Draft Massachusetts Integrated List of Waters for the Clean Water Act 2024/2026 Reporting Cycles

Appendix 30
Nashua River Basin
Assessment and Listing Decision Summary

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Watershed Planning Program

The mission of the Watershed Planning Program (WPP) in the Massachusetts Department of Environmental Protection is to protect, enhance, and restore the quality and value of the waters of the Commonwealth. Guided by the federal Clean Water Act, WPP implements this mission statewide through five Sections that each have a different technical focus: (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 Management. Together with other MassDEP programs and state environmental agencies, WPP shares in the duty and responsibility to secure the environmental, recreational, and public health benefits of clean water for all people of the Commonwealth.

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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.

Overview of Appendix Contents

This Integrated Report (IR) Appendix functions as a watershed-based Assessment and Listing Decision Summary that catalogs the most recent assessment decisions for each assessment unit (AU) that was updated as part of the 2024/2026 IR cycle.

The appendix begins with 2024/26 Cycle Impairment Changes, a comprehensive table summarizing all impairments that were either added, removed, changed, or unchanged between the 2022 and 2024/2026 reporting cycles. This table presents the overall impairment status at the waterbody scale, across all designated uses. The table does not detail use-specific impairment changes; those details are provided in subsequent sections of the appendix.

Following 2024/26 Cycle Impairment Changes, the appendix provides an individual section for each AU updated during the 2024/2026 cycle. Each AU section details the supporting data and rationale for each designated use attainment determination, including any associated impairment removal decisions. Changes in impairment status at the designated use level are documented in full within the corresponding Designated Use Attainment Decision. AUs where no usable data were available for the 2024/2026 IR cycle are included, but with the assessment information from the 2022 cycle is carried forward.

The following abbreviations are used when referencing designated uses:

- ALU - Aquatic Life Use
- FC - Fish Consumption Use
- SH - Shellfish Harvesting Use
- AES - Aesthetic Use
- PCR - Primary Contact Recreation Use
- SCR - Secondary Contact Recreation Use

When listing an impairment, parentheses and an asterisk (*) are utilized to denote “pollution” or non-pollutant impairments that do not require the development of a Total Maximum Daily Load (TMDL). Where applicable, further explanation of the ATTAINS impairment code is provided within square brackets [].

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2024/26 Cycle Impairment Changes

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Ashby Reservoir	MA81001	3	3	None	--	Unchanged
Asnebumskit Brook	MA81-104	--	3	None	--	Unchanged
Asnebumskit Brook	MA81-56	5	5	Ambient Bioassays - Chronic Aquatic Toxicity	--	Unchanged
Asnebumskit Brook	MA81-56	5	5	Escherichia Coli (E. Coli)	--	Added
Asnebumskit Pond	MA81002	3	3	None	--	Unchanged
Baker Brook	MA81-62	5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Ball Brook	MA81-45	2	2	None	--	Unchanged
Bare Hill Pond	MA81007	4a	4a	(Curly-leaf Pondweed*)	--	Unchanged
Bare Hill Pond	MA81007	4a	4a	(Fanwort*)	--	Unchanged
Bare Hill Pond	MA81007	4a	4a	(Non-Native Aquatic Plants*)	--	Unchanged
Bare Hill Pond	MA81007	4a	4a	(Water Chestnut*)	--	Unchanged
Bare Hill Pond	MA81007	4a	4a	Mercury in Fish Tissue	33880	Unchanged
Barrett Pond	MA81162	3	3	None	--	Unchanged
Bartlett Pond	MA81009	3	3	None	--	Unchanged
Bayberry Hill Brook	MA81-68	3	2	None	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Bixby Reservoir	MA81010	3	3	None	--	Unchanged
Bowers Brook	MA81-73	2	2	None	--	Unchanged
Bumbo Brook	MA81-94	2	2	None	--	Unchanged
Catacoonamug Brook	MA81-16	5	5	Dissolved Oxygen	--	Unchanged
Catacoonamug Brook	MA81-16	5	5	Escherichia Coli (E. Coli)	--	Added
Catacoonamug Brook	MA81-16	5	5	Lack of a Coldwater Assemblage	--	Unchanged
Catacoonamug Brook	MA81-16	5	5	Temperature	--	Unchanged
Catacoonamug Brook	MA81-74	5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Chaffin Pond	MA81017	4c	4c	(Fanwort*)	--	Unchanged
Chaffin Pond	MA81017	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged
Chaffins Brook	MA81-33	2	2	None	--	Unchanged
Coachlace Pond	MA81019	4c	4c	(Curly-leaf Pondweed*)	--	Unchanged
Coachlace Pond	MA81019	4c	4c	(Hydrilla*)	--	Unchanged
Coachlace Pond	MA81019	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged
Cobb Brook	MA81-71	2	2	None	--	Unchanged
Cold Spring Brook	MA81-82	3	3	None	--	Unchanged
Connelly Brook	MA81-57	2	2	None	--	Unchanged
Coon Tree Pond	MA81168	3	3	None	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Crocker Pond	MA81025	4c	5	(Non-Native Aquatic Plants*)	--	Unchanged
Crocker Pond	MA81025	4c	5	PFAS in Fish Tissue	--	Added
Dawson Pond	MA81028	4c	4c	(Fanwort*)	--	Unchanged
Dawson Pond	MA81028	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged
Eagle Lake	MA81034	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged
East Wachusett Brook	MA81-30	2	2	None	--	Unchanged
East Waushacum Pond	MA81035	3	3	None	--	Unchanged
Fall Brook	MA81-38	2	2	None	--	Unchanged
Fall Brook	MA81-39	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Fall Brook	MA81-39	5	5	Temperature	--	Unchanged
Fall Brook Reservoir	MA81038	5	5	Mercury in Fish Tissue	--	Unchanged
Falulah Brook	MA81-100	5	2	Escherichia Coli (E. Coli)	--	Removed
Falulah Brook	MA81-99	5	2	Escherichia Coli (E. Coli)	--	Removed
Fitchburg Reservoir	MA81043	3	2	None	--	Unchanged
Flag Brook	MA81-10	2	3	None	--	Unchanged
Flannagan Pond	MA81044	4c	4c	(Curly-leaf Pondweed*)	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Flannagan Pond	MA81044	4c	4c	(Fanwort*)	--	Unchanged
Flannagan Pond	MA81044	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged
Fort Pond	MA81046	5	5	Dissolved Oxygen	--	Unchanged
French Brook	MA81-48	2	5	Escherichia Coli (E. Coli)	--	Added
Gates Brook	MA81-24	5	5	Chloride	--	Unchanged
Gates Brook	MA81-24	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Gates Brook	MA81-24	5	5	Fecal Coliform	R1_MA_2024_04	Changed
Goodridge Brook	MA81-66	3	5	Escherichia Coli (E. Coli)	--	Added
Governor Brook	MA81-70	2	2	None	--	Unchanged
Grove Pond	MA81053	5	5	(Aquatic Plants (Macrophytes)*)	--	Changed
Grove Pond	MA81053	5	5	(Curly-leaf Pondweed*)	--	Unchanged
Grove Pond	MA81053	5	5	(Fanwort*)	--	Unchanged
Grove Pond	MA81053	5	5	(Non-Native Aquatic Plants*)	--	Unchanged
Grove Pond	MA81053	5	5	Arsenic	--	Unchanged
Grove Pond	MA81053	5	5	DEHP (Di-sec-octyl phthalate)	--	Unchanged
Grove Pond	MA81053	5	5	Mercury in Fish Tissue	--	Unchanged
Grove Pond	MA81053	5	5	Nutrient/Eutrophication Biological Indicators	--	Added

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Grove Pond	MA81053	5	5	Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	--	Unchanged
Grove Pond	MA81053	5	5	Sediment Bioassay [Chronic Toxicity Freshwater]	--	Unchanged
Gulf Brook	MA81-76	2	2	None	--	Unchanged
Haynes Reservoir	MA81055	2	2	None	--	Unchanged
Heald Pond	MA81056	3	2	None	--	Unchanged
Hickory Hills Lake	MA81031	4a	4a	Mercury in Fish Tissue	33880	Unchanged
Houghton Brook	MA81-55	3	3	None	--	Unchanged
Hy-Crest Pond	MA81060	3	3	None	--	Unchanged
James Brook	MA81-20	5	5	Dissolved Oxygen	--	Unchanged
James Brook	MA81-20	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Justice Brook	MA81-41	2	2	None	--	Unchanged
Kendall Reservoir	MA81062	3	3	None	--	Unchanged
Keyes Brook	MA81-40	2	2	None	--	Unchanged
Lake Samoset	MA81116	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged
Lake Shirley	MA81122	5	5	(Brittle Naiad, Najas Minor*)	--	Unchanged
Lake Shirley	MA81122	5	5	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
Lake Shirley	MA81122	5	5	(Fanwort*)	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Lake Shirley	MA81122	5	5	(Non-Native Aquatic Plants*)	--	Unchanged
Lake Shirley	MA81122	5	5	Dissolved Oxygen	--	Unchanged
Lake Shirley	MA81122	5	5	Harmful Algal Blooms	--	Unchanged
Lake Shirley	MA81122	5	5	Mercury in Fish Tissue	42399	Unchanged
Lake Shirley	MA81122	5	5	Turbidity	--	Unchanged
Lake Wampanoag	MA81151	4a	4a	Mercury in Fish Tissue	33880	Unchanged
Lake Whalom	MA81154	4c	4c	(Curly-leaf Pondweed*)	--	Unchanged
Lake Whalom	MA81154	4c	4c	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
Lake Whalom	MA81154	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged
Lancaster Millpond	MA81065	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged
Lily Pond	MA81067	--	4c	(Aquatic Plants (Macrophytes)*)	--	Added
Lincoln Pond	MA81070	3	3	None	--	Unchanged
Locke Brook	MA81-78	2	2	None	--	Unchanged
Long Pond	MA81073	3	3	None	--	Unchanged
Lovell Reservoir	MA81074	3	3	None	--	Unchanged
Lower Crow Hill Pond	MA81026	4c	4c	(Aquatic Plants (Macrophytes)*)	--	Added
Lower Crow Hill Pond	MA81026	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Malagasco Brook	MA81-29	5	5	Benthic Macroinvertebrates	--	Unchanged
Malagasco Brook	MA81-29	5	5	Escherichia Coli (E. Coli)	--	Added
Malden Brook	MA81-27	5	5	Temperature	--	Unchanged
Maple Spring Pond	MA81077	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged
Mason Brook	MA81-102	--	2	None	--	Unchanged
Massapoag Pond	MA81080	3	3	None	--	Unchanged
Meetinghouse Pond	MA81083	3	3	None	--	Unchanged
Mirror Lake	MA81084	3	3	None	--	Unchanged
Mirror Lake	MA81085	5	5	(Curly-leaf Pondweed*)	--	Unchanged
Mirror Lake	MA81085	5	5	Mercury in Fish Tissue	--	Unchanged
Monoosnoc Brook	MA81-13	5	4a	(Non-Native Aquatic Plants*)	--	Unchanged
Monoosnoc Brook	MA81-13	5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Morse Brook	MA81-84	2	2	None	--	Unchanged
Morse Reservoir	MA81086	3	3	None	--	Unchanged
Muddy Brook	MA81-28	5	5	Benthic Macroinvertebrates	--	Unchanged
Muddy Brook	MA81-28	5	5	Escherichia Coli (E. Coli)	--	Added
Mulpus Brook	MA81-36	5	5	Temperature	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Mulpus Brook	MA81-37	5	5	Escherichia Coli (E. Coli)	--	Added
Mulpus Brook	MA81-37	5	5	Lack of a Coldwater Assemblage	--	Unchanged
Mulpus Brook	MA81-37	5	5	Temperature	--	Unchanged
Muschopauge Brook	MA81-69	2	2	None	--	Unchanged
Muschopauge Pond	MA81089	3	3	None	--	Unchanged
Nashua River	MA81-05	5	5	(Water Chestnut*)	--	Unchanged
Nashua River	MA81-05	5	5	Benthic Macroinvertebrates	--	Unchanged
Nashua River	MA81-05	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Nashua River	MA81-05	5	5	PFAS in Fish Tissue	--	Added
Nashua River	MA81-05	5	5	Phosphorus, Total	--	Unchanged
Nashua River	MA81-05	5	5	Sediment Bioassay [Acute Toxicity Freshwater]	--	Unchanged
Nashua River	MA81-06	5	5	(Aquatic Plants (Macrophytes)*)	--	Added
Nashua River	MA81-06	5	5	(Curly-leaf Pondweed*)	--	Unchanged
Nashua River	MA81-06	5	5	(Fanwort*)	--	Unchanged
Nashua River	MA81-06	5	5	(Non-Native Aquatic Plants*)	--	Unchanged
Nashua River	MA81-06	5	5	(Water Chestnut*)	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Nashua River	MA81-06	5	5	Benthic Macroinvertebrates	--	Unchanged
Nashua River	MA81-06	5	5	Mercury in Fish Tissue	--	Unchanged
Nashua River	MA81-06	5	5	Nutrient/Eutrophication Biological Indicators	--	Unchanged
Nashua River	MA81-06	5	5	PFAS in Fish Tissue	--	Added
Nashua River	MA81-07	5	5	(Water Chestnut*)	--	Unchanged
Nashua River	MA81-07	5	5	Benthic Macroinvertebrates	--	Unchanged
Nashua River	MA81-07	5	5	PFAS in Fish Tissue	--	Added
Nashua River	MA81-08	4c	5	(Non-Native Aquatic Plants*)	--	Unchanged
Nashua River	MA81-08	4c	5	PFAS in Fish Tissue	--	Added
Nashua River	MA81-09	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Nashua River	MA81-09	5	5	PFAS in Fish Tissue	--	Added
Nashua River	MA81-09	5	5	pH, Low	--	Unchanged
Nissitissit River	MA81-21	5	5	Escherichia Coli (E. Coli)	--	Added
Nissitissit River	MA81-21	5	5	Lack of a Coldwater Assemblage	--	Unchanged
Nissitissit River	MA81-21	5	5	Temperature	--	Unchanged
Nonacoicus Brook	MA81-17	5	5	Dissolved Oxygen	--	Unchanged
North Nashua River	MA81-01	5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
North Nashua River	MA81-02	5	5	Ambient Bioassays - Chronic Aquatic Toxicity	--	Unchanged
North Nashua River	MA81-02	5	5	Benthic Macroinvertebrates	--	Unchanged
North Nashua River	MA81-02	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
North Nashua River	MA81-02	5	5	Fish Bioassessments	--	Unchanged
North Nashua River	MA81-02	5	5	Lead	--	Unchanged
North Nashua River	MA81-03	5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
North Nashua River	MA81-04	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
North Nashua River	MA81-04	5	5	Odor	--	Unchanged
Notown Reservoir	MA81092	3	3	None	--	Unchanged
Paradise Pond	MA81097	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged
Partridge Pond	MA81098	5	5	(Aquatic Plants (Macrophytes)*)	--	Changed
Partridge Pond	MA81098	5	5	(Non-Native Aquatic Plants*)	--	Unchanged
Partridge Pond	MA81098	5	5	Nutrient/Eutrophication Biological Indicators	--	Added
Partridge Pond	MA81098	5	5	Turbidity	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Pearl Hill Brook	MA81-103	--	3	None	--	Unchanged
Pearl Hill Brook	MA81-80	5	4a	Enterococcus	R1_MA_2024_04	Changed
Phillips Brook	MA81-12	5	5	Temperature	--	Unchanged
Pine Hill Reservoir	MA81102	3	3	None	--	Unchanged
Plow Shop Pond	MA81103	5	5	(Aquatic Plants (Macrophytes)*)	--	Changed
Plow Shop Pond	MA81103	5	5	(Fanwort*)	--	Unchanged
Plow Shop Pond	MA81103	5	5	(Non-Native Aquatic Plants*)	--	Removed
Plow Shop Pond	MA81103	5	5	Arsenic	--	Unchanged
Plow Shop Pond	MA81103	5	5	Chromium, Total	--	Unchanged
Plow Shop Pond	MA81103	5	5	Mercury in Fish Tissue	--	Unchanged
Plow Shop Pond	MA81103	5	5	Nutrient/Eutrophication Biological Indicators	--	Added
Plow Shop Pond	MA81103	5	5	Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	--	Unchanged
Plow Shop Pond	MA81103	5	5	Sediment Bioassay [Chronic Toxicity Freshwater]	--	Unchanged
Ponakin Brook	MA81-87	2	2	None	--	Unchanged
Poor Farm Brook	MA81-52	2	2	None	--	Unchanged
Quinapoxet Reservoir	MA81108	3	3	None	--	Unchanged
Quinapoxet River	MA81-32	5	5	(Dewatering*)	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Quinapoxet River	MA81-32	5	5	Escherichia Coli (E. Coli)	--	Added
Quinapoxet River	MA81-32	5	5	Temperature	--	Unchanged
Reedy Meadow Brook	MA81-64	3	5	Escherichia Coli (E. Coli)	--	Added
Robbins Pond	MA81111	4c	4c	(Aquatic Plants (Macrophytes)*)	--	Added
Robbins Pond	MA81111	4c	4c	(Curly-leaf Pondweed*)	--	Unchanged
Rocky Brook	MA81-42	2	2	None	--	Unchanged
Round Meadow Pond	MA81114	3	3	None	--	Unchanged
Sandy Pond	MA81117	4c	5	(Fanwort*)	--	Unchanged
Sandy Pond	MA81117	4c	5	(Non-Native Aquatic Plants*)	--	Unchanged
Sandy Pond	MA81117	4c	5	PFAS in Fish Tissue	--	Added
Sawmill Pond	MA81118	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged
Scanlon Brook	MA81-44	2	2	None	--	Unchanged
Scarletts Brook	MA81-25	5	5	Chloride	--	Unchanged
Scott Reservoir	MA81119	3	3	None	--	Unchanged
Smith Brook	MA81-90	5	5	Temperature	--	Unchanged
Snows Millpond	MA81127	3	3	None	--	Unchanged
South Meadow Brook	MA81-67	2	2	None	--	Unchanged
South Meadow Pond	MA81129	4c	4c	(Curly-leaf Pondweed*)	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
South Meadow Pond	MA81129	4c	4c	(Hydrilla*)	--	Unchanged
South Meadow Pond	MA81129	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged
South Meadow Pond	MA81165	4c	4c	(Curly-leaf Pondweed*)	--	Unchanged
South Meadow Pond	MA81165	4c	4c	(Hydrilla*)	--	Unchanged
South Meadow Pond	MA81165	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged
Spectacle Brook	MA81-101	--	3	None	--	Unchanged
Spectacle Pond	MA81132	5	5	Dissolved Oxygen	--	Unchanged
Squannacook River	MA81-18	5	5	Escherichia Coli (E. Coli)	--	Added
Squannacook River	MA81-18	5	5	Lack of a Coldwater Assemblage	--	Unchanged
Squannacook River	MA81-18	5	5	pH, Low	--	Unchanged
Squannacook River	MA81-18	5	5	Temperature	--	Unchanged
Squannacook River	MA81-19	2	2	None	--	Unchanged
Steam Mill Brook	MA81-96	2	2	None	--	Unchanged
Still River	MA81-15	2	3	None	--	Unchanged
Still River	MA81-60	5	5	Dissolved Oxygen	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Still River	MA81-60	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Stillwater River	MA81-31	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Stillwater River	MA81-31	5	5	Temperature	--	Unchanged
Streeter Pond	MA81136	3	3	None	--	Unchanged
Stuart Pond	MA81137	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged
Stump Pond	MA81171	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged
Sucker Brook	MA81-23	2	5	Escherichia Coli (E. Coli)	--	Added
The Quag	MA81170	4c	4c	(Brittle Naiad, Najas Minor*)	--	Unchanged
The Quag	MA81170	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged
Trapfall Brook	MA81-77	2	2	None	--	Unchanged
Trout Brook	MA81-26	5	5	Temperature	--	Unchanged
Unionville Pond	MA81143	4c	4c	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
Unionville Pond	MA81143	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged
Unkety Brook	MA81-81	2	2	None	--	Unchanged
Unnamed Tributary	MA81-35	5	5	Benthic Macroinvertebrates	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Unnamed Tributary	MA81-35	5	5	Dissolved Oxygen	--	Unchanged
Unnamed Tributary	MA81-46	2	2	None	--	Unchanged
Unnamed Tributary	MA81-49	5	5	Chloride	--	Unchanged
Unnamed Tributary	MA81-49	5	5	Escherichia Coli (E. Coli)	--	Added
Unnamed Tributary	MA81-50	2	2	None	--	Unchanged
Unnamed Tributary	MA81-51	2	2	None	--	Unchanged
Unnamed Tributary	MA81-54	5	5	Chloride	--	Unchanged
Unnamed Tributary	MA81-58	2	5	Escherichia Coli (E. Coli)	--	Added
Unnamed Tributary	MA81-59	2	2	None	--	Unchanged
Unnamed Tributary	MA81-83	2	2	None	--	Unchanged
Unnamed Tributary	MA81-85	2	2	None	--	Unchanged
Unnamed Tributary	MA81-86	2	2	None	--	Unchanged
Unnamed Tributary	MA81-88	2	2	None	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Unnamed Tributary	MA81-89	2	2	None	--	Unchanged
Unnamed Tributary	MA81-91	2	2	None	--	Unchanged
Unnamed Tributary	MA81-92	2	2	None	--	Unchanged
Unnamed Tributary	MA81-93	2	2	None	--	Unchanged
Unnamed Tributary	MA81-95	2	2	None	--	Unchanged
Unnamed Tributary	MA81-97	2	2	None	--	Unchanged
Unnamed Tributary	MA81-98	3	3	None	--	Unchanged
Unnamed Tributary (Boylston Brook)	MA81-34	2	2	None	--	Unchanged
Unnamed Tributary (Burnt Mill Pond Brook)	MA81-65	2	2	None	--	Unchanged
Upper Crow Hill Pond	MA81169	2	2	None	--	Unchanged
Vinton Pond	MA81145	3	3	None	--	Unchanged
Wachusett Lake	MA81146	5	5	Mercury in Fish Tissue	--	Unchanged
Wachusett Reservoir	MA81147	4a	4a	(Brittle Naiad, Najas Minor*)	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Wachusett Reservoir	MA81147	4a	4a	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
Wachusett Reservoir	MA81147	4a	4a	(Fanwort*)	--	Unchanged
Wachusett Reservoir	MA81147	4a	4a	(Non-Native Aquatic Plants*)	--	Unchanged
Wachusett Reservoir	MA81147	4a	4a	Mercury in Fish Tissue	33880	Unchanged
Warren Tannery Brook	MA81-53	2	2	None	--	Unchanged
Washacum Brook	MA81-47	5	5	Dissolved Oxygen	--	Unchanged
Washacum Brook	MA81-47	5	5	Escherichia Coli (E. Coli)	--	Added
Wekepeke Brook	MA81-72	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Wekepeke Brook	MA81-72	5	5	Temperature	--	Unchanged
West Waushacum Pond	MA81153	4c	4c	(Brittle Naiad, Najas Minor*)	--	Unchanged
West Waushacum Pond	MA81153	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged
White Pond	MA81155	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged
Whitman River	MA81-11	5	5	(Non-Native Aquatic Plants*)	--	Unchanged
Whitman River	MA81-11	5	5	Lead	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Whitman River	MA81-11	5	5	Temperature	--	Unchanged
Whitmanville Reservoir	MA81109	3	3	None	--	Unchanged
Wilder Brook	MA81-43	3	3	None	--	Unchanged
Willard Brook	MA81-79	5	4a	Enterococcus	R1_MA_2024_04	Changed
Winnekeag Lake	MA81157	3	3	None	--	Unchanged
Witch Brook	MA81-75	2	3	None	--	Unchanged
Wright Pond	MA81159	3	3	None	--	Unchanged
Wyman Pond	MA81161	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Ashby Reservoir (MA81001)

