Final Massachusetts Integrated List of Waters for the Clean Water Act 2022 Reporting Cycle

Appendix 20
Parker River Basin and Coastal Drainage Area Assessment and Listing Decision Summary

Prepared by:
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Massachusetts Department of Environmental Protection

MassDEP's mission is to protect and enhance the Commonwealth's natural resources – air, water, and land – to provide for the health, safety, and welfare of all people, and to ensure a clean and safe environment for future generations. In carrying out this mission MassDEP commits to address and advance environmental justice and equity for all people of the Commonwealth; provide meaningful, inclusive opportunities for people to participate in agency decisions that affect their lives; and ensure a diverse workforce that reflects the communities we serve.

Watershed Planning Program

The Watershed Planning Program is a statewide program in the Division of Watershed Management, Bureau of Water Resources, at MassDEP. We are stewards of the water resources of Massachusetts. Together with other state environmental agencies, we share in the duty and responsibility to protect, enhance, and restore the quality and value of the waters of the Commonwealth. We are guided by the federal Clean Water Act and work to secure the environmental, recreational, and public health benefits of clean water for the residents of Massachusetts. The Watershed Planning Program is organized into five Sections that each have a different technical focus under the Clean Water Act: (1) Surface Water Quality Standards; (2) Surface Water Quality Monitoring; (3) Data Management and Water Quality Assessment; (4) Total Maximum Daily Load; and (5) Nonpoint Source Pollution.

Disclaimer

References to trade names, commercial products, manufacturers, or distributors in this report constituted neither endorsement nor recommendation by MassDEP.

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Notice of Availability

This report is available on the Massachusetts Department of Environmental Protection website: https://www.mass.gov/lists/integrated-lists-of-waters-related-reports.

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2022 Cycle Impairment Changes

Waterbody	AU_ID	2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
Baldpate Pond	MA91001	5	5	(Curly-leaf Pondweed*)		Unchanged
Baldpate Pond	MA91001	5	5	(Fanwort*)		Unchanged
Baldpate Pond	MA91001	5	5	Dissolved Oxygen		Unchanged
Baldpate Pond	MA91001	5	5	Mercury in Fish Tissue		Unchanged
Bull Brook	MA91-04	2	2	None		Unchanged
Bull Brook Reservoir	MA91002	4c	4c	(Fish Passage Barrier*)		Unchanged
Central Street Pond	MA91003	3	3	None		Unchanged
Crane Pond	MA91004	3	3	None		Unchanged
Dow Brook Reservoir	MA91005	3	3	None		Unchanged
Eagle Hill River	MA91-06	5	4a	Fecal Coliform	R1_MA_2021_001	Changed
Egypt River	MA91-13	4c	4c	(Fish Passage Barrier*)		Unchanged
Egypt River	MA91-14	5	4a	Fecal Coliform	R1_MA_2021_001	Changed
Jackman Brook	MA91-07	2	5	Benthic Macroinvertebrates		Added
Little Crane Pond	MA91007	3	3	None		Unchanged
Little River	MA91-11	5	4a	Fecal Coliform	R1_MA_2021_001	Changed
Mill River	MA91-08	5	5	(Fish Passage Barrier*)		Unchanged
Mill River	MA91-08	5	5	(Water Chestnut*)		Unchanged
Mill River	MA91-08	5	5	Algae		Unchanged
Mill River	MA91-08	5	5	Aquatic Plants (Macrophytes)		Removed
Mill River	MA91-08	5	5	Benthic Macroinvertebrates		Added
Mill River	MA91-08	5	5	Dissolved Oxygen		Added
Mill River	MA91-08	5	5	Nutrient/Eutrophication Biological Indicators		Added
Mill River	MA91-09	5	4a	Fecal Coliform	R1_MA_2021_001	Changed
Ox Pasture Brook	MA91-10	2	2	None		Unchanged
Paine Creek	MA91-03	5	4a	Fecal Coliform	R1_MA_2021_001	Changed
Parker River	MA91-01	4c	4c	(Dewatering*)		Unchanged
Parker River	MA91-01	4c	4c	(Fish Passage Barrier*)		Unchanged
Parker River	MA91-02	5	4a	Fecal Coliform	R1_MA_2021_001	Changed
Penn Brook	MA91-16	5	5	Benthic Macroinvertebrates		Unchanged
Penn Brook	MA91-16	5	5	Dissolved Oxygen		Unchanged
Pentucket Pond	MA91010	5	5	(Fanwort*)		Unchanged
Pentucket Pond	MA91010	5	5	Mercury in Fish Tissue		Unchanged
Plum Island River	MA91-15	5	4a	Fecal Coliform	R1_MA_2021_001	Changed
Plum Island Sound	MA91-12	5	4a	Fecal Coliform	R1_MA_2021_001	Changed
Quills Pond	MA91011	3	3	None		Unchanged
Rock Pond	MA91012	5	5	Mercury in Fish Tissue		Unchanged
Rowley River	MA91-05	5	4a	Fecal Coliform	R1_MA_2021_001	Changed
Sperrys Pond	MA91013	3	3	None		Unchanged
State Street Pond	MA91014	4c	4c	(Fanwort*)		Unchanged
Wilson Pond	MA91017	3	3	None		Unchanged

Baldpate Pond (MA91001)

Location:	Boxford.
AU Type:	FRESHWATER LAKE
AU Size:	60 ACRES
Classification/Qualifier:	B

No usable data were available for Baldpate Pond (MA91001) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Curly-leaf Pondweed*)		Unchanged
5	5	(Fanwort*)		Unchanged
5	5	Dissolved Oxygen		Unchanged
5	5	Mercury in Fish Tissue		Unchanged

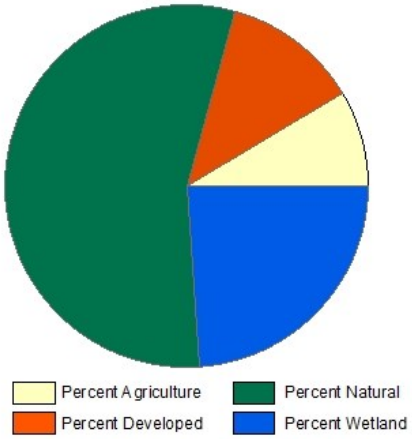
Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X				
(Fanwort*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X				
Dissolved Oxygen	Source Unknown (N)	X				
Mercury in Fish Tissue	Atmospheric Deposition - Toxics (Y)		X			

Bull Brook (MA91-04)

Location:	Headwaters south of Linebrook Road, Ipswich to mouth at inlet Bull Brook Reservoir, Ipswich.
AU Type:	RIVER
AU Size:	1.4 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Bull Brook - MA91-04

Watershed Area: 2.18 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	2.18	2.18	1.13	1.13
Agriculture	8.5%	8.5%	9.7%	9.7%
Developed	12.2%	12.2%	8.2%	8.2%
Natural	55.4%	55.4%	48.3%	48.3%
Wetland	23.9%	23.9%	33.7%	33.7%
Impervious Cover	3.9%			

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None		Unchanged

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Fully Supporting	NO
2022 Use Attainment Summary	
MassDFG conducted a fish community survey via backpack shocking in Bull Brook downstream of Line Brook Rd, Ipswich (Sample 6826) in August 2017. The sample (n=42) included 12% intolerant individuals (banded sunfish) and 17% intolerant/moderately tolerant macrohabitat generalists (banded sunfish, redfin pickerel). Ideally, water quality data would be collected in Bull Brook (MA91-04), but at this time, the Aquatic Life Use is assessed as Fully Supporting based on the 2017 fisheries survey.	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
6826	MassDFG	Fish Community	Bull Brook	Line Brook Rd DS, Ipswich	42.68721	-70.88347

Biological Monitoring Information

Fish Community Data and DELTS

Fish Community Data (2012-2019) Provided by MassDFG. (MassDFG 2020) (MassDEP Undated 1)

[Sample Type: TP= Total Pickup, SP= Selective Pickup, Method: BT=Boat Shocking, BP= Backpack Shocking, BG= Barge Shocking, SE= Seine, SL= Snorkel, NS= Not Stated, MT= Minnow Trap, GN= Gillnet, FY= Fyke Net, Gradient: H = High, L = Low; I/MT MG= Intolerant/Moderately Tolerant Macrohabitat Generalist]

[Species List: AE = American Eel, B = Bluegill, BS = Banded Sunfish, GS = Golden Shiner, RP = Redfin Pickerel]

Sample ID	Sample Date	Method	Sample Type	Gradient	Total Taxa	Total Ind	Cold Ind %	Fluvial Taxa	Fluvial Ind %	Intol Ind %	I/MT MG Taxa	I/MT MG Ind %	Notables	CFR	Species List
6826	08/21/17	BP	TP	L	5	42	0%	0	0%	12%	2	17%	Yes	No	AE, B, BS, GS, RP,

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Fish toxics sampling has not been conducted in Bull Brook (MA91-04), so the Fish Consumption Use is Not Assessed.	

Aesthetic

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Recent sampling has not been conducted in Bull Brook (MA91-04), so the Aesthetics Use is Not Assessed.	

Primary Contact Recreation

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent bacteria sampling has been conducted in Bull Brook (MA91-04), so the Primary Contact Recreational Use is Not Assessed.	

Secondary Contact Recreation

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent bacteria sampling has been conducted in Bull Brook (MA91-04), so the Secondary Contact Recreational Use is Not Assessed.	

Bull Brook Reservoir (MA91002)

Location:	Ipswich.
AU Type:	FRESHWATER LAKE
AU Size:	7 ACRES
Classification/Qualifier:	A: PWS, ORW

No usable data were available for Bull Brook Reservoir (MA91002) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Fish Passage Barrier*)		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
(Fish Passage Barrier*)	Dam or Impoundment (Y)	X				

Central Street Pond (MA91003)

Location:	Rowley.
AU Type:	FRESHWATER LAKE
AU Size:	3 ACRES
Classification/Qualifier:	B: ORW (also tributary to SA SFO ORW)

No usable data were available for Central Street Pond (MA91003) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None		Unchanged

Crane Pond (MA91004)

Location:	Groveland.
AU Type:	FRESHWATER LAKE
AU Size:	22 ACRES
Classification/Qualifier:	B: WWF, HQW (impoundment on river designated B/WWF/HQW)

No usable data were available for Crane Pond (MA91004) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None		Unchanged

Dow Brook Reservoir (MA91005)

Location:	Ipswich.
AU Type:	FRESHWATER LAKE
AU Size:	16 ACRES
Classification/Qualifier:	A: PWS, ORW

No usable data were available for Dow Brook Reservoir (MA91005) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None		Unchanged

Eagle Hill River (MA91-06)

Location:	Headwaters north of Town Hill, east of Town Farm Road, Ipswich to the mouth at Plum Island Sound, Ipswich.
AU Type:	ESTUARY
AU Size:	0.35 SQUARE MILES
Classification/Qualifier:	SA: ORW

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Fecal Coliform	R1_MA_2021_001	Changed

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Shellfish Harvesting	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Fecal Coliform	Source Unknown (N)			X			

Supporting Information for Removed Impairments

2018/20 Removed Impairment	Removal Reason	Removal Comment
Fecal Coliform	TMDL Approved or established by EPA (4a)	Impairment covered under TMDL: Final Pathogen TMDL for the Parker River Watershed (Report CN 258.1, approved 2021-02-24, ATTAINS Action ID: R1_MA_2021_001)

Recommendations

2022 Recommendations
ALU: As described in the 2018/2020 IR cycle (MassDEP 2021), water quality and biological monitoring should be conducted in the Eagle Hill River in the vicinity of the locations of a 2011 USFWS study which identified elevated sediment mercury concentrations, albeit not under the auspices of a QAPP.

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Assessed	YES
2022 Use Attainment Summary	
Recent data are not available for the Eagle Hill River (MA91-06), so the Aquatic Life Use is Not Assessed. An Alert described in the 2018/2020 IR cycle (MassDEP 2021), for high levels of mercury in sediment, is being carried forward.	

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO

2022 Use Attainment Summary
Fish toxics sampling has not been conducted in the Eagle Hill River (MA91-06), so the Fish Consumption Use is Not Assessed.

Shellfish Harvesting

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
Eagle Hill River (MA91-06): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.3304 sq mi (94%). The approved shellfish growing area represents 0 sq mi (0%). The Shellfish Harvesting Use is assessed as not supporting because the growing area (normalized to the AU area) is < 100% approved. Based on the new growing area classifications and the prior classifications, the existing fecal coliform impairment is being retained.	

Shellfish Growing Area Classifications

MassDFG-Division of Marine Fisheries Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Area Name	Waterbody/Area Description	Classification	Area (Sq. Mi.)	Area (% of AU)
N4.0	Plum Island Sound	Conditionally Approved	0.02086	5.9%
N4.1	Eagle Hill River	Conditionally Approved	0.29564	83.7%
N4.5	Greens Point Creek	Prohibited	0.01091	3.1%
N4.8	North Ridge Mooring Area	Prohibited	0.00301	0.9%

Aesthetic

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Recent data are not available for the Eagle Hill River (MA91-06), so the Aesthetics Use is Not Assessed.	

Primary Contact Recreation

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Recent Enterococci bacteria data are not available for the Eagle Hill River (MA91-06), so the Primary Contact Recreational Use is Not Assessed.	

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Summary
Eagle Hill River (MA91-06): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.3304 sq mi (94%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Primary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Secondary Contact Recreation

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Recent Enterococci bacteria data are not available for the Eagle Hill River (MA91-06), so the Secondary Contact Recreational Use is Not Assessed.	

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

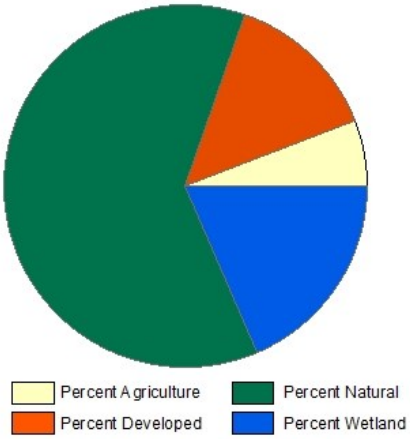
Summary
Eagle Hill River (MA91-06): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.3304 sq mi (94%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Secondary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Egypt River (MA91-13)

Location:	Outlet Bull Brook Reservoir, Ipswich to tidally influenced area approximately 600 feet downstream from High Street (Route 1A), Ipswich.
AU Type:	RIVER
AU Size:	0.3 MILES
Classification/Qualifier:	B: ORW

Egypt River - MA91-13

Watershed Area: 3.39 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	3.39	3.39	1.82	1.82
Agriculture	5.9%	5.9%	6.7%	6.7%
Developed	13.8%	13.8%	12.3%	12.3%
Natural	61.7%	61.7%	55%	55%
Wetland	18.5%	18.5%	25.9%	25.9%
Impervious Cover	4.4%			

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Fish Passage Barrier*)		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
(Fish Passage Barrier*)	Dam or Impoundment (Y)	X				

Recommendations

2022 Recommendations
ALU: Conduct a water quality survey in this Egypt River AU (MA 91-13) in the vicinity of Rt 1A, including deployment of probes to measure continuous dissolved oxygen. Biological surveys (benthic/fisheries) should also be conducted.

