations (mean of the daily DO minima = 0.20-2.24 mg/L, DO diel shifts <1.2 mg/L, DO max saturations = 8-50%; max temperature = 24.2 °C). There is a fair amount of wooded swamp a short way upstream of the site, so the low DO is likely influenced by natural wetland conditions. However, this location lies within the Zone II Wellhead Protection Area for multiple water supply wells belonging to the Towns of Norwell and Hingham. DO and temperature attended probe data were consistent with the deployed probe data. pH ranged from 5.7-6.0 SU (low pH is also often associated with wetland habitats). There were no violations of calculated ammonia criteria and the TP average concentration

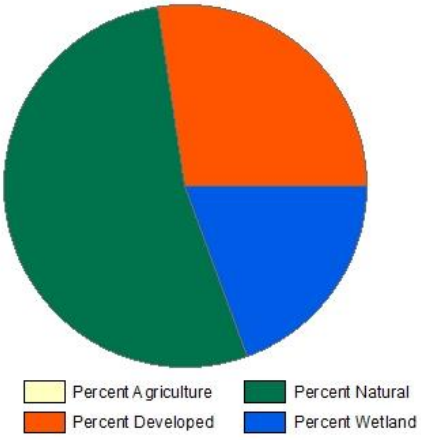
was 0.068 mg/L (n=5). There were no observations of excessive filamentous algae. The RBPIII status of the benthic sample was determined to be "Severely Impaired" (14% comparable) when compared to the reference (UniqueID: B0777, West Branch Palmer River, Narragansett Bay). The sample was lacking in taxa richness and presence of sensitive taxa, and was heavily dominated by the chironomid genus *Micropsectra* sp. This site was most severely impacted of all the 2009 benthic survey locations in the Weymouth and Weir basin.
The severely impaired RBPIII status of the benthic sample supports retaining the prior "Benthic Macroinvertebrates Bioassessments" impairment. Although low dissolved oxygen at the Prospect St crossing is likely influenced by natural wetland conditions, it is thought to be exacerbated by the baseflow depletion of groundwater withdrawals. A "Dissolved Oxygen" impairment is being added. The Aquatic Life Use of Accord Brook MA74-16 is assessed as Not Supporting.

Accord Brook (MA74-17)

Location:	From water supply intake (4131000-02S Accord Brook) south of South Pleasant Street, Hingham to mouth at inlet Triphammer Pond, Hingham.
AU Type:	RIVER
AU Size:	1.8 MILES
Classification/Qualifier:	B

Accord Brook - MA74-17

Watershed Area: 5.194078 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	5.04	3.59	2.16	1.53
Agriculture	0.36%	0.31%	0.25%	0.35%
Developed	27.32%	20.13%	19.84%	13.88%
Natural	52.9%	58.06%	45.38%	49.57%
Wetland	19.42%	21.5%	34.53%	36.2%
Impervious Cover	10.18%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	5	Benthic Macroinvertebrates		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting

MassDEP collected very limited water quality data at two stations on Accord Brook in 2009. The stream was observed to be flowing during seven visits (May-Sept.) at both the W2036 (South Pleasant St, Wompatuck State Park, Hingham) and W2035 (Union St, Wompatuck State Park, Hingham) stations. Attended probe measurements (temperature, pH, DO) were taken once at the upstream site and twice at the downstream site. Temperature was <20.0 °C and DO was 8.6-8.9 mg/L. pH was 6.0-6.6 SU. A benthic macroinvertebrate sample (B0747) was collected at the downstream location. The RBPIII status was determined to be "Moderately Impaired" (38% comparable) when compared to the reference (UniqueID: B0777, West Branch Palmer River, Narragansett Bay).

According to DMF biologists, the Triphammer Pond Dam (on the pond at the downstream end of this AU) is passable to river herring and American eel with only a minor obstruction. It received a passage score of 2 out of 10 (10 = no passage). Comments indicated the weir-pool ladder will function when flow is available. However, according to the 2004 Water Quality Assessment Report, this stream is often dewatered due to a water supply diversion at the upstream end of the AU.

Although field notes indicate the stream was "flowing" on seven visits in 2009, because the information is dated, discharge was not measured, and the water diversion at the upstream end of the AU is still in place, the

"Dewatering" impairment is being maintained. Additionally, an impairment is being added for “Benthic Macroinvertebrates Bioassessments” because of the moderately impaired RBPIII status of the sample from the Union St location. Due to both of these impairments, the Aquatic Life Use of Accord Brook MA74-17 is assessed as Not Supporting.

Accord Pond (MA74030)

Location:	Hingham/Norwell/Rockland (formerly reported as 2004 segment: Accord Pond MA94002).
AU Type:	FRESHWATER LAKE
AU Size:	103 ACRES
Classification/Qualifier:	A: PWS, ORW

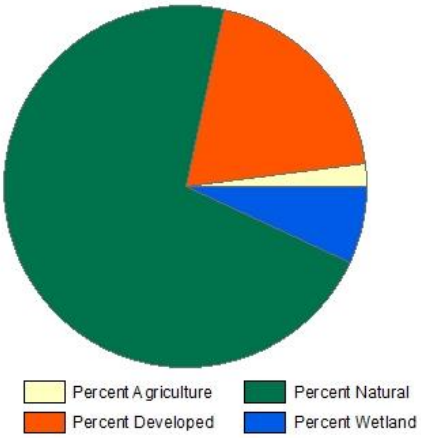
Fish, other Aquatic Life and Wildlife Use: Not Assessed
According to DMF biologists, Accord Pond "*MAY have been part of a river herring fishery, but way back before 1800. Mills and water supply actions may have stopped fish from reaching that far for over 300 years*" (Chase March 12, 2020). Although they also mention that there is typically no outflow over the Accord Pond Dam, given the tenuous evidence of a fishery, no impairment decision is being made at this time. With no other information available, the Aquatic Life Use of Accord Pond MA74030 is Not Assessed.

Blue Hill River (MA74-25)

Location:	Headwaters, perennial portion south of Route 93 on the Milton/Randolph border, to mouth at confluence with Farm River at the Randolph/Braintree border (where name changes to Farm River).
AU Type:	RIVER
AU Size:	2.9 MILES
Classification/Qualifier:	A: PWS, ORW

Blue Hill River - MA74-25

Watershed Area: 3.946157 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	3.95	3.52	1.65	1.54
Agriculture	2%	1.56%	3.18%	2.83%
Developed	19.63%	17.78%	19.25%	18.05%
Natural	71.5%	73.01%	62.09%	62.61%
Wetland	6.87%	7.65%	15.48%	16.51%
Impervious Cover	10.56%			

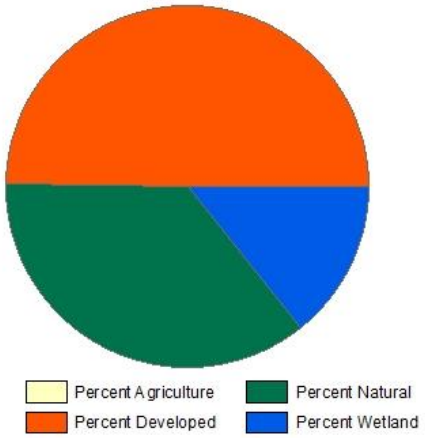
Fish, other Aquatic Life and Wildlife Use: Not Assessed
There are no recent data for Blue Hill River MA74-25, so the Aquatic Life Use is Not Assessed.

Cochato River (MA74-06)

Location:	Outlet Lake Holbrook, Holbrook to confluence with Farm River forming headwaters Monatiquot River, Braintree (through former 2010 segment: Ice House Pond MA74028).
AU Type:	RIVER
AU Size:	4.1 MILES
Classification/Qualifier:	B

Cochato River - MA74-06

Watershed Area: 11.11495 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	11.03	6.4	2.85	1.8
Agriculture	0.17%	0.17%	0.19%	0.23%
Developed	49.62%	52.81%	34.22%	34.08%
Natural	36.04%	33.67%	37.17%	37.31%
Wetland	14.16%	13.35%	28.41%	28.37%
Impervious Cover	19.99%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Chlordane in Sediment		Added
5	5	Copper		Added
5	5	DDT in Sediment		Added
5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Changed
5	5	Fecal Coliform	R1_MA_2019_01	Changed
5	5	Lead		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting (Alert)
MassDEP collected four metals samples in the water column at station W2052 (~20 ft downstream of North Shore Rd, Holbrook) during summer 2009. Two of four dissolved copper measurements (5.1 & 4.9 µg/L) exceeded their calculated acute toxicity criteria (3.9 & 4.7 µg/L). Four of four dissolved lead measurements (5.5-12.0 µg/L) exceeded their calculated chronic toxicity criteria (0.6-0.8 µg/L). DEP collected attended probe data and metals samples in the water column at station W2089 (Mear Road, Holbrook). Data for temperature, pH, and dissolved oxygen were generally good (DO = 4.2-9.6 mg/L; n=5). Four of four dissolved lead measurements (2.0-8.1 µg/L) exceeded their calculated chronic toxicity criteria (0.9-1.3 µg/L). Two of four aluminum measurements may have been elevated (at 99.0 & 110.0 µg/L), but aluminum

should be reevaluated once site-specific criteria have been promulgated in the MA Surface Water Quality Standards.
DEP collected water quality data at station W2051 (downstream of Union St./Rt 139 and two stormwater outfalls, Holbrook) during summer 2009. A multiprobe was deployed for three 2-day periods. The minimum recorded DO concentration was 4.06 mg/L, which met instantaneous criteria, but the lowest mean daily minimum concentration of 4.08 mg/L did not meet the criterion for 3-5 day continuous data sets (5.0 mg/L). Other multiprobe data were acceptable (max DO shift <2.7 mg/L, max saturation = 95%, max temperature = 24.4 °C). Attended probes measurements (temperature & DO) were consistent with the continuous data, and pH ranged from 6.4-6.8 (n=7). Grab samples (n=5) did not violate ammonia calculated criteria, but total phosphorus was a little elevated (n=5; avg/max = 0.063/0.081 mg/L) for a river entering a reservoir (criterion = 0.05 mg/L). There was one observation of dense/very dense filamentous algae.
In September 2007, DFG conducted a fish survey at station 2810 (between Mill St & Centre St, at MBTA row, Randolph/Holbrook). The small sample (n=12) included the moderately tolerant macrohabitat generalist, redfin pickerel, but no fluvial species.
As part of the long-term monitoring plan for the Baird and McGuire superfund site, sediment samples were collected at several river locations in 2013 and 2018 (n=3 for each station and year). Means at Station B (between Union St bridge and Center St), Station C (Ice Pond river location), and Station D (Mary Lee wetland river location) ranged from 402 - 19,559 ng/g dry weight for DDT in 2013 and 816 – 1,531 ng/g in 2018 (the Canadian Sediment Quality Guidelines PEL = 4.77 µg/kg, equivalent to ng/g). The mean dry weight of chlordane at the stations ranged from 87 – 3,940 ng/g in 2013 and 170 – 308 ng/g in 2018 (PEL = 8.87 µg/kg, equivalent to ng/g). The mean dry weight of arsenic at the stations ranged from 7.4 – 115 µg/g in 2013 and 12 – 64 µg/g in 2018 (PEL = 17.0 mg/kg, equivalent to µg/g).
The Aquatic Life Use of the Cochato River MA74-06 remains Not Supporting for DO (supported by data from W2051). An Alert will be added for elevated TP at W2051. DEP data and data collected as part of the Baird & McGuire superfund site cleanup indicate there are contaminants in the water column and sediments. Due to the magnitude of mean DDT and mean chlordane exceedances measured downstream of the superfund site, new impairments are being added for “DDT in Sediment” and “Chlordane in Sediment”. An Alert is being added for elevated arsenic in the sediment. For the water column, impairments are being added for “Copper” (due to exceedances of acute criteria at DEP W2052) and “Lead” (due to exceedances of chronic criteria at DEP W2052 & W2089).