Location:	Ashby.
AU Type:	FRESHWATER LAKE
AU Size:	36 ACRES
Classification/Qualifier:	A: ORW (never attained PWS use, impoundment on river designated ORW)

No usable data were available for Ashby Reservoir (MA81001) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Asnebumskit Brook (MA81-104)

Location:	Headwaters north of Smith Hill, Holden to inlet Eagle Lake, Holden.
AU Type:	RIVER
AU Size:	1.7 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for Asnebumskit Brook (MA81-104) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

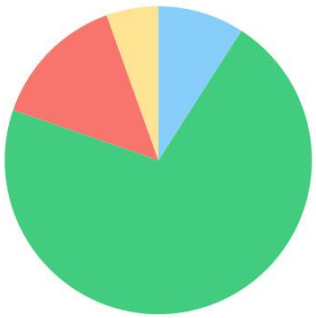
AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
--	3	None	--	Unchanged

Asnebumskit Brook (MA81-56)

Location:	From outlet Eagle Lake, Holden to mouth at confluence with the Quinapoxet River, Holden.
AU Type:	RIVER
AU Size:	2.9 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Asnebumskit Brook (MA81-56)

Watershed Area: 12.99 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	12.99	4.80	8.31	2.81
Agriculture	5.5%	2.1%	4.4%	0.8%
Developed	14.2%	18.4%	10.7%	13.1%
Natural	71.2%	69.8%	71.3%	70.2%
Wetland	9.1%	9.8%	13.6%	15.9%
Impervious	6.3%	8.5%	4.9%	6.4%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Ambient Bioassays - Chronic Aquatic Toxicity	--	Unchanged
5	5	Escherichia Coli (E. Coli)	--	Added

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Ambient Bioassays - Chronic Aquatic Toxicity	Source Unknown (N)	X	--	--	--	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Asnebumskit Brook (MA81-56) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Asnebumskit Brook (MA81-56) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Asnebumskit Brook (MA81-56) is assessed as Not Supporting. The prior Fecal Coliform Alert is being removed, and an Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at 1 station in 2018-2022. MA DCR (DCRWS) staff collected *E. coli* bacteria samples a quarter of the way down Asnebumskit Brook at DCRWS_M102 [upstream of Princeton St Near Post Office, Holden] from 2011-2022 (n=11-31/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from DCRWS_M102 indicated 5 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2018-2022, 31-94%), 5 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2018-2022, n=2-7), and cumulatively across years 75% of intervals had GMs >126 CFU/100ml. *E. coli* data from DCRWS_M102 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_M102	MA DCR Division of Water Supply Protection	Water Quality	ASNEBUMSKIT BROOK	UPSTREAM OF PRINCETON ST NEAR POST OFFICE, HOLDEN	42.365295	-71.882039

Bacteria Data

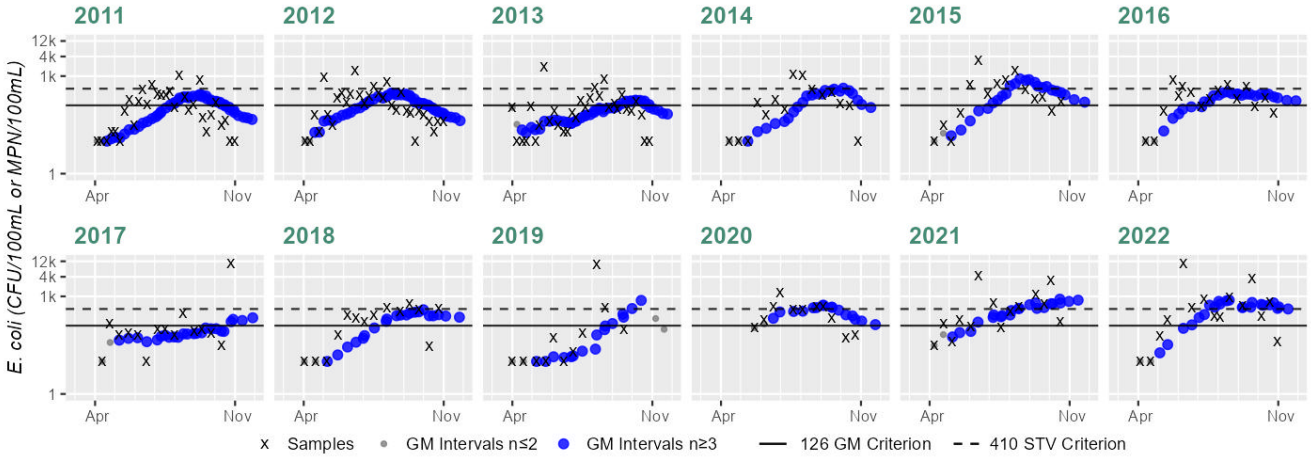
Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 2)

[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
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	04/04/11	11/14/11	31	10	1040	75
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	04/02/12	12/03/12	31	10	1440	102
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	04/01/13	10/28/13	31	10	1920	69
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	04/14/14	10/27/14	15	10	1160	101
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	04/08/15	10/19/15	15	10	2990	191
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	04/11/16	10/24/16	16	10	744	160
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	04/12/17	10/26/17	15	10	10500	88
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	04/02/18	10/24/18	14	10	573	113
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	04/01/19	09/18/19	11	10	9800	48
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	05/21/20	12/15/20	11	52	1270	255
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	04/08/21	10/18/21	14	31	4350	309
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	04/04/22	10/31/22	15	10	10500	268

Station DCRWS_M102 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	31
SeasGM	75
#GMI	54
#GMI Ex	23
%GMI Ex	42%
n>STV	3
%n>STV	9%

Variable*	Result
Samples	31
SeasGM	102
#GMI	53
#GMI Ex	25
%GMI Ex	47%
n>STV	4
%n>STV	12%

Variable*	Result
Samples	31
SeasGM	69
#GMI	53
#GMI Ex	12
%GMI Ex	22%
n>STV	3
%n>STV	9%

Variable*	Result
Samples	15
SeasGM	101
#GMI	25
#GMI Ex	14
%GMI Ex	56%
n>STV	2
%n>STV	13%

Variable*	Result
Samples	15
SeasGM	191
#GMI	25
#GMI Ex	20
%GMI Ex	80%
n>STV	5
%n>STV	33%

Variable*	Result
Samples	16
SeasGM	160
#GMI	27
#GMI Ex	20
%GMI Ex	74%
n>STV	4
%n>STV	25%

Variable*	Result
Samples	15
SeasGM	88
#GMI	25
#GMI Ex	5
%GMI Ex	20%
n>STV	1
%n>STV	6%

Variable*	Result
Samples	14
SeasGM	113
#GMI	22
#GMI Ex	15
%GMI Ex	68%
n>STV	2
%n>STV	14%

Variable*	Result
Samples	11
SeasGM	48
#GMI	16
#GMI Ex	5
%GMI Ex	31%
n>STV	2
%n>STV	18%

Variable*	Result
Samples	11
SeasGM	255
#GMI	17
#GMI Ex	16
%GMI Ex	94%
n>STV	4
%n>STV	36%

Variable*	Result
Samples	14
SeasGM	309
#GMI	23
#GMI Ex	20
%GMI Ex	86%
n>STV	6
%n>STV	42%

Variable*	Result
Samples	15
SeasGM	268
#GMI	25
#GMI Ex	22
%GMI Ex	88%
n>STV	7
%n>STV	46%

Cumulative %GMI Exceedance Current (2011-2022)
53%

Cumulative %GMI Exceedance Current (Recent 5 Years)
75%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Asnebumskit Brook (MA81-56) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at 1 station in 2018-2022. MA DCR (DCRWS) staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in Asnebumskit Brook (MA81-56) from 2008-2022 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: DCRWS_M102 [upstream of Princeton St Near Post Office, Holden] from 2008-2010 (historic n=45-51/yr) and 2011-2022 (current n=17-51/yr), DCRWS_M101 [upstream of Mill St. Bridge, Holden] from 2008-2010 (historic n=49-51/yr) and Jan 2011 (current n=1). Since there are some bacteria data from the current IR window that are indicative of poor water quality conditions (with a mix of good and poor conditions in the historic window), only the analysis from the current IR window will be summarized here as follows: Analysis of the recent five years of this multi-year high frequency *E. coli* dataset from DCRWS_M102 indicated 5 out of 5 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml (2018-2022, 10-52%), 2 yrs had >10% of samples exceed the 794 CFU/100ml STV (2021 and 2022, 12 & 13%), and cumulatively across years 35% of intervals had GMs >244 CFU/100ml. Current *E. coli* data from DCRWS_M101 are too limited according to the 2024 CALM to assess the Secondary Contact Recreation Use and current *E. coli* data from DCRWS_M102 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_M101	MA DCR Division of Water Supply Protection	Water Quality	ASNEBUMSKIT BROOK	UPSTREAM OF MILL ST. BRIDGE, HOLDEN	42.373121	-71.853632
DCRWS_M102	MA DCR Division of Water Supply Protection	Water Quality	ASNEBUMSKIT BROOK	UPSTREAM OF PRINCETON ST NEAR POST OFFICE, HOLDEN	42.365295	-71.882039

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

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

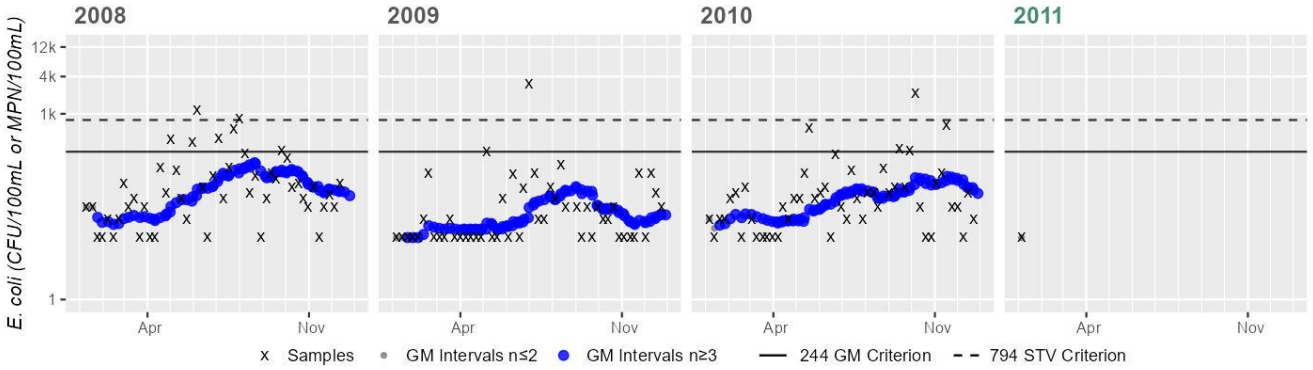
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_M101	MA DCR Division of Water Supply Protection	E. coli	01/10/08	12/11/08	49	10	1140	55

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_M101	MA DCR Division of Water Supply Protection	E. coli	01/06/09	12/23/09	50	10	3080	23
DCRWS_M101	MA DCR Division of Water Supply Protection	E. coli	01/06/10	12/22/10	51	10	2160	41
DCRWS_M101	MA DCR Division of Water Supply Protection	E. coli	01/05/11	01/05/11	1	10	10	10
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	01/10/08	12/11/08	45	10	3420	69
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	01/06/09	12/23/09	50	10	3650	39
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	01/06/10	12/22/10	51	10	2000	63
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	01/05/11	12/20/11	51	10	1040	41
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	01/03/12	12/17/12	50	10	1440	55
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	01/07/13	12/18/13	50	10	1920	45
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	01/08/14	12/09/14	25	10	1160	57
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	01/05/15	12/15/15	21	10	2990	115
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	01/04/16	12/05/16	26	10	744	61
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	01/03/17	12/19/17	25	10	10500	52
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	01/10/18	12/17/18	24	10	573	47
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	01/03/19	09/18/19	17	10	9800	30
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	01/09/20	12/15/20	20	10	1270	69
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	01/07/21	12/20/21	24	10	4350	117

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_M102	MA DCR Division of Water Supply Protection	E. coli	01/03/22	12/22/22	23	10	10500	122

Station DCRWS_M101 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	49
SeasGM	55
#GMI	85
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	50
SeasGM	23
#GMI	92
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	51
SeasGM	41
#GMI	92
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	1%

Variable*	Result
Samples	1
SeasGM	10
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

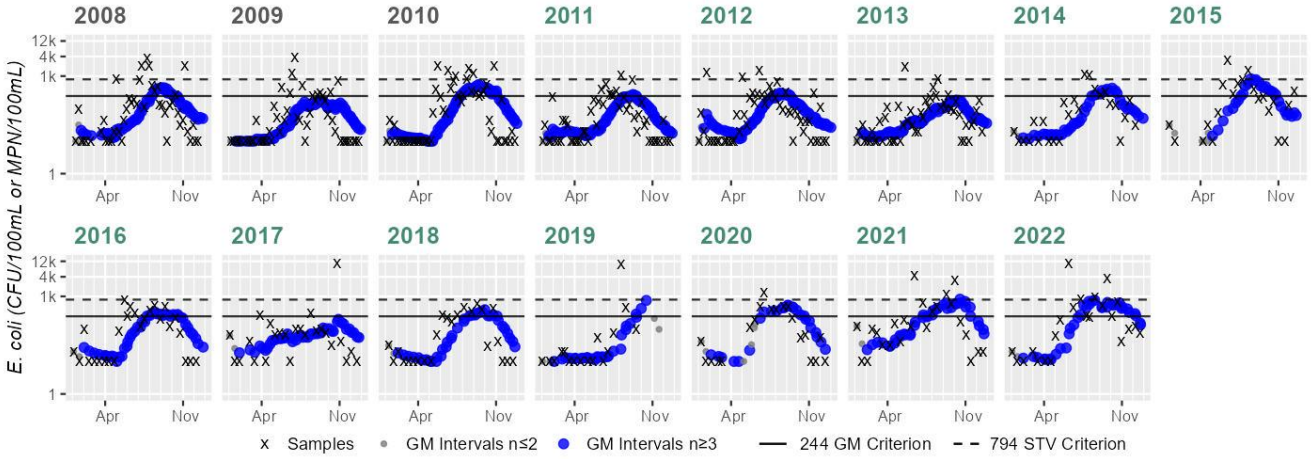
Cumulative %GMI Exceedance
Historic (1997-2010)
0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station DCRWS_M102 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	45
SeasGM	69
#GMI	78
#GMI Ex	16
%GMI Ex	20%
n>STV	4
%n>STV	8%

Variable*	Result
Samples	50
SeasGM	39
#GMI	91
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	51
SeasGM	63
#GMI	92
#GMI Ex	28
%GMI Ex	30%
n>STV	7
%n>STV	13%

Variable*	Result
Samples	51
SeasGM	41
#GMI	90
#GMI Ex	3
%GMI Ex	3%
n>STV	1
%n>STV	1%

Variable*	Result
Samples	50
SeasGM	55
#GMI	87
#GMI Ex	9
%GMI Ex	10%
n>STV	3
%n>STV	6%

Variable*	Result
Samples	50
SeasGM	45
#GMI	89
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	25
SeasGM	57
#GMI	45
#GMI Ex	11
%GMI Ex	24%
n>STV	2
%n>STV	8%

Variable*	Result
Samples	21
SeasGM	115
#GMI	33
#GMI Ex	14
%GMI Ex	42%
n>STV	2
%n>STV	9%

Variable*	Result
Samples	26
SeasGM	61
#GMI	47
#GMI Ex	14
%GMI Ex	29%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	25
SeasGM	52
#GMI	45
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	24
SeasGM	47
#GMI	42
#GMI Ex	11
%GMI Ex	26%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	17
SeasGM	30
#GMI	28
#GMI Ex	3
%GMI Ex	10%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	20
SeasGM	69
#GMI	29
#GMI Ex	12
%GMI Ex	41%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	24
SeasGM	117
#GMI	43
#GMI Ex	18
%GMI Ex	41%
n>STV	3
%n>STV	12%

Variable*	Result
Samples	23
SeasGM	122
#GMI	40
#GMI Ex	21
%GMI Ex	52%
n>STV	3
%n>STV	13%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
16%	18%	35%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Asnebumskit Pond (MA81002)

Location:	Paxton.
AU Type:	FRESHWATER LAKE
AU Size:	44 ACRES
Classification/Qualifier:	A: PWS, ORW (PWS and Tributary to PWS)

No usable data were available for Asnebumskit Pond (MA81002) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

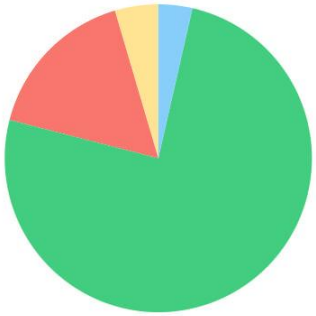
AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Baker Brook (MA81-62)

Location:	Headwaters, confluence of Pearl Hill and Falulah brooks, Fitchburg to mouth at confluence with North Nashua River, Fitchburg.
AU Type:	RIVER
AU Size:	2.5 MILES
Classification/Qualifier:	B: CSO

Baker Brook (MA81-62)

Watershed Area: 18.26 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	18.26	5.08	6.75	1.19
Agriculture	4.6%	4%	3%	1.6%
Developed	16.4%	38.4%	10.2%	29.9%
Natural	75.4%	52.3%	80.2%	56.8%
Wetland	3.6%	5.3%	6.6%	11.6%
Impervious	8%	20.7%	5.2%	16.2%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Combined Sewer Overflows (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Baker Brook (MA81-62) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Baker Brook (MA81-62) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for Baker Brook (MA81-62) continues to be assessed as Not Supporting. The prior Escherichia Coli (E. Coli) impairment is being carried forward based on the presence of CSOs and bacteria data not meeting the threshold at 2 stations in 2020-2022. There is a presumptive Escherichia Coli (E. Coli) impairment decision in place due to the presence of active CSO outfalls. Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in Baker Brook (MA81-62) from 2020-2022 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: close to the upstream end at NRWA_BB3050 [264 John Fitch Highway behind Car Wash, Fitchburg] from Sep-Oct 2021 (n=2), and a quarter of the way down at NRWA_BB2678 [120 John Fitch Hwy, Fitchburg] from 2020-2022 (n=5-16/yr). Analysis of the single year limited frequency *E. coli* dataset from NRWA_BB3050 indicated 100% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 136 CFU/100ml. Analysis of the multi-year limited frequency *E. coli* dataset from NRWA_BB2678 indicated 3 out of 3 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2020-2022, 50-100%), 3 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2020-2022, n=2-8), and cumulatively across years 85% of intervals had GMs >126 CFU/100ml. *E. coli* data from NRWA_BB3050 and NRWA_BB2678 are both indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_BB2678	Nashua River Watershed Association	Water Quality	Baker Brook	120 John Fitch Hwy, Fitchburg	42.574560	-71.775030
NRWA_BB3050	Nashua River Watershed Association	Water Quality	Baker Brook	264 John Fitch Highway behind Car Wash, Fitchburg	42.577387	-71.773136

Bacteria Data

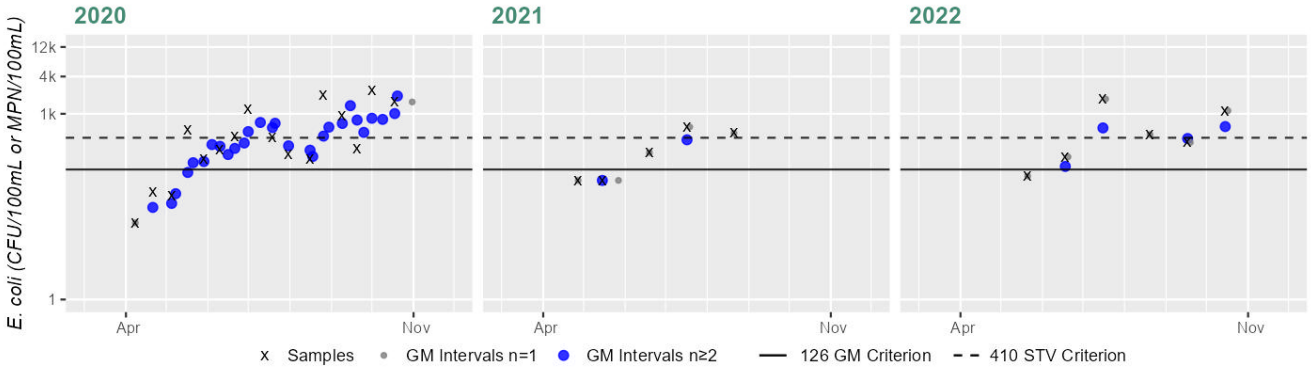
Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (30-day Interval Analysis)
(NRWA 2022) (MassDEP Undated 2)
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_BB2678	Nashua River Watershed Association	E. coli	04/07/20	10/17/20	16	17	2419	330
NRWA_BB2678	Nashua River Watershed Association	E. coli	04/27/21	08/21/21	5	83	613	218
NRWA_BB2678	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	98	1732	427

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_BB3050	Nashua River Watershed Association	E. coli	09/18/21	10/16/21	2	111	165	136

Station NRWA_BB2678 - Escherichia coli

Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	16
SeasGM	330
#GMI	28
#GMI Ex	24
%GMI Ex	85%
n>STV	8
%n>STV	50%

Variable*	Result
Samples	5
SeasGM	218
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	2
%n>STV	40%

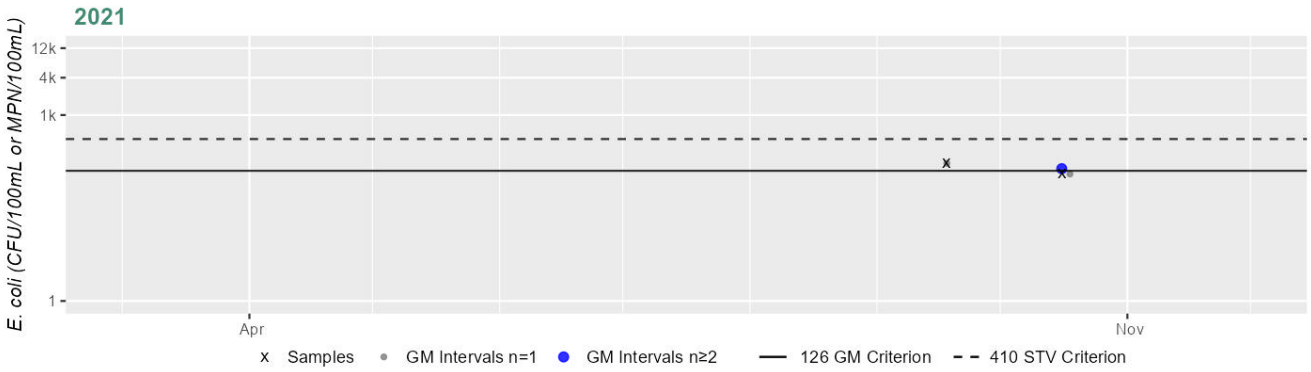
Variable*	Result
Samples	6
SeasGM	427
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	3
%n>STV	50%

Cumulative %GMI Exceedance
Current (2011-2022)
85%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_BB3050 - Escherichia coli

Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	2
SeasGM	136
#GMI	1
#GMI Ex	1
%GMI Ex	100%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance

Current (2011-2022)