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	YES

2022 Use Attainment Summary

Ipswich River Watershed Association staff/volunteers collected discrete water quality data from 2013-2019 in this Egypt River AU (MA91-13) upstream of Rt 1A in Ipswich (Station IRWA_ER-1A). Dissolved oxygen data were collected generally March through December each year (n= 8-10/yr). There were three instances of low DO <4.0 mg/L during summer 2016 (when there was a statewide drought (Drought Management Task Force 2021) and one instance each of DO below the 5.0 mg/L threshold for early life stages in July 2018 (3.2 mg/L) and July 2019 (4.8 mg/L). Discrete temperature data were measured three times each year during the summer index period, with a maximum temperature of 26.0 °C over all years. Specific conductance data were measured 8-10 times per year from 2017-2019 with a maximum of 667 µs/cm. Nearby, MassDFG biologists conducted backpack electrofishing in the river downstream of Rt 1A, Ipswich (Sample ID 6827) in August 2017. The sample (n=30) included only tolerant species (American eel, banded killifish, mummichog), however the field notes indicated that sampling efficiency was poor due to equipment issues (MassDFG 2020).
Although limited water quality data were generally indicative of good conditions, the Aquatic Life Use of this Egypt River AU (MA91-13) will continue to be assessed as Not Supporting with the Fish Passage Barrier impairment being carried forward. An Alert is also being identified due to occasional low DO data collected by IRWA and a recommendation will be made to collect continuous DO data.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
6827	MassDFG	Fish Community	Egypt River	RT 1A DS, Ipswich	42.69890	-70.86813

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
IRWA_ER-1A	Ipswich River Watershed Association	Water Quality	Egypt River	Route 1A, Ipswich	42.69818	-70.86919

Biological Monitoring Information

Fish Community Data and DELTS

Fish Community Data (2012-2019) Provided by MassDFG. (MassDFG 2020) (MassDEP Undated 1)

[Sample Type: TP= Total Pickup, SP= Selective Pickup, Method: BT=Boat Shocking, BP= Backpack Shocking, BG= Barge Shocking, SE= Seine, SL= Snorkel, NS= Not Stated, MT= Minnow Trap, GN= Gillnet, FY= Fyke Net, Gradient: H = High, L = Low; I/MT MG= Intolerant/Moderately Tolerant Macrohabitat Generalist]

[Species List: AE = American Eel, K = Banded Killifish, M = Mummichog]

Sample ID	Sample Date	Method	Sample Type	Gradient	Total Taxa	Total Ind	Cold Ind %	Fluvial Taxa	Fluvial Ind %	Intol Ind %	I/MT MG Taxa	I/MT MG Ind %	Notables	CFR	Species List
6827	08/21/17	BP	TP	L	3	30	0%	0	0%	0%	0	0%	Yes	No	AE, K, M,

Physico-chemical Water Quality Information

DO, pH, Temperature

Ipswich River Watershed Association Freshwater Discrete Dissolved Oxygen Data (2013-2020). (IRWA 2021) (MassDEP Undated 2)

[CW= Coldwater, WW= Warmwater]

Station Code	Start Date	End Date	DO Count	DO Min (mg/L)	DO Avg (mg/L)	Count CW <5.0	Count WW Early Life Stages <5.0	Count WW Other Life Stages <4.0
IRWA_ER-1A	03/24/13	10/27/13	8	6.0	7.5	0	0	0
IRWA_ER-1A	03/30/14	12/14/14	8	5.0	7.6	0	0	0
IRWA_ER-1A	04/26/15	12/13/15	9	4.0	7.1	1	1	0
IRWA_ER-1A	03/20/16	12/18/16	10	0.6	5.8	3	3	3
IRWA_ER-1A	03/26/17	12/17/17	10	6.2	8.8	0	0	0
IRWA_ER-1A	03/25/18	12/16/18	10	3.2	7.9	2	2	1
IRWA_ER-1A	03/30/19	12/15/19	10	4.4	7.5	2	2	0

* Note: Dissolved Oxygen data flagged as <5.0 mg/L or <4.0 mg/L in the table above include the following dates. 2015: 8/30/2015 (4.0 mg/L); 2016: 7/31/2016 (**3.0 mg/L**), 8/28/2016 (**0.6 mg/L**), 9/25/2016 (**3.3 mg/L**); 2018: 7/29/2018 (**3.2 mg/L**), 8/26/2018 (4.4 mg/L); 2019: 7/27/2019 (**4.8 mg/L**), 8/25/2019 (4.4 mg/L). Those concentrations that are bolded violate the threshold requiring 5.0 mg/L DO through the end of July for fish early life stages or the 4.0 mg/L DO threshold for other life stages.

Ipswich River Watershed Association Freshwater Discrete Temperature Data (2013-2020). (IRWA 2021) (MassDEP Undated 2)

[Summer Index is June 1 – Sept 15; CW= Coldwater, WW= Warmwater]

Station Code	Start Date	End Date	Temp Count	Index Count	Temp Max (°C)	Temp Avg (°C)	Count CW >20	Count CW >22	Count WW >28.3	Count WW >30.3
IRWA_ER-1A	03/24/13	10/27/13	8	3	22.0	15.8	3	0	0	0
IRWA_ER-1A	03/30/14	12/14/14	8	3	23.0	14.4	2	2	0	0
IRWA_ER-1A	04/26/15	12/13/15	9	3	24.0	15.8	3	3	0	0
IRWA_ER-1A	03/20/16	12/18/16	10	3	26.0	15.3	3	2	0	0
IRWA_ER-1A	03/26/17	12/17/17	10	3	24.0	14.8	3	1	0	0
IRWA_ER-1A	03/25/18	12/16/18	10	3	24.0	13.8	3	1	0	0
IRWA_ER-1A	03/30/19	12/15/19	10	3	24.0	14.2	2	2	0	0

Toxics and other pollutants (metals, ammonia, chloride, chlorine)

Ipswich River Watershed Association Discrete Specific Conductance Data (2013-2020) Compared to Estimated Chloride Criteria. (IRWA 2021) (MassDEP Undated 2)

Station Code	Start Date	End Date	SpCond Count	SpCond Min (µs/cm)	SpCond Max (µs/cm)	Count SpCond >904	Count SpCond >994	Count SpCond >3193	Count SpCond >3512	Consecutive sets >904	Consecutive sets >994
IRWA_ER-1A	03/26/17	12/17/17	10	238	667	0	0	0	0	0	0

Station Code	Start Date	End Date	SpCond Count	SpCond Min (µs/cm)	SpCond Max (µs/cm)	Count SpCond >904	Count SpCond >994	Count SpCond >3193	Count SpCond >3512	Consecutive sets >904	Consecutive sets >994
IRWA_ER-1A	03/25/18	12/16/18	8	298	450	0	0	0	0	0	0
IRWA_ER-1A	03/30/19	12/15/19	10	204	405	0	0	0	0	0	0

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Fish toxics sampling has not been conducted in this Egypt River AU (MA91-13), so the Fish Consumption Use is Not Assessed.	

Aesthetic

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Aesthetics observations have not been recorded recently in this Egypt River AU (MA91-13), so the Aesthetics Use is Not Assessed.	

Primary Contact Recreation

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Recent Enterococci bacteria sampling has not been conducted in this Egypt River AU (MA91-13), so the Primary Contact Recreational Use is Not Assessed.	

Secondary Contact Recreation

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Recent Enterococci bacteria sampling has not been conducted in this Egypt River AU (MA91-13), so the Secondary Contact Recreational Use is Not Assessed.	

Egypt River (MA91-14)

Location:	From tidally influenced area approximately 600 feet downstream from High Street (Route 1A), Ipswich to mouth at confluence with Rowley River, Rowley/Ipswich.
AU Type:	ESTUARY
AU Size:	0.04 SQUARE MILES
Classification/Qualifier:	SA: ORW

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Fecal Coliform	R1_MA_2021_001	Changed

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Shellfish Harvesting	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Fecal Coliform	Source Unknown (N)			X			

Supporting Information for Removed Impairments

2018/20 Removed Impairment	Removal Reason	Removal Comment
Fecal Coliform	TMDL Approved or established by EPA (4a)	Impairment covered under TMDL: Final Pathogen TMDL for the Parker River Watershed (Report CN 258.1, approved 2021-02-24, ATTAINS Action ID: R1_MA_2021_001)

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent data are available, so the Aquatic Life Use of this Egypt River AU (MA91-14) is Not Assessed.	

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Fish toxics sampling has not been conducted, so the Fish Consumption Use of this Egypt River AU (MA91-14) is Not Assessed.	

Shellfish Harvesting

2022 Use Attainment	Alert
Not Supporting	YES

2022 Use Attainment Summary
Egypt River (MA91-14): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.0204 sq mi (49%). The approved shellfish growing area represents 0 sq mi (0%). The prohibited shellfish growing area represents 0.0204 sq mi (49%). There is insufficient information available to assess the Shellfish Harvesting Use because the growing areas within this AU are classified as either entirely prohibited or a combination of approved and prohibited. Alert due to prohibited area >= 0.0001 sq mi. There is insufficient information available to delist the existing Fecal Coliform impairment so the Shellfish Harvesting Use is evaluated as not supporting.

Shellfish Growing Area Classifications

MassDFG-Division of Marine Fisheries Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Area Name	Waterbody/Area Description	Classification	Area (Sq. Mi.)	Area (% of AU)
N4.2	Upper Rowley River	Prohibited	0.02043	49.4%

Aesthetic

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent data are available, so the Aesthetics Use of this Egypt River AU (MA91-14) is Not Assessed.	

Primary Contact Recreation

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent Enterococci bacteria data are available, so the Primary Contact Recreational Use of this Egypt River AU (MA91-14) is Not Assessed.	

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Summary
Egypt River (MA91-14): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.0204 sq mi (49%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Primary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Secondary Contact Recreation

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent Enterococci bacteria data are available, so the Secondary Contact Recreational Use of this Egypt River AU (MA91-14) is Not Assessed.	

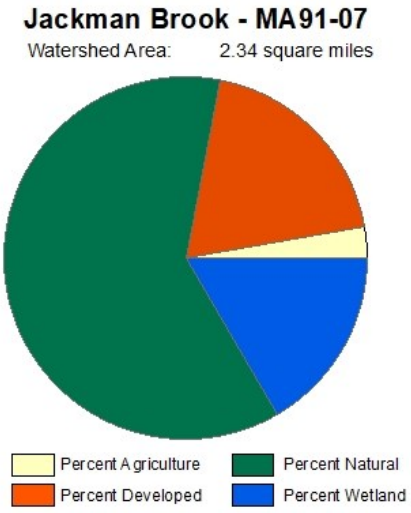
Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Summary
Egypt River (MA91-14): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.0204 sq mi (49%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Secondary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Jackman Brook (MA91-07)

Location:	Perennial portion northeast of intersection of Jewett and Tenney streets, Georgetown to mouth at confluence with Wheeler Brook, Georgetown.
AU Type:	RIVER
AU Size:	0.8 MILES
Classification/Qualifier:	B



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	2.34	2.34	1.05	1.05
Agriculture	2.8%	2.8%	2.4%	2.4%
Developed	19.1%	19.1%	14.9%	14.9%
Natural	61.6%	61.6%	56.5%	56.5%
Wetland	16.5%	16.5%	26.2%	26.2%
Impervious Cover	10.9%			

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
2	5	Benthic Macroinvertebrates		Added

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Benthic Macroinvertebrates	Source Unknown (N)	X				

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	

MassDEP staff conducted fish (Sample 6357), benthic (Station B0916), and water quality (Station W2517) surveys of Jackman Brook approximately 1200 feet upstream/south of Jackman Street, Georgetown during summer 2015. A small fish sample (n=7) was collected the end of June and included 43% intolerant/moderately tolerant macrohabitat generalists. The July benthic macroinvertebrate sample IBI score was 38, indicating that conditions were moderately degraded for a low gradient location. Water quality data, however, were indicative of good conditions. A deployed probe recorded continuous DO data for 84 days and the minimum DO was 7.2 mg/L. Continuous temperature data was measured over 77 days in the summer index period and the maximum temperature was only 21.3 °C, very cool for a warmwater fishery. Other water quality data are summarized as follows: pH ranged from 7.2-7.3 S.U. (n=3), there was no evidence of nutrient enrichment (TP seasonal average was 0.044 mg/L with n=5, maximum DO diel shift was 2.6 mg/L, maximum DO saturation was 97.2%, there were no observations of excessive filamentous algae), there were no exceedances among three clean metals samples or three aluminum samples (because dissolved Al data were compared to the total recoverable Al criteria, exceedances cannot be ruled out, however), the maximum Total Ammonia Nitrogen was 0.048 mg/L (n=5), the maximum chloride was 130 mg/L (n=5), and the maximum specific conductance was 444 µs/cm.

Although water quality data were indicative of good conditions, the Aquatic Life Use of Jackman Brook (MA91-07) is assessed as Not Supporting because of the moderately degraded benthic sample. A Benthic Macroinvertebrates impairment is being added.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
6357	MassDEP	Fish Community	Jackman Brook	50m DS to 50m US of WQ site., Georgetown	42.73504	-70.94273
B0916	MassDEP	Benthic	Jackman Brook/	[approximately 370 meters upstream/south of Jackman Street, Georgetown, MA]	42.735035	-70.942730
W2517	MassDEP	Water Quality	Jackman Brook	[approximately 1200 feet upstream/south of Jackman Street, Georgetown]	42.735035	-70.942730

Biological Monitoring Information

Benthic Macroinvertebrate Data

MassDEP Benthic Macroinvertebrate Data (2011-2017). (MassDEP Undated 3)

[Index Biological Condition Class: E= Exceptional, S= Satisfactory, MD= Moderately Degraded, SD= Severely Degraded; High Gradient IBI Thresholds: E= 100-75, S= 74-55, MD= 54-35, SD= 34-0; Low Gradient IBI Thresholds: E= 100-81, S= 80-62, MD= 61-38, SD= 37-0; R qualifier = Rarefaction (100ct) <55]

Station Code	Collection Date	Collection Method	Index Type	Organism Count	Index Score	Index Biological Condition Class
B0916	07/22/15	RBP multihab	Statewide_Low_Gradient	320	38	MD

Fish Community Data and DELTS

Fish Community Data (2012-2019) Provided by MassDFG. (MassDFG 2020) (MassDEP Undated 1)

[Sample Type: TP= Total Pickup, SP= Selective Pickup, Method: BT=Boat Shocking, BP= Backpack Shocking, BG= Barge Shocking, SE= Seine, SL= Snorkel, NS= Not Stated, MT= Minnow Trap, GN= Gillnet, FY= Fyke Net, Gradient: H = High, L = Low; I/MT MG= Intolerant/Moderately Tolerant Macrohabitat Generalist]

[Species List: AE = American Eel, RP = Redfin Pickerel, SL = Sea Lamprey]

Sample ID	Sample Date	Method	Sample Type	Gradient	Total Taxa	Total Ind	Cold Ind %	Fluvial Taxa	Fluvial Ind %	Intol Ind %	I/MT MG Taxa	I/MT MG Ind %	Notables	CFR	Species List
6357	06/25/15	NS	TP		3	7	0%	0	0%	0%	1	43%	No	No	AE, RP, SL,

Physico-chemical Water Quality Information

DO, pH, Temperature

MassDEP Long-term Continuous Dissolved Oxygen Data (2011-2018). (MassDEP Undated 6) (MassDEP Undated 4)

[7DADMin= 7-Day Average of the Daily Minima, 7DADA= 7-Day Average of the Daily Average, CW= Coldwater, WW= Warmwater]

Station Code	Start Date	End Date	Day Count	7day Count	30day Count	DO Min (mg/L)	Min 7DADMin (mg/L)	Min 7DADA (mg/L)	Delta DO Max (mg/L)	Count CW 7DADMin <6.0	Count CW 1Day Min <5.0	Count WW Early Life Stages 7DADA <6.5	Count WW Early Life Stages 1Day Min <5.0	Count WW Other Life Stages 7DADMin <5.0	Count WW Other Life Stages 1Day Min <4.0	Count CW 30DADA <8.0	Count WW Other Life Stages 30DADA <6.0
W2517	07/01/15	09/23/15	84	74	55	7.2	8.6	9.2	2.6	0	0	0	0	0	0	0	0

MassDEP Discrete Dissolved Oxygen Data (2011-2018). (MassDEP Undated 6) (MassDEP Undated 4)

[CW= Coldwater, WW= Warmwater]

Station Code	Start Date	End Date	DO Count	DO Min (mg/L)	DO Avg (mg/L)	Count CW <5.0	Count WW Early Life Stages <5.0	Count WW Other Life Stages <4.0
W2517	08/04/15	09/24/15	3	9.4	9.7	0	0	0

MassDEP Long-term Continuous Temperature Data (Summer Index 2011-2018). (MassDEP Undated 6) (MassDEP Undated 4)

[Summer Index is June 1 – Sept 15; Max Daily Mean= Maximum 24-Hour Average, 7DADM= 7-Day Average of the Daily Maxima, 7DADA= 7-Day Average of the Daily Average, CW= Coldwater, WW= Warmwater; NOTE: In the case of more than one row of data in the same year for a site, different types of temperature probes were deployed.]