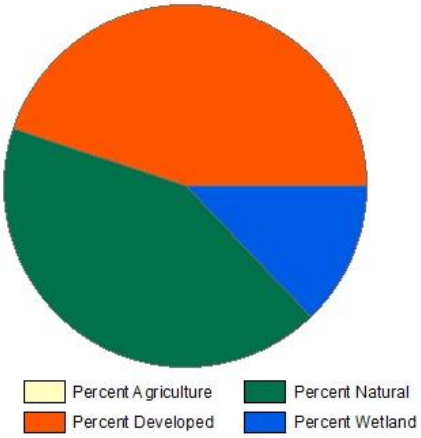
2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)

Cranberry Brook (MA74-22)

Location:	Headwaters, outlet Cranberry Pond, Braintree to mouth at confluence with Cochato River, Braintree (Cranberry Brook Watershed ACEC).
AU Type:	RIVER
AU Size:	1.9 MILES
Classification/Qualifier:	B: ORW

Cranberry Brook - MA74-22

Watershed Area: 1.826263 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	1.82	1.82	0.28	0.28
Agriculture	0.07%	0.07%	0%	0%
Developed	44.93%	44.93%	17.32%	17.32%
Natural	42.24%	42.24%	50.3%	50.3%
Wetland	12.76%	12.76%	32.38%	32.38%
Impervious Cover	18.58%			

Fish, other Aquatic Life and Wildlife Use: Fully Supporting

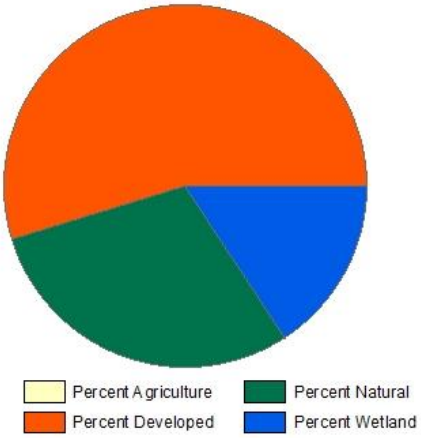
DFG conducted a brief survey of Cranberry Brook in July 2010 (Sample ID 3317; Liberty St xing upstream, just S of Oakden Ave, Braintree), when only two redfin pickerel were collected. Field comments noted they "ran out of water to shock" and that the stream was dry downstream at Route 37. There are no water supply wells in this sub-basin. Braintree is located in the southeast region of the state- the central and northeast regions were under a Drought Advisory as of August 1 and although the southeast region was not, it is likely it still experienced lower than normal precipitation. In 2009, a non-drought year, MassDEP conducted a benthic survey (B0753) and a water quality survey (W2049) upstream of Route 37 (Braintree). The RBPIII status of the benthic sample was determined to be "Slightly Impaired" (57% comparable) when compared to the reference (UniqueID: B0777, West Branch Palmer River, Narragansett Bay). A multiprobe was deployed for three 2-day periods and the data were indicative of good conditions (lowest mean daily minimum DO = 7.6 mg/L, max DO diel shift = 0.8 mg/L, max saturation = 97%; max temperature = 24.3 ˚C). In situ attended probe and grab sample data (temperature, pH, DO, ammonia, TP) were generally indicative of good conditions. The total phosphorus average/maximum concentrations were 0.044/0.061 mg/L (n=4, excluding a sample that failed to meet field duplicate precision objectives and which was collected during a large rain event, i.e. non-representative conditions) and there were no observations of dense/very dense filamentous algae. Based primarily on the benthic macroinvertebrate and water quality data from the Route 37 crossing, the Aquatic Life Use of Cranberry Brook MA74-22 is assessed as Fully Supporting.

Crooked Meadow River (MA74-01)

Location:	Headwaters, outlet Cushing Pond, Hingham to confluence with Fulling Mill Brook (forming headwater of Weir River), Hingham.
AU Type:	RIVER
AU Size:	1 MILES
Classification/Qualifier:	B

Crooked Meadow River - MA74-01

Watershed Area: 4.934656 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	4.93	4.3	2.18	1.92
Agriculture	0.57%	0.65%	0.81%	0.92%
Developed	54.41%	53.2%	41.38%	40.33%
Natural	29.34%	29.36%	32.49%	32.32%
Wetland	15.68%	16.8%	25.31%	26.42%
Impervious Cover	20.49%			

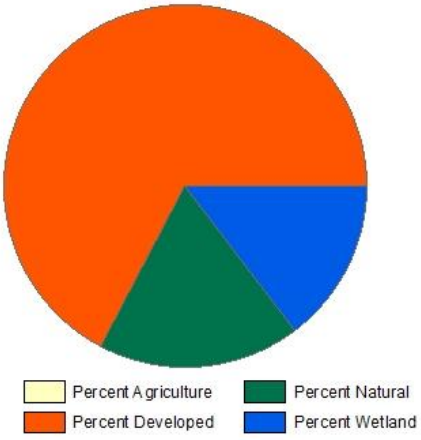
Fish, other Aquatic Life and Wildlife Use: Not Supporting
MassDEP conducted a water quality survey at station W2042 (approximately 50 feet upstream of Route 228 (Main Street), Hingham) during summer 2009. Attended probe and grab sample data (temperature, pH, DO, ammonia, TP; n=5 of each) all met water quality criteria. Of note, DO ranged from 6.3-9.4 mg/L (with saturation values ranging from 77-94%) and the average/maximum TP concentrations were 0.034/0.041 mg/L (n=5). There were no observations of excessive filamentous algae. After comparing the 2009 water quality data with historical data collected in 1989, it was determined that the "Nutrients/ Eutrophication Biological Indicators" impairment should be delisted (see Removal Comment for rationale). Although much improved water quality conditions were documented in Crooked Meadow River (comparing the 2009 water quality data with historical data collected in 1989), the Nutrients/ Eutrophication Biological Indicators impairment will be carried forward until recent data are collected to confirm the appropriateness of delisting.

Eel River (MA74-21)

Location:	Headwaters, east of Route 228, near West Moreland Street, Hingham to mouth at confluence with Plymouth River, Hingham.
AU Type:	RIVER
AU Size:	1.5 MILES
Classification/Qualifier:	B

Eel River - MA74-21

Watershed Area: 0.805139 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	0.81	0.81	0.26	0.26
Agriculture	0%	0%	0%	0%
Developed	67.3%	67.3%	57.2%	57.2%
Natural	18.05%	18.05%	13.62%	13.62%
Wetland	14.65%	14.65%	29.18%	29.18%
Impervious Cover	15.54%			

Fish, other Aquatic Life and Wildlife Use: Fully Supporting

The Eel River MA74-21 is identified by DFG as a Cold Water Fishery Resource. Given the presence of a reproducing brook trout population (see below), this AU is being evaluated as a Tier 1 Cold Water Existing Use. In July 2010 DFG conducted a fish survey (3332) at the Colonial and Puritan intersection (Hingham). The sample (sample n=36) was dominated by multiple age classes of eastern brook trout. In August 2011 DFG sampled (3881) downstream of the Colonial Rd crossing, again collecting a sample dominated by multiple age classes of brook trout (sample n=24). In September 2009, MassDEP surveyed (4535) just upstream of the Stagecoach Rd crossing, collecting a sample (n=29) dominated by redfin pickerel, but which included two YOY brook trout. Upstream of the Cushing St crossing, DFG collected a small sample (3312; n=12) in July 2010 which included three adult brook trout. Field notes indicated there were more trout ahead of the shocker which they were unable to capture. In the previous year (2009), DEP deployed a temperature probe at the Cushing St location (W2040), starting June 11th and lasting for 111 days. The 7-DADM exceeded the chronic criterion for Tier 1 Existing Use cold waters (≤20.0 °C, exceedances ≤11 times) on 7 occasions with a maximum 7-DADM of 20.8 °C. The maximum 24-hour rolling average was 20.5 °C.

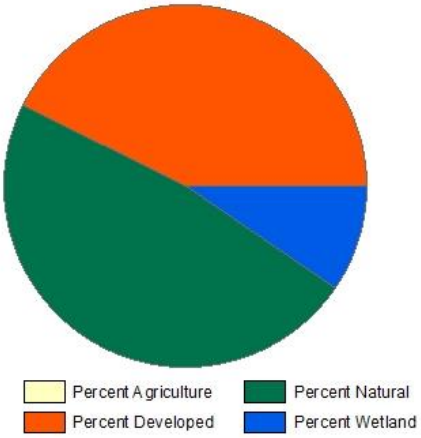
Based primarily on the presence of a reproducing eastern brook trout population, at three of four sites surveyed (and possibly the fourth also), as well as good continuous temperature data from one location, the Aquatic Life Use of the Eel River MA74-21 is assessed as Fully Supporting. Consideration should be given to designating the Eel River as a cold water fishery in the next iteration of the MA Surface Water Quality Standards.

Farm River (MA74-27)

Location:	From Randolph/Braintree border (where name changes from Blue Hill River), to the Braintree Water and Sewer Department public water supply Farm River intake, north of Richardi Reservoir, Braintree (formerly part of 2016 segment: Farm River MA74-07).
AU Type:	RIVER
AU Size:	2.6 MILES
Classification/Qualifier:	A: PWS, ORW

Farm River - MA74-27

Watershed Area: 12.7 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	12.7	9.2	4.9	3.4
Agriculture	0.8%	0.7%	1.2%	1.1%
Developed	42%	47%	28%	32%
Natural	47%	41%	48%	47%
Wetland	9.4%	8.8%	18%	20%
Impervious Cover	20%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
--	5	(Fish Passage Barrier*)		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting (Alert)

Although a fish ladder was constructed over the Great Pond Dam in 2017 (whose outlet is connected to Farm River MA74-27 via a short channel), improving potential passage for river herring and American eel, projects have not yet been implemented at the downstream Armstrong and Ames Pond Dams on the Monatiquot River, as well as a "natural" falls on that AU (MA74-08). Passage for those obstructions is rated, 4, 4, and 10, respectively, out of 10 (10 = no possible passage). Thus, the downstream obstructions prevent fish from reaching habitat in the Farm River MA74-27.