100%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Baker Brook (MA81-62) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to the presence of CSOs and bacteria data not meeting the threshold at 1 station in 2020-2022. There is a presumptive Escherichia Coli (E. Coli) impairment decision in place due to the presence of active CSO outfalls. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in Baker Brook from 2008-2022 at 3 stations. Samples were collected from the following stations/sample years from upstream to downstream: close to the upstream end at NRWA_BB3050 [264 John Fitch Highway behind Car Wash, Fitchburg] from Sep-Oct 2021 (n=2), a quarter of the way down at NRWA_BB2678 [120 John Fitch Hwy, Fitchburg] from 2020-2022 (n=5-16/yr), and three-quarters of the way down the AU at W1836 [Crawford St, Fitchburg] from May-Sep 2008 (n=6). Since bacteria data from the historic IR window (1 station) are indicative of good water quality conditions, only the analysis from the current IR window (2 stations) will be summarized here: Analysis of the multi-year limited frequency *E. coli* dataset from NRWA_BB2678 indicated 3 out of 3 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2020-2022, 25-100%), 2 yrs had ≥2 samples exceed the 794 CFU/100ml STV (2020 and 2022, n=5 & 2), and cumulatively across years 71% of intervals had GMs >244 CFU/100ml. *E. coli* data from NRWA_BB3050 are too limited according to the 2024 CALM to assess the Secondary Contact Recreation Use. *E. coli* data from NRWA_BB2678 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1836	MassDEP	Water Quality	Baker Brook	[Crawford Street, Fitchburg]	42.563162	-71.761549
NRWA_BB2678	Nashua River Watershed Association	Water Quality	Baker Brook	120 John Fitch Hwy, Fitchburg	42.574560	-71.775030
NRWA_BB3050	Nashua River Watershed Association	Water Quality	Baker Brook	264 John Fitch Highway behind Car Wash, Fitchburg	42.577387	-71.773136

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

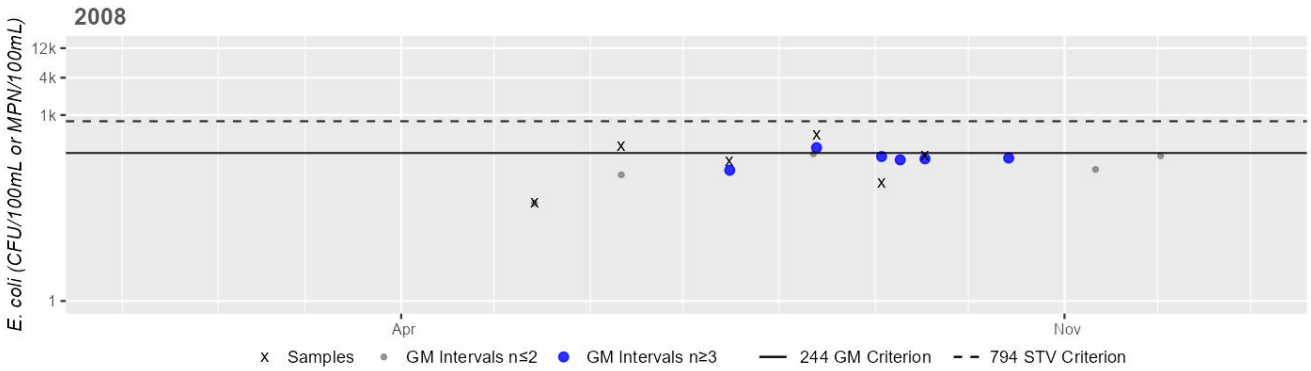
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1836	MassDEP	E. coli	05/13/08	09/16/08	6	38	470	161

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_BB2678	Nashua River Watershed Association	E. coli	04/07/20	10/17/20	16	17	2419	330
NRWA_BB2678	Nashua River Watershed Association	E. coli	04/27/21	08/21/21	5	83	613	218
NRWA_BB2678	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	98	1732	427
NRWA_BB3050	Nashua River Watershed Association	E. coli	09/18/21	10/16/21	2	111	165	136

Station MASSDEP_W1836 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



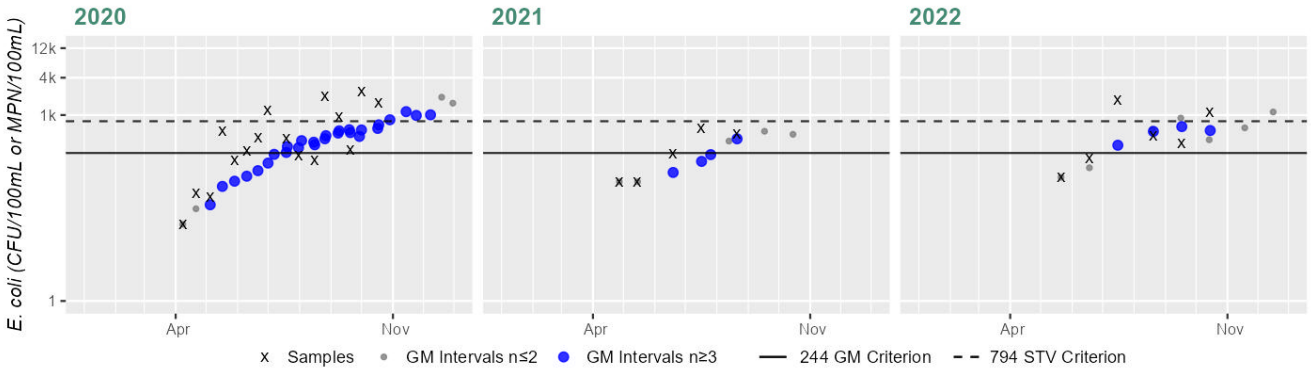
Variable*	Result
Samples	6
SeasGM	161
#GMI	6
#GMI Ex	1
%GMI Ex	16%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
16%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_BB2678 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	16
SeasGM	330
#GMI	27
#GMI Ex	20
%GMI Ex	74%
n>STV	5
%n>STV	31%

Variable*	Result
Samples	5
SeasGM	218
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	0
%n>STV	0%

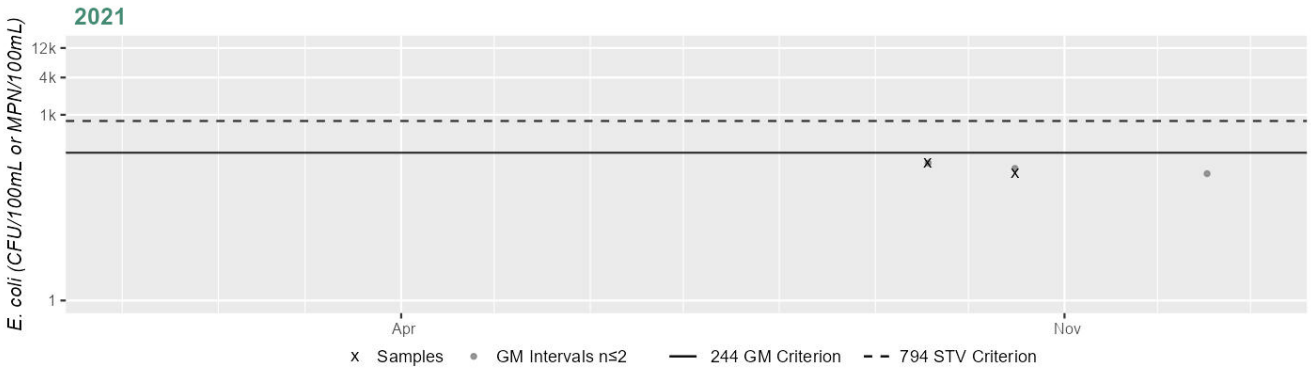
Variable*	Result
Samples	6
SeasGM	427
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	2
%n>STV	33%

Cumulative %GMI Exceedance
Current (2011-2022)
71%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_BB3050 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	2
SeasGM	136
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Ball Brook (MA81-45)

Location:	Headwaters, north of Sterling Road, Holden to mouth at confluence with Stillwater River, Sterling.
AU Type:	RIVER
AU Size:	1.6 MILES
Classification/Qualifier:	A: PWS, ORW, CWF (Tributary)

Ball Brook (MA81-45)

Watershed Area: 0.65 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	0.65	0.65	0.45	0.45
Agriculture	1.1%	1.1%	1.2%	1.2%
Developed	10.8%	10.8%	10.3%	10.3%
Natural	80.4%	80.4%	78%	78%
Wetland	7.7%	7.7%	10.6%	10.6%
Impervious	5.4%	5.4%	5.4%	5.4%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Ball Brook (MA81-45) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Ball Brook (MA81-45) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Ball Brook (MA81-45) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Ball Brook (MA81-45) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MA DCR (DCRWS) staff collected *E. coli* bacteria samples close to the downstream end of Ball Brook at DCRWS_MD88 [Rt. 140, Sterling] from Jan-Dec 2008 (n=46). Analysis of the historic single year high frequency *E. coli* dataset from DCRWS_MD88 indicated 0% of intervals had GMs >244 CFU/100ml and 2% of samples exceeded the 794 CFU/100ml STV. Historic *E. coli* data from DCRWS_MD88 meet 2024 CALM guidance. However, since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

Monitoring Stations

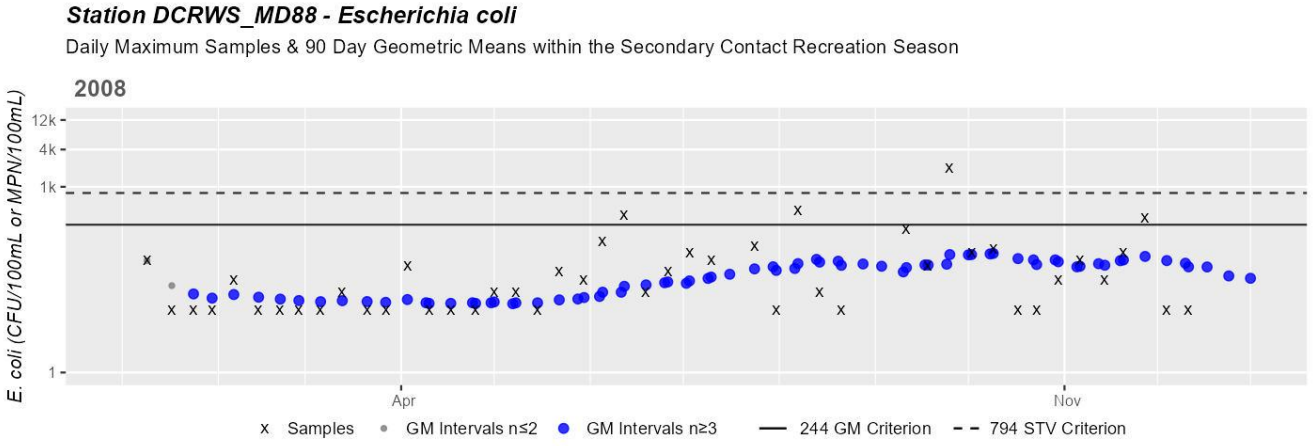
Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD88	MA DCR Division of Water Supply Protection	Water Quality	BALL BROOK	Rt. 140, Sterling	42.436293	-71.813662

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

[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
DCRWS_MD88	MA DCR Division of Water Supply Protection	E. coli	01/09/08	12/10/08	46	10	2000	31



Variable*	Result
Samples	46
SeasGM	31
#GMI	82
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Bare Hill Pond (MA81007)

Location:	Harvard.
AU Type:	FRESHWATER LAKE
AU Size:	310 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	(Curly-leaf Pondweed*)	--	Unchanged
4a	4a	(Fanwort*)	--	Unchanged
4a	4a	(Non-Native Aquatic Plants*)	--	Unchanged
4a	4a	(Water Chestnut*)	--	Unchanged
4a	4a	Mercury in Fish Tissue	33880	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Fanwort*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Water Chestnut*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--

Recommendations

2024/26 Recommendations
2024 IR [HARMFUL ALGAL BLOOMS, MEDIUM] Follow-up monitoring should be conducted in Bare Hill Pond (MA81007) to determine if Harmful Algal Blooms may be impairing the Recreational and Aesthetic uses. Monitoring should include collection of cyanobacteria cell count data, as well as continued reporting of algal blooms to MDPH.

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for Bare Hill Pond (MA81007) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. Fish toxics sampling was conducted in Bare Hill Pond at station F0075 in 2021 as part of the MassDEP Office of Research and Standards Mercury Initiative. MDPH included a site-specific advisory for Bare Hill Pond in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.

Fish Consumption Advisories

Summary of Fish Toxics Sampling and Resulting Fish Consumption Advisories (MA DPH 2025) (MassDEP Undated 5)

Summary Statement
Fish toxics sampling was conducted in Bare Hill Pond (MA81007) at station F0075 in 2021 as part of the MassDEP Office of Research and Standards Mercury Initiative. MDPH retained the existing site-specific fish consumption advisories for Mercury associated with Bare Hill Pond in their January 2025 Freshwater Fish Consumption Advisory List. The site-specific DPH advisories are indicative of a Fish Consumption Use impairment for Mercury in Fish Tissue for Bare Hill Pond (MA81007).

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	YES

2024/26 Use Attainment Summary
The Aesthetics Use for Bare Hill Pond (MA81007) is assessed as Fully Supporting. However, an Alert is being identified for Harmful Algal Blooms in this waterbody since C-HAB postings (blooms of >15 days in duration) were reported to MDPH for 2020 and 2021. MassDEP staff recorded aesthetics observations at one station for this Bare Hill Pond AU as part of the MAP2 lake monitoring project during the summer of 2016, at the deep hole, in Harvard (W0604, n=3). There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, though field staff noted green water color on one occasion. During the period 2015 through 2022, C-HAB postings for Bare Hill Pond were reported to MDPH based on visual observations for 58 days in 2020 and based on cell count data for 42 days in 2021 (but cell count concentration was not reported to MDPH). No blooms were reported in other years. Since an extended bloom (>20 days in duration) was reported without cell count concentration data in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, an Alert is being identified for Harmful Algal Blooms and a recommendation for follow-up sampling will be made.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0604	MassDEP	Water Quality	Bare Hill Pond	[deep hole, Harvard]	42.492508	-71.596909

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W0604	2016	3	Aesthetic observations were made by MassDEP field sampling crews at Station W0604 on Bare Hill Pond (MA81007) during 3 site visits between Jul 2016 and Sep 2016. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, though field staff noted green water color (n=1).

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W0604	Bare Hill Pond	2016	Aesthetics Impaired?	No	3	3
W0604	Bare Hill Pond	2016	Aquatic Plant Density, Overall	None	1	3
W0604	Bare Hill Pond	2016	Aquatic Plant Density, Overall	NR	1	3
W0604	Bare Hill Pond	2016	Aquatic Plant Density, Overall	Unobservable	1	3
W0604	Bare Hill Pond	2016	Color	Greenish	1	3
W0604	Bare Hill Pond	2016	Color	None	1	3
W0604	Bare Hill Pond	2016	Color	NR	1	3
W0604	Bare Hill Pond	2016	Objectionable Deposits	No	3	3
W0604	Bare Hill Pond	2016	Odor	None	3	3
W0604	Bare Hill Pond	2016	Scum	No	3	3
W0604	Bare Hill Pond	2016	Turbidity	None	2	3
W0604	Bare Hill Pond	2016	Turbidity	Slightly Turbid	1	3

Algal Bloom Information

Cyanobacteria Harmful Algal Bloom (C-HAB) Summary Statements for 2015-2022 MDPH Data (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

C-HAB Summary Statement
During the period 2015 through 2022, C-HAB postings for Bare Hill Pond (MA81007) were reported to MDPH based on visual observations for 58 days in 2020 and based on cell count data for 42 days in 2021 (but cell count concentration was not reported to MDPH). No blooms were reported in other years. Since an extended bloom (>20 days in duration) was reported without cell count concentration data in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, an Alert is being identified for C-HABs in this waterbody and a recommendation for follow-up sampling will be made.

Cyanobacteria Harmful Algal Bloom (C-HAB) Data (2015-2022) Provided by MDPH (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

[* indicates a C-HAB posting of unknown duration]

DEP Waterbody (DPH Waterbody)	DPH Town	Posting Days 2015	Posting Days 2016	Posting Days 2017	Posting Days 2018	Posting Days 2019	Posting Days 2020	Posting Days 2021	Posting Days 2022
Bare Hill Pond	Harvard						58	42	

Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary
No bacteria data are available to assess the Primary Contact Recreation Use for Bare Hill Pond (MA81007) and available other indicators and aesthetics observations for this AU did not result in any impairment, so it is assessed as having Insufficient Information. An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU. During the period 2015 through 2022, C-HAB postings for Bare Hill Pond were reported to MDPH based on visual observations for 58 days in 2020 and based on cell count data for 42 days in 2021 (but cell count concentration was not reported to MDPH). No blooms were reported in other years. Since an extended bloom (>20 days in duration) was reported without cell count concentration data in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, a Harmful Algal Bloom Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made. In Bare Hill Pond MassDEP staff collected Secchi depth data at W0604 [42.492508, -71.596909, deep hole, Harvard] (2016). Secchi depth data indicated water clarity meeting the 1.2m (4ft) threshold at W0604 in 2016 (n=3, 4.1-5.1m).

Other Indicators

Summary Statement for 2011-2022 Cyanobacteria Cell Count and Cyanotoxin Data, and Secchi Depth Data
(MassDEP Undated 7) (MassDEP Undated 4)

Data Year(s)	Summary
2016	In Bare Hill Pond (MA81007), MassDEP collected Secchi data at W0604 [42.492508, -71.596909, deep hole, Harvard] in 2016. At station W0604 (station depth=6.6 m) the Secchi depth measurements ranged from 4.1-5.1 m (n=3) indicating water clarity meeting the 1.2 m (4 ft) threshold.

Secondary Contact Recreation

2024/26 Use Attainment	Alert

Insufficient Information	YES

2024/26 Use Attainment Summary
No bacteria data are available to assess the Secondary Contact Recreation Use for Bare Hill Pond (MA81007) and available other indicators and aesthetics observations for this AU did not result in any impairment, so it is assessed as having Insufficient Information. An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU. During the period 2015 through 2022, C-HAB postings for Bare Hill Pond were reported to MDPH based on visual observations for 58 days in 2020 and based on cell count data for 42 days in 2021 (but cell count concentration was not reported to MDPH). No blooms were reported in other years. Since an extended bloom (>20 days in duration) was reported without cell count concentration data in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, a Harmful Algal Bloom Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made.

Barrett Pond (MA81162)

Location:	Leominster.
AU Type:	FRESHWATER LAKE
AU Size:	7 ACRES
Classification/Qualifier:	B

No usable data were available for Barrett Pond (MA81162) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Bartlett Pond (MA81009)

Location:	Leominster.
AU Type:	FRESHWATER LAKE
AU Size:	23 ACRES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for Bartlett Pond (MA81009) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

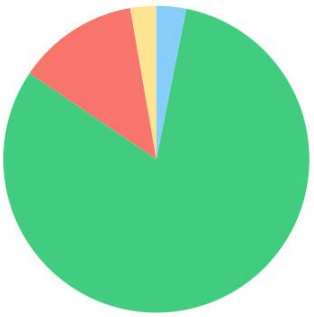
AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Bayberry Hill Brook (MA81-68)

Location:	Headwaters, outlet small unnamed pond north of Bailey Road, Townsend to mouth at confluence with Squannacook River, Townsend.
AU Type:	RIVER
AU Size:	2.1 MILES
Classification/Qualifier:	B: ORW, CWF

Bayberry Hill Brook (MA81-68)

Watershed Area: 1.22 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	1.22	1.22	0.37	0.37
Agriculture	2.7%	2.7%	1.8%	1.8%
Developed	12.8%	12.8%	15.8%	15.8%
Natural	81.3%	81.3%	78.2%	78.2%
Wetland	3.1%	3.1%	4.2%	4.2%
Impervious	2.7%	2.7%	2.5%	2.5%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Bayberry Hill Brook (MA81-68) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Bayberry Hill Brook (MA81-68) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Bayberry Hill Brook (MA81-68) is assessed as Fully Supporting. Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples close to the downstream end of Bayberry Hill Brook at NRWA_BH0038 [Woodland Drive, Townsend] from May-Oct 2019 (n=8). Analysis of the single year moderate frequency *E. coli* dataset from NRWA_BH0038 indicated 0% of intervals had GMs >126 CFU/100ml and no samples exceeded the 410 CFU/100ml STV. *E. coli* data from NRWA_BH0038 meet 2024 CALM guidance.

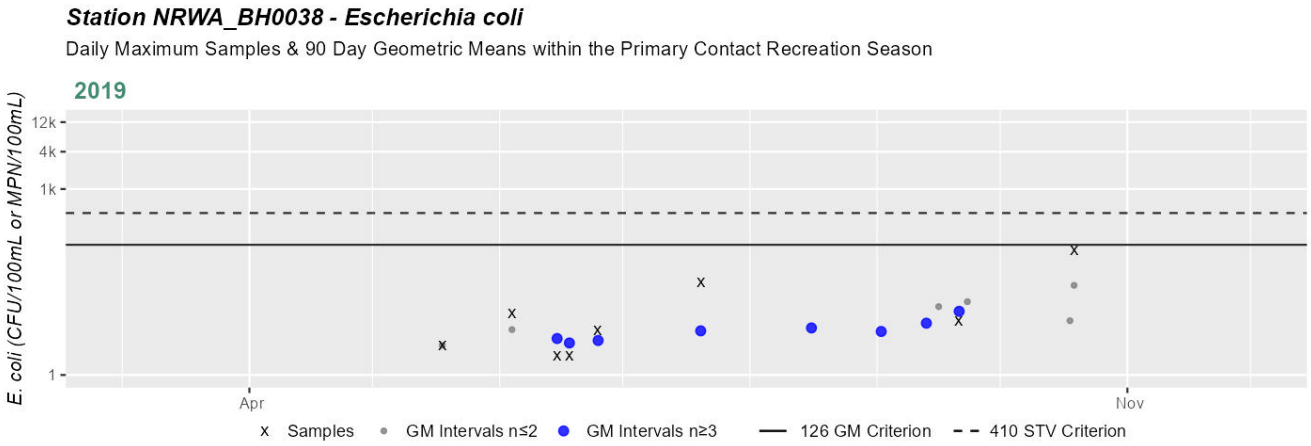
Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_BH0038	Nashua River Watershed Association	Water Quality	Bayberry Hill Brook	Woodland Drive, Townsend	42.660350	-71.714730

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)
(NRWA 2022) (MassDEP Undated 2)
[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
NRWA_BH0038	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	8	2	103	7



Variable*	Result
Samples	8
SeasGM	7
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Bayberry Hill Brook (MA81-68) is assessed as Fully Supporting. Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples close to the downstream end of Bayberry Hill Brook at NRWA_BH0038 [Woodland Drive, Townsend] from May-Oct 2019 (n=8). Analysis of the single year moderate frequency *E. coli* dataset from NRWA_BH0038 indicated 0% of intervals had GMs >244 CFU/100ml and no samples exceeded the 794 CFU/100ml STV. *E. coli* data from NRWA_BH0038 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_BH0038	Nashua River Watershed Association	Water Quality	Bayberry Hill Brook	Woodland Drive, Townsend	42.660350	-71.714730

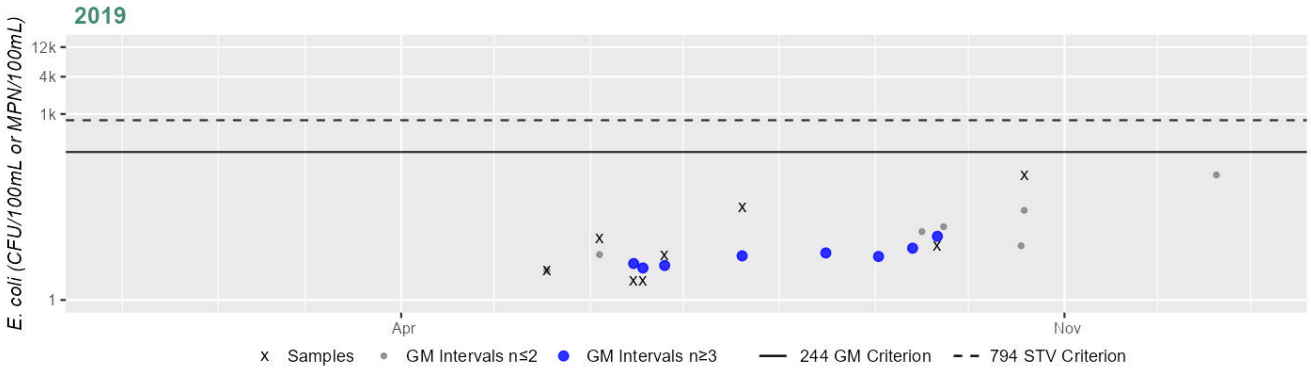
Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)
(NRWA 2022) (MassDEP Undated 1)
[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
NRWA_BH0038	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	8	2	103	7