Station Code	Start Date	End Date	Index Count	7day Count	Max Daily Mean (°C)	Max Temp (°C)	Max 7DADM (°C)	Max 7DADA (°C)	Count CWTier1 7DADM >20	Count CWTier1 Daily Mean >23.5	Count CWTier2 7DADA >21	Count CWTier2 Daily Mean >24.1	Count WW 7DADM >27.7	Count WW Daily Mean >28.3
W2517	07/01/15	09/15/15	77	74	18.1	21.3	18.7	16.6	0	0	0	0	0	0

24-hour Rolling Average Calculations for MassDEP Short- and Long-term Continuous Temperature Data (Summer Index 2011-2018). (MassDEP Undated 6) (MassDEP Undated 4)

[Summer Index is June 1 – Sept 15; CW= Coldwater, WW= Warmwater; NOTE: In the case of more than one row of data in the same year for a site, different types of temperature probes were deployed.]

Station Code	Start Date	End Date	Count Days Deployed	24hr Rolling Count	Max 24hr Avg Rolling Temp (°C)	Count CWTier1 24hr Avg Rolling >23.5 °C	Count CWTier2 24hr Avg Rolling >24.1 °C	Count WW 24hr Avg Rolling >28.3°C
W2517	06/30/15	09/15/15	77	3671	19.5	0	0	0

MassDEP Discrete Temperature Data (2011-2018). (MassDEP Undated 6) (MassDEP Undated 4)
[Summer Index is June 1 – Sept 15; CW= Coldwater, WW= Warmwater]

Station Code	Start Date	End Date	Temp Count	Index Count	Temp Max (°C)	Temp Avg (°C)	Count CW >20	Count CW >22	Count WW >28.3	Count WW >30.3
W2517	08/04/15	09/24/15	3	2	15.3	14.3	0	0	0	0

MassDEP Discrete pH Data (2011-2018). (MassDEP Undated 6) (MassDEP Undated 4)

Station Code	Start Date	End Date	pH Count	pH Min (SU)	pH Max (SU)	pH Count <6.5 & >8.3	pH Count <6.0 & >8.8
W2517	08/04/15	09/24/15	3	7.2	7.3	0	0

Nutrients (Primary Producer Screening, Physico-chemical Screening)

MassDEP Nutrient Enrichment Indicator Data (2011-2018). (MassDEP Undated 6) (MassDEP Undated 4)
[Summer seasonal total phosphorus data collected May-Sept]

Station Code	Data Year	Seasonal TP Count	Seasonal TP Min (mg/L)	Seasonal TP Max (mg/L)	Seasonal TP Avg (mg/L)	Delta DO Max (mg/L)	Delta DO Avg (mg/L)	DO Sat Max (%)	pH Max (SU)	Count Algal Obsv.	Dense/V. Dense Film/Fila. Algae
W2517	2015	5	0.011	0.110	0.044	2.6	0.8	97.2	7.3	4	0

Toxics and other pollutants (metals, ammonia, chloride, chlorine)

MassDEP Clean Metals Water Column Data (2011-2018), Acute Criteria Violations. (MassDEP Undated 6) (MassDEP Undated 4)
[CMC= Criterion Maximum Concentration, TU= Toxic Unit]

Station Code	Data Year	Metals Count	As CMC TU >1	Cd CMC TU >1	Cr III CMC TU >1	Cu CMC TU >1	Pb CMC TU >1	Ni CMC TU >1	Ag CMC TU >1	Zn CMC TU >1
W2517	2015	3	0	0	0	0	0	0	0	0

MassDEP Clean Metals Water Column Data (2011-2018), Chronic Criteria Violations. (MassDEP Undated 6) (MassDEP Undated 4)
[CCC= Criterion Continuous Concentration, TU= Toxic Unit]

Station Code	Data Year	Metals Count	As CCC TU >1	Cd CCC TU >1	Cr III CCC TU >1	Cu CCC TU >1	Pb CCC TU >1	Ni CCC TU >1	Se CCC TU >1	Zn CCC TU >1
W2517	2015	3	0	0	0	0	0	0	0	0

MassDEP Dissolved Aluminum Water Column Data (2011-2018). (MassDEP Undated 6) (MassDEP Undated 4)
[Since only dissolved aluminum data were available, these data were compared to the default freshwater criteria for total recoverable aluminum (TRA), presented in Appendix E of MassDEP's 2022 CALM. As dissolved Al is a fraction of TRA, an exceedance count of 0 does

not rule out violations of the TRA criteria. CMC= Criterion Maximum Concentration, CCC= Criterion Continuous Concentration, TU= Toxic Unit]

Station Code	Data Year	Dissolved Al Count	Al Min (mg/L)	Al Max (mg/L)	Al Avg (mg/L)	Al CMC TU Max	Al CCC TU Max	Al CMC TU >1	Al CCC TU >1
W2517	2015	3	0.051	0.072	0.058	0.1	0.2	0	0

MassDEP Total Ammonia Nitrogen (TAN) Data (2011-2018). (MassDEP Undated 6) (MassDEP Undated 4)
[TAN= NH3 + NH4+]

Station Code	Data Year	TAN Count	TAN Min (mg/L)	TAN Max (mg/L)	TAN Avg (mg/L)	Count TAN >Chronic	Count TAN >Acute
W2517	2015	5	0.040	0.048	0.042	0	0

MassDEP Chloride Data (2011-2018). (MassDEP Undated 6) (MassDEP Undated 4)

Station Code	Data Year	Chloride Count	Chloride Min (mg/L)	Chloride Max (mg/L)	Chloride Avg (mg/L)	Count Chloride >230	Count Chloride >860
W2517	2015	5	72	130	109	0	0

MassDEP Discrete Specific Conductance Data (2011-2018) Compared to Estimated Chloride Criteria. (MassDEP Undated 6) (MassDEP Undated 4)

Station Code	Start Date	End Date	SpCond Count	SpCond Min (µs/cm)	SpCond Max (µs/cm)	Count SpCond >904	Count SpCond >994	Count SpCond >3193	Count SpCond >3512	Consecutive sets >904	Consecutive sets >994
W2517	08/04/15	09/24/15	3	397	444	0	0	0	0	0	0

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Fish toxics sampling has not been conducted in Jackman Brook (MA91-07) so the Fish Consumption Use is Not Assessed.	

Aesthetic

2022 Use Attainment	Alert
Fully Supporting	NO
2022 Use Attainment Summary	
During five site visits to Jackman Brook approximately 1200 feet upstream/south of Jackman Street, Georgetown (Station W2517/MAP2-673) in summer 2015, MassDEP field crews generally did not note any objectionable conditions (odors, deposits, growths, or turbidity). Based on these field observations, the Aesthetics Use of Jackman Brook (MA91-07) is assessed as Fully Supporting.	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2517	MassDEP	Water Quality	Jackman Brook	[approximately 1200 feet upstream/south of Jackman Street, Georgetown]	42.735035	-70.942730

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2018) (MassDEP Undated 4)

Station Code	Waterbody	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2517	Jackman Brook	2015	5	MassDEP aesthetics observations for station W2517/MAP2-673 on Jackman Brook can be summarized as follows: there were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DEP field sampling crews during summer 2015.

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2018) (MassDEP Undated 6) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2517	2015	5	4	0

MassDEP Aesthetics Observations (2011-2018) (MassDEP Undated 6)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2517	Jackman Brook	2015	Color	Light Yellow/Tan	2	5
W2517	Jackman Brook	2015	Color	None	2	5
W2517	Jackman Brook	2015	Color	NR	1	5
W2517	Jackman Brook	2015	Objectionable Deposits	No	5	5
W2517	Jackman Brook	2015	Odor	None	5	5
W2517	Jackman Brook	2015	Scum	No	4	5
W2517	Jackman Brook	2015	Scum	NR	1	5
W2517	Jackman Brook	2015	Turbidity	Moderately Turbid	1	5
W2517	Jackman Brook	2015	Turbidity	None	4	5

Primary Contact Recreation

2022 Use Attainment	Alert
Fully Supporting	NO

2022 Use Attainment Summary

MassDEP staff collected *E. coli* bacteria samples and recorded field observations during five surveys of Jackman Brook approximately 1200 feet upstream/south of Jackman Street, Georgetown (Station W2517/MAP2-673) in summer 2015. Analysis of this limited frequency bacteria dataset indicated that none of the intervals had GMs exceeding 126 cfu/100mL, none of the sample concentrations exceeded the 410 cfu/100mL STV, and that the seasonal GM was relatively low at 76 cfu/100mL. Field crews generally did not note any objectionable conditions (odors, deposits, growths, or turbidity).

The Primary Contact Recreational Use of Jackman Brook (MA91-07) is assessed as Fully Supporting based on the low *E. coli* concentrations and lack of aesthetically objectionable conditions from summer 2015.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2517	MassDEP	Water Quality	Jackman Brook	[approximately 1200 feet upstream/south of Jackman Street, Georgetown]	42.735035	-70.942730

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MassDEP Undated 6) (MassDEP Undated 4)

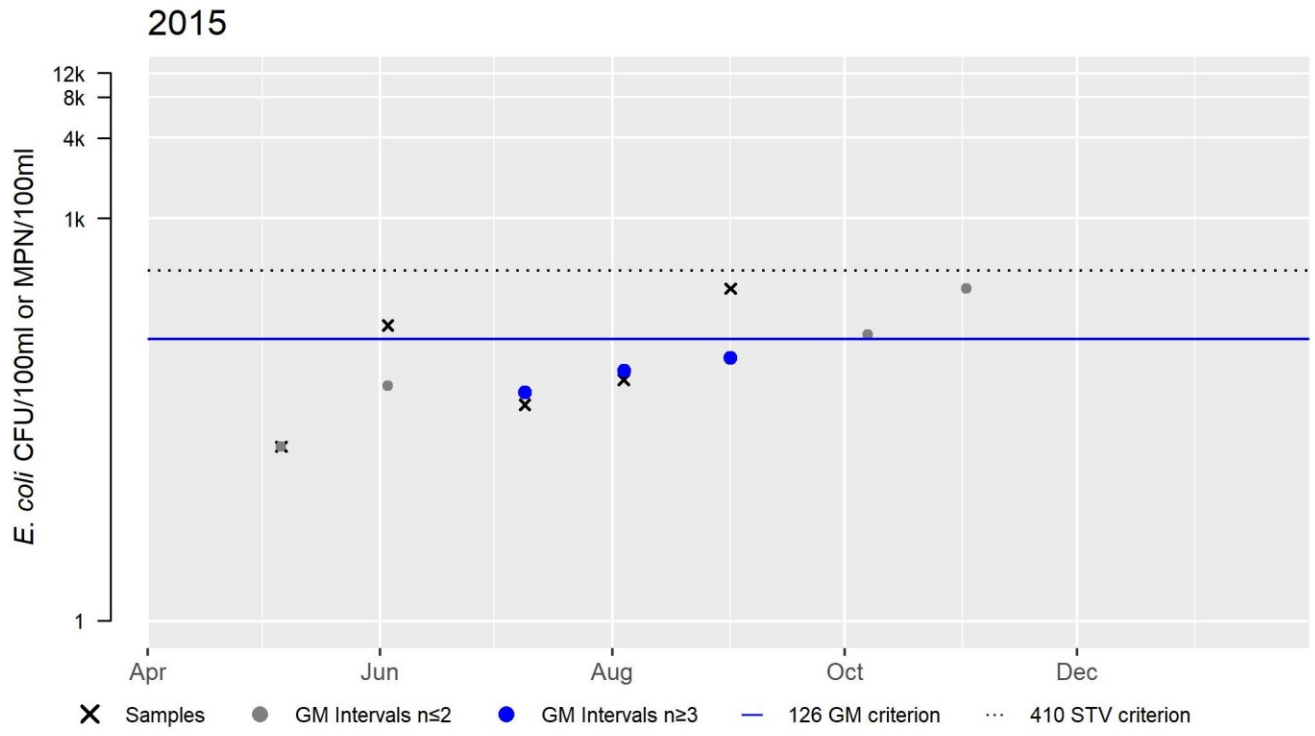
[Result units are CFU/100ml or MPN/100ml]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2517	MassDEP	E. coli	05/06/15	09/01/15	5	20	300	76

W2517 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	5
SeasGM	76
#GMI	3
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exeedances; %GMI Ex = percent GMI Exeedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



Secondary Contact Recreation

2022 Use Attainment	**Alert**
Fully Supporting	NO
2022 Use Attainment Summary	
MassDEP staff collected *E. coli* bacteria samples and recorded field observations during five surveys of Jackman Brook approximately 1200 feet upstream/south of Jackman Street, Georgetown (Station W2517/MAP2-673) in summer 2015. Analysis of this limited frequency bacteria dataset indicated that none of the intervals had GMs exceeding 630 cfu/100mL, none of the sample concentrations exceeded the 1260 cfu/100mL STV, and that the seasonal GM was low at 76 cfu/100mL. Field crews generally did not note any objectionable conditions (odors, deposits, growths, or turbidity). The Secondary Contact Recreational Use of Jackman Brook (MA91-07) is assessed as Fully Supporting based on the low *E. coli* concentrations and lack of aesthetically objectionable conditions from summer 2015.	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2517	MassDEP	Water Quality	Jackman Brook	[approximately 1200 feet upstream/south of Jackman Street, Georgetown]	42.735035	-70.942730

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MassDEP Undated 6) (MassDEP Undated 4)

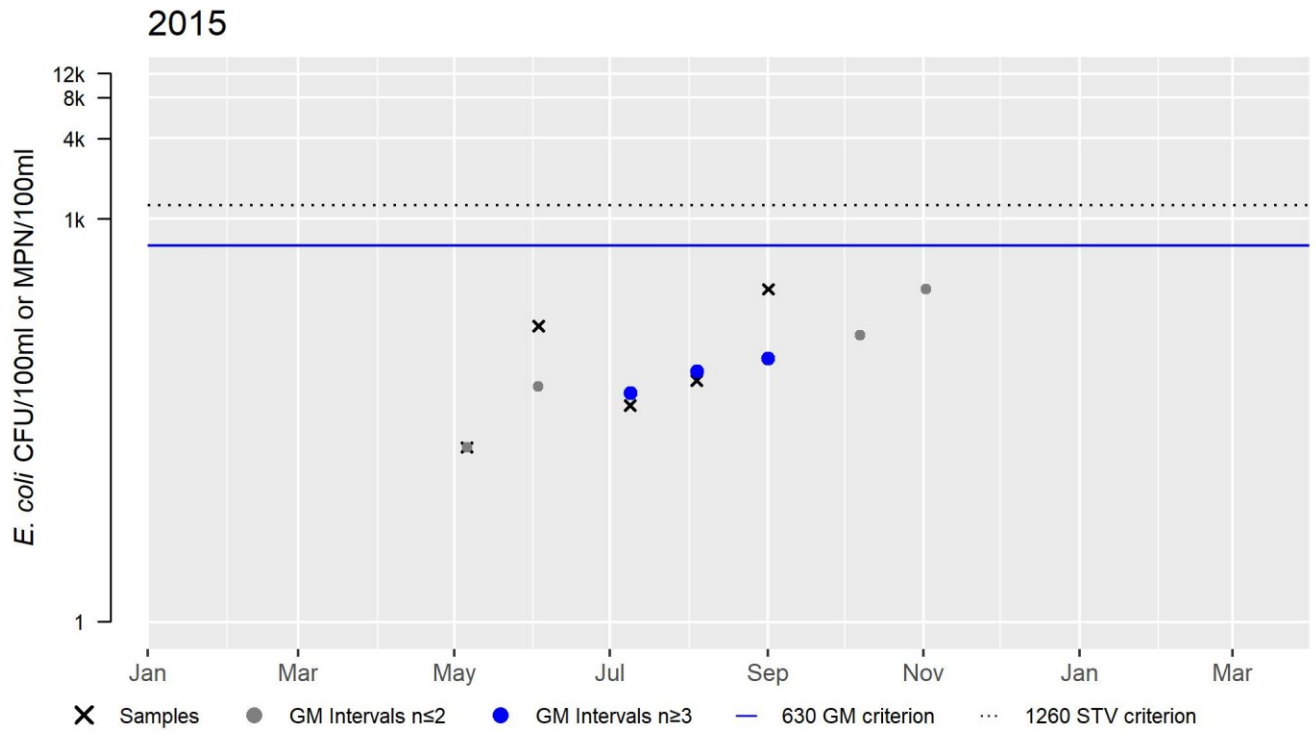
[Result units are CFU/100ml or MPN/100ml]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
W2517	MassDEP	E. coli	05/06/15	09/01/15	5	20	300	76

W2517 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	5
SeasGM	76
#GMI	3
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exeedances; %GMI Ex = percent GMI Exeedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