MassDEP conducted water quality (W2053) and benthic community (B0752) surveys roughly 300 feet upstream of Pond Street (Braintree) during summer 2009. A thermistor was deployed starting June 11 for 111 days. The maximum temperature was 26.5 ˚C and there were no violations of warmwater criteria. Grab samples for ammonia and total phosphorus (n=5 each) also did not violate criteria. The TP average/maximum concentrations were 0.038/0.1 mg/L and there were no observations of dense/very dense filamentous algae. The benthic sample (B0752) was collected the end of July. The RBPIII status was determined to be "Slightly/Moderately Impaired" (52% comparable) when compared to the reference (UniqueID: B0777, West

Branch Palmer River, Narragansett Bay). The score was influenced by a large number of filter-feeding taxa in the sample and a lack of sensitive EPT taxa. MassDFG conducted a fish community survey (UniqueID 3335) upstream of the Pond St (Braintree) crossing in July 2010. The sample (n=46) was majority moderately tolerant macrohabitat generalists (yellow perch, redfin pickerel, largemouth bass) as well as one intolerant swamp darter.

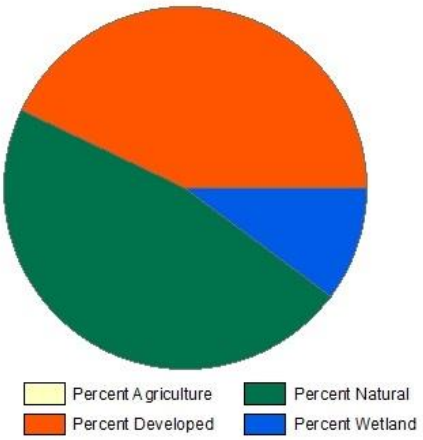
Due to the obstruction of fish passage into Great Pond MA74012, the Aquatic Life Use of Farm River MA74-27 is assessed as Not Supporting. The fish community appears adequate and the limited water quality data are acceptable. The prior Alert, due to a lack of water passing over Great Pond Dam, is being maintained. An Alert is being issued due to the Slightly/Moderately Impaired benthic community upstream of Pond Street. The benthic community should be resurveyed, accompanied by a complete water quality survey (including deployment of multiprobes).

Farm River (MA74-28)

Location:	From the Braintree Water and Sewer Department public water supply Farm River intake, north of Richardi Reservoir, Braintree to confluence with Cochato River (forming headwaters of Monatiquot River), Braintree (formerly part of 2016 segment: Farm River MA7
AU Type:	RIVER
AU Size:	0.5 MILES
Classification/Qualifier:	B

Farm River - MA74-28

Watershed Area: 12.91809 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	12.92	8.18	4.98	3.22
Agriculture	0.87%	0.88%	1.3%	1.27%
Developed	42.61%	49.52%	29.32%	31.2%
Natural	46.44%	40.41%	49.88%	47.47%
Wetland	10.08%	9.19%	19.5%	20.06%
Impervious Cover	20.16%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
--	5	(Fish Passage Barrier*)		Added

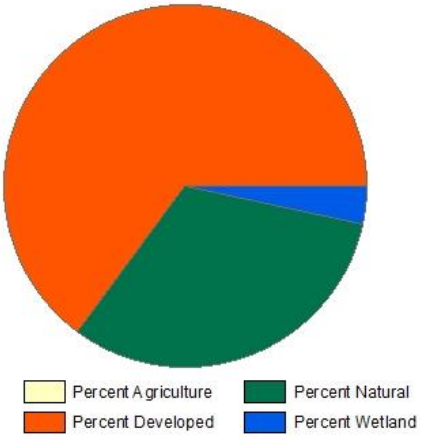
Fish, other Aquatic Life and Wildlife Use: Not Supporting (Alert)
According to DMF biologists, diadromous fish passage projects have not yet been implemented at the downstream Armstrong and Ames Pond Dams on the Monatiquot River, as well as a "natural" falls on that AU (MA74-08). Passage for those obstructions is rated, 4, 4, and 10, respectively, out of 10 (10 = no possible passage). Thus, the downstream obstructions prevent river herring and American eel from reaching habitat in the Farm River MA74-28 (and the upstream Great Pond MA74012). There are currently no other data available for Farm River MA74-28. The Aquatic Life Use is Not Supporting due to Fish Passage Barriers. The prior Alert due to a lack of water being passed over Great Pond and into Farm River upstream of this AU will remain.

Furnace Brook (MA74-10)

Location:	From headwaters north of Blue Hills Reservoir, Quincy to confluence with Blacks Creek, Quincy (portions culverted underground).
AU Type:	RIVER
AU Size:	4.2 MILES
Classification/Qualifier:	B

Furnace Brook - MA74-10

Watershed Area: 3.948821 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	3.95	3.95	0.42	0.42
Agriculture	0.14%	0.14%	0%	0%
Developed	64.77%	64.78%	48.85%	48.85%
Natural	31.68%	31.68%	40.46%	40.46%
Wetland	3.41%	3.41%	10.68%	10.68%
Impervious Cover	28.23%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Benthic Macroinvertebrates		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting

MassDEP conducted a water quality survey of Furnace Brook at station W2026 (Reardon St, Quincy) during summer 2009. A multiprobe was deployed for four 3-day periods, with data indicating good water quality (lowest mean daily min DO = 7.7 mg/L, max DO diel shifts all <1 mg/L, max saturation = 95%; max temperature = 20.9 ˚C). In situ attended probe and grab sample data (temperature, pH, DO, ammonia, TP) were also indicative of good water quality. The average/maximum TP concentrations were 0.015/0.024 mg/L (n=5) and there was one observation of dense or very dense filamentous algae.

According to DMF biologists, they hope to make channel improvements just downstream of the Bernazzani Elementary School (Quincy), which would improve habitat for rainbow smelt, river herring, and American eel. They gave the stream at this location a passage score of 2 out of 10 (10 = no passage), indicating that there are currently only minor obstructions to fish passage. During summer 2009, DEP also collected benthic macroinvertebrate data (B0744) roughly 30 meters upstream of Newport Avenue (Quincy) and water quality data at the crossing itself (W2027). The RBPIII status of the benthic sample was determined to be "Moderately Impaired" (29% comparable) when compared to the reference (Unique ID: B0777, West Branch Palmer River, Narragansett Bay). While the habitat score was only partially supporting in comparison to the reference, the Furnace Brook sub-watershed contains 28% impervious cover and the moderately impaired RBPIII status is likely

due to water quality issues. A multiprobe was deployed for three 5-day and one 3-day periods at W2027. These data were indicative of good conditions (lowest mean daily min DO = 7.6 mg/L, max DO diel shifts all ≤1.5 mg/L, max saturation = 101%; max temperature = 18.6 ˚C). In situ attended probe and grab sample data (temperature, pH, DO, ammonia, TP) were also indicative of good water quality. The average/maximum TP concentrations were 0.025/0.056 mg/L (n=4) and there was one observation of dense or very dense filamentous algae.

The Aquatic Life Use of Furnace Brook MA74-10 is assessed as Not Supporting due to a new Benthic Macroinvertebrates Bioassessments impairment (based on a moderately impaired benthic community upstream of Newport Avenue, Quincy). The prior impairment for DO is being carried forward until more recent data are collected to confirm the appropriateness of delisting.

Great Pond (MA74012)

Location:	Randolph/Braintree (portion between the Great Pond Upper Reservoir Dam (NATID: MA00823) and outlet at Great Pond Dam (NATID: MA00828), Braintree).
AU Type:	FRESHWATER LAKE
AU Size:	198 ACRES
Classification/Qualifier:	A: PWS, ORW

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
--	4c	(Fish Passage Barrier*)		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting
According to DMF biologists, a fish ladder was constructed over the Great Pond Dam in 2017, improving potential passage for river herring and American eel. However, because projects have not yet been implemented at the Armstrong and Ames Pond Dams on the Monatiquot River, as well as a "natural" falls on that AU (MA74-08), the benefits have not been realized. Therefore, the Aquatic Life Use of Great Pond is assessed as Not Supporting due to Fish Passage Barriers.

Hingham Harbor (MA74-18)

Location:	Hingham Harbor inside a line from Crows Point to Worlds End, Hingham (formerly reported as 2008 segment: Hingham Harbor MA70-08).
AU Type:	ESTUARY
AU Size:	1.12 SQUARE MILES
Classification/Qualifier:	SA: SFO

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Changed
5	5	Fecal Coliform	R1_MA_2019_01	Changed

Fish, other Aquatic Life and Wildlife Use: Not Assessed
With no data available, the Aquatic Life Use of Hingham Harbor MA74-18 is Not Assessed.

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)

Hoosicwhisick Pond (MA74015)

Location:	Milton.
AU Type:	FRESHWATER LAKE
AU Size:	23 ACRES
Classification/Qualifier:	B

Fish, other Aquatic Life and Wildlife Use: Not Assessed (Alert)
There are reports in MassDEP's herbicide permit application database (2012-2016) of the non-native aquatic macrophytes, *Myriophyllum heterophyllum* and *Cabomba caroliniana*, in Hoosicwhisick Pond (locally known as Houghtons Pond). However, these reports should be confirmed by MassDEP biologists. Since there are no other data available, the Aquatic Life Use of Hoosicwhisick Pond MA74015 is Not Assessed. An Alert is being issued for potential infestations of non-native aquatic macrophytes.

Lake Holbrook (MA74013)

Location:	Holbrook.
AU Type:	FRESHWATER LAKE
AU Size:	31 ACRES
Classification/Qualifier:	B

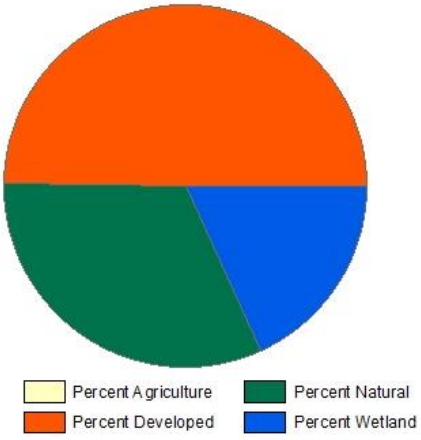
Fish, other Aquatic Life and Wildlife Use: Not Assessed
There are no new data for Lake Holbrook MA74013 so the Aquatic Life Use is Not Assessed.