Station NRWA_BH0038 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	8
SeasGM	7
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Bixby Reservoir (MA81010)

Location:	Townsend.
AU Type:	FRESHWATER LAKE
AU Size:	21 ACRES
Classification/Qualifier:	B: ORW

No usable data were available for Bixby Reservoir (MA81010) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

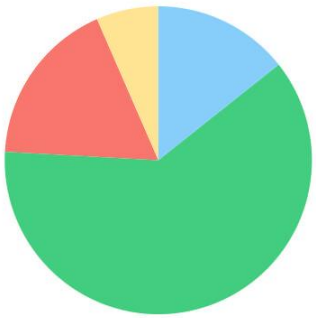
AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Bowers Brook (MA81-73)

Location:	From outlet Bare Hill Pond, Harvard to mouth at inlet unnamed pond, Ayer.
AU Type:	RIVER
AU Size:	6.1 MILES
Classification/Qualifier:	B

Bowers Brook (MA81-73)

Watershed Area: 11.64 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	11.64	5.90	3.35	1.29
Agriculture	6.5%	6.5%	4.2%	3.5%
Developed	17.6%	22%	9.1%	10.5%
Natural	61.5%	56.5%	59.9%	49.7%
Wetland	14.3%	14.9%	26.8%	36.2%
Impervious	7.5%	9.6%	4.1%	4.9%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Bowers Brook (MA81-73) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Bowers Brook (MA81-73) continues to be assessed as Fully Supporting. MassDEP staff recorded aesthetics observations in 2011 as part of the MAP2 wadeable streams monitoring project, at one station three-quarters of the way down this Bowers Brook AU ~830 feet downstream from West Lancaster Country Road, Harvard (W2205, n=6). No persistent objectionable conditions (i.e., odors, deposits, growths, or turbidity) were observed during any of the surveys.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2205	MassDEP	Water Quality	Bowers Brook	[approximately 830 feet downstream from West Lancaster Country Road, Harvard]	42.531927	-71.579109

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2205	2011	6	Aesthetic observations were made by MassDEP field sampling crews at Station W2205 on Bowers Brook (MA81-73) during 6 site visits between May 2011 and Sep 2011. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2205	2011	6	6	0

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2205	Bowers Brook	2011	Aquatic Plant Density, Overall	None	5	6
W2205	Bowers Brook	2011	Aquatic Plant Density, Overall	Sparse	1	6
W2205	Bowers Brook	2011	Color	Brownish	1	6
W2205	Bowers Brook	2011	Color	Light Yellow/Tan	3	6
W2205	Bowers Brook	2011	Color	NR	2	6
W2205	Bowers Brook	2011	Objectionable Deposits	No	6	6
W2205	Bowers Brook	2011	Odor	Musty (Basement)	1	6
W2205	Bowers Brook	2011	Odor	None	4	6
W2205	Bowers Brook	2011	Odor	NR	1	6
W2205	Bowers Brook	2011	Periphyton Density, Filamentous	None	6	6
W2205	Bowers Brook	2011	Periphyton Density, Film	Moderate	2	6
W2205	Bowers Brook	2011	Periphyton Density, Film	None	4	6
W2205	Bowers Brook	2011	Scum	No	5	6
W2205	Bowers Brook	2011	Scum	Yes	1	6
W2205	Bowers Brook	2011	Turbidity	None	5	6
W2205	Bowers Brook	2011	Turbidity	NR	1	6

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for Bowers Brook (MA81-73) continues to be assessed as Fully Supporting. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in Bowers Brook from 2011-2015 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: the upstream end of the AU at NRWA_BR0895 [Bare Hill Pond Dam, Harvard] from 2013-2015 (n=6-7/yr), and two-thirds of the way down at W2205 [~830 ft downstream from W Lancaster Country Rd, Harvard] from May-Sep 2011 (n=6). Analysis of the multi-year moderate frequency *E. coli* dataset from NRWA_BR0895 indicated 0 out of 3 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml, 0 yrs had ≥2 samples exceed the 410 CFU/100ml STV, and cumulatively across years 6% of intervals had GMs >126 CFU/100ml. Analysis of the single year limited frequency *E. coli* dataset from W2205 indicated 14% of intervals had GMs >126 CFU/100ml, 1 sample exceeded the 410 CFU/100ml STV (640 CFU), and the seasonal GM was 86 CFU/100ml. *E. coli* data from W2205 are inconclusive according to the 2024 CALM to assess the Primary Contact Recreation Use because this single year, limited frequency dataset included both GMs below the threshold and STV exceedance of the threshold. *E. coli* data from NRWA_BR0895 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2205	MassDEP	Water Quality	Bowers Brook	[approximately 830 feet downstream from West Lancaster Country Road, Harvard]	42.531927	-71.579109
NRWA_BR0895	Nashua River Watershed Association	Water Quality	Bowers Brook	Bare Hill Pond Dam, Harvard	42.497300	-71.595300

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

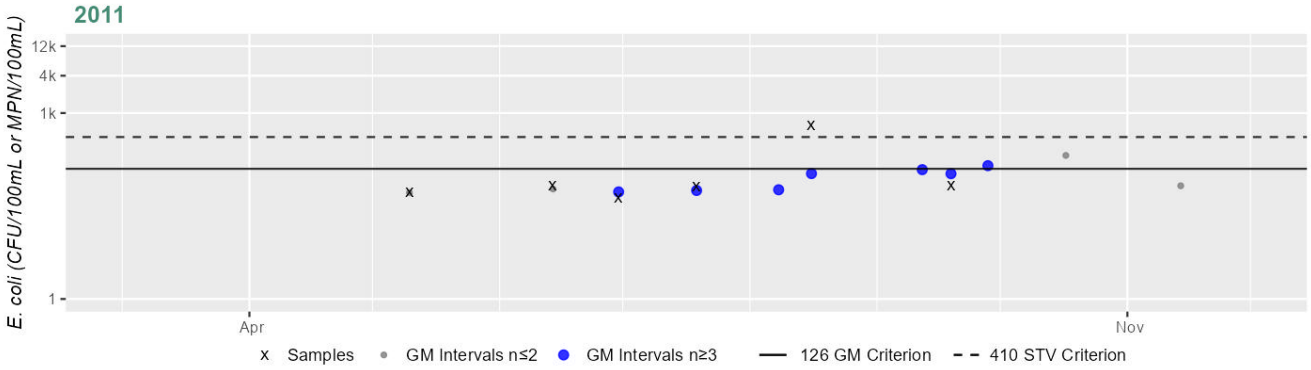
(MassDEP Undated 7) (MassDEP Undated 4) (NRWA 2022) (MassDEP Undated 2)

[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
W2205	MassDEP	E. coli	05/10/11	09/19/11	6	43	640	86
NRWA_BR0895	Nashua River Watershed Association	E. coli	05/18/13	10/19/13	6	2	11	3
NRWA_BR0895	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	1	7	3
NRWA_BR0895	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	2	1203	27

Station MASSDEP_W2205 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



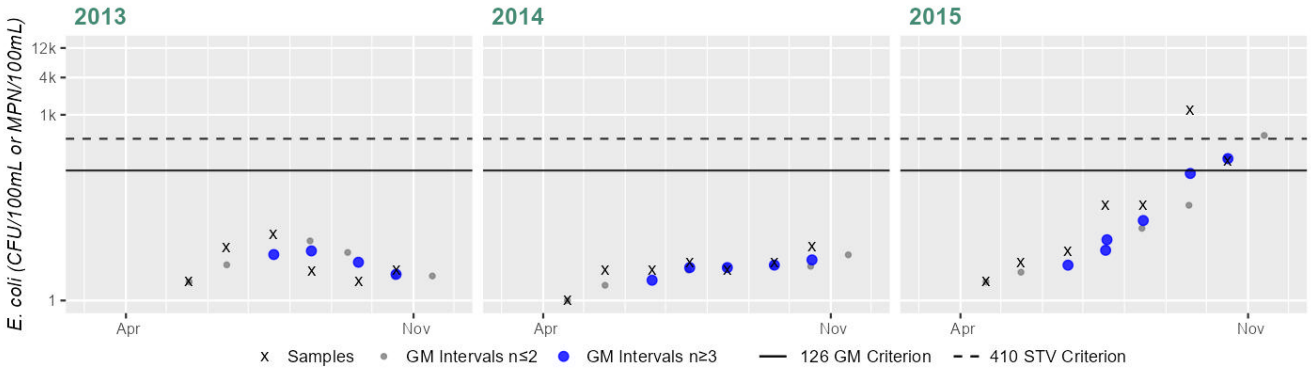
Variable*	Result
Samples	6
SeasGM	86
#GMI	7
#GMI Ex	1
%GMI Ex	14%
n>STV	1
%n>STV	16%

Cumulative %GMI Exceedance
Current (2011-2022)
14%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_BR0895 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	3
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	3
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	27
#GMI	6
#GMI Ex	1
%GMI Ex	16%
n>STV	1
%n>STV	14%

Cumulative %GMI Exceedance
Current (2011-2022)
6%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Bowers Brook (MA81-73) continues to be assessed as Fully Supporting. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in Bowers Brook from 2008-2015 at 4 stations. Samples were collected from the following stations/sample years from upstream to downstream: the upstream end of the AU at NRWA_BR0895 [Bare Hill Pond Dam, Harvard] from 2013-2015 (n=6-7/yr), two-thirds of the way down at W1830 [Lancaster County Rd, Harvard] from May-Sep 2008 (n=6), and W2205 [~830 ft downstream from W Lancaster Country Rd, Harvard] from May-Sep 2011 (n=6), then the downstream end at W1842 [Barnum Rd, Ayer] from May-Sep 2008 (n=6). Since bacteria data from the historic IR window (at 2 stations) are indicative of good water quality conditions, only the analysis from the current IR window (at 2 stations) will be summarized here: Analysis of the multi-year moderate frequency *E. coli* dataset from NRWA_BR0895 indicated 0 out of 3 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml, 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. Analysis of the single year limited frequency *E. coli* dataset from W2205 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 86 CFU/100ml. *E. coli* data from NRWA_BR0895 and W2205 meet 2024 CALM guidance .

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1830	MassDEP	Water Quality	Bowers Brook	[Lancaster County Road, Harvard]	42.530090	-71.577921
W1842	MassDEP	Water Quality	Bowers Brook	[Barnum Road, Ayer]	42.551830	-71.574278
W2205	MassDEP	Water Quality	Bowers Brook	[approximately 830 feet downstream from West Lancaster Country Road, Harvard]	42.531927	-71.579109
NRWA_BR0895	Nashua River Watershed Association	Water Quality	Bowers Brook	Bare Hill Pond Dam, Harvard	42.497300	-71.595300

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

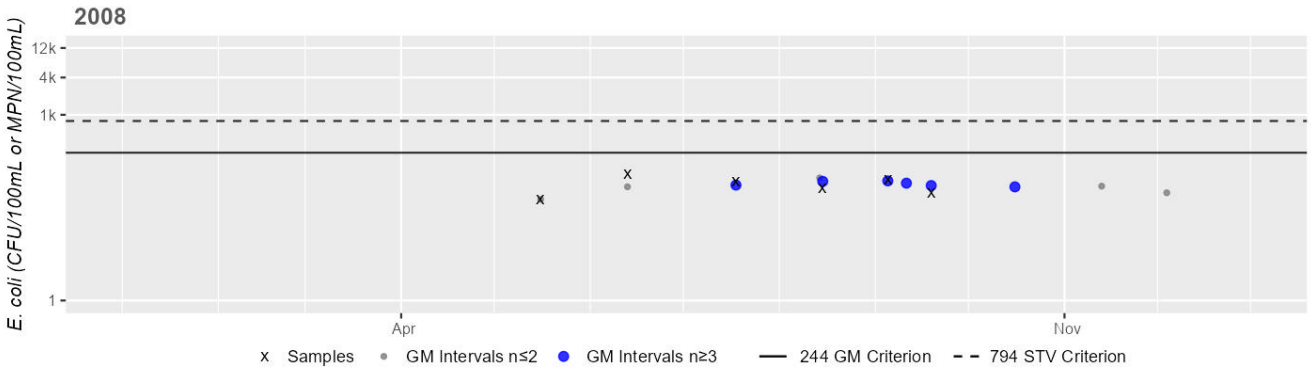
(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

[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
W1830	MassDEP	E. coli	05/15/08	09/18/08	6	43	110	70
W1842	MassDEP	E. coli	05/15/08	09/18/08	6	29	110	63
W2205	MassDEP	E. coli	05/10/11	09/19/11	6	43	640	86
NRWA_BR0895	Nashua River Watershed Association	E. coli	05/18/13	10/19/13	6	2	11	3
NRWA_BR0895	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	1	7	3
NRWA_BR0895	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	2	1203	27

Station MASSDEP_W1830 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



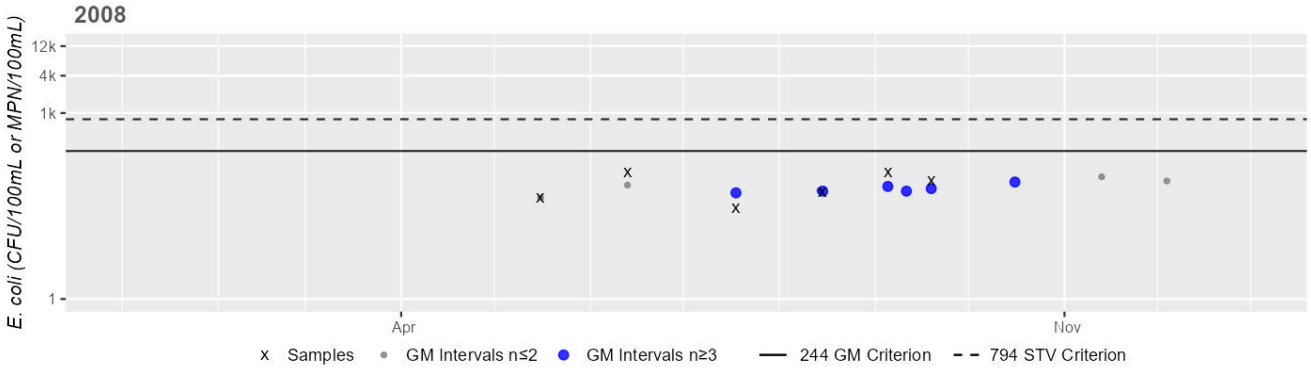
Variable*	Result
Samples	6
SeasGM	70
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W1842 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



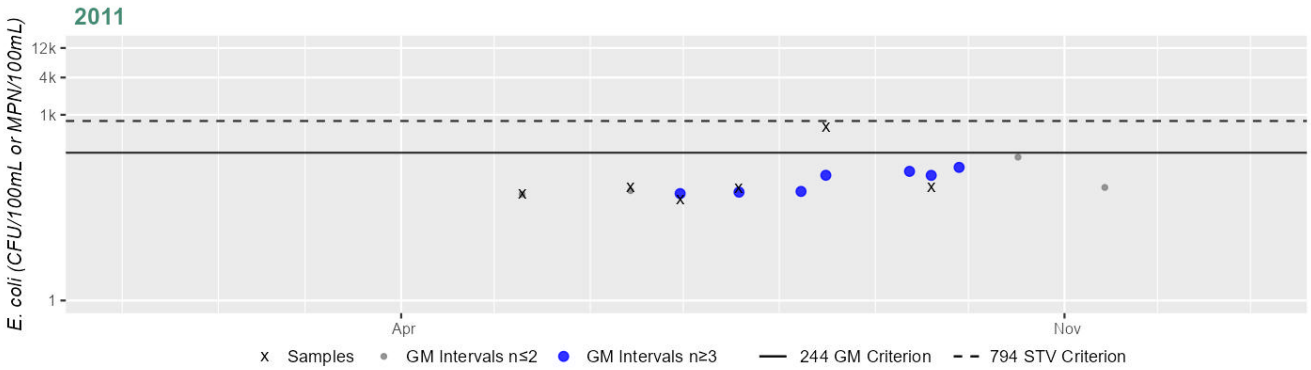
Variable*	Result
Samples	6
SeasGM	63
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W2205 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



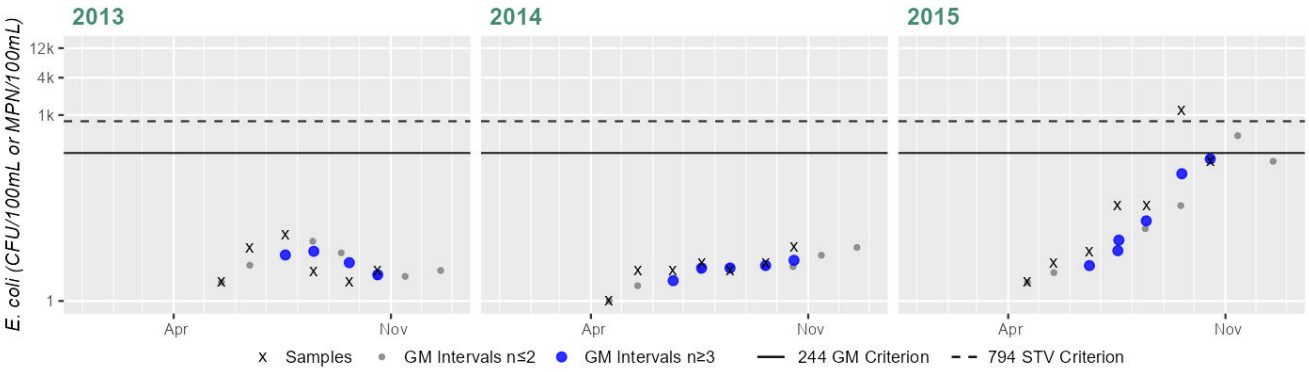
Variable*	Result
Samples	6
SeasGM	86
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_BR0895 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	3
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	3
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	27
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Bumbo Brook (MA81-94)

Location:	Headwaters, perennial portion south of Streeter Road, Paxton to mouth at inlet of Pine Hill Reservoir, Paxton.
AU Type:	RIVER
AU Size:	1.5 MILES
Classification/Qualifier:	A: PWS, ORW, CWF (Tributary)

No usable data were available for Bumbo Brook (MA81-94) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

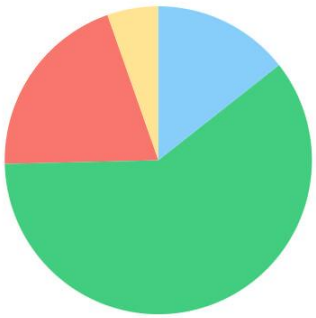
AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Catacoonamug Brook (MA81-16)

Location:	Outlet Lake Shirley, Lunenburg to mouth at confluence with Nashua River (backwater area), Shirley.
AU Type:	RIVER
AU Size:	2.7 MILES
Classification/Qualifier:	B

Catacoonamug Brook (MA81-16)

Watershed Area: 20.09 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	20.09	7.62	6.20	2.74
Agriculture	5.4%	1%	3.2%	0.4%
Developed	20%	19%	14.8%	13.3%
Natural	60.2%	66.1%	60.2%	65.3%
Wetland	14.4%	13.9%	21.9%	21%
Impervious	7.7%	7.4%	6.4%	5.9%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Dissolved Oxygen	--	Unchanged
5	5	Escherichia Coli (E. Coli)	--	Added
5	5	Lack of a Coldwater Assemblage	--	Unchanged
5	5	Temperature	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Dissolved Oxygen	Source Unknown (N)	X	--	--	--	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Lack of a Coldwater Assemblage	Dam or Impoundment (Y)	X	--	--	--	--
Temperature	Dam or Impoundment (Y)	X	--	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Catacoonamug Brook (MA81-16) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Catacoonamug Brook (MA81-16) continues to be assessed as Fully Supporting. MassDEP staff recorded aesthetics observations in 2011 as part of the MAP2 wadeable streams monitoring project close to the upstream end of this Catacoonamug Brook AU, ~40 feet upstream from Pond Street, Shirley (W2186, n=6). No persistent objectionable conditions (i.e., odors, deposits, growths, or turbidity) were observed during any of the surveys.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2186	MassDEP	Water Quality	Catacoonamug Brook	[approximately 40 feet upstream from Pond Street, Shirley]	42.553083	-71.669474

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2186	2011	6	Aesthetic observations were made by MassDEP field sampling crews at Station W2186 on Catacoonamug Brook (MA81-16) during 6 site visits between May 2011 and Sep 2011. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2186	2011	6	6	1

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2186	Catacoonamug Brook	2011	Aquatic Plant Density, Overall	None	6	6
W2186	Catacoonamug Brook	2011	Color	Brownish	1	6
W2186	Catacoonamug Brook	2011	Color	Light Yellow/Tan	2	6
W2186	Catacoonamug Brook	2011	Color	None	2	6
W2186	Catacoonamug Brook	2011	Color	NR	1	6
W2186	Catacoonamug Brook	2011	Objectionable Deposits	No	6	6
W2186	Catacoonamug Brook	2011	Odor	None	4	6
W2186	Catacoonamug Brook	2011	Odor	Other (Eutrophic)	1	6
W2186	Catacoonamug Brook	2011	Odor	Other (Saltwater)	1	6
W2186	Catacoonamug Brook	2011	Periphyton Density, Filamentous	Moderate	1	6

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2186	Catacoonamug Brook	2011	Periphyton Density, Filamentous	None	5	6
W2186	Catacoonamug Brook	2011	Periphyton Density, Film	Moderate	1	6
W2186	Catacoonamug Brook	2011	Periphyton Density, Film	None	1	6
W2186	Catacoonamug Brook	2011	Periphyton Density, Film	Sparse	3	6
W2186	Catacoonamug Brook	2011	Periphyton Density, Film	Very Dense	1	6
W2186	Catacoonamug Brook	2011	Scum	No	5	6
W2186	Catacoonamug Brook	2011	Scum	Yes	1	6
W2186	Catacoonamug Brook	2011	Turbidity	None	4	6
W2186	Catacoonamug Brook	2011	Turbidity	Slightly Turbid	2	6

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for Catacoonamug Brook (MA81-16) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at NRWA_CT0012 with the prior Alert for Escherichia Coli (E. Coli) being removed. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in Catacoonamug Brook from 2011-2022 at 5 stations. Samples were collected from the following stations/sample years from upstream to downstream: the upstream end of the AU at NRWA_CT0425 [Catacunemaug Rd, below dam, Shirley] from 2011-2012 and 2022 (n=4-7/yr), close to the upstream end at W2186 [~40 ft upstream from Pond St, Shirley] from May-Sep 2011 (n=6), halfway down at NRWA_CT0195 [Umbagog Building on Leominster Rd., Shirley] from 2011-2018 (n=6-7/yr), two-thirds of the way down at NRWA_CT0151 [Fredonian Park, Shirley] from Apr-Oct 2017 (n=7), and the downstream end at NRWA_CT0012 [Lovell St Bridge, Shirley] from 2017-2022 (n=6-7/yr). Analysis of the multi-year limited frequency *E. coli* dataset from NRWA_CT0425 indicated 0 out of 3 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml, 0 yrs had ≥2 samples exceed the 410 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >126 CFU/100ml. Analysis of the single year limited frequency *E. coli* dataset from W2186 indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 27 CFU/100ml. Analysis of the recent five years of the multi-year moderate frequency *E. coli* dataset from NRWA_CT0195 indicated 2 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2015 and 2016, 25 & 40%), 0 yrs had ≥2 samples exceed the 410 CFU/100ml STV, and cumulatively across years 12% of intervals had GMs >126 CFU/100ml. Analysis of the single year moderate frequency *E. coli* dataset from NRWA_CT0151 indicated 0% of intervals had GMs >126 CFU/100ml and no samples exceeded the 410 CFU/100ml STV. Analysis of the recent five years of this multi-year limited frequency *E. coli* dataset from NRWA_CT0012 indicated 3 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2020-2022, 25-66%), and while 0 yrs had ≥2 samples exceed the 410 CFU/100ml STV, cumulatively across years 26% of intervals had GMs >126 CFU/100ml. While *E. coli* data from 4 stations (NRWA_CT0425, W2186, NRWA_CT0195, and NRWA_CT0151) meet 2024 CALM guidance, *E. coli* data from NRWA_CT0012 (at the downstream end of the AU) are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2186	MassDEP	Water Quality	Catacoonamug Brook	[approximately 40 feet upstream from Pond Street, Shirley]	42.553083	-71.669474
NRWA_CT0012	Nashua River Watershed Association	Water Quality	Catecunemaug Brook	Lovell Street Bridge, Shirley	42.541500	-71.637100
NRWA_CT0151	Nashua River Watershed Association	Water Quality	Catecunemaug	Fredonian Park, Shirley	42.541500	-71.652500
NRWA_CT0195	Nashua River Watershed Association	Water Quality	Catecunemaug	Umbagog Building on Leominster Rd., Shirley	42.544220	-71.657620