Little Crane Pond (MA91007)

Location:	West Newbury.
AU Type:	FRESHWATER LAKE
AU Size:	4 ACRES
Classification/Qualifier:	B

No usable data were available for Little Crane Pond (MA91007) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None		Unchanged

Little River (MA91-11)

Location:	from tidally influenced area approximately 100 feet downstream from Hanover Street, Newbury to mouth at confluence with Parker River, Newbury.
AU Type:	ESTUARY
AU Size:	0.08 SQUARE MILES
Classification/Qualifier:	SA: ORW, SFO (Tributary to SA SFO ORW)

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Fecal Coliform	R1_MA_2021_001	Changed

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Shellfish Harvesting	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Fecal Coliform	Source Unknown (N)			X			

Supporting Information for Removed Impairments

2018/20 Removed Impairment	Removal Reason	Removal Comment
Fecal Coliform	TMDL Approved or established by EPA (4a)	Impairment covered under TMDL: Final Pathogen TMDL for the Parker River Watershed (Report CN 258.1, approved 2021-02-24, ATTAINS Action ID: R1_MA_2021_001)

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Insufficient Information	NO
2022 Use Attainment Summary	
MassDFG biologists conducted a seine survey (Sample ID 6562) in the Little River downstream of Newman Rd, Newbury in May 2017. The sample contained 41 individuals, including fourspine stickleback, mummichog, and striped killifish. According to the 2022 CALM guidance, "fish community data are not currently utilized to make Aquatic Life Use support determination for either lentic or estuarine waters" (MassDEP 2022). The Aquatic Life Use of the Little River (MA91-11) is assessed as having Insufficient Information.	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
6562	MassDFG	Fish Community	Little River	Sit # 2. By Newman Rd., Newbury	42.77229	-70.86385

Biological Monitoring Information

Fish Community Data (DELTS or population loss estimates only)

Fish Community Data (2012-2019) Provided by MassDFG. (MassDFG 2020) (MassDEP Undated 1)

[Sample Type: TP= Total Pickup, SP= Selective Pickup, Method: BT=Boat Shocking, BP= Backpack Shocking, BG= Barge Shocking, SE= Seine, SL= Snorkel, NS= Not Stated, MT= Minnow Trap, GN= Gillnet, FY= Fyke Net, Gradient: H = High, L = Low; I/MT MG= Intolerant/Moderately Tolerant Macrohabitat Generalist]

[Species List: FSS = Fourspine Stickleback, M = Mummichog, SK = Striped Killifish]

Sample ID	Sample Date	Method	Sample Type	Gradient	Total Taxa	Total Ind	Cold Ind %	Fluvial Taxa	Fluvial Ind %	Intol Ind %	I/MT MG Taxa	I/MT MG Ind %	Notables	CFR	Species List
6562	05/11/17	SE	TP		3	41	0%	0	0%	0%	0	0%	No	No	FSS, M, SK,

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Fish toxics sampling has not been conducted in the Little River (MA91-11) so the Fish Consumption Use is Not Assessed.	

Shellfish Harvesting

2022 Use Attainment	Alert
Not Supporting	YES
2022 Use Attainment Summary	
Little River (MA91-11): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.0389 sq mi (42%). The approved shellfish growing area represents 0 sq mi (0%). The prohibited shellfish growing area represents 0.0389 sq mi (42%). There is insufficient information available to assess the Shellfish Harvesting Use because the growing areas within this AU are classified as either entirely prohibited or a combination of approved and prohibited. Alert due to prohibited area >= 0.0001 sq mi. There is insufficient information available to delist the existing Fecal Coliform impairment so the Shellfish Harvesting Use is evaluated as not supporting.	

Shellfish Growing Area Classifications

MassDFG-Division of Marine Fisheries Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Area Name	Waterbody/Area Description	Classification	Area (Sq. Mi.)	Area (% of AU)
N4.3		Prohibited	0.03889	42.1%

Aesthetic

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Recent sampling has not been conducted in the Little River (MA91-11) so the Aesthetics Use is Not Assessed.	

Primary Contact Recreation

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Recent Enterococci bacteria sampling has not been conducted in the Little River (MA91-11) so the Primary Contact Recreational Use is Not Assessed.	

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Summary
Little River (MA91-11): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.0389 sq mi (42%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Primary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Secondary Contact Recreation

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Recent Enterococci bacteria sampling has not been conducted in the Little River (MA91-11) so the Secondary Contact Recreational Use is Not Assessed.	

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

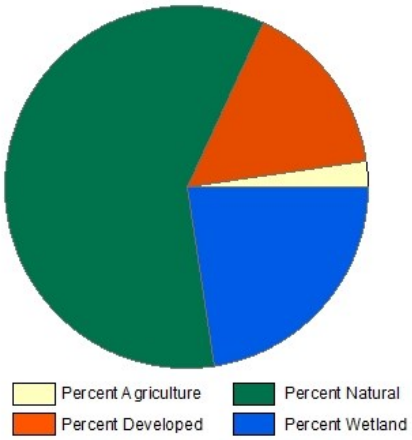
Summary
Little River (MA91-11): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.0389 sq mi (42%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Secondary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Mill River (MA91-08)

Location:	Headwaters - Outlet of small unnamed pond between Route 95 and Rowley Road, Boxford to tidally influenced area approximately 1200 feet upstream from Route 1, Rowley/Newbury (through former 2008 segment: Upper Mill Pond MA91015 and through former 2010 segment: Lower Mill Pond MA91008).
AU Type:	RIVER
AU Size:	6.7 MILES
Classification/Qualifier:	B: ORW, WWF

Mill River - MA91-08

Watershed Area: 12.55 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	12.55	6.58	4.82	2.54
Agriculture	2.3%	3.4%	2.6%	3.8%
Developed	15.7%	15.3%	10.4%	10%
Natural	59.4%	60.1%	49.8%	50.1%
Wetland	22.5%	21.1%	37.2%	36.1%
Impervious Cover	7.5%			

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Fish Passage Barrier*)		Unchanged
5	5	(Water Chestnut*)		Unchanged
5	5	Algae		Unchanged
5	5	Aquatic Plants (Macrophytes)		Removed
5	5	Benthic Macroinvertebrates		Added
5	5	Dissolved Oxygen		Added
5	5	Nutrient/Eutrophication Biological Indicators		Added

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
(Fish Passage Barrier*)	Dam or Impoundment (Y)	X				
(Water Chestnut*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X				

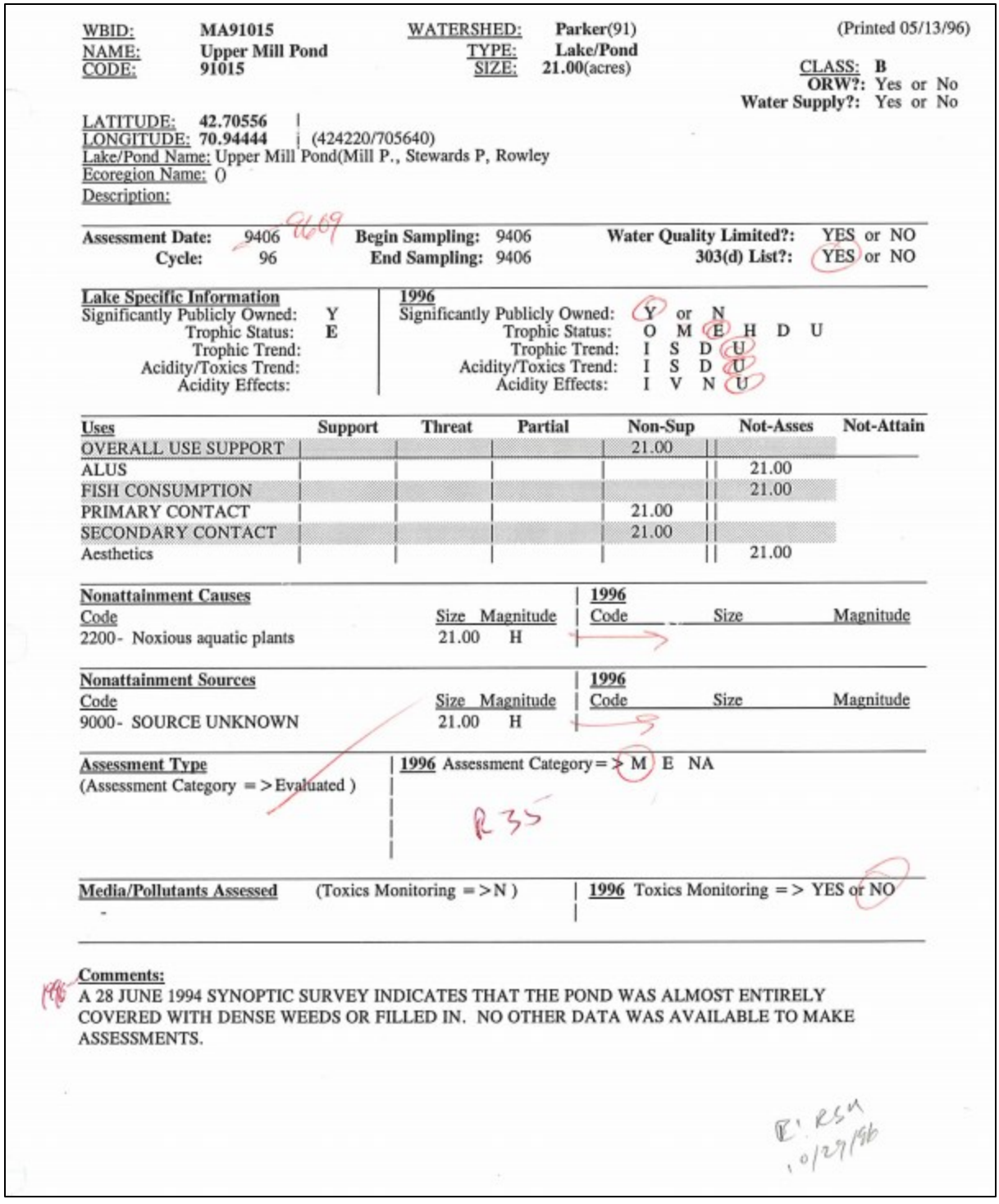
Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Algae	Source Unknown (N)			X	X	X
Benthic Macroinvertebrates	Source Unknown (N)	X				
Dissolved Oxygen	Source Unknown (N)	X				
Nutrient/Eutrophication Biological Indicators	Source Unknown (N)			X	X	X

Supporting Information for Removed Impairments

2018/20 Removed Impairment	Removal Reason	Removal Comment
Aquatic Plants (Macrophytes)	Clarification of listing cause	As described in detail in the 2022 CALM guidance document (MassDEP 2022), the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Mill River (MA91-08) includes two run-of-river impoundments, Upper Mill Pond (formerly MA91015) and Lower Mill Pond (formerly MA91008), which were both listed for Noxious Aquatic Plants in 1996 (later remapped to Aquatic Plants (Macrophytes) during the 2010 IR cycle). Subsequently, the impairment was applied to the Mill River (MA91-08) AU when the pond and river segments merged in 2012 (MassDEP 2015). The original impairments for the ponds were based on synoptic surveys conducted by MassDEP staff in June 1994 in which it was noted that the ponds were mostly/entirely covered with aquatic macrophytes, including the non-rooted, floating species, *Lemna/Wolffia* spp. and *Spirodela* sp. (MassDEP 1994, MassDEP 2002). Google Earth images from summer 2013, 2014, and 2015 show high amounts of plant coverage in the ponds (Google Earth Pro Undated). Additionally, the ponds account for roughly 12% of the Mill River AU (MA91-08) so Aquatic Plants (Macrophytes) is being delisted and replaced with the pollutant impairment, Nutrient/Eutrophication Biological Indicators.

Aquatic Plants (Macrophytes)

1996 WBS Coding Sheet for Upper Mill Pond (formerly MA91015) (MassDEP 2002):



WBID: MA91015 WATERSHED: Parker(91) (Printed 05/13/96)
NAME: Upper Mill Pond TYPE: Lake/Pond
CODE: 91015 SIZE: 21.00(acres)
CLASS: B
ORW?: Yes or No
Water Supply?: Yes or No

LATITUDE: 42.70556
LONGITUDE: 70.94444 (424220/705640)
Lake/Pond Name: Upper Mill Pond(Mill P., Stewards P, Rowley
Ecoregion Name: 0
Description:

Assessment Date: 9406 Begin Sampling: 9406 Water Quality Limited?: YES or NO
Cycle: 96 End Sampling: 9406 303(d) List?: YES or NO

Lake Specific Information		1996	
Significantly Publicly Owned:	Y	Significantly Publicly Owned:	Y or N
Trophic Status:	E	Trophic Status:	O M E H D U
Trophic Trend:		Trophic Trend:	I S D U
Acidity/Toxics Trend:		Acidity/Toxics Trend:	I S D U
Acidity Effects:		Acidity Effects:	I V N U

Uses	Support	Threat	Partial	Non-Sup	Not-Asses	Not-Attain
OVERALL USE SUPPORT				21.00		
ALUS					21.00	
FISH CONSUMPTION					21.00	
PRIMARY CONTACT				21.00		
SECONDARY CONTACT				21.00		
Aesthetics					21.00	

Nonattainment Causes			1996		
Code	Size	Magnitude	Code	Size	Magnitude
2200- Noxious aquatic plants	21.00	H			

Nonattainment Sources			1996		
Code	Size	Magnitude	Code	Size	Magnitude
9000- SOURCE UNKNOWN	21.00	H			

Assessment Type (Assessment Category = > Evaluated)
1996 Assessment Category = > M E NA

R35

Media/Pollutants Assessed (Toxics Monitoring = > N)
1996 Toxics Monitoring = > YES or NO

Comments:
A 28 JUNE 1994 SYNOPTIC SURVEY INDICATES THAT THE POND WAS ALMOST ENTIRELY COVERED WITH DENSE WEEDS OR FILLED IN. NO OTHER DATA WAS AVAILABLE TO MAKE ASSESSMENTS.

R. RSH 10/29/96

1996 WBS Coding Sheet for Lower Mill Pond (formerly MA91008) (MassDEP 2002):

WBID: **MA91008** WATERSHED: **Parker** (91) (Printed 02/03/98)
NAME: **Lower Mill Pond** TYPE: **Lake/Pond**
CODE: **91008** SIZE: **14.00**(acres) CLASS: **B**

LATITUDE: **42.71806**
LONGITUDE: **70.93750** (424305/705615)
Lake/Pond Name: Lower Mill Pond, Rowley
Ecoregion Name: ()
Description:

Assessment Date: 9609 **Begin Sampling:** 9406 **303(d) List?:** Yes
Cycle: 96 **End Sampling:** 9406 **Pathogens Only?:** No

Lake Specific Information
Lake size greater than 10 acres?: Yes
Significantly Publicly Owned: xxxx
Trophic Status: Hypereutrophic
Trophic Trend: Unknown
Acidity/Toxics Trend: Unknown
Acidity Effects: Unknown

Uses	Support	Threat	Partial	Non-Sup	Not-Asses	Not-Attain
OVERALL USE SUPPORT				14.00		
ALUS			14.00			
FISH CONSUMPTION					14.00	
PRIMARY CONTACT				14.00		
SECONDARY CONTACT				14.00		
Aesthetics					14.00	

Nonattainment Causes

Code	Size	Magnitude
2200- Noxious aquatic plants	14.00	M
2600- Exotic species	14.00	M

"New"

Code	Size	Magnitude

Nonattainment Sources

Code	Size	Magnitude
9000- SOURCE UNKNOWN	14.00	H

"New"

Code	Size	Magnitude

Assessment Type
(Assessment Category = >Monitored)
B25- Ecological/habitat surveys (Qualitative/Quantitative)
R35- Primary Producer Surveys

"New" Assessment Category = > M E NA

Media/Pollutants Assessed (Toxics Monitoring = >N)
-

"New" Toxics Monitoring = > YES or NO

Comments:
1996:
A 28 JUNE 1994 SYNOPTIC SURVEY INDICATES THAT THERE WAS 100% COVER OF PLANTS AND ALGAE. THE NON-NATIVE TRAPA NATANS WAS PRESENT AND POSED A THREAT TO THE AQUATIC LIFE IN THE POND. NO OTHER DATA WAS AVAILABLE TO MAKE ASSESSMENTS.