Mary Lee Brook (MA74-23)

Location:	Headwaters, north of West High Street, Avon to mouth at confluence with Cochato River, Randolph.
AU Type:	RIVER
AU Size:	2.7 MILES
Classification/Qualifier:	B

Mary Lee Brook - MA74-23

Watershed Area: 1.402323 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	1.4	1.4	0.5	0.5
Agriculture	0%	0%	0%	0%
Developed	49.75%	49.75%	47.35%	47.35%
Natural	32.06%	32.06%	32.58%	32.58%
Wetland	18.2%	18.2%	20.07%	20.07%
Impervious Cover	17.75%			

Fish, other Aquatic Life and Wildlife Use: Fully Supporting (Alert)

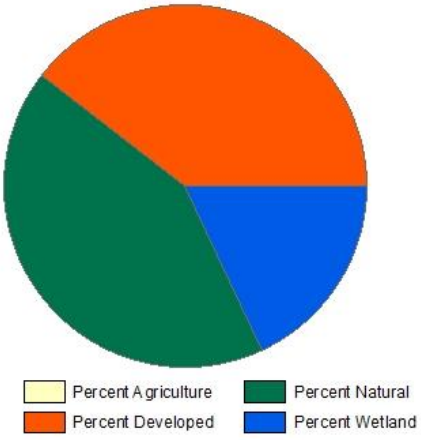
MassDEP conducted benthic (B0751) and water quality surveys (W2050) of Mary Lee Brook during summer 2009 (footbridge crossing at the western end of Joyce Circle, Randolph). The benthic sample was collected July 23 and its RBPIII status was determined to be "Slightly/Moderately Impaired" (52% comparable) when compared to the reference (UniqueID: B0777, West Branch Palmer River, Narragansett Bay). The score was influenced by a lack of sensitive EPT taxa and a lack of scrapers in the sample. A multiprobe was deployed for four 3-5 day periods and data were indicative of good conditions (lowest mean daily min DO = 6.8 mg/L, max DO diel shift = 1.5 mg/L, max saturation = 88%; max temperature = 22.3 ˚C). A thermistor was deployed for 111 days starting June 11. The maximum temperature was 23.2 ˚C, well below warm water criteria. Some of the in situ attended probe and grab sample data were indicative of good conditions (temperature, pH, DO, ammonia). The total phosphorus average/maximum concentrations were elevated at 0.11/0.27 mg/L, however, there were no observations of dense/very dense filamentous algae. DEP conducted a fish population survey (4531) a short way downstream in September and collected a small (n=16) number of American eel and redfin pickerel (the latter, a moderately tolerant macrohabitat generalist). In September 2007, DFG collected a fish sample (2811) further downstream (upstream of Union St, Randolph). Comments indicate the stream was not flowing and mostly pool habitat in this reach. Only 6 redfin pickerel were collected. The Aquatic Life Use of Mary Lee Brook is assessed as Fully Supporting based on the DEP data collected in 2009. It should be noted that the RBPIII status of the benthic sample was on the border between Slightly and Moderately Impaired. Although total phosphorus was elevated (0.11 mg/L seasonal average), there were no other indicators of enriched conditions. An Alert is being issued for Benthic Macroinvertebrates Bioassessments and elevated Total Phosphorus.

Mill River (MA74-04)

Location:	Headwaters, west of Route 18 and south of Randolph Street, Weymouth to inlet Whitmans Pond, Weymouth (portions culverted underground).
AU Type:	RIVER
AU Size:	3.4 MILES
Classification/Qualifier:	A: PWS, ORW

Mill River - MA74-04

Watershed Area: 6.258871 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	6.25	3.87	2.81	1.69
Agriculture	0%	0%	0%	0%
Developed	39.61%	53.18%	26.88%	36.44%
Natural	42.38%	31.78%	44.03%	37.88%
Wetland	18.01%	15.04%	29.09%	25.68%
Impervious Cover	17.13%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Escherichia Coli (E. Coli)	R1_MA_2019_01	Changed
5	4a	Fecal Coliform	R1_MA_2019_01	Changed
5	4a	(Fish Passage Barrier*)		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting (Alert)
There are two barriers to diadromous fish passage along the Mill River – a riprap dam behind 824 Washington Street and a dam on the river at 134 Mill Street in Weymouth. DMF biologists assigned a passage score =10 and a population score =10 for both. DFG conducted a fish survey (ID 2521, downstream of the Park Ave W & Columbian St junction, Weymouth) of the Mill River MA74-04 in August 2008. Roughly half the sample was composed of the moderately tolerant redfin pickerel. MassDEP conducted a water quality survey at station W2048 (West Street, Weymouth) during summer 2009. Attended probe and grab sample data (temperature, pH, DO, ammonia) all met their applicable criteria. The total phosphorus average concentration of 0.093 mg/L (n=5) was elevated above the criterion for a river entering a reservoir (0.05 mg/L), but there were no observations of excessive filamentous algae. DEP also conducted a water quality survey at station W2047 (Front Street, upstream of the outfall downstream of the bridge, Weymouth) during summer 2009. Again, most of the attended probe and grab sample data met their applicable criteria, but the total phosphorus average concentration of 0.11 mg/L was elevated. There were no observations of excessive filamentous algae. A fish

sample was collected in the vicinity during the previous summer (August 2008). Even more than the upstream sample, this one was dominated by the moderately tolerant redfin pickerel.
Despite the generally good water quality and fish sample data, the Aquatic Life Use of this Mill River AU (MA74-04) is assessed as Not Supporting because of the lack of diadromous fish passage. The elevated TP data are concerning and an Alert is being issued- at this time, without other indications of enrichment, an impairment decision is not warranted.

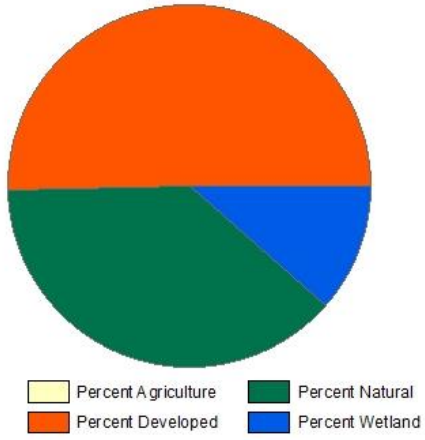
2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)

Monatiquot River (MA74-08)

Location:	Headwaters at confluence of Cochato and Farm rivers, Braintree to confluence with Weymouth Fore River at Commercial Street, Braintree.
AU Type:	RIVER
AU Size:	4.4 MILES
Classification/Qualifier:	B

Monatiquot River - MA74-08

Watershed Area: 28.70596 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	28.62	6.55	8.56	1.41
Agriculture	0.47%	0.07%	0.82%	0%
Developed	50.13%	67.65%	33.78%	52.78%
Natural	37.96%	22.49%	43.4%	26.98%
Wetland	11.44%	9.79%	22%	20.24%
Impervious Cover	22.12%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Curly-leaf Pondweed*)		Added
5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Changed
5	5	Fecal Coliform	R1_MA_2019_01	Changed
5	5	(Fish Passage Barrier*)		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting (Alert)

According to DMF biologists, the Armstrong Dam (or Armstrong Pond Dam) and Ames Pond Dams in the upper part of the Monatiquot River AU obstruct passage of river herring and American eel, with passage scores of 10 and 5, respectively (on a scale of 10). A recent news report indicates the Town of Braintree was awarded state funds to remove both dams. The funds will cover the project's final design and permitting process. DMF indicates that the natural falls (also called Rock Falls) downstream of Ames Pond Dam are also a barrier to diadromous fish (passage score of 10 out of 10). "*The Natural Falls… were once passable, but the theory is that the construction of the train bridge there over a 100 years ago lowered the tailwater and now river herring can't pass above that*" (Chase March 12, 2020). DMF is seeking funding for channel improvement.

MassDEP conducted a water quality survey at station W2031 (River St, Braintree) during summer 2009. A multiprobe was deployed for three 3-day periods and data were indicative of good conditions (DO lowest mean daily min = 5.9 mg/L, DO diel shifts <1.7 mg/L, max saturation = 94%; max temperature = 25.8 °C). Attended probe and grab sample data (temperature, pH, DO, ammonia, TP) were also good, with a TP seasonal average of

0.029 mg/L (n=5). There were no observations of excessive filamentous algae. DFG sampled the fish community (ID 4037) downstream of the Adams St crossing in August 2012 (n=27) but only collected 1 moderately tolerant individual (redfin pickerel).
DMF biologists indicate that the McCusker Drive culvert (Braintree) restricts river herring and American eel passage with a score of 4 out of 10 (10 = no passage). They state that passage through this culvert may be improved with design modifications.
DEP also conducted water quality / benthic surveys at station W2030/B0746 (~700 ft upstream of Commercial St, Braintree) during summer 2009. A multiprobe was deployed for three 3-day periods and data were indicative of good conditions (lowest DO mean daily min = 8.0 mg/L, DO diel shifts <0.7 mg/L, max saturation = 98%; max temperature = 25.1 °C). Attended probe and grab sample data (temperature, pH, DO, ammonia, TP) were also good, with a TP seasonal average of 0.041 mg/L. There was 1 observation of dense/very dense filamentous algae. Staff also observed the non-native aquatic macrophyte, curly-leaf pondweed (*Potamogeton crispus*) at this location. The RBPIII status of the benthic sample (B0746) was determined to be "Slightly Impaired" (62% comparable) when compared to the reference (UniqueID: B0777, West Branch Palmer River, Narragansett Bay).
Water quality and benthic data from the Monatiquot River MA74-08 were indicative of good conditions. However, the Aquatic Life Use will remain Not Supporting for Benthic Macroinvertebrates Bioassessments at this time due to the difference in sampling locations between the 1999 (Middle St.) and 2009 surveys and the fact that the reference sites were from different basins. The impairment, Fish Passage Barrier, is being added due to multiple obstructions with passage scores ≥4, and an impairment is also being added due to an infestation of the non-native curly-leaf pondweed (*Potamogeton crispus*). The presence of only one moderately tolerant individual in the fish sample is concerning and an Alert is being added. While the 2009 DO data were indicative of good conditions the Dissolved Oxygen is impairment is being carried forward until more recent data are collected to confirm the appropriateness of this impairment delisting.