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_CT0425	Nashua River Watershed Association	Water Quality	Catecunemaug Brook	Catacunemaug Rd, below dam, Shirley	42.554477	-71.673525

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 4) (NRWA 2022) (MassDEP Undated 2)

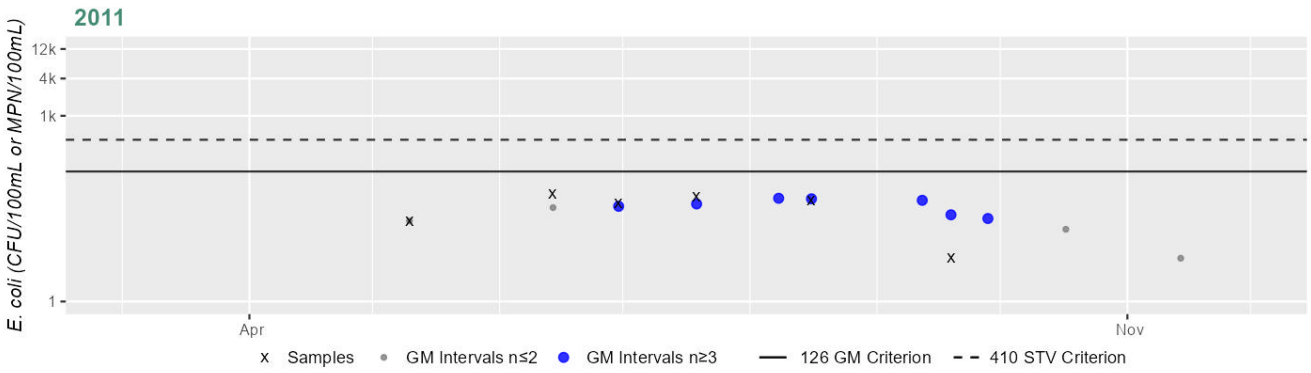
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2186	MassDEP	E. coli	05/10/11	09/19/11	6	5	54	27
NRWA_CT0012	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	20	166	49
NRWA_CT0012	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	18	110	58
NRWA_CT0012	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	65	209	95
NRWA_CT0012	Nashua River Watershed Association	E. coli	05/16/20	10/17/20	6	41	816	129
NRWA_CT0012	Nashua River Watershed Association	E. coli	04/27/21	10/16/21	7	48	344	128
NRWA_CT0012	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	38	290	109
NRWA_CT0151	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	11	125	38
NRWA_CT0195	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	20	155	74
NRWA_CT0195	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	43	344	94
NRWA_CT0195	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	20	167	65
NRWA_CT0195	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	6	547	65
NRWA_CT0195	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	6	5	195	48
NRWA_CT0195	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	7	261	76

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_CT0195	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	9	172	38
NRWA_CT0195	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	9	86	42
NRWA_CT0425	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	12	36	17
NRWA_CT0425	Nashua River Watershed Association	E. coli	04/21/12	09/15/12	6	7	63	15
NRWA_CT0425	Nashua River Watershed Association	E. coli	06/18/22	09/17/22	4	4	79	21

Station MASSDEP_W2186 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



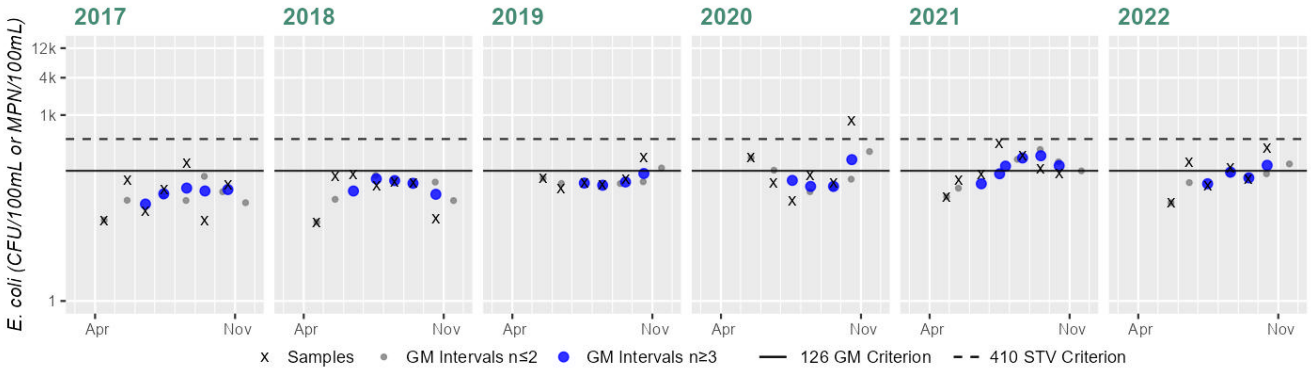
Variable*	Result
Samples	6
SeasGM	27
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W0996 & NRWA_CT0012 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	49
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	58
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	95
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	129
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	7
SeasGM	128
#GMI	6
#GMI Ex	4
%GMI Ex	66%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	109
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	0
%n>STV	0%

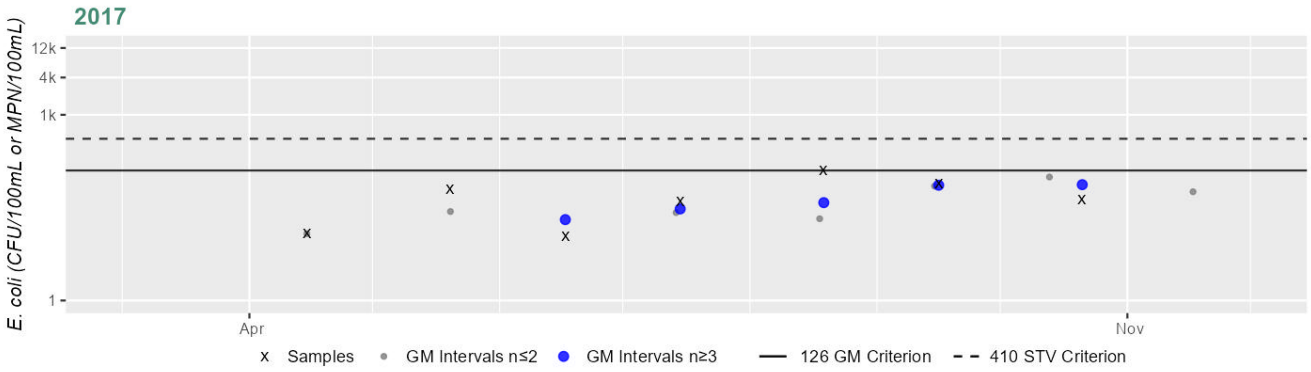
Cumulative %GMI Exceedance
Current (2011-2022)
21%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
26%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_CT0151 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



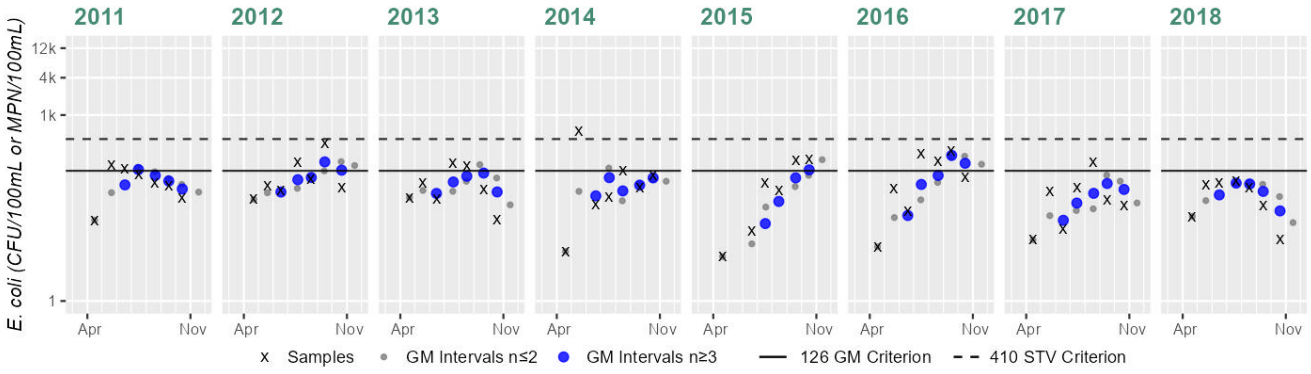
Variable*	Result
Samples	7
SeasGM	38
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W1812 & NRWA_CT0195 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	74
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	94
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	65
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	65
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	48
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	76
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	38
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	42
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

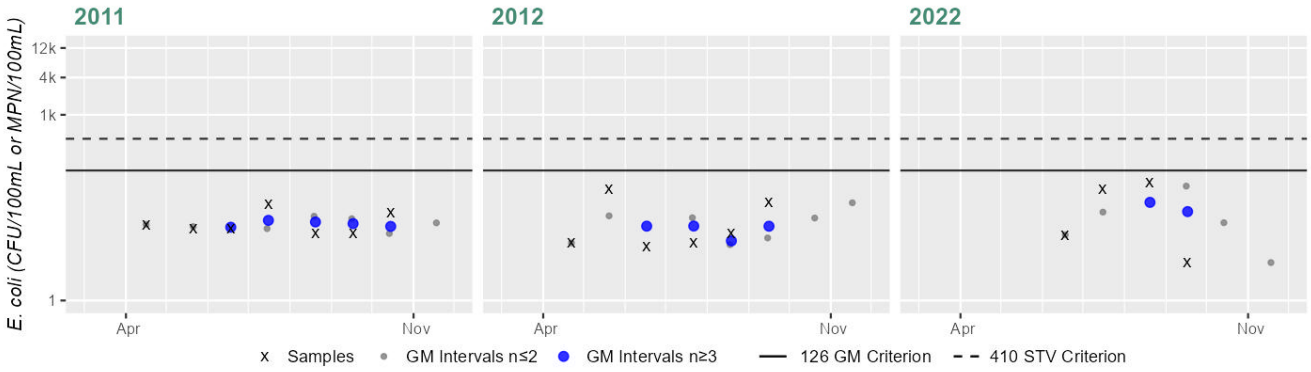
Cumulative %GMI Exceedance
Current (2011-2022)
15%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
12%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_CT0425 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	17
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	15
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	21
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Catacoonamug Brook (MA81-16) continues to be assessed as Fully Supporting. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in Catacoonamug Brook from 2003-2022 at 5 stations/combined stations. Samples were collected from the following stations/sample years from upstream to downstream: the upstream end of the AU at NRWA_CT0425 [Catacunemaug Rd, below dam, Shirley] from 2009-2010 (historic n=6-7/yr) and 2011-2012 and 2022 (current n=4-7/yr), close to the upstream end at W2186 [~40 ft upstream from Pond St, Shirley] from May-Sep 2011 (n=6), halfway down at combined station W1812 & NRWA_CT0195 [~190 ft upstream of Main St, Shirley & Umbagog Building on Leominster Rd., Shirley] from 2008-2010 (historic n=7-9/yr) and 2011-2018 (current n=6-7/yr), two thirds of the way down at NRWA_CT0151 [Fredonian Park, Shirley] from Apr-Oct 2008 (historic n=6) and Apr-Oct 2017 (current n=7), the downstream end of the AU at combined station W0996 & NRWA_CT0012 [Lovell Rd, Shirley & Lovell St Bridge, Shirley] from May-Sep 2003 (historic n=5) and 2017-2022 (current n=6-7/yr). Since bacteria data from the historic IR window are all indicative of good water quality conditions, only the analysis from the current IR window will be summarized here. Analysis of the multi-year limited frequency *E. coli* dataset from NRWA_CT0425 indicated 0 out of 3 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml, 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. Analysis of the single year limited frequency *E. coli* dataset from W2186 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 27 CFU/100ml. Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from W1812 & NRWA_CT0195 indicated 0 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml, 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. Analysis of the single year moderate frequency *E. coli* dataset from NRWA_CT0151 indicated 0% of intervals had GMs >244 CFU/100ml and no samples exceeded the 794 CFU/100ml STV. Analysis of the recent five years of this multi-year limited frequency *E. coli* dataset from W0996 & NRWA_CT0012 indicated 0 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml, 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. *E. coli* data from NRWA_CT0425, W2186, W1812 & NRWA_CT0195, NRWA_CT0151, and W0996 & NRWA_CT0012 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0996	MassDEP	Water Quality	Catacoonamug Brook	[Lovell Road, Shirley]	42.541472	-71.637256
W1812	MassDEP	Water Quality	Catacoonamug Brook	[approximately 190 feet upstream of Main Street, Shirley]	42.544214	-71.657373
W2186	MassDEP	Water Quality	Catacoonamug Brook	[approximately 40 feet upstream from Pond Street, Shirley]	42.553083	-71.669474
NRWA_CT0012	Nashua River Watershed Association	Water Quality	Catecunemaug Brook	Lovell Street Bridge, Shirley	42.541500	-71.637100
NRWA_CT0151	Nashua River Watershed Association	Water Quality	Catecunemaug	Fredonian Park, Shirley	42.541500	-71.652500
NRWA_CT0195	Nashua River Watershed Association	Water Quality	Catecunemaug	Umbagog Building on Leominster Rd., Shirley	42.544220	-71.657620
NRWA_CT0425	Nashua River Watershed Association	Water Quality	Catecunemaug Brook	Catacunemaug Rd, below dam, Shirley	42.554477	-71.673525

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

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

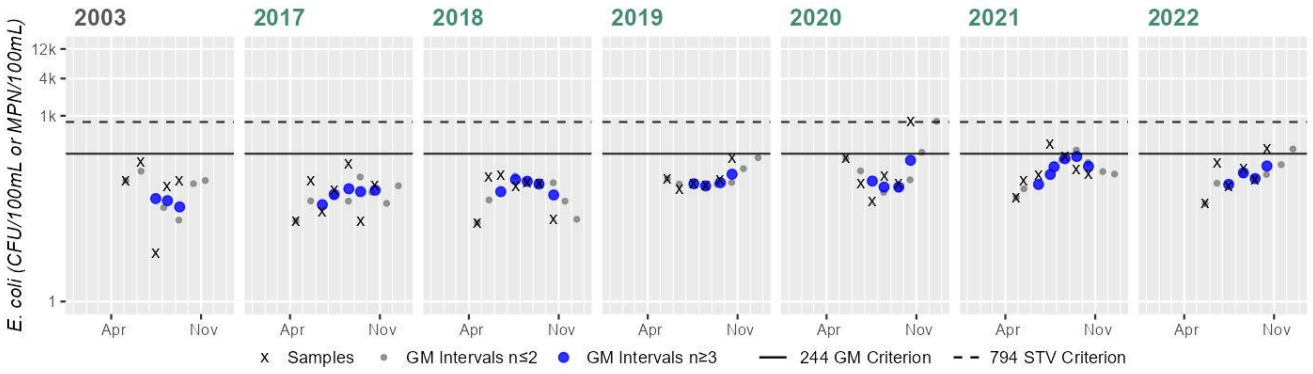
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W0996	MassDEP	E. coli	05/06/03	09/11/03	5	6	180	57
W1812	MassDEP	E. coli	05/13/08	09/16/08	6	48	1400	128
W2186	MassDEP	E. coli	05/10/11	09/19/11	6	5	54	27
NRWA_CT0012	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	20	166	49
NRWA_CT0012	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	18	110	58
NRWA_CT0012	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	65	209	95
NRWA_CT0012	Nashua River Watershed Association	E. coli	05/16/20	10/17/20	6	41	816	129
NRWA_CT0012	Nashua River Watershed Association	E. coli	04/27/21	10/16/21	7	48	344	128

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_CT0012	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	38	290	109
NRWA_CT0151	Nashua River Watershed Association	E. coli	04/19/08	10/18/08	6	2	344	53
NRWA_CT0151	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	11	125	38
NRWA_CT0195	Nashua River Watershed Association	E. coli	04/19/08	08/16/08	3	33	133	67
NRWA_CT0195	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	20	328	47
NRWA_CT0195	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	7	24	172	83
NRWA_CT0195	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	20	155	74
NRWA_CT0195	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	43	344	94
NRWA_CT0195	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	20	167	65
NRWA_CT0195	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	6	547	65
NRWA_CT0195	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	6	5	195	48
NRWA_CT0195	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	7	261	76
NRWA_CT0195	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	9	172	38
NRWA_CT0195	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	9	86	42
NRWA_CT0425	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	1	167	9
NRWA_CT0425	Nashua River Watershed Association	E. coli	05/15/10	10/16/10	6	1	24	11
NRWA_CT0425	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	12	36	17

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_CT0425	Nashua River Watershed Association	E. coli	04/21/12	09/15/12	6	7	63	15
NRWA_CT0425	Nashua River Watershed Association	E. coli	06/18/22	09/17/22	4	4	79	21

Station MASSDEP_W0996 & NRWA_CT0012 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	57
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	49
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	58
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	95
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	129
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	7
SeasGM	128
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	109
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)
0%

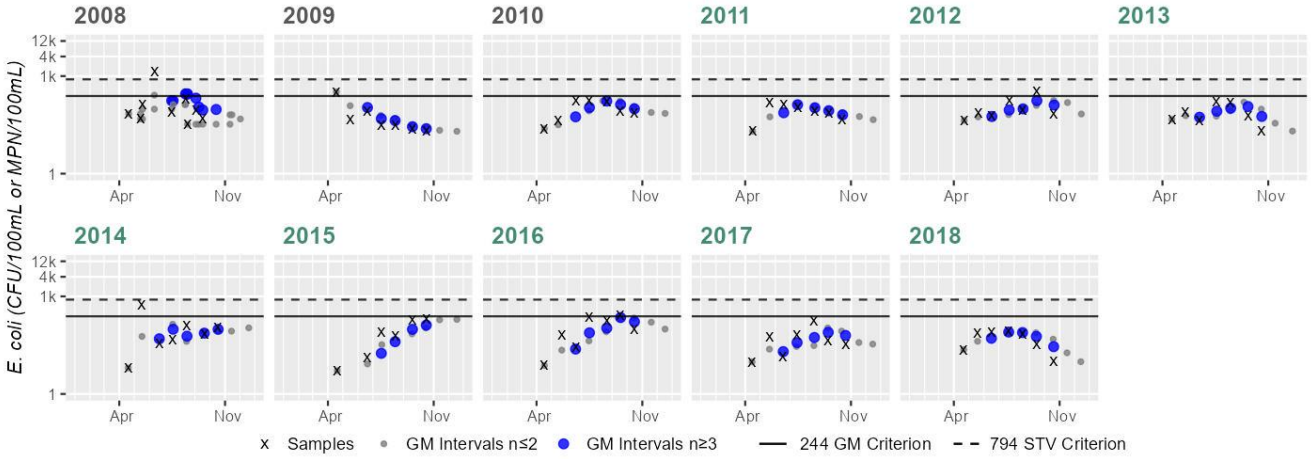
Cumulative %GMI Exceedance Current (2011-2022)
0%

Cumulative %GMI Exceedance Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W1812 & NRWA_CT0195 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	9
SeasGM	103
#GMI	9
#GMI Ex	3
%GMI Ex	33%
n>STV	1
%n>STV	11%

Variable*	Result
Samples	7
SeasGM	47
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	83
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	74
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	94
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	65
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	65
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	48
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	76
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	38
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

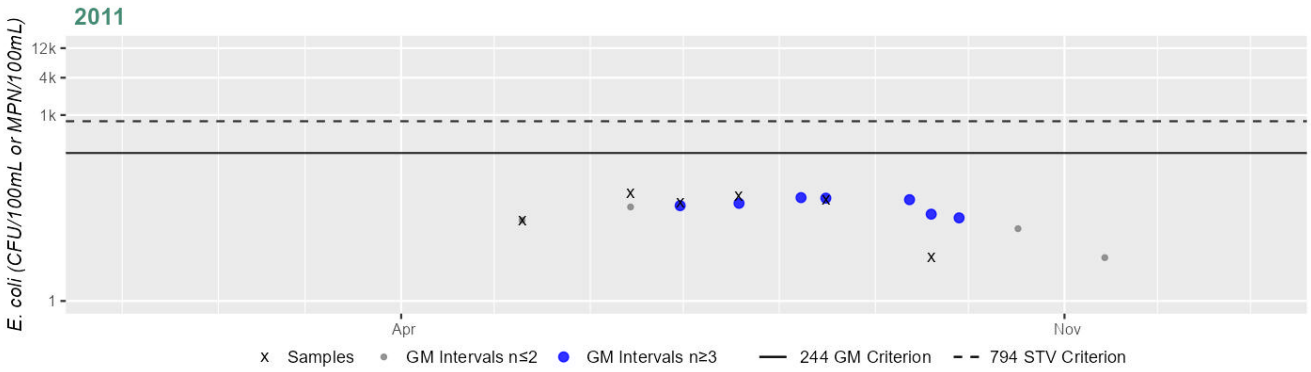
Variable*	Result
Samples	7
SeasGM	42
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
15%	0%	0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W2186 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



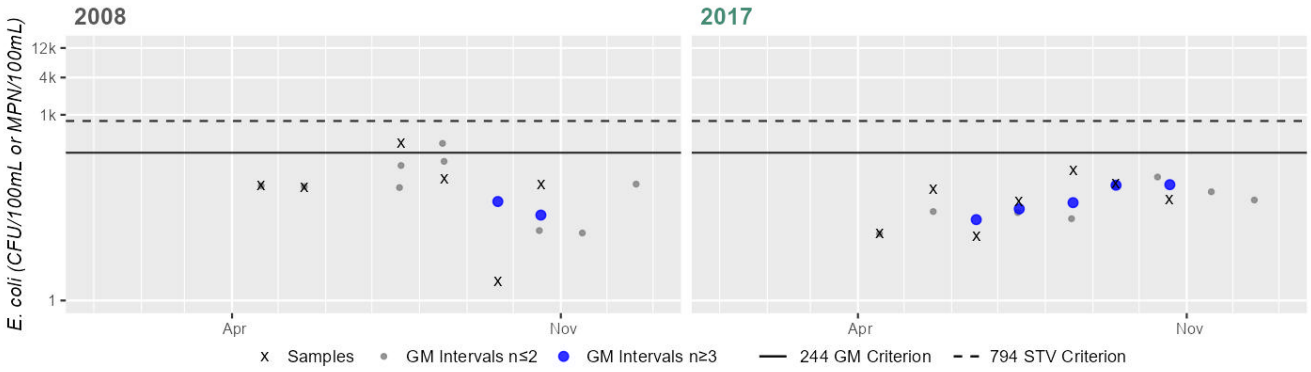
Variable*	Result
Samples	6
SeasGM	27
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_CT0151 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	53
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

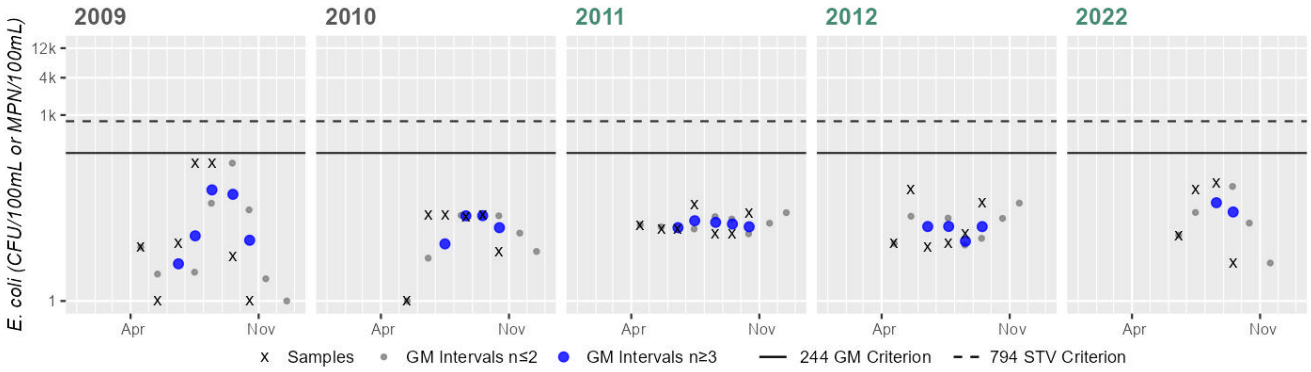
Variable*	Result
Samples	7
SeasGM	38
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_CT0425 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	9
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	11
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	17
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	15
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	21
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Catacoonamug Brook (MA81-74)

Location:	Headwaters, northwest of Chestnut Street, Lunenberg to inlet Lake Shirley, Harvard.
AU Type:	RIVER
AU Size:	4.5 MILES
Classification/Qualifier:	B

Catacoonamug Brook (MA81-74)

Watershed Area: 8.55 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	8.55	7.85	2.46	2.25
Agriculture	9.6%	10.2%	6.7%	7.3%
Developed	19.7%	19.4%	13.9%	12.7%
Natural	56.9%	56.9%	56.6%	56.7%
Wetland	13.8%	13.4%	22.8%	23.2%
Impervious	7.6%	7.5%	6%	5.6%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Catacoonamug Brook (MA81-74) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Catacoonamug Brook (MA81-74) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Catacoonamug Brook (MA81-74) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior Escherichia Coli (E. Coli) impairment is being carried forward.