1994 Synoptic Survey Field Sheet for Upper Mill Pond (MassDEP 1994):

9/13/94 10/17/94

Page 1 of 2

MA 91015

Lake/Pond Upper Mill Pond **Date** 28 June 94

Town/City Rowley **Observers** G. DeCesare
R. McVoy

Location/type of access (be specific, e.g., public boat ramp at west cove area off Simpson Street):
Through old saw mill at the outlet

Ownership of Location/Access (specify public or private, name of owner(s), and any use restrictions):
Private

Posted signs (re aquatic plants, fish advisories, access, etc.):
None

Water quality observations (clarity, dissolved organic staining, blooms, et cetera):
- Water level low; much of pond filled in
- No other w.q. observations -

Page 2 of 2

Record of aquatic plant "species" observed (see note below):

Nymphaea, Pontederia, Utricularia, Ceratophyllum echinatum, Potamogeton epihydrus, Lemna, Wolffia, Peltandra, Iris, Ranunculus, filamentous algae

Observed aquatic plant density (at observation site and across lake or pond, if practicable):

Almost entirely covered with dense weeds or filled in.

Other notes (e.g., overt pollution, construction, and water uses:

305b - Eutrophic

Aesthetics NS

1° Contact - 100% Non-support

2° Contact - 100% Non-Support

Cause - Noxious plants - H (Full acreage)

Note: record suspect *M. heterophyllum* plants that may require confirmation once emergent flowering stalks are evident.

1994 Synoptic Survey Field Sheet for Lower Mill Pond (MassDEP 1994):

9/12/94 10/17/94

Page 1 of 2

MA 91008

Lake/Pond Lower Mill Pond **Date** 28 June 94

Town/City Rowley **Observers** G. DeCesare
R. McVoy

Location/type of access (be specific, e.g., public boat ramp at west cove area off Simpson Street):

No formal access.
Observed near outlet at Dodge Rd.

Ownership of Location/Access (specify public or private, name of owner(s), and any use restrictions):

Private

Posted signs (re aquatic plants, fish advisories, access, etc.):

None

Water quality observations (clarity, dissolved organic staining, blooms, et cetera):

- Algal scums on surface
- Hypereutrophic

Page 2 of 2

Record of aquatic plant "species" observed (see note below):

Trapa natans (on left bank), Sagittaria, Pontederia, Iris, Spirodela, Wolffia, Lemna, Potamogeton epihydrus Nymphaea, Peltandra, Typha (far upper end of lake)

Observed aquatic plant density **(at observation site and across lake or pond, if practicable):**

100% cover of plants and algae

Other notes (e.g., overt pollution, construction, and water uses:

3056 – Hypereutrophic

1° Contact – 100% Non-support

2° Contact – 100% Non-support

Aquatic Life – 100% Partial Support

Causes – Noxious Plants – H (Full acreage), Exotic plants – M (Full acreage)

Note: record suspect *M. heterophyllum* plants that may require confirmation once emergent flowering stalks are evident.

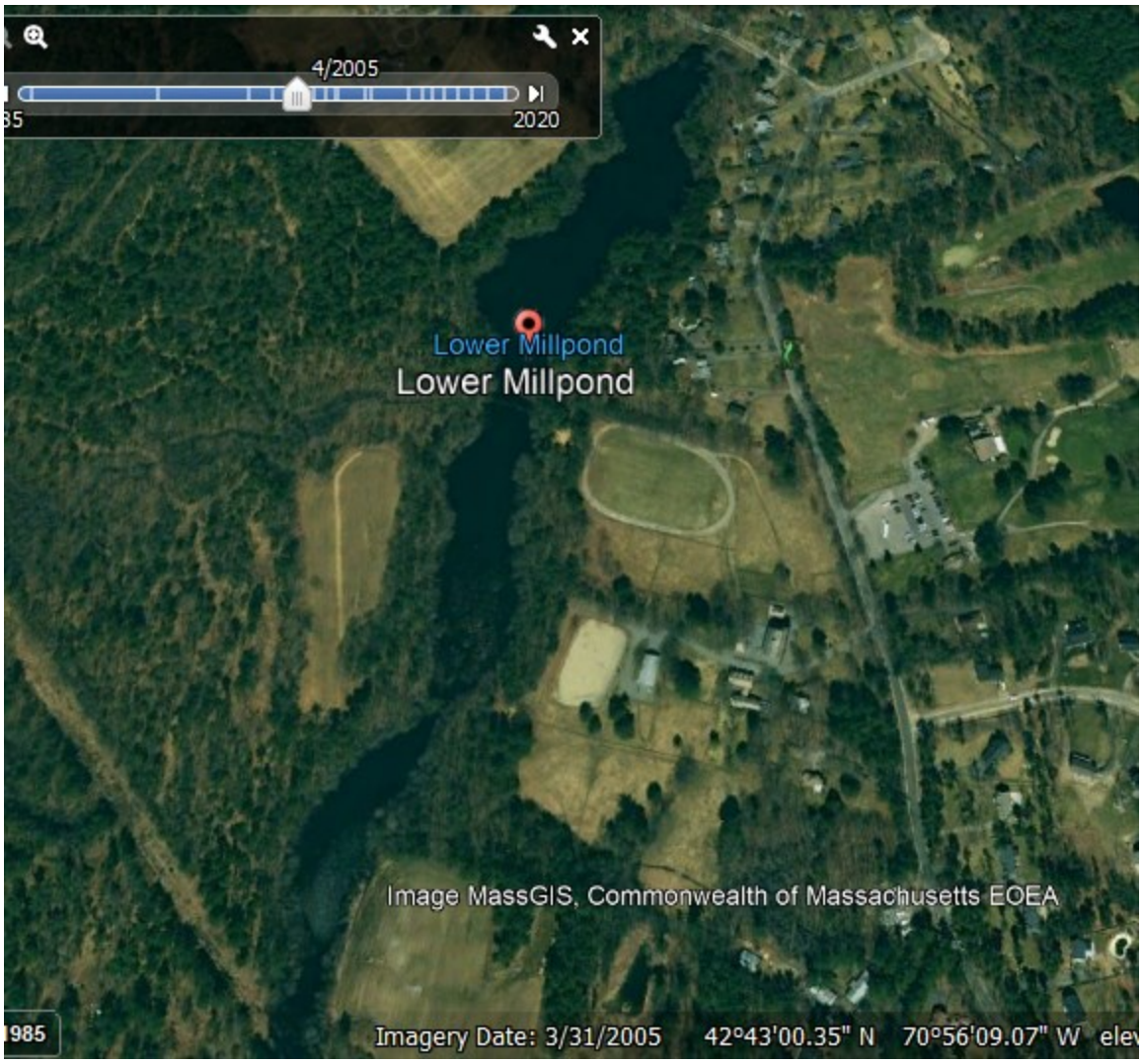
Google Earth image of Upper Mill Pond when clear, 12/31/2000 (Google Earth Pro Undated):

Google Earth image of Upper Mill Pond, 8/24/2013 (Google Earth Pro Undated):

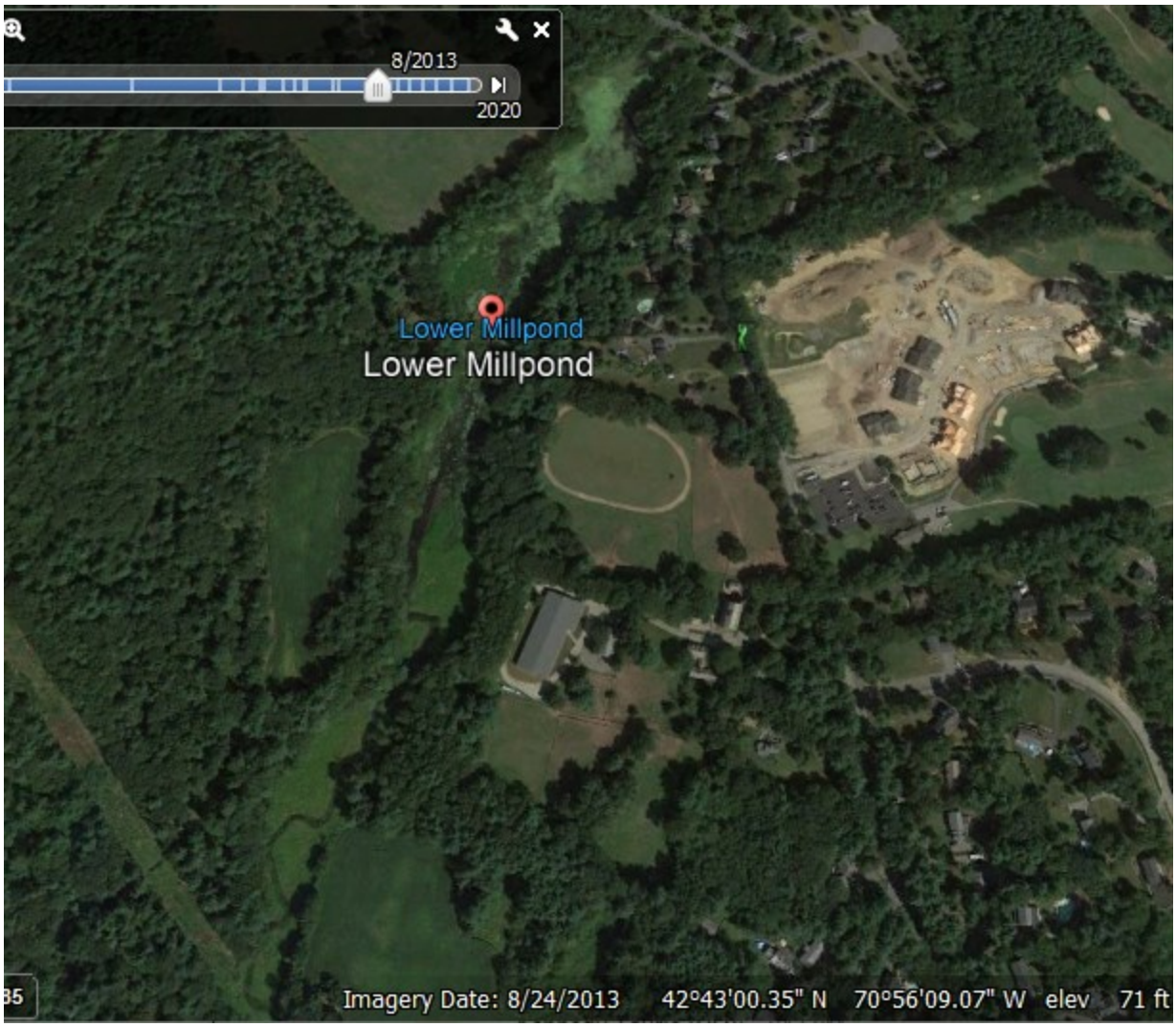
Google Earth image of Upper Mill Pond, 9/27/2014 (Google Earth Pro Undated):

Google Earth image of Upper Mill Pond, 6/6/2015 (Google Earth Pro Undated):

Google Earth image of Lower Mill Pond when relatively clear, 3/31/2005 (Google Earth Pro Undated):



Google Earth image of Lower Mill Pond, 8/24/2013 (Google Earth Pro Undated):



Google Earth image of Lower Mill Pond, 9/27/2014 (Google Earth Pro Undated):

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	

MassDFG biologists conducted backpack electrofishing in this Mill River AU (MA91-08) downstream of Dodge Rd, Rowley (Sample 8573) in July 2019 & at the Wethersfield St crossing, Rowley (Sample 5241) in July 2014. Sampling (n= 38 & 54) resulted in the capture of a small percentage (5-11%) of fluvial individuals (adult brown trout, possibly stocked) at both sites. The upstream sample contained 13% intolerant individuals & the downstream sample may have contained as much as 18% intolerant individuals, however a field comment indicated "*BL caught were NOT vouchered, may actually be SL. Site needs to [b]e resampled to confirm BL*" (MassDFG 2020) (i.e., brook lamprey may have actually been sea lamprey; if so, the percentage intolerant individuals would be 9%). Downstream, MassDEP staff conducted benthic (B0940) & water quality (WQ) (W2543) surveys ~4300 ft upstream/S of Glen St, Rowley). Benthic surveys were conducted in July 2015 & 2016, with low gradient IBI scores of 36 & 42, indicating severely degraded & moderately degraded conditions, respectively. Continuous dissolved oxygen was measured over 138 days during summer 2016. The 7DADMin was <5.0 mg/L most of the time and the 1-day minima were <4.0 mg/L most of the time. Continuous temp. data were measured over 107 days during the summer index periods of both 2015 & 2016. None of the 7DADMs exceeded 27.7 °C & both the max 24-hr rolling avg temps. were <26 °C. Other WQ data were generally indicative of good conditions: pH ranged from 6.7-7.2 S.U., there was generally no evidence of nutrient enrichment (TP seasonal averages were 0.056/0.043 mg/L with n=4/yr, max DO saturation was 89.6%, there were no observations of excessive filamentous algae; the max DO diel shift was 6.1 mg/L in 2016 but these data were qualified), the max Total Ammonia Nitrogen was 0.120 mg/L, max chloride was 100 mg/L and the max specific conductance was 479 µs/cm (n=4/yr for discrete & lab samples).
The Aquatic Life Use of this Mill River AU (MA91-08) is assessed as Not Supporting with the historical Fish Passage Barrier and Water Chestnut impairments being carried forward. Based on data from two benthic surveys, Benthic Macroinvertebrates will be added as an impairment. Although low DO data from summer 2016 were probably mainly due to a combination of the high percentage of wetland/natural landcover in the sub-watershed (22.5%/81.9%) and the state- wide drought (Drought Management Task Force 2021), it is impossible to separate out human influences, such as the percentage impervious cover (7.5%) and groundwater withdrawal in the upstream third of the sub-watershed, so a Dissolved Oxygen impairment is also being added.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
5241	MassDFG	Fish Community	Mill River (2)	Wethersfield St xing, just W of Taylor's Ln, Rowley	42.72519	-70.91454
8573	MassDFG	Fish Community	Mill River	Dodge Rd D.S., Rowley	42.72146	-70.93597
B0940	MassDEP	Benthic	Mill River/	[approximately 1310 meters upstream/south of Glen Street, Rowley, MA]	42.733424	-70.904624
W2543	MassDEP	Water Quality	Mill River	[approximately 4300 feet upstream/south of Glen Street, Rowley]	42.733424	-70.904624

Biological Monitoring Information

Benthic Macroinvertebrate Data

MassDEP Benthic Macroinvertebrate Data (2011-2017). (MassDEP Undated 3)

[Index Biological Condition Class: E= Exceptional, S= Satisfactory, MD= Moderately Degraded, SD= Severely Degraded; High Gradient IBI Thresholds: E= 100-75, S= 74-55, MD= 54-35, SD= 34-0; Low Gradient IBI Thresholds: E= 100-81, S= 80-62, MD= 61-38, SD= 37-0; R qualifier = Rarefaction (100ct) <55]

Station Code	Collection Date	Collection Method	Index Type	Organism Count	Index Score	Index Biological Condition Class
B0940	07/08/15	RBP multihab	Statewide_Low_Gradient	323	36	SD
B0940	07/28/16	RBP multihab	Statewide_Low_Gradient	313	42	MD

Fish Community Data and DELTS

Fish Community Data (2012-2019) Provided by MassDFG. (MassDFG 2020) (MassDEP Undated 1)

[Sample Type: TP= Total Pickup, SP= Selective Pickup, Method: BT=Boat Shocking, BP= Backpack Shocking, BG= Barge Shocking, SE= Seine, SL= Snorkel, NS= Not Stated, MT= Minnow Trap, GN= Gillnet, FY= Fyke Net; Trout= any combination of brook trout, brown trout, rainbow trout, tiger trout; Other Tier2 Species= any size and any combination of American brook lamprey, Atlantic salmon, lake chub, lake trout, longnose sucker, slimy sculpin]

[Species List: AE = American Eel, BL = American Brook Lamprey, BS = Banded Sunfish, BT = Brown Trout, GS = Golden Shiner, P = Pumpkinseed, RP = Redfin Pickerel, YB = Yellow Bullhead]

Sample ID	Sample Date	Method	Sample Type	Total Taxa	Total Ind	Trout ≤140mm Ind	LLS<200mm Ind	Other Tier2 Ind	Cold Ind %	Fluvial Ind %	Notables	CFR	Species List
5241	07/31/14	BP	TP	8	54	0	0	5	11%	11%	Yes	No	AE, BL, BS, BT, GS, P, RP, YB,