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)

Old Quincy Reservoir (MA74017)

Location:	Braintree.
AU Type:	FRESHWATER LAKE
AU Size:	27 ACRES
Classification/Qualifier:	B

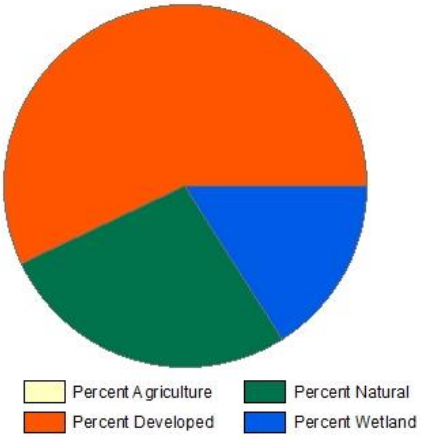
Fish, other Aquatic Life and Wildlife Use: Not Assessed
There are no data available, so Old Quincy Reservoir (MA74017) is Not Assessed.

Old Swamp River (MA74-03)

Location:	Headwaters just west of Pleasant Street and north of Liberty Street, Rockland to inlet Whitmans Pond, Weymouth.
AU Type:	RIVER
AU Size:	4.6 MILES
Classification/Qualifier:	A: PWS, ORW

Old Swamp River - MA74-03

Watershed Area: 5.046449 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	4.96	4.62	2.03	1.85
Agriculture	0%	0%	0%	0%
Developed	57.07%	56.54%	42.06%	40.9%
Natural	26.9%	27.31%	28.47%	29.23%
Wetland	16.02%	16.15%	29.46%	29.87%
Impervious Cover	24.54%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Escherichia Coli (E. Coli)	R1_MA_2019_01	Changed
5	4a	Fecal Coliform	R1_MA_2019_01	Changed
5	4a	(Fish Passage Barrier*)		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting (Alert)

Old Swamp River (MA74-03) is identified by DFG as a Cold Water Fishery Resource. Given the presence of a reproducing brown trout population, this AU is being evaluated as a Tier 2 Cold Water Existing Use.

Limited sampling was conducted at 2 sites on the upstream end of MA74-01 (2007-2017) as part of the long-term monitoring at the Rubble Disposal Area (Operational Unit 2) within the S. Weymouth Naval Air Station superfund site. Occasional exceedances of National Recommended WQ Criteria for iron & lead were too limited to make an impairment decision. The SNUP dam has been identified as a diadromous fish passage barrier. DMF biologists assigned a passage score=10 based on lack of passage during all site visits and a population score=10. Weymouth recently applied to DER to remove this defunct dam.

MassDEP conducted surveys of MA74-03 during 2009 at 4 WQ sites (W2043, W2044, W2045, W2046), 3 fish pop. sites (4532, 4536, 4537), & 1 benthic community site (B0750). At WQ/fish sites W2043/4532 near Sharp St, Hingham, a multiprobe was deployed for 3 5-day periods (DO mean daily mins = 3.2-5.8 mg/L, DO diel shifts <2.75 mg/L, DO max sat. = 54-88%), with lower DO conc. likely reflecting the wooded swamp habitat upstream of the site. A thermistor was deployed for 111 days starting June 11 (max 7-DADA = 21.0 °C, max 24-hr rolling avg = 21.6 °C). Discrete probe data (T, pH, DO) were consistent with multiprobe data, while grab sample data (NH3/TP/metals; no observations of excessive filamentous algae; TP avg = 0.038 mg/L) were satisfactory. The fish sample (4532) was collected in good fish habitat & included mostly moderately tolerant redfin pickerel as well as 1 intolerant YOY brown trout. WQ/fish sites W2044/4536 were sampled at Ralph Talbot St (Weymouth). Discrete probe measurements were indicative of the wooded swamp habitat immediately upstream (4 T values <20.0 °C & 1 was 24.0 °C, pH = 6.4-6.6 SU, DO = 4.8-8.3 mg/L; n=5 each parameter). NH3 data did not violate calculated criteria but TP was a little elevated (avg = 0.058 mg/L; n=5) for a river flowing into an impoundment. The fish sample from this location included mainly redfin pickerel plus 1 American eel. Downstream, at WQ/fish/benthic sites W2045/4537/B0750 (Elm St, Weymouth), a multiprobe was deployed for 3 5-day periods (DO mean daily mins 6.2-7.3 mg/L, DO diel shifts <1.4 mg/L, DO sat = 80-87%) & a thermistor was deployed for 95 days starting June 11th (max 7-DADA = 22.6 °C w/ 6 exceedances of 21.0 °C, max 24-hr rolling avg = 23.9 °C). Discrete probe data (T, pH, DO) were consistent with multiprobe data & there were no violations of NH3 criteria (n=5). TP was elevated (avg = 0.096 mg/L; n=5) but there were no observations of excessive algal density. At this location, 1 YOY brook trout was captured, as well as 1 YOY brown trout. The RBPIII status of the benthic sample was determined to be “Slightly Impaired” (57% comparable) when compared to the reference (UniqueID: B0777, West Branch Palmer River, Narragansett Bay). At the most downstream WQ station (W2046, Libbey Industrial Parkway, Weymouth), only discrete probe & grab sample data were collected. These (T, pH, DO, NH3, TP) were all indicative of good conditions (of note, T <20.0 °C n=4; DO >5.0 mg/L n=5), with a TP avg conc. of 0.039 mg/L & no observations of excessive filamentous algae.

While the biological and water quality data for MA74-03 were indicative of generally good conditions, the Aquatic Life Use is assessed as Not Supporting because of the lack of diadromous fish passage at the SNUP dam. Consideration should be given to designating this AU as a Tier 2 Cold Water Fishery, given that continuous T data at two locations (including the site with a YOY brook trout and a YOY brown trout) met this criterion. An Alert is being issued due to elevated total phosphorus at the Ralph Talbot St and Elm St (Weymouth) locations, but an impairment is not warranted since there were no other indicators of enrichment.

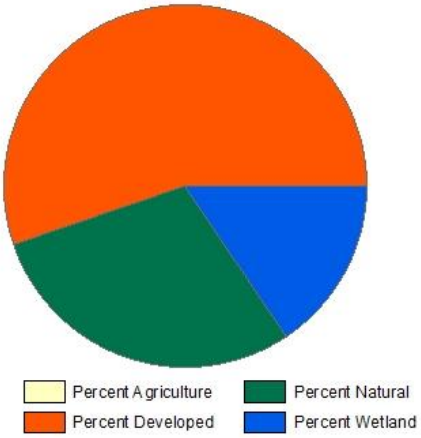
2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)

Plymouth River (MA74-20)

Location:	Headwaters, perennial portion (including channelized, culverted section) north of Route 3 (Pilgrim Highway), Weymouth to the mouth at inlet of Cushing Pond, Hingham (entire river not depicted on Weymouth USGS quad).
AU Type:	RIVER
AU Size:	3.6 MILES
Classification/Qualifier:	B

Plymouth River - MA74-20

Watershed Area: 4.235541 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	4.24	4.24	1.84	1.84
Agriculture	0.67%	0.67%	0.96%	0.96%
Developed	54.85%	54.85%	41.76%	41.76%
Natural	28.95%	28.95%	32.24%	32.24%
Wetland	15.53%	15.53%	25.03%	25.03%
Impervious Cover	21.58%			

Fish, other Aquatic Life and Wildlife Use: Fully Supporting

DFG conducted fish surveys at two locations on the Plymouth River in July 2010. Downstream of Rt 53 in Weymouth (ID 3314), the moderately tolerant redfin pickerel dominated the sample (n=43). Upstream of Colonels Dr (ID 3334), redfin pickerel again dominated the sample (n=30). In the downstream portion of the AU, MassDEP conducted a water quality survey (W2039, Ward St, Hingham) during summer 2009. A temperature probe was deployed for 111 days, beginning on June 11th. The maximum 7-DADM was 22.6 °C and the maximum 24-hour rolling average was 22.7 °C. Attended probe and grab sample data (temperature, pH, DO, ammonia, TP) were all indicative of good conditions. Of note, the average TP was 0.024 mg/L.

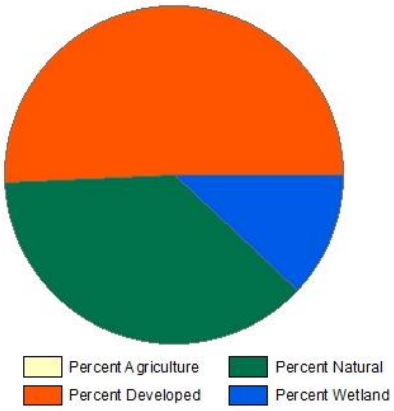
Based on 2010 fish data and 2009 water quality data, the Aquatic Life Use of the Plymouth River (MA74-20) is assessed as Fully Supporting.

Smelt Brook (MA74-24)

Location:	Headwaters outlet Smelt Brook Pond, Braintree to mouth at confluence with Weymouth Fore River, Braintree/Weymouth (portions culverted).
AU Type:	RIVER
AU Size:	1.1 MILES
Classification/Qualifier:	B

Smelt Brook - MA74-24

Watershed Area: 2.147886 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	2.15	2.15	0.72	0.72
Agriculture	0.24%	0.24%	0.03%	0.03%
Developed	50.6%	50.6%	30.33%	30.33%
Natural	37.17%	37.17%	45.43%	45.43%
Wetland	11.99%	11.99%	24.2%	24.2%
Impervious Cover	21.28%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
--	4c	(Fish Passage Barrier*)		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting

According to DMF biologists, the Pond Meadow Lake Dam has no present passage (score =10) for river herring and American eel with an existing population score of 0 although there is a manual eel ladder at the base of the dam. Further downstream a perched culvert (off Brookside Drive, Braintree) along Smelt Brook permits no passage of rainbow smelt and American eel. The passage score was 10 out of 10 (10 = no passage) while the existing population score was 2 out of 10 (with 0 being no run present). Effectively, the culvert serves as the upstream extent of migration of diadromous fish in this AU (although some eels are able to pass and are counted at the eel ladder at the Pond Meadow Lake Dam). An online article by the Weymouth-Braintree Regional Recreation-Conservation District indicates that an Army Corps Section 1135 ecological restoration feasibility study, which will study restoration of the perched culvert, is currently underway. The Section 1135 study would also reconsider the design and operation & maintenance of the ACOE flood control gate located a short way downstream. This structure was given a passage score of 5 out of 10 by DMF. Of the downstream roughly 1,000-foot portion of Smelt Brook that is culverted underground, a 150-foot section in the Weymouth Landing area was scheduled for completion of daylighting in December, 2019. Even prior to this project, DMF biologists considered the underground channel only a minor obstruction to rainbow smelt and American eel, giving this feature of the stream a passage score of 3 out of 10 (10 = no passage).