Secondary Contact Recreation

2024/26 Use Attainment	Alert

Not Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Catacoonamug Brook (MA81-74) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added based on a re-evaluation of bacteria data not meeting the threshold at 1 combined station in 2008. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples close to the downstream end of Catacoonamug Brook at 1 combined station W1843 & NRWA_CT0743 [Reservoir Rd, Lunenburg & upstream of Lake Shirley at Reservoir Rd., Lunenburg] in 2008 & 2009 (n=1 and n=7 respectively). Analysis of this historic single year moderate frequency *E. coli* dataset from W1843 & NRWA_CT0743 indicated 85% of intervals had GMs >244 CFU/100ml and 2 samples exceeded the 794 CFU/100ml STV (max 4,400 CFU). Historic *E. coli* data from W1843 & NRWA_CT0743 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1843	MassDEP	Water Quality	Catacoonamug Brook	[Reservoir Road, Lunenburg]	42.566806	-71.698654
NRWA_CT0743	Nashua River Watershed Association	Water Quality	Catecunemaug	Upstream of Lake Shirley at Reservoir Rd., Lunenburg	42.566800	-71.698400

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

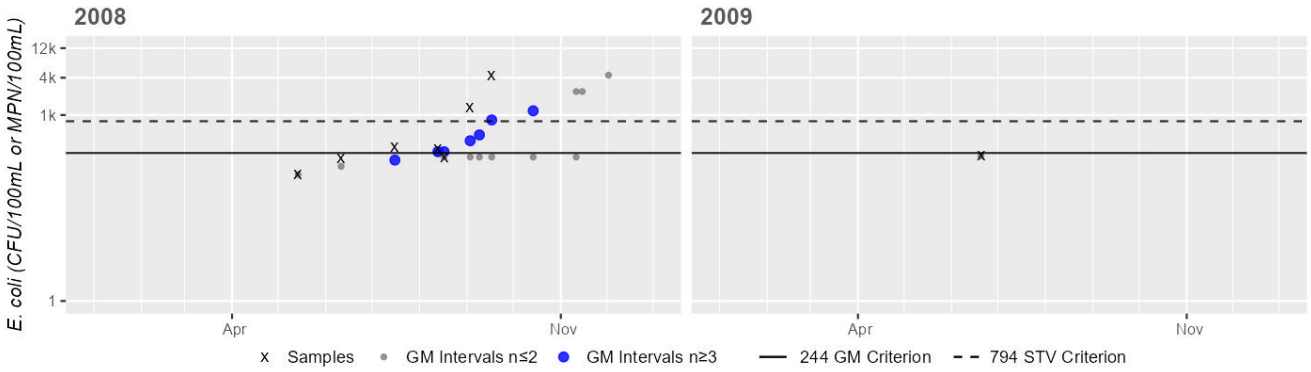
(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

[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
W1843	MassDEP	E. coli	05/13/08	09/16/08	6	110	4400	468
NRWA_CT0743	Nashua River Watershed Association	E. coli	08/16/08	08/16/08	1	209	209	209
NRWA_CT0743	Nashua River Watershed Association	E. coli	06/20/09	06/20/09	1	218	218	218

Station MASSDEP_W1843 & NRWA_CT0743 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	417
#GMI	7
#GMI Ex	6
%GMI Ex	85%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	1
SeasGM	218
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
85%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Chaffin Pond (MA81017)

Location:	Holden.
AU Type:	FRESHWATER LAKE
AU Size:	90 ACRES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for Chaffin Pond (MA81017) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Fanwort*)	--	Unchanged
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

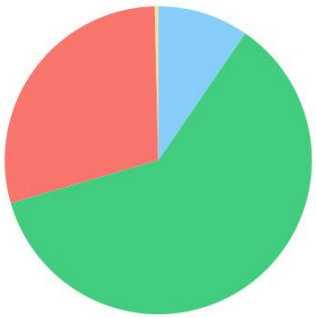
Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Fanwort*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Chaffins Brook (MA81-33)

Location:	Headwaters, perennial portion, south of Malden Street/west of Wachusett Street, Holden to mouth at inlet of Unionville Pond, Holden.
AU Type:	RIVER
AU Size:	0.9 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Chaffins Brook (MA81-33)

Watershed Area: 5.92 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	5.92	5.12	3.52	3.12
Agriculture	0.4%	0.2%	0.5%	0.3%
Developed	29.1%	31.2%	23.5%	25.3%
Natural	60.9%	58.6%	60.7%	58.8%
Wetland	9.6%	10%	15.3%	15.6%
Impervious	14.1%	15.1%	11.8%	12.7%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Chaffins Brook (MA81-33) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Chaffins Brook (MA81-33) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Chaffins Brook (MA81-33) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary
Too limited bacteria data are available to assess the Secondary Contact Recreation Use for Chaffins Brook (MA81-33), so it is assessed as having Insufficient Information. MA DCR (DCRWS) staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) a third of the way down Chaffins Brook at DCRWS_M104 [upstream of Malden St, Holden] from 2008-2010 (historic n=49-51/yr) and in Jan 2011 (current n=1). The available *E. coli* data at DCRWS_M104 in the current IR window are too limited to assess according to the 2024 CALM. Analysis of the historic multi-year high frequency *E. coli* dataset from DCRWS_M104 indicated 0 out of 3 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml, 0 yrs had >10% of samples exceed the 794 CFU/100ml STV, and cumulatively across years 1% of intervals had GMs >244 CFU/100ml. While the historic bacteria concentrations from DCRWS_M104 meet 2024 CALM guidance, there was Insufficient Information from the current IR window (2011-2022) to assess the Secondary Contact Recreation Use.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_M104	MA DCR Division of Water Supply Protection	Water Quality	CHAFFINS BROOK	UPSTREAM OF MALDEN ST, HOLDEN	42.349432	-71.838418

Bacteria Data

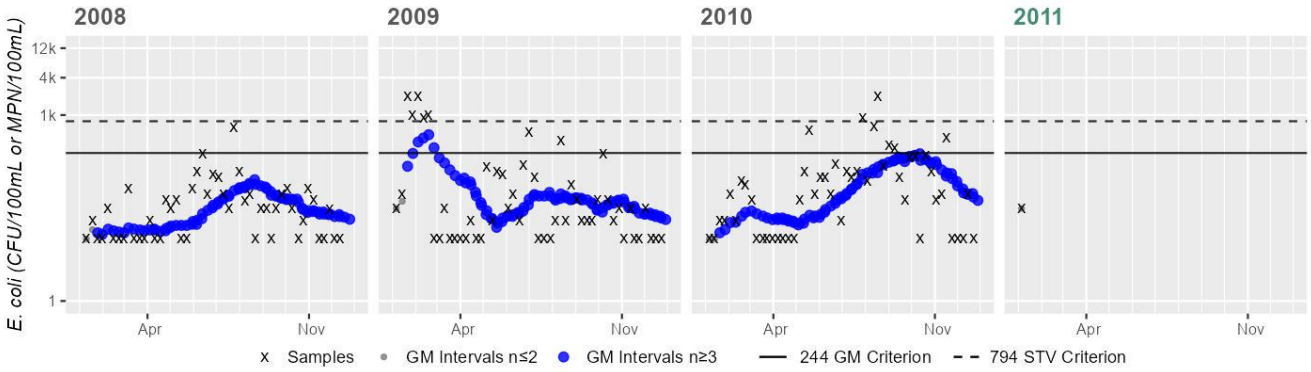
Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

[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
DCRWS_M104	MA DCR Division of Water Supply Protection	E. coli	01/10/08	12/11/08	49	10	627	26
DCRWS_M104	MA DCR Division of Water Supply Protection	E. coli	01/06/09	12/23/09	51	10	2010	39
DCRWS_M104	MA DCR Division of Water Supply Protection	E. coli	01/06/10	12/22/10	51	10	2000	53
DCRWS_M104	MA DCR Division of Water Supply Protection	E. coli	01/05/11	01/05/11	1	31	31	31

Station DCRWS_M104 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	49
SeasGM	26
#GMI	85
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	51
SeasGM	39
#GMI	93
#GMI Ex	4
%GMI Ex	4%
n>STV	5
%n>STV	9%

Variable*	Result
Samples	51
SeasGM	53
#GMI	92
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	3%

Variable*	Result
Samples	1
SeasGM	31
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)
1%

Cumulative %GMI Exceedance Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Coachlace Pond (MA81019)

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

No usable data were available for Coachlace Pond (MA81019) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Curly-leaf Pondweed*)	--	Unchanged
4c	4c	(Hydrilla*)	--	Unchanged
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Hydrilla*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Cobb Brook (MA81-71)

Location:	Headwaters, outlet small unnamed pond west of Brooks Station Road, Princeton to mouth at confluence with South Wachusett Brook, Princeton.
AU Type:	RIVER
AU Size:	2.7 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Cobb Brook (MA81-71)

Watershed Area: 2.54 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	2.54	2.45	1.60	1.55
Agriculture	2.1%	2.2%	2.8%	2.9%
Developed	7.3%	7.5%	6.1%	6.2%
Natural	79.8%	79.4%	75.6%	75.3%
Wetland	10.8%	10.9%	15.5%	15.6%
Impervious	3.4%	3.4%	2.9%	2.9%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Cobb Brook (MA81-71) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Cobb Brook (MA81-71) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Cobb Brook (MA81-71) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Cobb Brook (MA81-71) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MassDEP staff collected *E. coli* bacteria samples at the downstream end of Cobb Brook at W1841 [Ball Hill Rd, Princeton] from May-Sep 2008 (n=6). Analysis of the historic single year limited frequency *E. coli* dataset from W1841 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 28 CFU/100ml. Historic *E. coli* data from W1841 meet 2024 CALM guidance. However, since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1841	MassDEP	Water Quality	Cobb Brook	[Ball Hill Road, Princeton]	42.417576	-71.889871

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

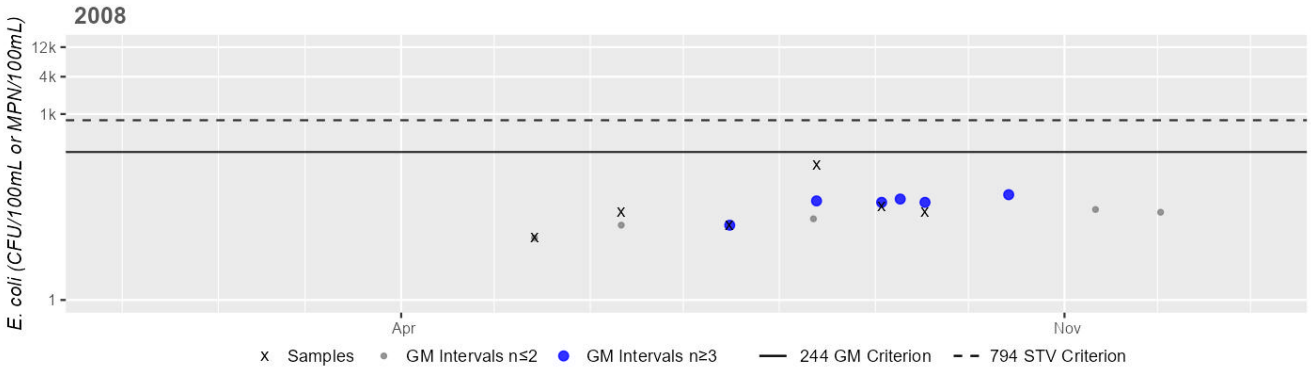
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W1841	MassDEP	E. coli	05/13/08	09/16/08	6	10	150	28

Station MASSDEP_W1841 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	28
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Cold Spring Brook (MA81-82)

Location:	Headwaters, west of Old Mill Road (on the western side of railroad tracks), Harvard to mouth at confluence with Bowers Brook, Harvard.
AU Type:	RIVER
AU Size:	1.2 MILES
Classification/Qualifier:	B

No usable data were available for Cold Spring Brook (MA81-82) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

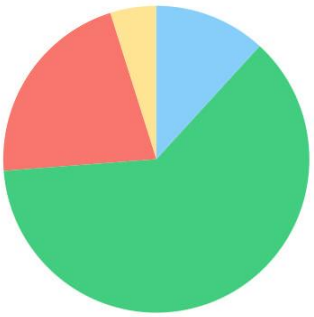
AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Connelly Brook (MA81-57)

Location:	Headwaters, southwest of Rowley Hill Road, Sterling to mouth at inlet The Quag, Sterling.
AU Type:	RIVER
AU Size:	2.9 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Connelly Brook (MA81-57)

Watershed Area: 2.51 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	2.51	2.51	1.51	1.51
Agriculture	4.9%	4.9%	5.2%	5.2%
Developed	21.3%	21.3%	16.5%	16.5%
Natural	62%	62%	59.4%	59.4%
Wetland	11.8%	11.8%	18.9%	18.9%
Impervious	9.3%	9.3%	8.4%	8.4%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Connelly Brook (MA81-57) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Connelly Brook (MA81-57) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Connelly Brook (MA81-57) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Connelly Brook (MA81-57) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MA DCR (DCRWS) staff collected *E. coli* bacteria samples close to the downstream end of Connelly Brook at DCRWS_MD87 [Jewett Rd, Sterling] from Jan-Dec 2008 (n=46). Analysis of the historic single year high frequency *E. coli* dataset from DCRWS_MD87 indicated 0% of intervals had GMs >244 CFU/100ml and 0% of samples exceeded the 794 CFU/100ml STV. Historic *E. coli* data from DCRWS_MD87 meet 2024 CALM guidance. However, since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

Monitoring Stations

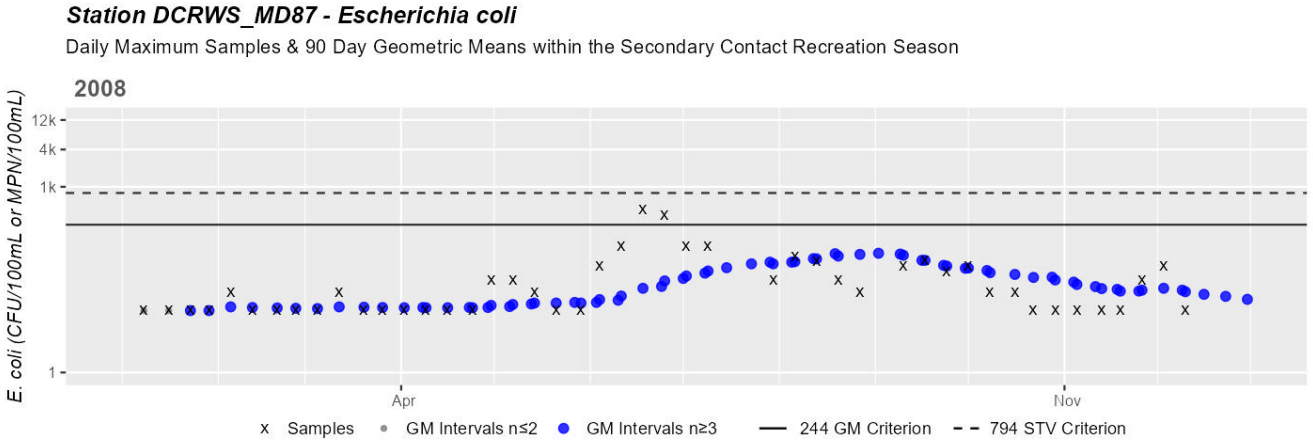
Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD87	MA DCR Division of Water Supply Protection	Water Quality	CONNELLY BROOK	Jewett Rd, Sterling	42.423569	-71.776218

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

[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
DCRWS_MD87	MA DCR Division of Water Supply Protection	E. coli	01/08/08	12/09/08	46	10	429	22



Variable*	Result
Samples	46
SeasGM	22
#GMI	83
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Coon Tree Pond (MA81168)

Location:	Pepperell.
AU Type:	FRESHWATER LAKE
AU Size:	29 ACRES
Classification/Qualifier:	B: ORW

No usable data were available for Coon Tree Pond (MA81168) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Crocker Pond (MA81025)

Location:	Westminster.
AU Type:	FRESHWATER LAKE
AU Size:	101 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	5	(Non-Native Aquatic Plants*)	--	Unchanged
4c	5	PFAS in Fish Tissue	--	Added

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
PFAS in Fish Tissue	Source Unknown (N)	--	X	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Fish Consumption Use for Crocker Pond (MA81025) is assessed as Not Supporting with a new impairment being added for PFAS in Fish Tissue. Fish toxics sampling was conducted in Crocker Pond (MA81025) at station F0473 (PFAS Study ID 9) [on Whitman River in impoundment (Crocker Pond) of Crocker Pond Dam (NAT ID: MA00638), Westminster] on 09/08/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. MDPH issued a site-specific advisory for PFAS in Crocker Pond in their May 2024 Freshwater Fish Consumption Advisory List and retained it in the January 2025 list. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations. No source of PFAS has been identified at this time.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
F0473	MassDEP	Fish Toxics	Whitman River/Crocker Pond	[on Whitman River in impoundment (Crocker Pond) of Crocker Pond Dam (NAT ID: MA00638), Westminster]	42.571789	-71.886823

Fish Tissue Data

Summary of Fish Tissue Data and Resulting Fish Consumption Advisories (MA DPH 2025) (MassDEP 2023) (MassDEP Undated 5)

Summary
Fish toxics sampling was conducted in Crocker Pond (MA81025) at station F0473 (PFAS Study ID 9) [on Whitman River in impoundment (Crocker Pond) of Crocker Pond Dam (NAT ID: MA00638), Westminster] on 09/08/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. Because of elevated PFAS measured in fish filets, MDPH issued site-specific fish consumption advisories for Crocker Pond in their May 2024 Freshwater Fish Consumption Advisory List and retained them in the January 2025 list. The site-specific DPH advisories are indicative of a Fish Consumption Use impairment for PFAS in Fish Tissue for Crocker Pond (MA81025).

MassDEP 2022 PFAS in Fish Tissue Data for Massachusetts Surface Waters (MassDEP 2023) (MassDEP Undated 5) (MA DPH 2023)

[ng/g = ppb. All PFBA, PFBS, and HFPO-DA (Genx) concentrations <MDL. ND indicates that the PFAS analyte was not detected in any of the composite samples (i.e., it was <MDL). Means weighted by the number of fish in the contributing composites were calculated for any PFAS analyte – waterbody – species combination where an analyte was detected in at least one sample; if a sample did not have the analyte detected, the concentration for that sample was set to ½*MDL for the purposes of calculating a mean. Data are highlighted red per the fish consumption advisory thresholds summarized in Table 4.2 of MDPH's 2023 Technical Support Document for the evaluation of PFAS in recreational waterbodies.]

[Species List: BC = black crappie, LMB = largemouth bass, YP = yellow perch]

Station Code	PFAS Study ID	Sample Date	Species	Mean PFHxS ng/g	Mean PFNA ng/g	Mean PFOA ng/g	Mean PFOS ng/g	Analytes with ≥ 1 Sample Qualified
F0473	9	09/08/2022	BC	ND	1.23	0.33	25.50	PFOA
F0473	9	09/08/2022	LMB	ND	ND	ND	15.50	
F0473	9	09/08/2022	YP	ND	0.36	ND	12.00	PFNA

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Crocker Pond (MA81025) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary
No bacteria data are available to assess the Primary Contact Recreation Use for Crocker Pond (MA81025), so it is assessed as having Insufficient Information. Surface water sampling was conducted in Crocker Pond at stations W3268 (PFAS Study ID 9) and W3269 (PFAS Study ID 9B), the beach on the southeastern edge of the pond, on 09/08/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W3268	MassDEP	Water Quality	Whitman River/Crocker Pond	[the default location representing co-located water/fish PFAS sampling, on Whitman River in Crocker Pond impoundment, Westminster]	42.571789	-71.886823
W3269	MassDEP	Water Quality	Whitman River/Crocker Pond	[beach on southeastern edge of Crocker Pond (a Whitman River impoundment), Westminster]	42.568930	-71.883400

Other Indicators

Summary Statement(s) for MassDEP 2022 PFAS in Water Column Data (MassDEP 2023) (MassDEP Undated 4)

Summary
Surface water sampling was conducted in Crocker Pond (MA81025) at station W3268 (PFAS Study ID 9) on 09/08/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value.

Summary
Surface water sampling was conducted in Crocker Pond (MA81025) at station W3269 (PFAS Study ID 9B), the beach on the southeastern edge of the pond, on 09/08/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value.

MassDEP 2022 PFAS in Water Column Data for Massachusetts Surface Waters (MassDEP 2023) (MassDEP Undated 4)

[HFPO-DA is also known as GenX; the ∑PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here); * indicates the ∑PFAS6 concentration was qualified since data for one or more individual PFAS6 analytes were qualified; b = blank contamination qualifier, d = qualifier indicating precision of field duplicates did not meet project data quality objectives; j = 'estimated' value qualifier; ## = censored data.]

Station Code	PFAS Study ID	Sample Date	PFOA ng/L	PFOS ng/L	PFNA ng/L	PFHxS ng/L	PFBA ng/L	PFBS ng/L	HFPO-DA ng/L	∑PFAS6 ng/L
W3268	9	09/08/2022	24	<0.49	2.3	0.61j	5.4j	1.8j	<2	39.9*
W3269	9B	09/08/2022	25	8.7	2.9	0.6j	5.8j	2	<2	50.7*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Crocker Pond (MA81025) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.