Fish Community Data (2012-2019) Provided by MassDFG. (MassDFG 2020) (MassDEP Undated 1)

[Sample Type: TP= Total Pickup, SP= Selective Pickup, Method: BT=Boat Shocking, BP= Backpack Shocking, BG= Barge Shocking, SE= Seine, SL= Snorkel, NS= Not Stated, MT= Minnow Trap, GN= Gillnet, FY= Fyke Net, Gradient: H = High, L = Low; I/MT MG= Intolerant/Moderately Tolerant Macrohabitat Generalist]

[Species List: AE = American Eel, B = Bluegill, BS = Banded Sunfish, BT = Brown Trout, CP = Chain Pickerel, GS = Golden Shiner, RP = Redfin Pickerel, SL = Sea Lamprey, WS = White Sucker, YB = Yellow Bullhead]

Sample ID	Sample Date	Method	Sample Type	Gradient	Total Taxa	Total Ind	Cold Ind %	Fluvial Taxa	Fluvial Ind %	Intol Ind %	I/MT MG Taxa	I/MT MG Ind %	Notables	CFR	Species List
8573	07/02/19	BP	TP		10	38	3%	2	5%	13%	3	18%	No	No	AE, B, BS, BT, CP, GS, RP, SL, WS, YB,

Physico-chemical Water Quality Information

DO, pH, Temperature

MassDEP Long-term Continuous Dissolved Oxygen Data (2011-2018). (MassDEP Undated 6) (MassDEP Undated 4)

[7DADMin= 7-Day Average of the Daily Minima, 7DADA= 7-Day Average of the Daily Average, CW= Coldwater, WW= Warmwater]

Station Code	Start Date	End Date	Day Count	7day Count	30day Count	DO Min (mg/L)	Min 7DADMin (mg/L)	Min 7DADA (mg/L)	Delta DO Max (mg/L)	Count CW 7DADMin <6.0	Count CW 1Day Min <5.0	Count WW Early Life Stages 7DADA <6.5	Count WW Early Life Stages 1Day Min <5.0	Count WW Other Life Stages 7DADMin <5.0	Count WW Other Life Stages 1Day Min <4.0	Count CW 30DADA <8.0	Count WW Other Life Stages 30DADA <6.0
W2543	05/12/16	09/26/16	138	132	109	0.2	0.2	0.5	6.1	126	124	68	67	122	117	109	102

MassDEP Discrete Dissolved Oxygen Data (2011-2018). (MassDEP Undated 6) (MassDEP Undated 4)

[CW= Coldwater, WW= Warmwater]

Station Code	Start Date	End Date	DO Count	DO Min (mg/L)	DO Avg (mg/L)	Count CW <5.0	Count WW Early Life Stages <5.0	Count WW Other Life Stages <4.0
W2543	06/23/15	09/17/15	4	4.1	5.1	2	2	0
W2543	06/08/16	09/27/16	4	2.3	4.5	2	2	2

MassDEP Long-term Continuous Temperature Data (Summer Index 2011-2018). (MassDEP Undated 6) (MassDEP Undated 4)

[Summer Index is June 1 – Sept 15; Max Daily Mean= Maximum 24-Hour Average, 7DADM= 7-Day Average of the Daily Maxima, 7DADA= 7-Day Average of the Daily Average, CW= Coldwater, WW= Warmwater; NOTE: In the case of more than one row of data in the same year for a site, different types of temperature probes were deployed.]

Station Code	Start Date	End Date	Index Count	7day Count	Max Daily Mean (°C)	Max Temp (°C)	Max 7DADM (°C)	Max 7DADA (°C)	Count CWTier1 7DADM >20	Count CWTier1 Daily Mean >23.5	Count CWTier2 7DADA >21	Count CWTier2 Daily Mean >24.1	Count WW 7DADM >27.7	Count WW Daily Mean >28.3
W2543	06/01/15	09/15/15	107	105	25.5	27.5	25.7	24.4	99	19	76	14	0	0
W2543	06/01/16	09/15/16	107	107	25.3	25.7	25.1	24.3	105	21	74	13	0	0

24-hour Rolling Average Calculations for MassDEP Short- and Long-term Continuous Temperature Data (Summer Index 2011-2018). (MassDEP Undated 6) (MassDEP Undated 4)

[Summer Index is June 1 – Sept 15; CW= Coldwater, WW= Warmwater; NOTE: In the case of more than one row of data in the same year for a site, different types of temperature probes were deployed.]

Station Code	Start Date	End Date	Count Days Deployed	24hr Rolling Count	Max 24hr Avg Rolling Temp (°C)	Count CWTier1 24hr Avg Rolling >23.5 °C	Count CWTier2 24hr Avg Rolling >24.1 °C	Count WW 24hr Avg Rolling >28.3°C
W2543	06/01/15	09/15/15	107	5136	25.6	1010	656	0
W2543	06/01/16	09/15/16	107	5136	25.3	1019	621	0

MassDEP Discrete Temperature Data (2011-2018). (MassDEP Undated 6) (MassDEP Undated 4)

[Summer Index is June 1 – Sept 15; CW= Coldwater, WW= Warmwater]

Station Code	Start Date	End Date	Temp Count	Index Count	Temp Max (°C)	Temp Avg (°C)	Count CW >20	Count CW >22	Count WW >28.3	Count WW >30.3
W2543	06/23/15	09/17/15	4	3	22.0	21.0	3	0	0	0
W2543	06/08/16	09/27/16	4	3	21.8	19.7	3	0	0	0

MassDEP Discrete pH Data (2011-2018). (MassDEP Undated 6) (MassDEP Undated 4)

Station Code	Start Date	End Date	pH Count	pH Min (SU)	pH Max (SU)	pH Count <6.5 & >8.3	pH Count <6.0 & >8.8
W2543	06/23/15	09/17/15	4	6.9	7.2	0	0
W2543	06/08/16	09/27/16	4	6.7	7.2	0	0

Nutrients (Primary Producer Screening, Physico-chemical Screening)

MassDEP Nutrient Enrichment Indicator Data (2011-2018). (MassDEP Undated 6) (MassDEP Undated 4)

[Summer seasonal total phosphorus data collected May-Sept]

Station Code	Data Year	Seasonal TP Count	Seasonal TP Min (mg/L)	Seasonal TP Max (mg/L)	Seasonal TP Avg (mg/L)	Delta DO Max (mg/L)	Delta DO Avg (mg/L)	DO Sat Max (%)	pH Max (SU)	Count Algal Obsv.	Dense/V. Dense Film/Fila. Algae
W2543	2015	4	0.048	0.060	0.056	--	--	74.8	7.2	3	0
W2543	2016	4	0.024	0.055	0.043	6.1	2.4	89.6	7.2	3	0

Toxics and other pollutants (metals, ammonia, chloride, chlorine)

MassDEP Total Ammonia Nitrogen (TAN) Data (2011-2018). (MassDEP Undated 6) (MassDEP Undated 4)

[TAN= NH3 + NH4+]

Station Code	Data Year	TAN Count	TAN Min (mg/L)	TAN Max (mg/L)	TAN Avg (mg/L)	Count TAN >Chronic	Count TAN >Acute
W2543	2015	4	0.040	0.120	0.067	0	0
W2543	2016	4	0.040	0.060	0.048	0	0

MassDEP Chloride Data (2011-2018). (MassDEP Undated 6) (MassDEP Undated 4)

Station Code	Data Year	Chloride Count	Chloride Min (mg/L)	Chloride Max (mg/L)	Chloride Avg (mg/L)	Count Chloride >230	Count Chloride >860
W2543	2015	4	81	100	92	0	0
W2543	2016	4	42	94	71	0	0

MassDEP Discrete Specific Conductance Data (2011-2018) Compared to Estimated Chloride Criteria. (MassDEP Undated 6) (MassDEP Undated 4)

Station Code	Start Date	End Date	SpCond Count	SpCond Min (µs/cm)	SpCond Max (µs/cm)	Count SpCond >904	Count SpCond >994	Count SpCond >3193	Count SpCond >3512	Consecutive sets >904	Consecutive sets >994
W2543	06/23/15	09/17/15	4	395	479	0	0	0	0	0	0
W2543	06/08/16	09/27/16	4	376	461	0	0	0	0	0	0

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Fish toxics sampling has not been conducted in this Mill River AU (MA91-08) so the Fish Consumption Use is Not Assessed.	

Aesthetic

2022 Use Attainment	Alert
Not Supporting	NO

2022 Use Attainment Summary
MassDEP field crews recorded observations during site visits to the Mill River approximately 4300 feet upstream/south of Glen Street, Rowley during summer 2015 (n=4) and summer 2016 (n=4). Generally, no noted objectionable conditions (odors, deposits, growths, or turbidity) were recorded in either year. As described in detail in the 2022 CALM guidance document (MassDEP 2022), the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Mill River (MA91-08) includes two run-of-river impoundments, Upper Mill Pond (formerly MA91015) and Lower Mill Pond (formerly MA91008), which were both listed for Noxious Aquatic Plants in 1996 (later remapped to Aquatic Plants (Macrophytes) during the 2010 IR cycle). Subsequently, it was applied to the Mill River (MA91-08) AU when the pond and river segments merged in 2012 (MassDEP 2015). The original impairments for the ponds were based on synoptic surveys conducted by MassDEP staff in June 1994 in which it was noted that the ponds were mostly/entirely covered with aquatic macrophytes, including the non-rooted, floating species, *Lemna/Wolffia* spp. and *Spirodela* sp. (MassDEP 1994, MassDEP 2002). Google Earth images from summer 2013, 2014, and 2015 show high amounts of plant coverage in the ponds (Google Earth Pro Undated). Additionally, these Upper and Lower Mill Pond impoundments account for roughly 12% of the Mill River AU (MA91-08) so Aquatic Plants (Macrophytes) should be delisted and replaced with the pollutant impairment, Nutrient/Eutrophication Biological Indicators. The Aesthetics Use of this Mill River AU (MA91-08) is assessed as Not Supporting with the historical Algae impairment being carried forward. Additionally, as described in the rationale above, the Aquatic Plants (Macrophytes) impairment is being removed and replaced with the pollutant impairment, Nutrient/Eutrophication Biological Indicators.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2543	MassDEP	Water Quality	Mill River	[approximately 4300 feet upstream/south of Glen Street, Rowley]	42.733424	-70.904624

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2018) (MassDEP Undated 4)

Station Code	Waterbody	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2543	Mill River	2015	4	MassDEP aesthetics observations for station W2543 on Mill River can be summarized as follows: there were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DEP field sampling crews during summer 2015.
W2543	Mill River	2016	4	MassDEP aesthetics observations for station W2543 on Mill River can be summarized as follows: there were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DEP field sampling crews during summer 2016.

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2018) (MassDEP Undated 6) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2543	2015	4	3	0
W2543	2016	4	3	0

MassDEP Aesthetics Observations (2011-2018) (MassDEP Undated 6)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2543	Mill River	2015	Color	Light Yellow/Tan	4	4
W2543	Mill River	2015	Objectionable Deposits	No	4	4
W2543	Mill River	2015	Odor	None	4	4
W2543	Mill River	2015	Scum	No	3	4
W2543	Mill River	2015	Scum	Yes	1	4
W2543	Mill River	2015	Turbidity	Moderately Turbid	1	4
W2543	Mill River	2015	Turbidity	None	2	4
W2543	Mill River	2015	Turbidity	Slightly Turbid	1	4
W2543	Mill River	2016	Color	Brownish	1	4
W2543	Mill River	2016	Color	Light Yellow/Tan	3	4
W2543	Mill River	2016	Objectionable Deposits	No	4	4
W2543	Mill River	2016	Odor	Musty (Basement)	1	4
W2543	Mill River	2016	Odor	None	3	4
W2543	Mill River	2016	Scum	No	3	4
W2543	Mill River	2016	Scum	Yes	1	4
W2543	Mill River	2016	Turbidity	Moderately Turbid	1	4
W2543	Mill River	2016	Turbidity	None	1	4
W2543	Mill River	2016	Turbidity	Slightly Turbid	2	4

Primary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO

2022 Use Attainment Summary

MassDEP field crews recorded observations during site visits to the Mill River approximately 4300 feet upstream/south of Glen Street, Rowley during summer 2015 (n=4) and summer 2016 (n=4). Generally, no noted objectionable conditions (odors, deposits, growths, or turbidity) were recorded in either year.

As described in detail in the 2022 CALM guidance document (MassDEP 2022), the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Mill River (MA91-08) includes two run-of-river impoundments, Upper Mill Pond (formerly MA91015) and Lower Mill Pond (formerly MA91008), which were both listed for Noxious Aquatic Plants in 1996 (later remapped to Aquatic Plants (Macrophytes) during the 2010 IR cycle). Subsequently, it was applied to the Mill River (MA91-08) AU when the pond and river segments merged in 2012 (MassDEP 2015). The original impairments for the ponds were based on synoptic surveys conducted by MassDEP staff in June 1994 in which it was noted that the ponds were mostly/entirely covered with aquatic macrophytes, including the non-rooted, floating species, *Lemna/Wolffia* spp. and *Spirodela* sp. (MassDEP 1994, MassDEP 2002). Google Earth images from summer 2013, 2014, and 2015 show high amounts of plant coverage in the ponds (Google Earth Pro Undated). Additionally, these Upper and Lower Mill Pond impoundments account for roughly 12% of the Mill River AU (MA91-08) so Aquatic Plants (Macrophytes) should be delisted and replaced with the pollutant impairment, Nutrient/Eutrophication Biological Indicators.

The Primary Contact Recreational Use of this Mill River AU (MA91-08) is being assessed as Not Supporting with the historical Algae impairment being carried forward. Additionally, as described in the rationale above, the Aquatic Plants (Macrophytes) impairment is being removed and replaced with the pollutant impairment, Nutrient/Eutrophication Biological Indicators.

Secondary Contact Recreation

2022 Use Attainment	Alert

Not Supporting	NO

2022 Use Attainment Summary

MassDEP field crews recorded observations during site visits to the Mill River approximately 4300 feet upstream/south of Glen Street, Rowley during summer 2015 (n=4) and summer 2016 (n=4). Generally, no noted objectionable conditions (odors, deposits, growths, or turbidity) were recorded in either year.

As described in detail in the 2022 CALM guidance document (MassDEP 2022), the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Mill River (MA91-08) includes two run-of-river impoundments, Upper Mill Pond (formerly MA91015) and Lower Mill Pond (formerly MA91008), which were both listed for Noxious Aquatic Plants in 1996 (later remapped to Aquatic Plants (Macrophytes) during the 2010 IR cycle). Subsequently, it was applied to the Mill River (MA91-08) AU when the pond and river segments merged in 2012 (MassDEP 2015). The original impairments for the ponds were based on synoptic surveys conducted by MassDEP staff in June 1994 in which it was noted that the ponds were mostly/entirely covered with aquatic macrophytes, including the non-rooted, floating species, *Lemna/Wolffia* spp. and *Spirodela* sp. (MassDEP 1994, MassDEP 2002). Google Earth images from summer 2013, 2014, and 2015 show high amounts of plant coverage in the ponds (Google Earth Pro Undated). Additionally, these Upper and Lower Mill Pond impoundments account for roughly 12% of the Mill River AU (MA91-08) so Aquatic Plants (Macrophytes) should be delisted and replaced with the pollutant impairment, Nutrient/Eutrophication Biological Indicators.

The Secondary Contact Recreational Use of this Mill River AU (MA91-08) is being assessed as Not Supporting with the historical Algae impairment being carried forward. Additionally, as described in the rationale above, the Aquatic Plants (Macrophytes) impairment is being removed and replaced with the pollutant impairment, Nutrient/Eutrophication Biological Indicators.

Mill River (MA91-09)

Location:	From tidally influenced area approximately 1200 feet upstream from Route 1, Rowley/Newbury to mouth at confluence with Parker River, Newbury.
AU Type:	ESTUARY
AU Size:	0.09 SQUARE MILES
Classification/Qualifier:	SA: ORW, SFO (also tributary to SA SFO ORW)

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Fecal Coliform	R1_MA_2021_001	Changed

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Shellfish Harvesting	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Fecal Coliform	Source Unknown (N)			X			

Supporting Information for Removed Impairments

2018/20 Removed Impairment	Removal Reason	Removal Comment
Fecal Coliform	TMDL Approved or established by EPA (4a)	Impairment covered under TMDL: Final Pathogen TMDL for the Parker River Watershed (Report CN 258.1, approved 2021-02-24, ATTAINS Action ID: R1_MA_2021_001)

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent data are available, so the Aquatic Life Use of this Mill River AU (MA91-09) is Not Assessed.	