Based on the obstruction to migratory fish provided by the perched culvert off Brookside Drive (Braintree), as well as the Army Corps flood control gate, the Aquatic Life Use of Smelt Brook MA74-24 is assessed as Not Supporting for Fish Passage Barriers.

Smelt Brook Pond (MA74018)

Location:	Braintree (locally 'Pond Meadow' pond).
AU Type:	FRESHWATER LAKE
AU Size:	23 ACRES
Classification/Qualifier:	B

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
--	4c	(Fish Passage Barrier*)		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting
According to DMF biologists, the Pond Meadow Lake Dam has no present passage (score =10) for river herring and American eel with an existing population score of 0 although there is a manual eel ladder at the base of the dam. The Aquatic Life Use for Smelt Brook Pond (MA74018) is assessed as Not Supporting because of the lack of passage for diadromous fish.

Sunset Lake (MA74020)

Location:	Braintree.
AU Type:	FRESHWATER LAKE
AU Size:	58 ACRES
Classification/Qualifier:	B

Fish, other Aquatic Life and Wildlife Use: Not Supporting (Alert)

There are reports of the non-native aquatic macrophyte, Eurasian water milfoil (*Myriophyllum spicatum*), in the MassDEP Herbicide Database most years between 1994-2009. Additionally, there is a 2014 report of fanwort (*Cabomba caroliniana*) in the Herbicide Database, which should be confirmed by DEP staff.

The Town of Braintree used Section 319 Nonpoint Source Pollution Competitive Grant funding (project #11-10/319) to install multiple BMPS, including four rain gardens, three deep sump catch basins, one water quality swale, and four areas of permeable pavers within or adjacent to the lake parking lot. The BMPS were designed to treat bacteria, nitrogen, phosphorus, and sediment. The project was completed as of September 2012. Town staff observed that "scoured areas on the beach from the direct discharge of stormwater are gone and ponding in the beach parking lot has been eliminated." Additionally, the Town indicated that the beach did not need to be closed during the 2012 recreational season (compared to earlier years when it was usually closed several times per season). Data Source (Phelan 2012).

With no other data available for this reporting cycle, the Aquatic Life Use of Sunset Lake remains Not Supporting due to the presence of "Eurasian Water Milfoil, *Myriophyllum spicatum*". An Alert is being added for a potential infestation of the non-native fanwort (*Cabomba caroliniana*).

Sylvan Lake (MA74021)

Location:	Holbrook.
AU Type:	FRESHWATER LAKE
AU Size:	6 ACRES
Classification/Qualifier:	B

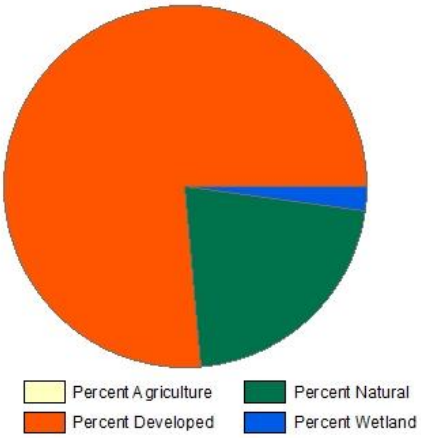
Fish, other Aquatic Life and Wildlife Use: Not Assessed
There are no new data for Sylvan Lake MA74021 so the Aquatic Life Use is Not Assessed.

Town Brook (MA74-09)

Location:	Headwaters, outlet Old Quincy Reservoir, Braintree to confluence with Town River Bay north of Route 3A, Quincy (SARIS note: includes "The Canal"/Town River) (portions culverted underground).
AU Type:	RIVER
AU Size:	3.5 MILES
Classification/Qualifier:	B

Town Brook - MA74-09

Watershed Area: 4.441603 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	4.44	3.89	0.67	0.59
Agriculture	0.06%	0.07%	0%	0%
Developed	76.3%	81.35%	58.07%	62.68%
Natural	21.51%	16.81%	35.11%	30.83%
Wetland	2.13%	1.78%	6.82%	6.49%
Impervious Cover	41.25%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Changed
5	5	Fecal Coliform	R1_MA_2019_01	Changed

Fish, other Aquatic Life and Wildlife Use: Not Supporting

The Massachusetts Bay Tranportation Authority (MBTA) Quincy Pump Station discharges groundwater comingled with storm water to Town Brook (MA74-09) under NPDES permit MA0033987. Water from Town Brook was collected (East of Fort St., at emergence of culverted portion of stream, Quincy) for use as a diluent/control in *C. dubia* (n = 34) and *P. promelas* whole effluent toxicity tests (n = 33) conducted between August 2009 and November 2018. Survival of *C. dubia* and *P. promelas* exposed (~7 days) to the brook water was good, ranging from 80-100% of the test organisms for both species. Although the lethality of effluent on both *C. dubia* and *P. promelas* test organisms was good for all tests (LC_{50} >100% effluent) and the chronic-NOEC for *P. promelas* usually met the permit limit, there was periodic chronic toxicity for *C. dubia* test organisms (27% of 28 tests) which exceeded the permit limit.

MassDEP collected water quality data at station W2029 (Miller Stile Rd, Quincy) during summer 2009. Attended probe and grab sample data (temperature, pH, DO, ammonia, TP) did not violate any criteria. Avg/max TP was 0.014/0.018 mg/L (n=3). DEP collected a benthic macroinvertebrate sample (B0745, ~90 m downstream of Miller Stile Rd, Quincy) in July 2009. The RBPIII status was determined to be “Moderately Impaired” (43%

comparable) when compared to the reference (UniqueID: B0777, West Branch Palmer River, Narragansett Bay). The station had a habitat score of 77 considered to be" Non-supporting" when compared to the reference.
Moving downstream, DEP collected water quality data at station W2028 (Elm St, Quincy), also in 2009. Attended probe and grab sample data (temperature, pH, DO, ammonia, TP) did not violate any criteria at this location either. Avg/max TP was 0.012/0.013 mg/L (n=3).
Although the MassDEP water quality data were good, the Aquatic Life Use of Town Brook remains assessed as Not Supporting due to prior impairments related to flow regime and habitat alterations. The moderately impaired benthic sample indicates that this AU should also remain not supporting for benthic macroinvertebrates bioassessments. The MBTA Quincy Pump station effluent should be further evaluated in the future for chronic toxicity to *C. dubia* test organisms

2018/20 Delisted Impairment	**Delisting Reason**	**Delisting Comment**
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)

Town River Bay (MA74-15)

Location:	From the headwaters at the Route 3A bridge, Quincy to the mouth at Weymouth Fore River between Shipyard and Germantown Points, Quincy.
AU Type:	ESTUARY
AU Size:	0.46 SQUARE MILES
Classification/Qualifier:	SB: SFR

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Enterococcus	R1_MA_2019_01	Changed
5	5	Fecal Coliform	R1_MA_2019_01	Changed

Fish, other Aquatic Life and Wildlife Use: Not Supporting
With no new data available for Town River Bay MA74-15, the Aquatic Life Use remains Not Supporting due to the prior Dissolved Oxygen impairment.

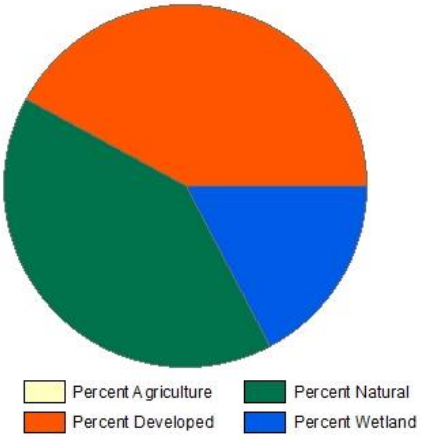
2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Enterococcus	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)

Trout Brook (MA74-12)

Location:	Headwaters southwest of South Street, Holbrook to inlet Lake Holbrook, Holbrook.
AU Type:	RIVER
AU Size:	1.2 MILES
Classification/Qualifier:	B

Trout Brook - MA74-12

Watershed Area: 2.305416 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	2.29	2.29	0.37	0.37
Agriculture	0.17%	0.17%	0%	0%
Developed	41.98%	41.98%	24.58%	24.58%
Natural	40.69%	40.69%	34.31%	34.31%
Wetland	17.17%	17.17%	41.11%	41.11%
Impervious Cover	17.07%			

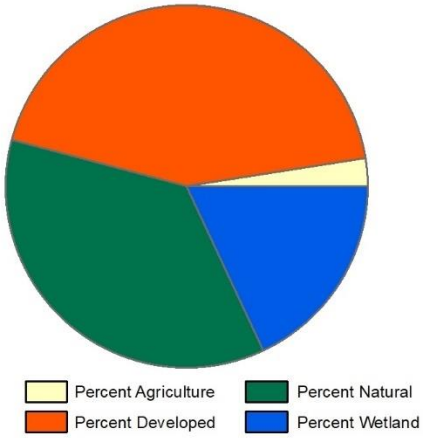
Fish, other Aquatic Life and Wildlife Use: Insufficient Information
Trout Brook was sampled (End of Hillsdale Rd, off Rt 37, Holbrook) in July 2010. The sample (n=73) was 99% moderately tolerant macrohabitat generalists, mainly redfin pickerel. The brook lies almost entirely within the Zone II Wellhead Protection Area for an existing and a proposed Randolph/Holbrook Water Board water supply well. Although the fish sample did contain moderately tolerant macrohabitat generalists, there are not enough data to assess the Aquatic Life Use of Trout Brook MA74-12- the status is Insufficient Information.

Unnamed Tributary (MA74-19)

Location:	Unnamed Tributary to Plymouth River, headwaters, west of Route 53 (Whiting Street), Hingham to mouth at confluence with Plymouth River, Hingham.
AU Type:	RIVER
AU Size:	1.1 MILES
Classification/Qualifier:	B

Unnamed Tributary - MA74-19

Watershed Area: 0.67 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	0.67	0.67	0.4	0.4
Agriculture	2.5%	2.5%	2.3%	2.3%
Developed	43.8%	43.8%	35%	35%
Natural	36.5%	36.5%	37%	37%
Wetland	18.2%	18.2%	35.6%	25.6%
Impervious Cover	20%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
3	5	Temperature		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting

Unnamed Tributary (UNT) MA74-19 is identified by DFG as a Cold Water Fishery Resource. Given the presence of a reproducing brook trout population (see below), this AU is being evaluated as a Tier 1 Cold Water Existing Use. MassDEP surveyed the UNT during summer 2009, conducting water quality (W2038), fish (4534) and benthic invertebrate (B0749) surveys at the most northern (downstream) Cushing St crossing in Hingham. A temperature probe was deployed for 111 days beginning on June 11th. The 7-DADM exceeded the chronic criterion for Tier 1 Existing Use cold waters (≤20.0 °C , exceedances ≤11 times) on 19 occasions with a maximum 7-DADM of 21.9 °C. The maximum 24-hour rolling average was 21.6 °C. Aside from attended probe QC checks, no other water quality data were collected. Although 75% of the September fish sample (total n=16) was eastern brook trout, only 1 was a young of the year (YOY). The comments indicated the site was a "shallow riffle run, no real deep pools". The RBPIII status of the benthic invertebrate sample was determined to be "Slightly Impaired" (76% comparable) when compared to the reference (UniqueID: B0777, West Branch Palmer River, Narragansett Bay).