Dawson Pond (MA81028)

Location:	Holden.
AU Type:	FRESHWATER LAKE
AU Size:	22 ACRES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for Dawson Pond (MA81028) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Fanwort*)	--	Unchanged
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Fanwort*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Eagle Lake (MA81034)

Location:	Holden.
AU Type:	FRESHWATER LAKE
AU Size:	56 ACRES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for Eagle Lake (MA81034) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

East Wachusett Brook (MA81-30)

Location:	Headwaters northeast of Little Wachusett Mountain, Princeton to mouth at confluence with Stillwater River, Sterling.
AU Type:	RIVER
AU Size:	4.6 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

East Wachusett Brook (MA81-30)

Watershed Area: 7.27 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	7.27	4.01	4.32	2.50
Agriculture	3.3%	3.3%	2%	1.7%
Developed	8.5%	9.2%	8.1%	8.6%
Natural	81.3%	78.5%	78.4%	75.8%
Wetland	7%	9%	11.4%	13.9%
Impervious	3.7%	4%	3.5%	3.7%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Recommendations

2024/26 Recommendations
2024/26 IR [Bacteria, Medium] Additional monitoring for *E. coli* is recommended to rule out the possibility of an intermittent source of bacteria to East Wachusett Brook (MA81-30). Sampling should focus at {DCRWS_MD89} located downstream of Rt. 140, Sterling, with attention given to the possibility of potential intermittent sources of bacteria. *E. coli* concentrations were occasionally extremely elevated in recent years at this station i.e. 2,280 CFU in 2017; 8,160 CFU in 2021 and 13,000 CFU in 2022. This is of medium priority;

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for East Wachusett Brook (MA81-30) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for East Wachusett Brook (MA81-30) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	YES

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for East Wachusett Brook (MA81-30) is assessed as Fully Supporting. However, an Alert is being identified for Escherichia Coli (E. Coli) due to elevated concentrations at 1 station in 2021 & 2022. MA DCR (DCRWS) staff collected *E. coli* bacteria samples close to the downstream end of East Wachusett Brook at DCRWS_MD89 [downstream of Rt. 140, Sterling] from 2011-2022 (n=11-31/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from DCRWS_MD89 indicated 0 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml, 1 yr had ≥2 samples exceed the 410 CFU/100ml STV (2022, n=2, max 13,000 CFU), and cumulatively across years 6% of intervals had GMs >126 CFU/100ml. While *E. coli* data from DCRWS_MD89 meet 2024 CALM guidance, an Alert is being identified since *E. coli* concentrations were occasionally extremely elevated in recent years i.e. 2,280 CFU in 2017; 8,160 CFU in 2021 and 13,000 CFU in 2022. Additional monitoring is recommended to rule out the possibility of an intermittent source of bacteria to East Wachusett Brook.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD89	MA DCR Division of Water Supply Protection	Water Quality	EAST WACHUSETT BROOK	DOWNSTREAM OF RT. 140, STERLING	42.441077	-71.814832

Bacteria Data

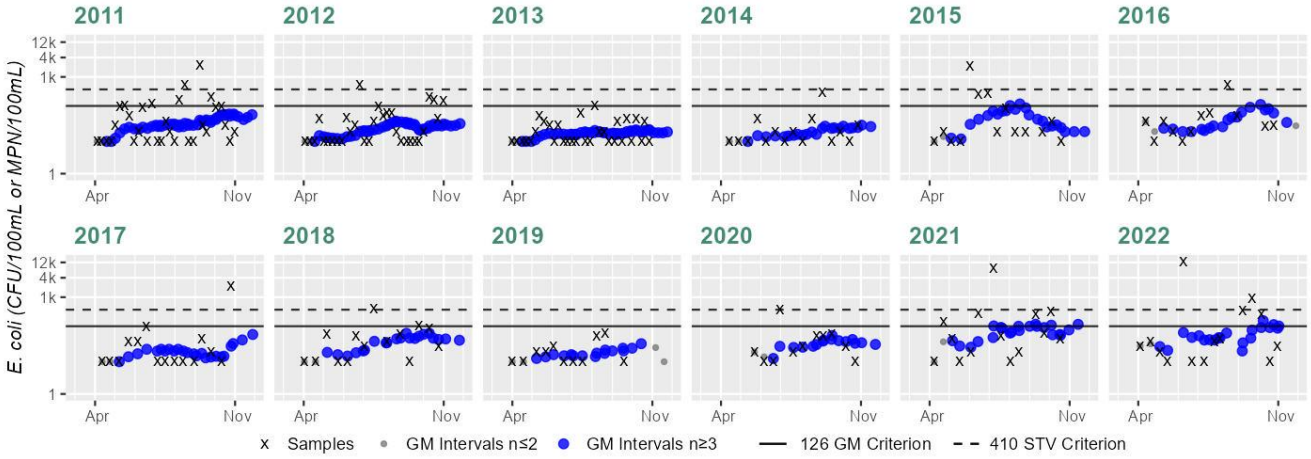
Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 2)

[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
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	04/04/11	11/14/11	31	10	2310	36
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	04/02/12	12/03/12	31	10	591	27
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	04/01/13	10/28/13	31	10	134	18
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	04/14/14	10/27/14	15	10	324	19
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	04/08/15	10/19/15	14	10	2250	40
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	04/11/16	10/24/16	12	10	573	38
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	04/12/17	10/26/17	15	10	2280	23
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	04/02/18	10/24/18	14	10	431	36
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	04/01/19	09/18/19	11	10	75	17
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	05/21/20	12/15/20	11	10	404	32
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	04/08/21	10/18/21	14	10	8160	76
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	04/04/22	10/31/22	14	10	13000	64

Station DCRWS_MD89 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	31
SeasGM	36
#GMI	54
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	6%

Variable*	Result
Samples	31
SeasGM	27
#GMI	53
#GMI Ex	1
%GMI Ex	1%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	31
SeasGM	18
#GMI	53
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	15
SeasGM	19
#GMI	25
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	14
SeasGM	40
#GMI	23
#GMI Ex	2
%GMI Ex	8%
n>STV	1
%n>STV	7%

Variable*	Result
Samples	12
SeasGM	38
#GMI	19
#GMI Ex	1
%GMI Ex	5%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	15
SeasGM	23
#GMI	25
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	6%

Variable*	Result
Samples	14
SeasGM	36
#GMI	22
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	7%

Variable*	Result
Samples	11
SeasGM	17
#GMI	16
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	32
#GMI	17
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	14
SeasGM	76
#GMI	23
#GMI Ex	4
%GMI Ex	17%
n>STV	1
%n>STV	7%

Variable*	Result
Samples	14
SeasGM	64
#GMI	23
#GMI Ex	3
%GMI Ex	13%
n>STV	2
%n>STV	14%

Cumulative %GMI Exceedance Current (2011-2022)
3%

Cumulative %GMI Exceedance Current (Recent 5 Years)
6%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for East Wachusett Brook (MA81-30) is assessed as Fully Supporting. MA DCR (DCRWS) staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in East Wachusett Brook from 2008-2022 at 3 stations. Samples were collected from the following stations/sample years from upstream to downstream: close to the upstream end at DCRWS_MD91 [Rt. 31, Princeton] from Jan-Dec 2008 (n=45), halfway down at DCRWS_MD90 [Bullard Rd, Princeton] from Jan-Dec 2008 (n=49), and close to the downstream end at DCRWS_MD89 [downstream of Rt. 140, Sterling] from 2008-2010 (historic n=49-51/yr) and 2011-2022 (current n=17-51/yr). Since bacteria data from the historic IR window are all indicative of good water quality conditions, only the analysis from the current IR window (1 station) will be summarized here: Analysis of the recent five years of the multi-year high frequency *E. coli* dataset from DCRWS_MD89 indicated 0 out of 5 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml, 0 yrs had >10% of samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. *E. coli* data from DCRWS_MD89 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD89	MA DCR Division of Water Supply Protection	Water Quality	EAST WACHUSETT BROOK	DOWNSTREAM OF RT. 140, STERLING	42.441077	-71.814832
DCRWS_MD90	MA DCR Division of Water Supply Protection	Water Quality	EAST WACHUSETT BROOK	Bullard Rd, Princeton	42.448630	-71.843650
DCRWS_MD91	MA DCR Division of Water Supply Protection	Water Quality	EAST WACHUSETT BROOK	Rt. 31, Princeton	42.463905	-71.859883

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

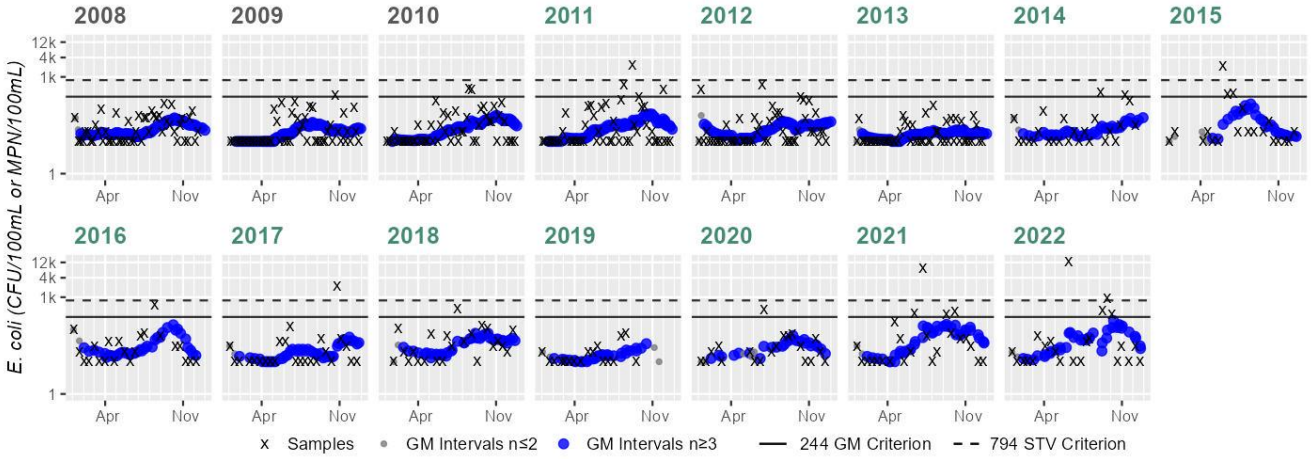
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	01/09/08	12/10/08	49	10	150	23

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	01/06/09	12/23/09	51	10	271	19
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	01/06/10	12/22/10	51	10	429	23
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	01/05/11	12/20/11	51	10	2310	24
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	01/03/12	12/17/12	51	10	591	22
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	01/07/13	12/18/13	50	10	134	15
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	01/08/14	12/09/14	25	10	324	23
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	01/05/15	12/15/15	20	10	2250	28
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	01/04/16	12/05/16	22	10	573	25
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	01/03/17	12/19/17	25	10	2280	19
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	01/24/18	12/17/18	23	10	431	33
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	01/03/19	09/18/19	17	10	75	15
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	01/09/20	12/15/20	20	10	404	23
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	01/07/21	12/20/21	24	10	8160	38
DCRWS_MD89	MA DCR Division of Water Supply Protection	E. coli	01/03/22	12/22/22	23	10	13000	36
DCRWS_MD90	MA DCR Division of Water Supply Protection	E. coli	01/09/08	12/10/08	49	10	271	28
DCRWS_MD91	MA DCR Division of Water Supply Protection	E. coli	01/09/08	12/10/08	45	10	448	24

Station DCRWS_MD89 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	49
SeasGM	23
#GMI	86
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	51
SeasGM	19
#GMI	93
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	51
SeasGM	23
#GMI	92
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	51
SeasGM	24
#GMI	90
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	1%

Variable*	Result
Samples	51
SeasGM	22
#GMI	89
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	50
SeasGM	15
#GMI	89
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	25
SeasGM	23
#GMI	45
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	28
#GMI	31
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	22
SeasGM	25
#GMI	39
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	25
SeasGM	19
#GMI	45
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	23
SeasGM	33
#GMI	40
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	17
SeasGM	15
#GMI	28
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	23
#GMI	29
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	24
SeasGM	38
#GMI	43
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	23
SeasGM	36
#GMI	40
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	8%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

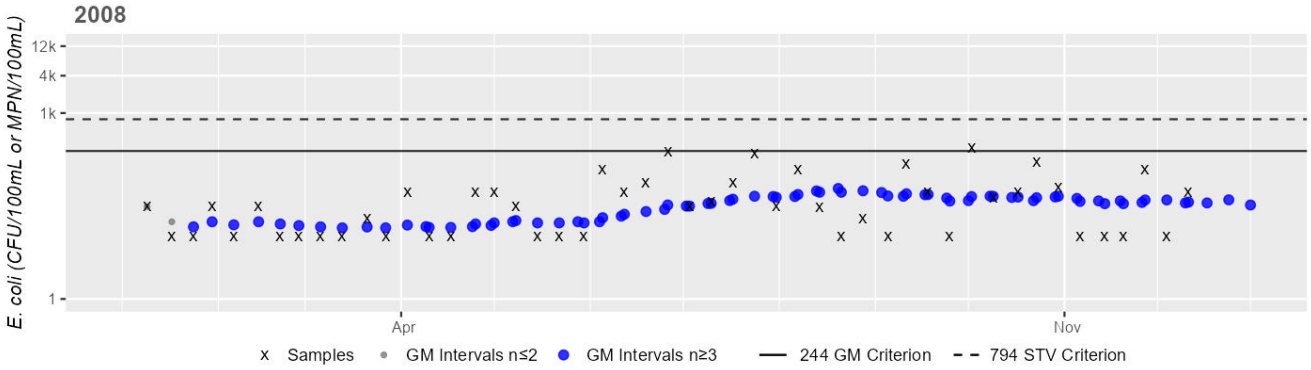
Cumulative %GMI Exceedance
Current (2011-2022)
0%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station DCRWS_MD90 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



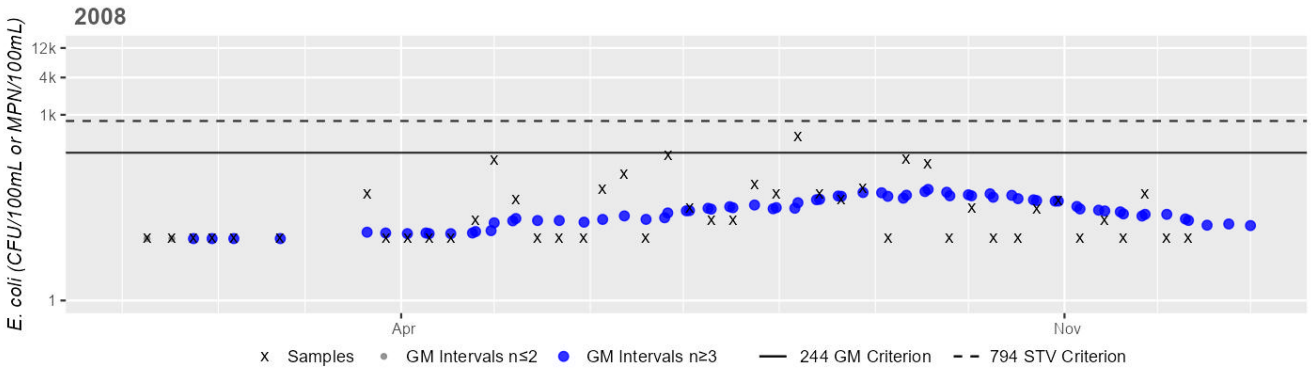
Variable*	Result
Samples	49
SeasGM	28
#GMI	86
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station DCRWS_MD91 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	45
SeasGM	24
#GMI	79
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

East Waushacum Pond (MA81035)

Location:	Sterling.
AU Type:	FRESHWATER LAKE
AU Size:	181 ACRES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for East Waushacum Pond (MA81035) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

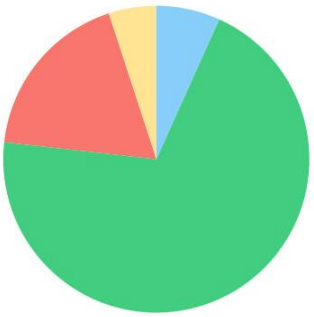
AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Fall Brook (MA81-38)

Location:	From outlet Fall Brook Reservoir, Leominster to inlet Lake Samoset, Leominster (formerly part of 2008 segment: Fall Brook MA81-14).
AU Type:	RIVER
AU Size:	1.3 MILES
Classification/Qualifier:	B

Fall Brook (MA81-38)

Watershed Area: 2.36 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	2.36	2.36	1.08	1.08
Agriculture	5%	5%	3%	3%
Developed	18.2%	18.2%	17.5%	17.5%
Natural	70%	70%	67.7%	67.7%
Wetland	6.7%	6.7%	11.7%	11.7%
Impervious	5.3%	5.3%	4.1%	4.1%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Fall Brook (MA81-38) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Fall Brook (MA81-38) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Fall Brook (MA81-38) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Fall Brook (MA81-38) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MassDEP staff collected *E. coli* bacteria samples at the downstream end of Fall Brook at W1825 [Lakeview Drive, Leominster] from May-Sep 2008 (n=6). Analysis of the historic single year limited frequency *E. coli* dataset from W1825 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 69 CFU/100ml. Historic *E. coli* data from W1825 meet 2024 CALM guidance. However, since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

Monitoring Stations

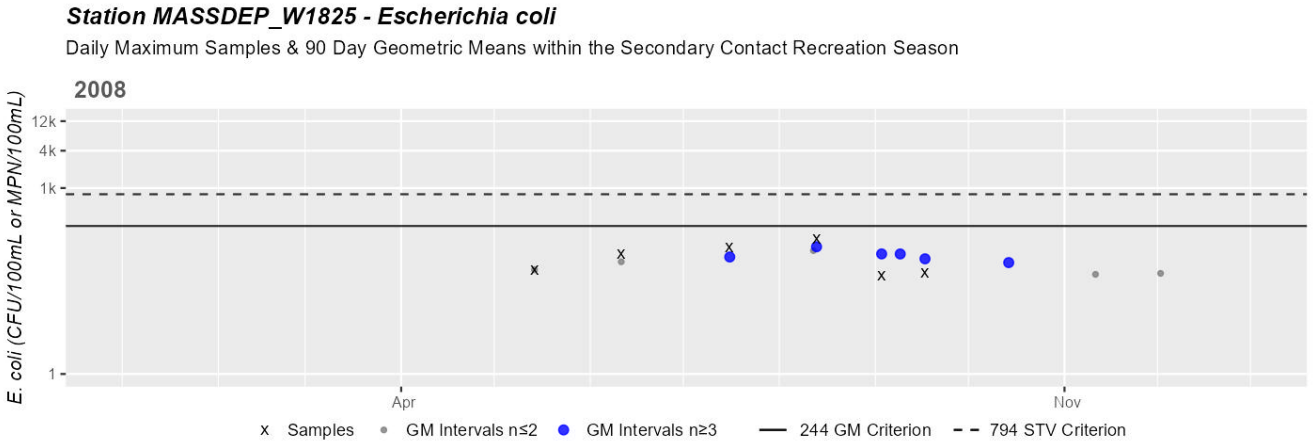
Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1825	MassDEP	Water Quality	Fall Brook	[Lakeview Drive, Leominster]	42.491589	-71.763114

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W1825	MassDEP	E. coli	05/13/08	09/16/08	6	39	150	69



Variable*	Result
Samples	6
SeasGM	69
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Fall Brook (MA81-39)

Location:	From outlet Lake Samoset, Leominster to mouth at confluence with the North Nashua River, Leominster (formerly part of 2008 segment: Fall Brook MA81-14).
AU Type:	RIVER
AU Size:	3 MILES
Classification/Qualifier:	B

Fall Brook (MA81-39)

Watershed Area: 7.20 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	7.20	5.80	2.46	1.82
Agriculture	3%	3.1%	2%	2.1%
Developed	34.1%	39%	27.1%	31.6%
Natural	54%	48.7%	53.5%	47.7%
Wetland	8.9%	9.2%	17.4%	18.7%
Impervious	17.3%	20.8%	13.8%	18.1%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
5	5	Temperature	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--
Temperature	Dam or Impoundment (Y)	X	--	--	--	--
Temperature	Source Unknown (N)	X	--	--	--	--

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Fall Brook (MA81-39) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Fall Brook (MA81-39) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Fall Brook (MA81-39) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior Escherichia Coli (E. Coli) impairment is being carried forward.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Fall Brook (MA81-39) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MassDEP staff collected *E. coli* bacteria samples three-quarters of the way down Fall Brook at W1826 [Rt. 117, Leominster] from May-Sep 2008 (n=6). Analysis of the historic single year limited frequency *E. coli* dataset from W1826 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 165 CFU/100ml. Historic *E. coli* data from W1826 meet 2024 CALM guidance. However, since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1826	MassDEP	Water Quality	Fall Brook	[Route 117, Leominster]	42.511145	-71.738409

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

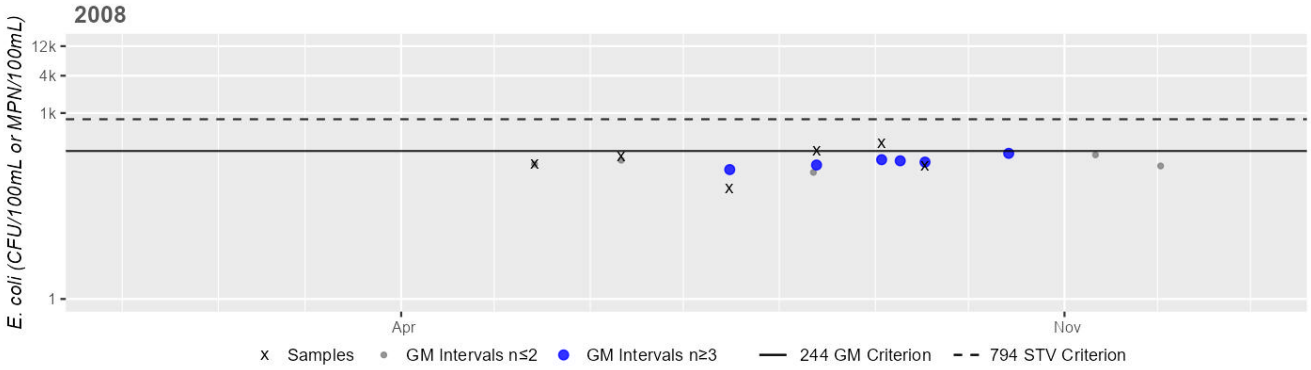
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W1826	MassDEP	E. coli	05/13/08	09/16/08	6	61	320	165

Station MASSDEP_W1826 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	165
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Fall Brook Reservoir (MA81038)

Location:	Leominster.
AU Type:	FRESHWATER LAKE
AU Size:	88 ACRES
Classification/Qualifier:	A: PWS, ORW

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Mercury in Fish Tissue	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Mercury in Fish Tissue	Atmospheric Deposition (N)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for Fall Brook Reservoir (MA81038) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. DPH included a site-specific advisory for Fall Brook Reservoir in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Fall Brook Reservoir (MA81038) is assessed as Fully Supporting. MassDEP staff recorded aesthetics observations as part of the MAP2 lake monitoring project in summer 2017 at two stations in Leominster, for Fall Brook Reservoir, at the southeastern end of lake, north of May Street (W2687/MAP2L-140S, n=5) and at the deep hole index station (W2686/MAP2L-140, n=3). There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, or littoral zone duckweed recorded in ten shoreline plots (n=1). During the MAP2 macrophyte mapping survey in Aug 2017 (n=1), less than 25% (0.7%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2686	MassDEP	Water Quality	Fall Brook Reservoir	[index site, Leominster]	42.494215	-71.783505
W2687	MassDEP	Water Quality	Fall Brook Reservoir	[southeastern end of lake, north of May Street, Leominster]	42.490148	-71.782661

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2686	2017	3	Aesthetic observations were made by MassDEP field sampling crews at Station W2686 (MAP2L-140) on Fall Brook Reservoir (MA81038) during 3 site visits between Jun 2017 and Sep 2017. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded. During the MAP2 macrophyte mapping survey (n=1) in Aug 2017, less than 25% (0.7%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%.
W2687	2017	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2687 (MAP2L-140S) on Fall Brook Reservoir (MA81038) during 5 site visits between May 2017 and Aug 2017. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded. During the MAP2 littoral survey (n=1), duckweed was not noted in any of the 10 shoreline plots.