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No fish toxics sampling data are available, so the Fish Consumption Use of this Mill River AU (MA91-09) is Not Assessed.	

Shellfish Harvesting

2022 Use Attainment	Alert
Not Supporting	YES
2022 Use Attainment Summary	

Mill River (MA91-09): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.0547 sq mi (62%). The approved shellfish growing area represents 0 sq mi (0%). The prohibited shellfish growing area represents 0.0547 sq mi (62%). There is insufficient information available to assess the Shellfish Harvesting Use because the growing areas within this AU are classified as either entirely prohibited or a combination of approved and prohibited. Alert due to prohibited area >= 0.0001 sq mi. There is insufficient information available to delist the existing Fecal Coliform impairment so the Shellfish Harvesting Use is evaluated as not supporting.

Shellfish Growing Area Classifications

MassDFG-Division of Marine Fisheries Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Area Name	Waterbody/Area Description	Classification	Area (Sq. Mi.)	Area (% of AU)
N4.4		Prohibited	0.05473	62.4%

Aesthetic

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent data are available, so the Aesthetics Use of this Mill River AU (MA91-09) is Not Assessed.	

Primary Contact Recreation

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent Enterococci bacteria data are available, so the Primary Contact Recreational Use of this Mill River AU (MA91-09) is Not Assessed.	

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Summary
Mill River (MA91-09): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.0547 sq mi (62%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Primary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Secondary Contact Recreation

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent Enterococci bacteria data are available, so the Secondary Contact Recreational Use of this Mill River AU (MA91-09) is Not Assessed.	

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Summary
Mill River (MA91-09): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.0547 sq mi (62%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Secondary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Ox Pasture Brook (MA91-10)

Location:	Headwaters - Outlet of small unnamed impoundment east of Bradford Street, Rowley to west of Ox Pasture Hill in the Mill Creek Wildlife Management Area boundary, Rowley.
AU Type:	RIVER
AU Size:	2.4 MILES
Classification/Qualifier:	B: ORW (also tributary to SA SFO ORW)

No usable data were available for Ox Pasture Brook (MA91-10) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None		Unchanged

Paine Creek (MA91-03)

Location:	Headwaters east of Town Farm Road, Ipswich to confluence with Eagle Hill River, Ipswich.
AU Type:	ESTUARY
AU Size:	0.06 SQUARE MILES
Classification/Qualifier:	SA: ORW

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Fecal Coliform	R1_MA_2021_001	Changed

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Shellfish Harvesting	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Fecal Coliform	Source Unknown (N)			X			

Supporting Information for Removed Impairments

2018/20 Removed Impairment	Removal Reason	Removal Comment
Fecal Coliform	TMDL Approved or established by EPA (4a)	Impairment covered under TMDL: Final Pathogen TMDL for the Parker River Watershed (Report CN 258.1, approved 2021-02-24, ATTAINS Action ID: R1_MA_2021_001)

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent data are available, so the Aquatic Life Use of Paine Creek (MA91-03) is Not Assessed.	

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No fish toxics sampling has been conducted in Paine Creek (MA91-03), so the Fish Consumption Use of is Not Assessed.	

Shellfish Harvesting

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	

Paine Creek (MA91-03): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.0532 sq mi (86%). The approved shellfish growing area represents 0 sq mi (0%). The Shellfish Harvesting Use is assessed as not supporting because the growing area (normalized to the AU area) is < 100% approved. Based on the new growing area classifications and the prior classifications, the existing fecal coliform impairment is being retained.

Shellfish Growing Area Classifications

MassDFG-Division of Marine Fisheries Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Area Name	Waterbody/Area Description	Classification	Area (Sq. Mi.)	Area (% of AU)
N4.1	Eagle Hill River	Conditionally Approved	0.05318	85.7%

Aesthetic

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent data are available, so the Aesthetics Use of Paine Creek (MA91-03) is Not Assessed.	

Primary Contact Recreation

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent Enterococci bacteria data are available, so the Primary Contact Recreational Use of Paine Creek (MA91-03) is Not Assessed.	

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Summary
Paine Creek (MA91-03): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.0532 sq mi (86%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Primary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Secondary Contact Recreation

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent Enterococci bacteria data are available, so the Secondary Contact Recreational Use of Paine Creek (MA91-03) is Not Assessed.	

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

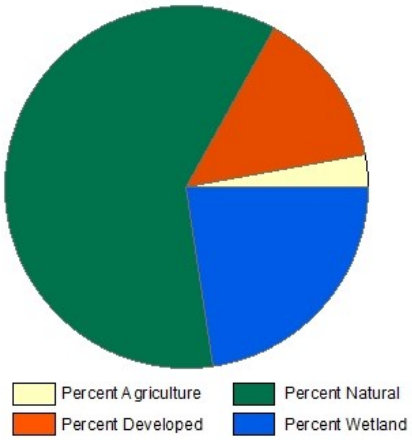
Summary
Paine Creek (MA91-03): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.0532 sq mi (86%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Secondary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Parker River (MA91-01)

Location:	Source north of Silver Mine Road, Boxford to Parker River Dam#1 (NATID# MA00241) just upstream of Central Street, Newbury (excluding Sperry Pond segment MA91013, Rock Pond segment MA91012, Pentucket Pond segment MA91010, and Crane Pond segment MA91004).
AU Type:	RIVER
AU Size:	12.3 MILES
Classification/Qualifier:	B: WWF, HQW

Parker River - MA91-01

Watershed Area: 24.79 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	24.79	9.16	8.25	3.54
Agriculture	2.9%	2.5%	1.4%	0.8%
Developed	14%	12.8%	10.9%	9.8%
Natural	60.3%	56.2%	49.3%	45.3%
Wetland	22.7%	28.6%	38.4%	44.1%
Impervious Cover	6.6%			

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Dewatering*)		Unchanged
4c	4c	(Fish Passage Barrier*)		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
(Dewatering*)	Baseflow Depletion from Groundwater Withdrawals (N)	X				
(Fish Passage Barrier*)	Dam or Impoundment (Y)	X				

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	NO

2022 Use Attainment Summary

MassDFG biologists conducted five fish surveys (via backpack or boat shocking) along this Parker River AU (MA91-01) in July and September of 2018. The locations surveyed include: a side channel of the river (connected on both ends to the Parker River) downstream of Mill St in Georgetown (Sample 7547), the mainstem of the river downstream of the Mill St crossing and parallel to the side channel in Georgetown (Sample 7617), downstream of the Thurlow St double culvert in Georgetown (Sample 7594), roughly 900 ft downstream of Thurlow St in Georgetown (Sample 7593), and upstream of the River St crossing in Newbury/Byfield but below Parker River Dam #5 (Sample 7629). The samples were generally small to moderately sized (n= 4-41). Only one sample included one fluvial individual (a creek chubsucker). The percentage of intolerant/moderately tolerant macrohabitat generalists ranged from 8-73%, a good indicator in this warmwater fishery.

Although fish community data for this Parker River AU (MA91-01) are indicative of marginally sufficient conditions, the Aquatic Life Use will continue to be assessed as Not Supporting, with the Dewatering and Fish Passage Barrier impairments being carried forward.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
7547	MassDFG	Fish Community	Parker River	Mill St. crossing, side channel on west side parallel to north street, Georgetown	42.73254	-70.98697
7593	MassDFG	Fish Community	Parker River	Thurlow St. access, small parking area near double culvert , Georgetown	42.74693	-70.98194
7594	MassDFG	Fish Community	Parker River	Right at culvert pool. Thurlow St. access, small parking area near double culvert , Georgetown	42.74532	-70.98197
7617	MassDFG	Fish Community	Parker River	Mill St. crossing, beside side channel near North St. , Georgetown	42.73249	-70.98635
7629	MassDFG	Fish Community	Parker River	Upstream of road crossing for River St., Byfield below dam. Site #2, Newbury/Byfield	42.75651	-70.95361

Biological Monitoring Information

Fish Community Data and DELTS

Fish Community Data (2012-2019) Provided by MassDFG. (MassDFG 2020) (MassDEP Undated 1)

[Sample Type: TP= Total Pickup, SP= Selective Pickup, Method: BT=Boat Shocking, BP= Backpack Shocking, BG= Barge Shocking, SE= Seine, SL= Snorkel, NS= Not Stated, MT= Minnow Trap, GN= Gillnet, FY= Fyke Net, Gradient: H = High, L = Low; I/MT MG= Intolerant/Moderately Tolerant Macrohabitat Generalist]

[Species List: AE = American Eel, BB = Brown Bullhead, BS = Banded Sunfish, CCS = Creek Chubsucker, CP = Chain Pickerel, GS = Golden Shiner, LMB = Largemouth Bass, P = Pumpkinseed, RP = Redfin Pickerel, SD = Swamp Darter, YB = Yellow Bullhead]

Sample ID	Sample Date	Method	Sample Type	Gradient	Total Taxa	Total Ind	Cold Ind %	Fluvial Taxa	Fluvial Ind %	Intol Ind %	I/MT MG Taxa	I/MT MG Ind %	Notables	CFR	Species List
7547	07/18/18	BP	TP		5	7	0%	0	0%	0%	2	29%	No	No	AE, BB, CP, LMB, YB,
7593	09/04/18	BT	TP		5	41	0%	0	0%	2%	4	73%	Yes	No	BS, CP, GS, P, RP,
7594	09/04/18	BT	TP		4	6	0%	1	17%	17%	2	33%	Yes	No	CCS, GS, P, RP,

Sample ID	Sample Date	Method	Sample Type	Gradient	Total Taxa	Total Ind	Cold Ind %	Fluvial Taxa	Fluvial Ind %	Intol Ind %	I/MT MG Taxa	I/MT MG Ind %	Notables	CFR	Species List
7617	07/18/18	BP	TP		2	4	0%	0	0%	0%	1	25%	No	No	AE, RP,
7629	07/18/18	BP	TP		5	39	0%	0	0%	5%	3	8%	Yes	No	AE, BS, RP, SD, YB,

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Fish toxics sampling has not been conducted in this Parker River AU (MA91-01) so the Fish Consumption Use is Not Assessed.	

Aesthetic

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Recent sampling has not been conducted in this Parker River AU (MA91-01) so the Aesthetics Use is Not Assessed.	

Primary Contact Recreation

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent bacteria sampling has been conducted in this Parker River AU (MA91-01) so the Primary Contact Recreational Use is Not Assessed.	

Secondary Contact Recreation

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent bacteria sampling has been conducted in this Parker River AU (MA91-01) so the Secondary Contact Recreational Use is Not Assessed.	

Parker River (MA91-02)

Location:	From Parker River Dam#1 (NATID# MA00241) just upstream of Central Street, Newbury to mouth at Plum Island Sound, Newbury.
AU Type:	ESTUARY
AU Size:	0.6 SQUARE MILES
Classification/Qualifier:	SA: ORW, SFO

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Fecal Coliform	R1_MA_2021_001	Changed

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Shellfish Harvesting	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Fecal Coliform	Source Unknown (N)			X			

Supporting Information for Removed Impairments

2018/20 Removed Impairment	Removal Reason	Removal Comment
Fecal Coliform	TMDL Approved or established by EPA (4a)	Impairment covered under TMDL: Final Pathogen TMDL for the Parker River Watershed (Report CN 258.1, approved 2021-02-24, ATTAINS Action ID: R1_MA_2021_001)

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Insufficient Information	NO

2022 Use Attainment Summary

MassDFG biologists conducted seine surveys at three locations in this Parker River AU (MA91-02) in July 2018: in an upstream section "that is freshwater but tidal" (MassDFG 2020) off Great Meadow Rd, Newbury (Sample 7628), in a tidal freshwater slough upstream (roughly 2.5 miles) of Middle Rd, Newbury (Sample 7619), and in a salt marsh downstream of Middle Rd, Newbury (Sample 7642). The samples were comprised of 58-93% intolerant/moderately tolerant macrohabitat generalists. However, according to 2022 CALM guidance, "fish community data are not currently utilized to make Aquatic Life Use support determination for either lentic or estuarine waters" (MassDEP 2022).
The Aquatic Life Use of this Parker River AU (MA91-02) is assessed as having Insufficient Information.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
7619	MassDFG	Fish Community	Parker River	Upstream Middle Rd. tidal freshwater slough. Site #2, Newbury	42.75049	-70.91907

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
7628	MassDFG	Fish Community	Parker River	Section of river that is freshwater but tidal. Site #1., Newbury	42.75249	-70.92397
7642	MassDFG	Fish Community	Parker River	Salt marsh. Site #3., Newbury	42.75819	-70.89970

Biological Monitoring Information

Fish Community Data (DELTS or population loss estimates only)

Fish Community Data (2012-2019) Provided by MassDFG. (MassDFG 2020) (MassDEP Undated 1)

[Sample Type: TP= Total Pickup, SP= Selective Pickup, Method: BT=Boat Shocking, BP= Backpack Shocking, BG= Barge Shocking, SE= Seine, SL= Snorkel, NS= Not Stated, MT= Minnow Trap, GN= Gillnet, FY= Fyke Net, Gradient: H = High, L = Low; I/MT MG= Intolerant/Moderately Tolerant Macrohabitat Generalist]

[Species List: A = Alewife, ATS = Atlantic Silverside, CP = Chain Pickerel, FSS = Fourspine Stickleback, LMB = Largemouth Bass, M = Mummichog, P = Pumpkinseed, WP = White Perch, WS = White Sucker]

Sample ID	Sample Date	Method	Sample Type	Gradient	Total Taxa	Total Ind	Cold Ind %	Fluvial Taxa	Fluvial Ind %	Intol Ind %	I/MT MG Taxa	I/MT MG Ind %	Notables	CFR	Species List
7619	07/20/18	SE	TP		5	22	0%	0	0%	0%	3	73%	No	No	A, FSS, LMB, M, WP,
7628	07/20/18	SE	TP		9	114	0%	1	2%	0%	5	93%	No	No	A, ATS, CP, FSS, LMB, M, P, WP, WS,
7642	07/20/18	SE	TP		5	132	0%	0	0%	0%	2	58%	No	No	A, ATS, FSS, M, WP,

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Fish toxics sampling has not been conducted in this Parker River AU (MA91-02), so the Fish Consumption Use is Not Assessed.	

Shellfish Harvesting

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
Parker River (MA91-02): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.5043 sq mi (85%). The approved shellfish growing area represents 0 sq mi (0%). The Shellfish Harvesting Use is assessed as not supporting because the growing area (normalized to the AU area) is < 100% approved. Based on the new growing area classifications and the prior classifications, the existing fecal coliform impairment is being retained.	

Shellfish Growing Area Classifications

MassDFG-Division of Marine Fisheries Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Area Name	Waterbody/Area Description	Classification	Area (Sq. Mi.)	Area (% of AU)
N4.0	Plum Island Sound	Conditionally Approved	0.00205	0.3%

Area Name	Waterbody/Area Description	Classification	Area (Sq. Mi.)	Area (% of AU)
N4.3		Prohibited	0.14280	23.9%
N4.4		Prohibited	0.13817	23.2%
N4.6	Parker River and Mud Creek	Conditionally Approved	0.22127	37.1%

Aesthetic

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Recent sampling has not been conducted in this Parker River AU (MA91-02), so the Aesthetics Use is Not Assessed.	

Primary Contact Recreation

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent Enterococci bacteria sampling has been conducted in this Parker River AU (MA91-02), so the Primary Contact Recreational Use is Not Assessed.	

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Summary
Parker River (MA91-02): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.5043 sq mi (85%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Primary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Secondary Contact Recreation

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent Enterococci bacteria sampling has been conducted in this Parker River AU (MA91-02), so the Secondary Contact Recreational Use is Not Assessed.	