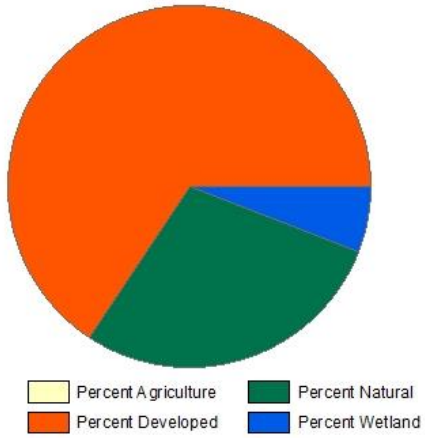
In July 2010, DFG conducted fish surveys upstream at the Rt 53 crossing (ID 3313) and again at the Cushing St crossing (ID 3333). Several adult brook trout were captured at the upstream crossing, but the Cushing St sample included a mix of age classes indicative of a reproducing brook trout population (n=17).
Although the RBPIII status of the Cushing St invertebrate sample was good, the chronic Tier 1 cold water temperature violation is concerning for the reproducing brook trout population. Given that this region was not under a drought advisory when continuous temperature data were collected and that the entire UNT lies within a Zone II Wellhead Protection Area for the Aquarion Water Company (the water utility for the Towns of Hingham and Hull), the Aquatic Life Use of Unnamed Tributary MA74-10 is being assessed as Not Supporting for Temperature. Of note, 20% of the sub-basin is impervious cover.

Unnamed Tributary (MA74-26)

Location:	Unnamed tributary to Monatiquot River, headwaters outlet Sunset Lake, Braintree to mouth at confluence with Monatiquot River, south of Pond Street, Braintree.
AU Type:	RIVER
AU Size:	0.4 MILES
Classification/Qualifier:	B

Unnamed Tributary - MA74-26

Watershed Area: 0.557763 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	0.56	0.56	0.15	0.15
Agriculture	0%	0%	0%	0%
Developed	65.68%	65.68%	64.98%	64.98%
Natural	28.52%	28.52%	22.71%	22.71%
Wetland	5.8%	5.8%	12.32%	12.32%
Impervious Cover	22.78%			

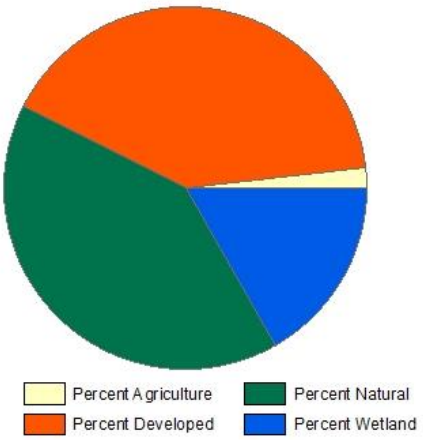
Fish, other Aquatic Life and Wildlife Use: Not Assessed
There are no data available for Unnamed Tributary MA74-26, so the Aquatic Life Use is Not Assessed.

Weir River (MA74-02)

Location:	Headwaters at confluence of Crooked Meadow River and Fulling Mill Brook, Hingham to Foundry Pond outlet, Hingham (through former 2008 segment: Foundry Pond MA74011) (area associated with Weir River ACEC designated as ORW).
AU Type:	RIVER
AU Size:	2.7 MILES
Classification/Qualifier:	B: ORW

Weir River - MA74-02

Watershed Area: 15.07281 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	14.91	6.17	5.78	1.84
Agriculture	1.75%	3.46%	1.51%	3.48%
Developed	40.77%	35.08%	30.4%	26.82%
Natural	40.8%	45.77%	38.95%	41.87%
Wetland	16.69%	15.7%	29.14%	27.83%
Impervious Cover	14.28%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Curly-leaf Pondweed*)		Added
5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Changed
5	5	Fecal Coliform	R1_MA_2019_01	Changed
5	5	(Fish Passage Barrier*)		Added

Fish, other Aquatic Life and Wildlife Use: Not Supporting

DFG conducted a fish population survey upstream of the Union St crossing (ID 3331, Hingham) in July 2010. The sample (n=17) included two moderately tolerant pumpkinseed. In the vicinity of the Leavitt St crossing, DFG sampled in July 2010 (ID 3330) and MassDEP conducted a water quality survey (W2034) during summer 2009. The fish sample (n=50) was a third moderately tolerant redfin pickerel and also included one intolerant swamp darter. DEP deployed a multiprobe for three 5-day periods and the data were indicative of good conditions (lowest mean daily DO minimum = 5.8 mg/L, DO diel shifts <1 mg/L, max DO saturation = 81%). A thermistor was deployed on June 11th for 111 days. The maximum 7-DADM was 25.3 °C and the maximum 24-hour rolling average was 25.5 °C. Attended probe and grab sample data (temperature, pH, DO, ammonia, TP) were also indicative of good conditions. Of note, the TP average concentration was 0.043 mg/L (n=5) and there were no observations of excessive filamentous algae. In 2009, DEP conducted fish population (4533), benthic (B0758),

and water quality (W2033) sampling upstream of the Rt 228 crossing (Hingham). The fish sampling was the most upstream of the three, near a foot bridge. The sample was dominated by American eel but included one moderately tolerant pumpkinseed. The benthic sample was collected roughly 100 meters upstream of Rt 228 and its RBPIII status was determined to be "Not Impaired" (86% comparable) when compared to the reference (UniqueID: B0777, West Branch Palmer River, Narragansett Bay). A multiprobe was deployed for three 5-day periods and the data here were also indicative of good conditions (lowest mean daily DO minimum = 6.25 mg/L, DO diel shifts <1.2 mg/L, max DO saturation = 84%). A thermistor was deployed on June 11th for 111 days. The maximum 7-DADM was 24.9 °C and the maximum 24-hour rolling average was 25.0 °C. Attended probe and grab sample data (temperature, pH, DO, ammonia, TP) were also indicative of good conditions. Of note, the TP average concentration was 0.042 mg/L (n=5) and there were no observations of excessive filamentous algae. DEP staff identified the non-native aquatic macrophyte, *Potamogeton crispus*, during multiple field surveys in 2009 and 2013 at the W2034 and W2033 water quality stations.

According to DMF biologists, the Foundry Pond Dam was given a passage score of 6 out of 10 (10 = no passage), indicating the dam restricts passage of river herring and American eel. They expressed concern about juvenile escapement at the crest of the dam.

Although benthic/fish/water quality data collected by DEP indicate conditions in the Weir River are generally good, there are some challenges as well. Survival of juvenile diadromous fish trying to pass over the Foundry Pond Dam is a concern, as is the infestation of the non-native curly-leaf pondweed (*Potamogeton crispus*) at multiple locations in this AU. Impairments are being added for both and the Dewatering impairment is being retained. The Aquatic Life Use of Weir River MA74-02 is thus assessed as Not Supporting.

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)

Weir River (MA74-11)

Location:	From Foundry Pond outlet, Hingham to mouth at Worlds End, Hingham and Nantasket Road near Beech Avenue, Hull (including unnamed tributary from outlet Straits Pond, Hingham/Hull) (area associated with Weir River ACEC designated as ORW).
AU Type:	ESTUARY
AU Size:	0.83 SQUARE MILES
Classification/Qualifier:	SA: ORW, SFO

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Fecal Coliform	R1_MA_2019_01	Changed

Fish, other Aquatic Life and Wildlife Use: Not Assessed
According to DMF biologists, the Foundry Pond Dam was given a passage score of 6 out of 10 (10 = no passage), indicating the dam restricts passage of river herring and American eel into the upstream Weir River AU (MA74-02). They expressed concern about juvenile escapement at the crest of the dam. DMF biologists indicate that the Straits Pond tide gate was recently fixed, allowing passage of estuarine fish into Straits Pond (not an AU) for most of the migratory season, but it still restricts passage enough that they gave it a passage score of 5 out of 10 (10 = no passage) (Chase March 12, 2020, Chase 2017). Per 2018 CALM guidance, MassDEP will not impair estuaries based on fish passage obstructions that affect upstream assessment units. With no other information available, the Aquatic Life Use of Weir River MA74-11 is Not Assessed.

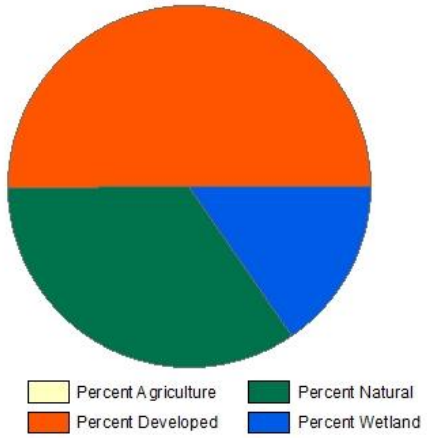
2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)

Weymouth Back River (MA74-05)

Location:	Headwaters, outlet Elias Pond, Weymouth to the base of the fish ladder north of Commercial Street,Weymouth (area associated with Weymouth Back River ACEC designated as ORW).
AU Type:	RIVER
AU Size:	0.7 MILES
Classification/Qualifier:	B: ORW, WWF

Weymouth Back River - MA74-05

Watershed Area: 13.7184 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	13.62	5.64	5.51	2.31
Agriculture	0%	0%	0%	0%
Developed	50.15%	62.96%	37.36%	54.14%
Natural	34.36%	27.87%	35.63%	29.55%
Wetland	15.49%	9.17%	27.02%	16.31%
Impervious Cover	21.14%			

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Changed
5	5	Fecal Coliform	R1_MA_2019_01	Changed

Fish, other Aquatic Life and Wildlife Use: Not Supporting (Alert)
According to DMF biologists, the Water Street culvert (Weymouth) constitutes a minor obstruction to river herring and American eel with a passage score of 3 out of 10 (10 = no passage). They indicated that the culvert needs baffles to reduce velocity and backwater during high flows. The river herring run on this AU is one of the largest in the coastal drainage area (with a population score of 10 out of 10). According to DMF biologists, the Jackson Square Dam and youth center dam (located within roughly 25 feet of each other downstream of Commercial Street, Weymouth) constitute minor obstructions to diadromous fish, with passage scores of 3 and 2, respectively, out of 10 (10 = no passage). DMF indicated that the fishway on the youth center dam functions adequately but needs annual maintenance. They also indicated that sediment was removed from upstream of the Jackson Square Dam in 2009 and minor repairs are scheduled to be made to the fish ladder during summer 2020 (Chase March 12, 2020). According to DMF biologists, the Broad Street Dam constitutes a minor obstruction to river herring and American eel with a passage score of 3 out of 10 (10 = no passage). DMF indicated that there is a growing need for maintenance of the Denil fishway. A flood control tunnel discharges adjacent to the downstream end of the

fishway. DMF gave this structure a passage score of 3 also and indicated that the gate preventing river herring and rainbow smelt from entering the tunnel's outlet needs to be replaced with a diversion wall. Repairs to the gate and construction of the diversion wall are scheduled for summer 2020 (Chase March 12, 2020).
MassDEP conducted a water quality survey at station W2032 (approximately 560 feet downstream of Commercial Street, Weymouth) during summer 2009. A multiprobe was deployed for three 5 day periods and the dissolved oxygen data may be indicative of enriched conditions (lowest DO mean daily min = 5.16 mg/L, max DO diel shift = 6.2 mg/L, max saturation = 166%; max temperature = 28.5 °C, max 4-DADM temp = 28.0 °C, max 24-hour rolling avg = 26.0 °C). However, it should be noted that all these data were qualified as tidal, and the two deployments which appeared to indicate enrichment were also qualified "U" (unstable readings). Attended probe and grab sample data (temperature, pH, DO, ammonia, TP) were consistent with the continuous data in the case of DO, and did not violate criteria in the case of the other parameters. Of note, the total phosphorus average concentration was 0.028 mg/L and there were no observations of excessive algal density.
While DO concentration data met the criterion for short-term continuous data (mean of the daily minimum >5.0 mg/L) and there were no biological indicators of enrichment, the maximum diel shift was >3.0 mg/L and the maximum saturation was ≥125%. The DO data may have been under the influence of tidal conditions. Due to uncertainty in whether the data truly indicate evidence of enrichment, the DO impairment will be retained at this time. Followup monitoring should be conducted. The Aquatic Life Use of the Weymouth Back River MA74-05 is assessed as Not Supporting. An Alert is being added for temperature because the maximum 4-DADM exceeded the chronic criterion (27.7 °C). This alert is added with the caution that the data from this deploy were qualified and followup sampling should be conducted.

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)

Weymouth Back River (MA74-13)

Location:	From the base of the fish ladder north of Commercial Street, Weymouth to mouth between Lower Neck, Weymouth (to the west) and Wompatuck Road, Hingham (area associated with Weymouth Back River ACEC designated as ORW).
AU Type:	ESTUARY
AU Size:	0.85 SQUARE MILES
Classification/Qualifier:	SA: ORW, SFO

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Fecal Coliform	R1_MA_2019_01	Changed

Fish, other Aquatic Life and Wildlife Use: Not Assessed
With no data available, the Aquatic Life Use of Weymouth Back River MA74-13 is Not Assessed.

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)

Weymouth Fore River (MA74-14)

Location:	Commercial Street, Braintree to mouth (eastern point at Lower Neck, Weymouth and western point at Wall Street on Houghs Neck, Quincy).
AU Type:	ESTUARY
AU Size:	2.29 SQUARE MILES
Classification/Qualifier:	SB: SFR

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Enterococcus	R1_MA_2019_01	Changed
5	5	Fecal Coliform	R1_MA_2019_01	Changed

Fish, other Aquatic Life and Wildlife Use: Insufficient Information

Clean Harbors of Braintree, Inc. (MA0031551) was issued a permit (9 May 2011) to discharge a maximum daily flow of 350 gpm of treated effluent (comprised of stormwater runoff, ground water seepage collected in the stormwater system, and stormwater collected in secondary containment areas) via outfall 001 to the Weymouth Fore River (MA74-14). Clean Harbors is required to utilize Mysid shrimp (*Mysidopsis bahia*) and inland silverside (*Menidia beryllina*) test organisms in one whole effluent toxicity test per year (conducted in August) with an acute LC_{50} ≥100%. The facility is also required to report the NOAEL (No Observed Acute Effect Level, which is similar to Acute No Effect Concentration that MassDEP typically summarizes). Between June 2010 and August 2018, water from the Weymouth Fore River was collected (approximately 45 feet east of Clean Harbors outfall 001, northeast of Hill Ave., Braintree) for use as a diluent/control in Mysid shrimp (n = 9) and inland silverside (n=8) WET tests. Survival of Mysid shrimp exposed (~48 hours) to the river water was good, ranging from 98-100% of the test organisms for most of the tests (with one exception of 18% survival). Survival of inland silversides at 48 hours of exposure was good for all tests, ranging from 83-100% of the test organisms. There was no acute toxicity detected in tests of the effluent.

The New England Aquarium Off-Site Holding Facility (MA0040380) was issued a permit (19 May 2010) to discharge an average monthly flow of 12,000 GPD of disinfected tank and aquaria waters via outfall 001 to the Weymouth Fore River (MA74-14). The NE Aquarium is required to utilize Mysid shrimp and inland silverside test organisms in one whole effluent toxicity test per year (conducted in the third calendar quarter) with an acute LC_{50} = 100%. The facility is also required to report the ANOEC. Between October 2010 and September 2018, water from the Weymouth Fore River was collected (approximately 350 feet north of the New England Aquarium's outfall 001, via a submersible pump intake east of South Street, Quincy) for use as a diluent/control in Mysid shrimp (n = 8) and inland silverside WET tests (n = 8). Survival of Mysid shrimp exposed (~48 hours) to the river water was good, ranging from 90-100% of the test organisms. Survival of inland silverside fish was similarly good, ranging from 93-100% of the test organisms. There was no acute toxicity detected in tests of the effluent.

Although whole effluent toxicity tests, conducted by Clean Harbors of Braintree and the New England Aquarium, using ambient water, indicated that survival of test organisms was generally good, these data were fairly limited. Therefore, there is Insufficient Information to assess the Aquatic Life Use of the Weymouth Fore River MA74-14.

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Enterococcus	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
		(Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds (Report CN 157.1, approved 11/21/2018, ATTAINS Action ID: R1_MA_2019_01)

Whitmans Pond (MA74025)

Location:	Weymouth.
AU Type:	FRESHWATER LAKE
AU Size:	176 ACRES
Classification/Qualifier:	A: PWS, ORW

2016 AU Category	2018/20 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Curly-leaf Pondweed*)		Added
5	5	(Fanwort*)		Added
5	5	(Non-Native Aquatic Plants*)		Removed

Fish, other Aquatic Life and Wildlife Use: Not Supporting (Alert)

There are reports of the non-native aquatic macrophytes, fanwort (*Cabomba caroliniana*) and curly-leaf pondweed (*Potamogeton crispus*), in Whitmans Pond. An unconfirmed 2010 report of variable milfoil (*Myriophyllum heterophyllum*) in MassDEP's Herbicide Database should be confirmed.

According to DMF biologists, the Washington Street control structure between the upper and lower lobes of Whitmans Pond functions as a minor obstruction to river herring and American eel. DMF gave the recently replaced (2012) gate a passage score of 3 out of 10 (10 = no passage) and indicated that an Operations and Management plan should be developed with the Weymouth Water Department.

According to DMF biologists, the Whitmans Pond Dam constitutes a minor obstruction to river herring and American eel with a passage score of 2 out of 10 (10 = no passage). DMF indicates the fishway functions adequately but needs annual attention. The river herring population is considered a 10 out of 10, one of the largest runs in the coastal drainage area.

A short way downstream of Whitmans Pond Dam, on the channel carrying the pond's outflow, is the Iron Hill Dam. DMF considers this dam also a minor obstruction to river herring and American eel, and gave it a passage score of 2 out of 10 (10 = no passage).

Another short distance downstream is the Pleasant Street Dam. DMF considers this dam only a very minor obstruction to river herring and American eel, and gave it a passage score of 1 out of 10 (0 = no obstruction). DMF commented that the fishway functions adequately, but sediment removal and other maintenance are needed.

The diadromous fish passage scores for all the structures on the pond or immediately downstream in its outlet channel are considered satisfactory (all <4). However, the presence of two non-native aquatic macrophyte species warrants that the Aquatic Life Use of Whitmans Pond MA74025 be assessed as Not Supporting. The "Non-Native Aquatic Plants" code is being delisted and replaced with the specific codes "Fanwort" and "Curly-leaf Pondweed". An Alert is being added due to a potential infestation of the non-native variable water milfoil (*Myriophyllum heterophyllum*).

2018/20 Delisted Impairment	Delisting Reason	Delisting Comment
Non-Native Aquatic Plants	Clarification of listing cause	The generic "Non-Native Aquatic Plants" is being delisted and replaced with the specific codes "Fanwort" and "Curly-leaf Pondweed".

Supporting Information for Delisted Impairments

Non-Native Aquatic Plants

There are reports of the non-native aquatic macrophytes, *Cabomba carolinian* and *Potamogeton crispus*, in Whitmans Pond (Valutkevich, McVoy and Mallard 1983). An unconfirmed 2010 report of *Myriophyllum heterophyllum* in MassDEP's Herbicide Database (MassDEP 2017) should be confirmed.

From Herbicide Database (MassDEP 2017):

Name	Received Di	Company Name	VEG1	VEG2	VEG3	VEG4	VEG5	VEG6	VEG7
WHITMAN 'S POND	7/11/1996	LYCOTT ENVIRONMENTAL RESEARCH INC	LILIES	BLADDERWORT	FANWORT	DUCKWEED	FILAMENTOUS ALGAE	PHRAGMITES	
WHITMAN'S POND	4/6/2010	AQUATIC CONTROL TECHNOLOGY, INC.	FANWORT	VARIABLE WATERMILFOI					
WHITMAN'S POND	4/17/1997	LYCOTT ENVIRONMENTAL RESEARCH INC	LILIES	BLADDERWORT	ELODEA	PHRAGMITES	FILAMENTOUS ALGAE	DUCKWEED	
WHITMAN'S POND	6/26/2009	AQUATIC CONTROL TECHNOLOGY, INC.	CABOMBA CAROLINIANA	LYTHRUM SALICARIA	PHRAGMITES				
WHITMAN'S POND WEST BASIN	6/25/2003	AQUATIC CONTROL TECHNOLOGY, INC.	FANWORT						
WITMAN'S POND	8/20/1998	LYCOTT ENVIRONMENTAL RESEARCH INC	LILIES	BLADDERWORT	ELODEA	PHRAGMITES	FILAMENTOUS ALGAE	DUCKWEED	PURPLE LOOSTRIFE

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