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Summary
Parker River (MA91-02): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.5043 sq mi (85%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Secondary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Penn Brook (MA91-16)

Location:	Headwaters, outlet Baldpate Pond, Boxford to mouth at confluence with Parker River, Georgetown.
AU Type:	RIVER
AU Size:	3 MILES
Classification/Qualifier:	B

No usable data were available for Penn Brook (MA91-16) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Benthic Macroinvertebrates		Unchanged
5	5	Dissolved Oxygen		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Benthic Macroinvertebrates	Source Unknown (N)	X				
Dissolved Oxygen	Source Unknown (N)	X				

Pentucket Pond (MA91010)

Location:	Georgetown.
AU Type:	FRESHWATER LAKE
AU Size:	92 ACRES
Classification/Qualifier:	B: WWF, HQW (impoundment on river designated B/WWF/HQW)

No usable data were available for Pentucket Pond (MA91010) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Fanwort*)		Unchanged
5	5	Mercury in Fish Tissue		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
(Fanwort*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X				
Mercury in Fish Tissue	Atmospheric Deposition - Toxics (Y)		X			

Plum Island River (MA91-15)

Location:	From "high sandy" sandbar just north of the confluence with Pine Island Creek, Newbury to confluence with Plum Island Sound, Newbury (formerly part of 2000 segment: Plum Island River MA84A-23).
AU Type:	ESTUARY
AU Size:	0.39 SQUARE MILES
Classification/Qualifier:	SA: ORW, SFO

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Fecal Coliform	R1_MA_2021_001	Changed

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Shellfish Harvesting	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Fecal Coliform	Source Unknown (N)			X			

Supporting Information for Removed Impairments

2018/20 Removed Impairment	Removal Reason	Removal Comment
Fecal Coliform	TMDL Approved or established by EPA (4a)	Impairment covered under TMDL: Final Pathogen TMDL for the Parker River Watershed (Report CN 258.1, approved 2021-02-24, ATTAINS Action ID: R1_MA_2021_001)

Recommendations

2022 Recommendations
ALU: As described in the 2018/2020 IR cycle (MassDEP 2021), water quality and biological monitoring should be conducted in the Plum Island River in the vicinity of the locations of a 2011 USFWS study which identified elevated sediment mercury concentrations, albeit not under the auspices of a QAPP.

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Assessed	YES
2022 Use Attainment Summary	
Recent data are not available for the Plum Island River (MA91-15), so the Aquatic Life Use is Not Assessed. An Alert described in the 2018/2020 IR cycle (MassDEP 2021), for high levels of mercury in sediment, should be carried forward.	

Fish Consumption

2022 Use Attainment	Alert

Not Assessed	NO
2022 Use Attainment Summary	
Fish toxics sampling has not been conducted in the Plum Island River (MA91-15), so the Fish Consumption Use is Not Assessed.	

Shellfish Harvesting

2022 Use Attainment	**Alert**
Not Supporting	NO
2022 Use Attainment Summary	
Plum Island River (MA91-15): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.3538 sq mi (91%). The approved shellfish growing area represents 0 sq mi (0%). The Shellfish Harvesting Use is assessed as not supporting because the growing area (normalized to the AU area) is < 100% approved. Based on the new growing area classifications and the prior classifications, the existing fecal coliform impairment is being retained.	

Shellfish Growing Area Classifications

MassDFG-Division of Marine Fisheries Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Area Name	**Waterbody/Area Description**	**Classification**	**Area (Sq. Mi.)**	**Area (% of AU)**
N4.0	Plum Island Sound	Conditionally Approved	0.35382	91.0%

Aesthetic

2022 Use Attainment	**Alert**
Not Assessed	NO
2022 Use Attainment Summary	
Recent sampling has not been conducted in the Plum Island River (MA91-15), so the Aesthetics Use is Not Assessed.	

Primary Contact Recreation

2022 Use Attainment	**Alert**
Not Assessed	NO
2022 Use Attainment Summary	
No recent Enterococci bacteria sampling has been conducted in the Plum Island River (MA91-15), so the Primary Contact Recreational Use is Not Assessed.	

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Summary
Plum Island River (MA91-15): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.3538 sq mi (91%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Primary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Secondary Contact Recreation

2022 Use Attainment	**Alert**
Not Assessed	NO

2022 Use Attainment Summary
No recent Enterococci bacteria sampling has been conducted in the Plum Island River (MA91-15), so the Secondary Contact Recreational Use is Not Assessed.

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Summary
Plum Island River (MA91-15): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.3538 sq mi (91%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Secondary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Plum Island Sound (MA91-12)

Location:	From the mouth of both the Parker River and Plum Island River, Newbury to the Atlantic Ocean, Ipswich (Includes Ipswich Bay) (formerly reported as 2000 segment: Plum Island Sound MA84A-24).
AU Type:	ESTUARY
AU Size:	4.48 SQUARE MILES
Classification/Qualifier:	SA: ORW, SFO

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Fecal Coliform	R1_MA_2021_001	Changed

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Shellfish Harvesting	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Fecal Coliform	Source Unknown (N)			X			

Supporting Information for Removed Impairments

2018/20 Removed Impairment	Removal Reason	Removal Comment
Fecal Coliform	TMDL Approved or established by EPA (4a)	Impairment covered under TMDL: Final Pathogen TMDL for the Parker River Watershed (Report CN 258.1, approved 2021-02-24, ATTAINS Action ID: R1_MA_2021_001)

Recommendations

2022 Recommendations
ALU: As described in the 2018/2020 IR cycle (MassDEP 2021), water quality and biological monitoring should be conducted in Plum Island Sound in the vicinity of the locations of a 2011 USFWS study which identified elevated sediment mercury concentrations, albeit not under the auspices of a QAPP.

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Assessed	YES
2022 Use Attainment Summary	
Recent data are not available for Plum Island Sound (MA91-12), so the Aquatic Life Use is Not Assessed. An Alert described in the 2018/2020 IR cycle (MassDEP 2021), for high levels of mercury in sediment, should be carried forward.	

Fish Consumption

2022 Use Attainment	Alert

Not Assessed	NO
2022 Use Attainment Summary	
Fish toxics sampling has not been conducted in Plum Island Sound (MA91-12), so the Fish Consumption Use is Not Assessed.	

Shellfish Harvesting

2022 Use Attainment	**Alert**
Not Supporting	NO
2022 Use Attainment Summary	
Plum Island Sound (MA91-12): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 4.3912 sq mi (98%). The approved shellfish growing area represents 1.119 sq mi (25%). The Shellfish Harvesting Use is assessed as not supporting because the growing area (normalized to the AU area) is < 100% approved. Based on the new growing area classifications and the prior classifications, the existing fecal coliform impairment is being retained.	

Shellfish Growing Area Classifications

MassDFG-Division of Marine Fisheries Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Area Name	Waterbody/Area Description	Classification	Area (Sq. Mi.)	Area (% of AU)
N3.0	Plum Island	Approved	0.03247	0.7%
N4.0	Plum Island Sound	Conditionally Approved	2.72035	60.7%
N4.10	Clark Beach	Prohibited	0.05680	1.3%
N4.11	Pavilion Beach Mooring Area	Prohibited	0.02044	0.5%
N4.12	Grape Island Mooring Area	Prohibited	0.02882	0.6%
N4.13	Eel Run Mooring Area	Prohibited	0.01652	0.4%
N4.14	Sandy Point Mooring Area	Prohibited	0.03416	0.8%
N4.6	Parker River and Mud Creek	Conditionally Approved	0.01296	0.3%
N4.7	Rowley River and Rogers Island	Conditionally Approved	0.04684	1.0%
N4.8	North Ridge Mooring Area	Prohibited	0.03670	0.8%
N4.9	Ipswich Bay Yacht Club Mooring Area	Prohibited	0.15541	3.5%
N6.0	Cranes Beach	Approved	1.08649	24.3%
N6.1	Steep Hill Beach	Prohibited	0.14320	3.2%

Aesthetic

2022 Use Attainment	**Alert**
Not Assessed	NO
2022 Use Attainment Summary	
Recent data are not available for Plum Island Sound (MA91-12), so the Aesthetics Use is Not Assessed.	

Primary Contact Recreation

2022 Use Attainment	**Alert**
Fully Supporting	NO
2022 Use Attainment Summary	

According to MassDPH beach posting data, none of the beaches (Clark Beach, Steep Hill Beach, Pavilion Beach, Crane Beach, all located in Ipswich) in Plum Island Sound had any closures during the period 2014-2019.
The Primary Contact Recreational Use of Plum Island Sound (MA91-12) is assessed as Fully Supporting based on the lack of any beach posting advisories at the four public beaches (Clark, Steep Hill, Pavilion, and Crane) along the shoreline of Plum Island Sound.

Beach Postings

MassDPH Beach Posting Data Summary (% Bathing Season Posted 2014-2019) (Bailey, Logan Feb. 2, 2021) (MassDEP Undated 2)

Beach ID	Beach Name/Town	Left Boundary (Latitude)	Left Boundary (Longitude)	Right Boundary (Latitude)	Right Boundary (Longitude)	2014	2015	2016	2017	2018	2019	# years> 10%
2921	Clark/Ipswich	42.70538	-70.79530	42.70317	-70.79460	0%	0%	0%	0%	0%	0%	0
2922	Steep Hill/Ipswich	42.69250	-70.78980	42.69099	-70.77950	0%	0%	0%	0%	0%	0%	0
2923	Pavilion/Ipswich	42.70016	-70.79190	42.69740	-70.79160	0%	0%	0%	0%	0%	0%	0
2924	Crane/Ipswich	42.69097	-70.77470	42.66260	-70.72950	0%	0%	0%	0%	0%	0%	0

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Summary
Plum Island Sound (MA91-12): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 4.3912 sq mi (98%). The approved shellfish growing area represents 1.119 sq mi (25%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Primary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Secondary Contact Recreation

2022 Use Attainment	**Alert**
Fully Supporting	NO
2022 Use Attainment Summary	
According to MassDPH beach posting data, none of the beaches (Clark Beach, Steep Hill Beach, Pavilion Beach, Crane Beach, all located in Ipswich) in Plum Island Sound had any closures during the period 2014-2019. The Secondary Contact Recreational Use of Plum Island Sound (MA91-12) is assessed as Fully Supporting based on the lack of any beach posting advisories at the four public beaches (Clark, Steep Hill, Pavilion, and Crane) along the shoreline of Plum Island Sound.	

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Summary
Plum Island Sound (MA91-12): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 4.3912 sq mi (98%). The approved shellfish growing area represents 1.119 sq mi (25%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Secondary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Quills Pond (MA91011)

Location:	Newbury.
AU Type:	FRESHWATER LAKE
AU Size:	2 ACRES
Classification/Qualifier:	B

No usable data were available for Quills Pond (MA91011) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None		Unchanged

Rock Pond (MA91012)

Location:	Georgetown.
AU Type:	FRESHWATER LAKE
AU Size:	49 ACRES
Classification/Qualifier:	B: WWF, HQW (impoundment on river designated B/WWF/HQW)

No usable data were available for Rock Pond (MA91012) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Mercury in Fish Tissue		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Mercury in Fish Tissue	Atmospheric Deposition - Toxics (Y)		X			

Rowley River (MA91-05)

Location:	Headwaters, confluence with Egypt River, Rowley/Ipswich to mouth at Plum Island Sound, Rowley/Ipswich.
AU Type:	ESTUARY
AU Size:	0.25 SQUARE MILES
Classification/Qualifier:	SA: ORW

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Fecal Coliform	R1_MA_2021_001	Changed

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Shellfish Harvesting	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Fecal Coliform	Source Unknown (N)			X			

Supporting Information for Removed Impairments

2018/20 Removed Impairment	Removal Reason	Removal Comment
Fecal Coliform	TMDL Approved or established by EPA (4a)	Impairment covered under TMDL: Final Pathogen TMDL for the Parker River Watershed (Report CN 258.1, approved 2021-02-24, ATTAINS Action ID: R1_MA_2021_001)

Recommendations

2022 Recommendations
ALU: As described in the 2018/2020 IR cycle (MassDEP 2021), water quality and biological monitoring should be conducted in the Rowley River in the vicinity of the locations of a 2011 USFWS study which identified elevated sediment mercury concentrations, albeit not under the auspices of a QAPP.

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Assessed	YES
2022 Use Attainment Summary	
Recent data are not available for the Rowley River (MA91-05), so the Aquatic Life Use is Not Assessed. An Alert described in the 2018/2020 IR cycle (MassDEP 2021), for high levels of mercury in sediment, should be carried forward.	

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO

2022 Use Attainment Summary
Fish toxics sampling has not been conducted in the Rowley River (MA91-05), so the Fish Consumption Use is Not Assessed.

Shellfish Harvesting

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
Rowley River (MA91-05): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.2327 sq mi (93%). The approved shellfish growing area represents 0 sq mi (0%). The Shellfish Harvesting Use is assessed as not supporting because the growing area (normalized to the AU area) is < 100% approved. Based on the new growing area classifications and the prior classifications, the existing fecal coliform impairment is being retained.	

Shellfish Growing Area Classifications

MassDFG-Division of Marine Fisheries Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Area Name	Waterbody/Area Description	Classification	Area (Sq. Mi.)	Area (% of AU)
N4.0	Plum Island Sound	Conditionally Approved	0.00003	0.0%
N4.2	Upper Rowley River	Prohibited	0.01256	5.0%
N4.7	Rowley River and Rogers Island	Conditionally Approved	0.22010	87.7%

Aesthetic

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Recent data are not available for the Rowley River (MA91-05), so the Aesthetics Use is Not Assessed.	

Primary Contact Recreation

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent Enterococci bacteria data are available for the Rowley River (MA91-05), so the Primary Contact Recreational Use is Not Assessed.	

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Summary
Rowley River (MA91-05): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.2327 sq mi (93%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Primary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Secondary Contact Recreation

2022 Use Attainment	Alert

Not Assessed	NO
2022 Use Attainment Summary	
No recent Enterococci bacteria data are available for the Rowley River (MA91-05), so the Secondary Contact Recreational Use is Not Assessed.	

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 5)

Summary
Rowley River (MA91-05): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.2327 sq mi (93%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Secondary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Sperrys Pond (MA91013)

Location:	Boxford.
AU Type:	FRESHWATER LAKE
AU Size:	26 ACRES
Classification/Qualifier:	B: WWF, HQW (impoundment on river designated B/WWF/HQW)

No usable data were available for Sperrys Pond (MA91013) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None		Unchanged

State Street Pond (MA91014)

Location:	Newburyport.
AU Type:	FRESHWATER LAKE
AU Size:	4 ACRES
Classification/Qualifier:	B

No usable data were available for State Street Pond (MA91014) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Fanwort*)		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
(Fanwort*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X				

Wilson Pond (MA91017)

Location:	Rowley.
AU Type:	FRESHWATER LAKE
AU Size:	5 ACRES
Classification/Qualifier:	B: ORW, WWF ('and tributaries thereto' to a river designated B/WWF/ORW)

No usable data were available for Wilson Pond (MA91017) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None		Unchanged

Data Sources

Bailey, Logan. "RE: Beaches Bill reporting data." Email to Dan Davis (MassDEP Watershed Planning Program) providing an Excel file (DEP_BeachDataRequest) with data for marine and DCR freshwater beaches, Environmental Toxicology Program, Bureau of Environmental Health, Massachusetts Department of Public Health, Boston, MA, MA, Feb. 2, 2021.

Bettencourt, Greg. "MA shellfish classification areas, shapefile provided via email." Email to Laurie Kennedy (MassDEP Watershed Planning Program) with subject line "RE: Hello and question on DMF GIS shellfish classification datalayer - next update", Division of Marine Fisheries, Massachusetts Department of Fish and Game, Gloucester, MA, August 25, 2021.

Drought Management Task Force. "Open files compiling 2001-2020 information from "Past Drought Declarations Maps and Hisory" website." Information provided by the Drought Management Task Force and compiled by MassDEP Watershed Planning Program, Worcester, MA. September 2021. https://www.mass.gov/info-details/drought-status#past-drought-declarations-maps-and-history- (accessed September 2021).

Google Earth Pro. "Satellite Imagery of selected stream and lake/pond segments." Massachusetts, Undated.

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MassDEP. "2015 Scanned Project Files, "Parker watershed lake survey data, 1994", D01-27.PDF." Division of Watershed Management, Massachusetts Department of Environmental Protection, Worcester, MA, 1994.

MassDEP. "Final Massachusetts Integrated List of Waters for the Clean Water Act 2018/2020 Reporting Cycle (and associated basin-specific appendices)." CN 505.1, Available at https://www.mass.gov/lists/integrated-lists-of-waters-related-reports, Watershed Planning Program, Division of Watershed Management, Massachusetts Department of Environmental Protection, Worcester, MA, 2021.

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