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2686	Fall Brook Reservoir	2017	Aesthetics Impaired?	No	3	3
W2686	Fall Brook Reservoir	2017	Aquatic Plant Density, Overall	None	3	3
W2686	Fall Brook Reservoir	2017	Aquatic Plant Density, Whole Lake	Sparse	1	2
W2686	Fall Brook Reservoir	2017	Aquatic Plant Density, Whole Lake	Unobservable	1	2
W2686	Fall Brook Reservoir	2017	Color	None	3	3
W2686	Fall Brook Reservoir	2017	Duckweed Density, Whole Lake	None	1	2
W2686	Fall Brook Reservoir	2017	Duckweed Density, Whole Lake	Unobservable	1	2
W2686	Fall Brook Reservoir	2017	Objectionable Deposits	No	3	3
W2686	Fall Brook Reservoir	2017	Odor	None	3	3
W2686	Fall Brook Reservoir	2017	Scum	No	3	3
W2686	Fall Brook Reservoir	2017	Turbidity	None	3	3
W2687	Fall Brook Reservoir	2017	Aesthetics Impaired?	No	5	5
W2687	Fall Brook Reservoir	2017	Color	None	4	5
W2687	Fall Brook Reservoir	2017	Color	NR	1	5
W2687	Fall Brook Reservoir	2017	Objectionable Deposits	No	5	5
W2687	Fall Brook Reservoir	2017	Odor	None	5	5
W2687	Fall Brook Reservoir	2017	Scum	No	5	5
W2687	Fall Brook Reservoir	2017	Turbidity	None	5	5

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Fall Brook Reservoir (MA81038) is assessed as Fully Supporting. In Fall Brook Reservoir MassDEP staff collected Secchi depth and cyanobacteria cell count data at W2686 [MAP2L-140, Index-deep hole] (2017) and cyanobacteria cell count and cyanotoxins data at W2687 [MAP2L-140S, Shoreline at southeastern end of lake, N of May St, Leominster] (2017). Secchi depth data indicated water clarity meeting the 1.2m (4ft) threshold at W2686 in 2017 (n=3, 5.3-7.4m). The cyanobacteria cell count did not exceed 70,000 cells/ml in any of the water samples in 2017 (n=6). Analysis of microcystins and cylindrospermopsin samples from W2687 in 2017 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L. In addition, MassDEP staff collected *E. coli* bacteria samples in Fall Brook Reservoir at shoreline station W2687 from May-Aug 2017 (n=5). Analysis of the single year limited frequency *E. coli* dataset from W2687 indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 10 CFU/100ml. *E. coli* data from W2687 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2686	MassDEP	Water Quality	Fall Brook Reservoir	[index site, Leominster]	42.494215	-71.783505
W2687	MassDEP	Water Quality	Fall Brook Reservoir	[southeastern end of lake, north of May Street, Leominster]	42.490148	-71.782661

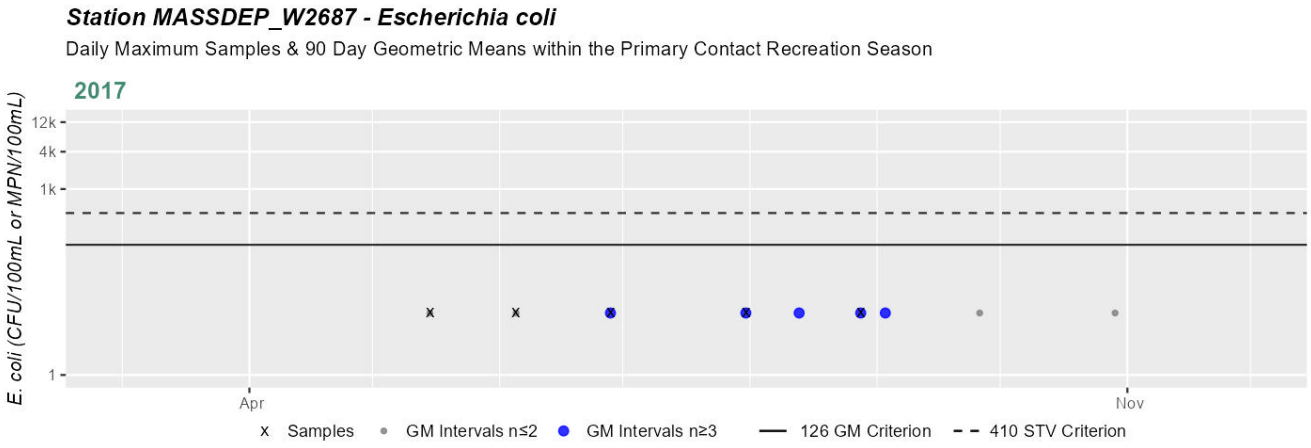
Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (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
W2687	MassDEP	E. coli	05/15/17	08/28/17	5	10	10	10



Variable*	Result
Samples	5
SeasGM	10
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Other Indicators

Summary Statement for 2011-2022 Cyanobacteria Cell Count and Cyanotoxin Data, and Secchi Depth Data (MassDEP Undated 7) (MassDEP Undated 4)

Data Year(s)	Summary
2017	In Fall Brook Reservoir (MA81038) in 2017, MassDEP collected Secchi and cyanobacteria cell count data at W2686 [MAP2L-140, Index-deep hole], and cyanobacteria cell count and cyanotoxin data at W2687 [MAP2L-140S, Shoreline]. At station W2686 (station depth=8 m) the Secchi depth measurements ranged from 5.3-7.4 m (n=3) indicating water clarity meeting the 1.2 m (4 ft) threshold. The cyanobacteria cell count did not exceed 70,000 cells/mL in any of the water samples (n=6). Analysis of microcystins and cylindrospermopsin samples from the shoreline station W2687 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L.

MassDEP Cyanobacteria Cell Count Data Collected at Lakes and Impoundments (2016-2018) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Waterbody	Station Type	Data Year	Sample Count	Count >70,000 cells/mL	Exceedance Date(s)
W2686	Fall Brook Reservoir	Index	2017	3	0	NA
W2687	Fall Brook Reservoir	Shoreline	2017	3	0	NA

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Fall Brook Reservoir (MA81038) is assessed as Fully Supporting. In Fall Brook Reservoir MassDEP collected cyanobacteria cell count data at W2686 [MAP2L-140, Index-deep hole] (2017) and cyanobacteria cell count and cyanotoxins data at W2687 [MAP2L-140S, Shoreline at southeastern end of lake, N of May St, Leominster] (2017). The cyanobacteria cell count did not exceed 70,000 cells/ml in any of the water samples in 2017 (n=6). Analysis of microcystins and cylindrospermopsin samples from W2687 in 2017 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L. MassDEP staff collected *E. coli* bacteria samples in Fall Brook Reservoir at shoreline station W2687 from May-Aug 2017 (n=5). Analysis of the single year limited frequency *E. coli* dataset from W2687 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 10 CFU/100ml. *E. coli* data from W2687 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2687	MassDEP	Water Quality	Fall Brook Reservoir	[southeastern end of lake, north of May Street, Leominster]	42.490148	-71.782661

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

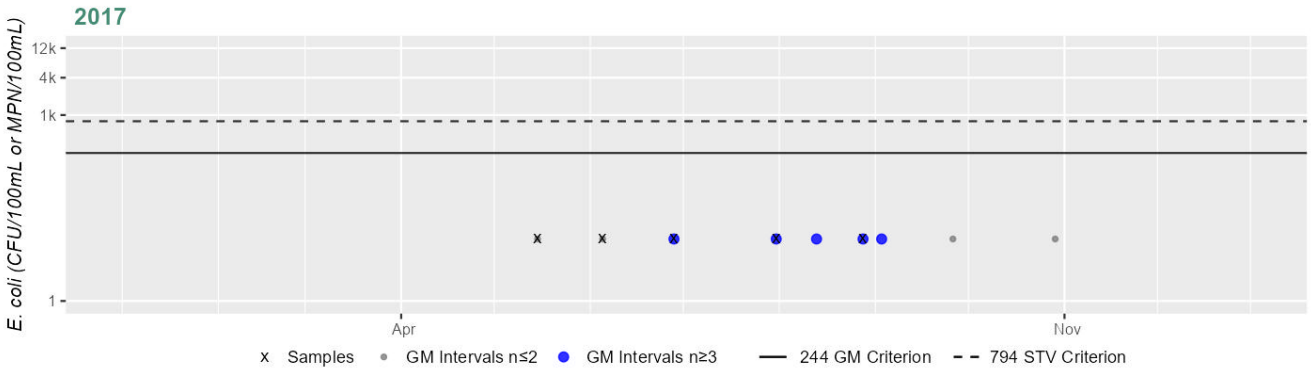
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W2687	MassDEP	E. coli	05/15/17	08/28/17	5	10	10	10

Station MASSDEP_W2687 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	10
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

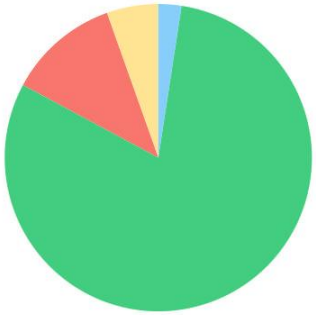
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Falulah Brook (MA81-100)

Location:	From the outlet of Lovell Reservoir at Lovell Reservoir Dam (NATID#: MA00872), Fitchburg to mouth at confluence with Pearl Hill Brook, forming headwaters Baker Brook, Fitchburg (formerly part of 2016 segment: Falulah Brook MA81-63).
AU Type:	RIVER
AU Size:	4 MILES
Classification/Qualifier:	B

Falulah Brook (MA81-100)

Watershed Area: 12.65 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	12.65	4.42	5.51	1.18
Agriculture	5.4%	5.9%	3.5%	2.4%
Developed	11.7%	25.2%	8%	24%
Natural	80.4%	67.5%	83.6%	69.5%
Wetland	2.4%	1.4%	4.9%	4%
Impervious	5.6%	12.7%	4.1%	12.3%

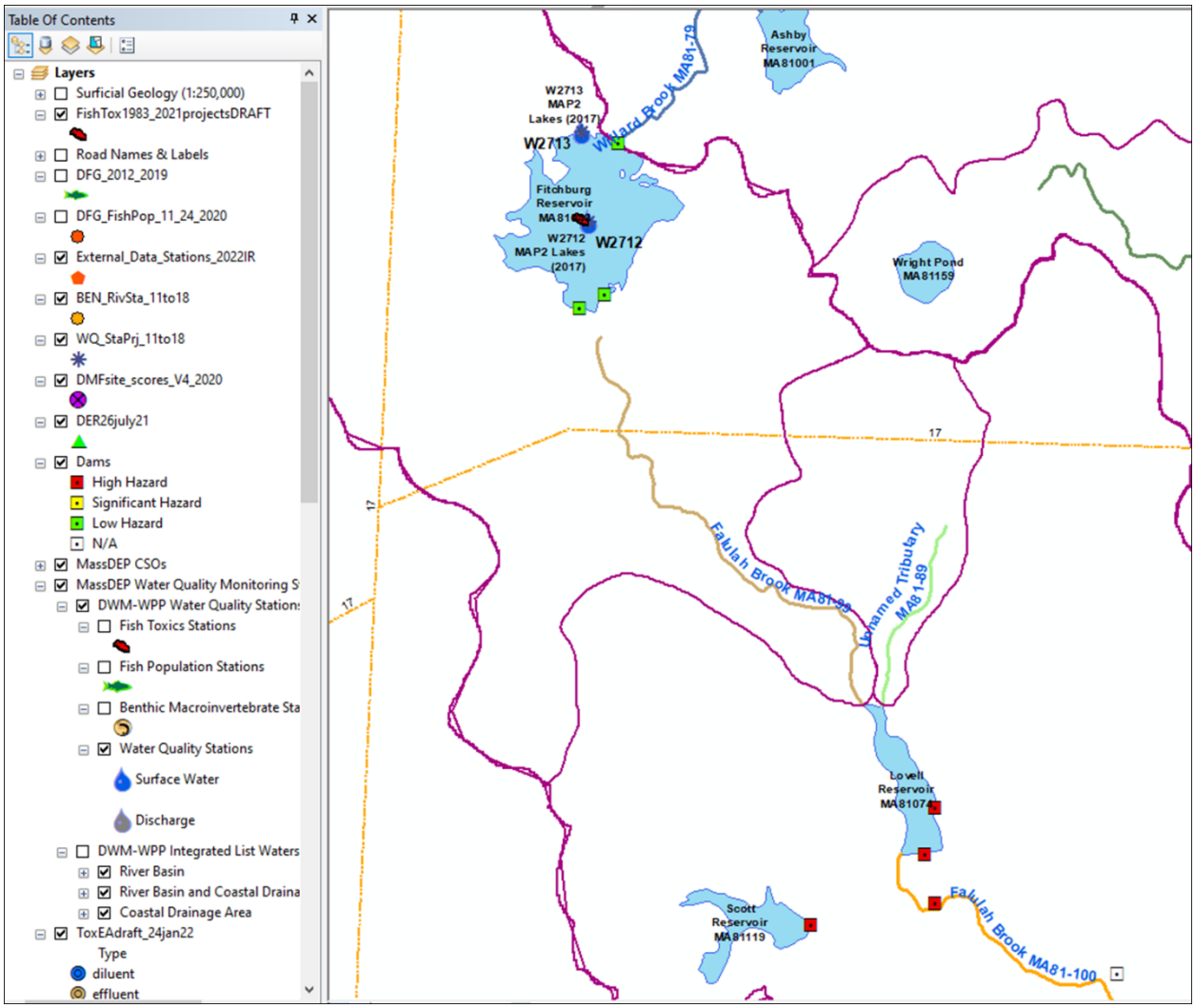
AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	2	Escherichia Coli (E. Coli)	--	Removed

Supporting Information for Removed Impairments

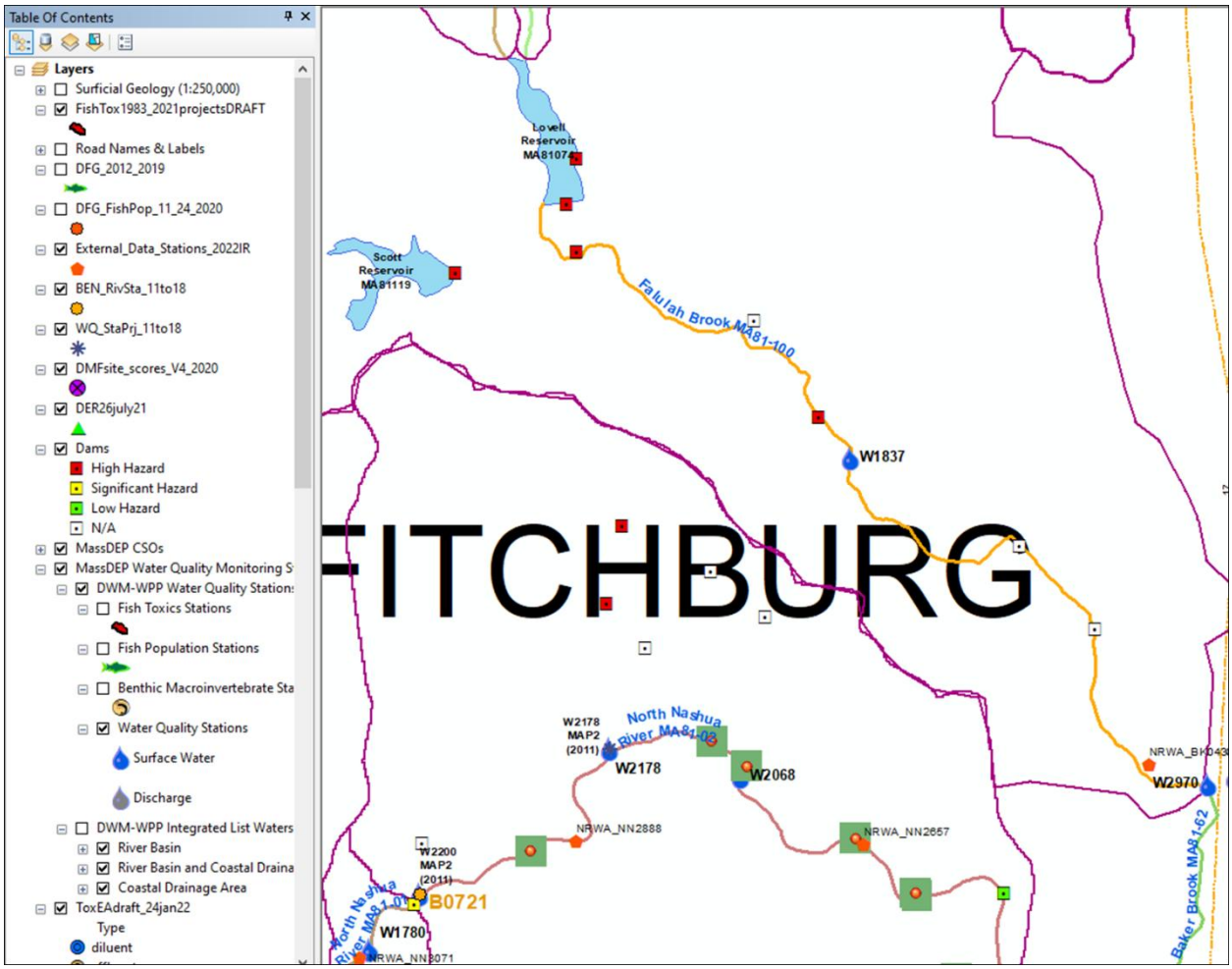
2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	Applicable WQS attained; based on new data	Falulah Brook was originally (as of the 2016 IR cycle) one AU (MA81-63), running from the headwaters near Ringe Rd, Ashby to the mouth at the confluence with Pearl Hill Brook, forming the headwaters of Baker Brook. A presumptive impairment was identified for the recreational uses given the presence of two CSO discharges to the brook without a CSO variance in place (according to City of Fitchburg records (McNamara November 23, 2022), CSO FIT072 was located at Pearl St and Townsend St, while CSO FIT024 was located at Boutelle St and Lunenburg St/Rt 2A). During the 2018/20 IR reporting cycle, the recreational uses were not assessed, but the AU was split into two AUs: an upstream Class A AU (MA81-99) ending at the inlet of Lovell Reservoir, Fitchburg, and a downstream Class B AU (MA81-100), running from the outlet of Lovell Reservoir to the mouth at the confluence with Pearl Hill Brook, and the presumptive *E. coli* impairment was applied to the recreational uses of both AUs (despite the fact that there were only ever two CSOs on the new downstream AU and none on the upstream AU). The June 2022 map of CSO regulator and outfall locations for the City of Fitchburg reflects that both CSO FIT072 and FIT024 are closed (Weston & Sampson 2022). Since the presumptive impairment was applied to the upstream Falulah Brook AU (MA81-99) in error and all CSOs that formerly discharged to the downstream Falulah Brook AU (MA81-100) have been closed, the Escherichia Coli (E. Coli) impairment is being removed.

Escherichia coli (E. coli)

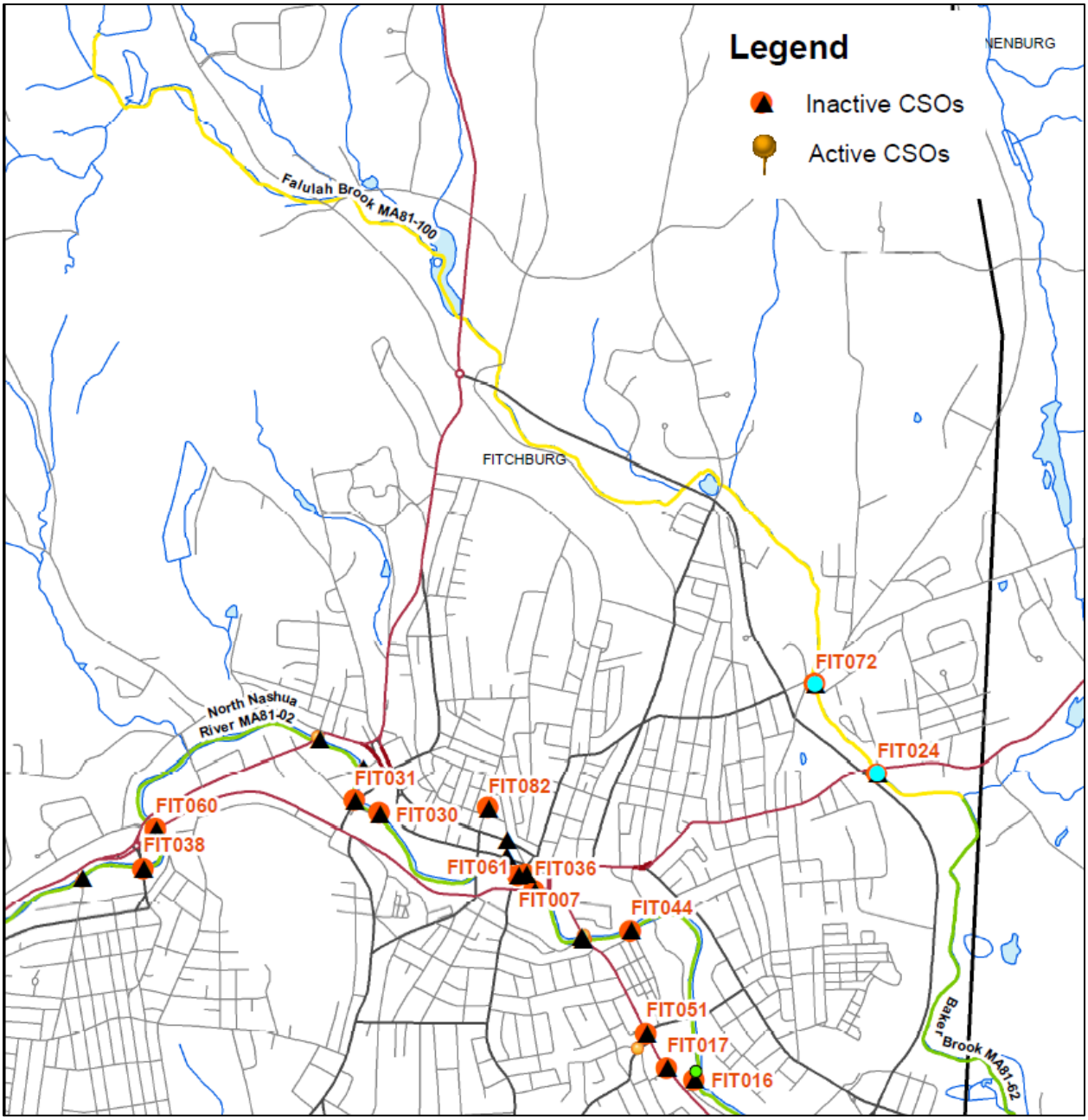
Screen capture of ArcMap project showing upstream AU (MA81-99):



Screen capture of ArcMap project showing downstream AU (MA81-100) along with the 2008 MassDEP water quality monitoring site (blue water drop) and 2013 NRWA monitoring site (orange pentagon):



Screen capture of former CSOs:



Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary

Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Falulah Brook (MA81-100) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Falulah Brook (MA81-100) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary
Too limited bacteria data are available to assess the Primary Contact Recreation Use for the Falulah Brook (MA81-100), so it is assessed as having Insufficient Information. The prior Escherichia Coli (E. Coli) impairment is being removed. Falulah Brook was originally (as of the 2016 IR cycle) one AU (MA81-63), running from the headwaters near Ringe Rd, Ashby to the mouth at the confluence with Pearl Hill Brook, forming the headwaters of Baker Brook. A presumptive impairment was identified for the recreational uses given the presence of two CSO discharges to the brook without a CSO variance in place (according to City of Fitchburg records (McNamara November 23, 2022), CSO FIT072 was located at Pearl St and Townsend St, while CSO FIT024 was located at Boutelle St and Lunenburg St/Rt 2A). During the 2018/20 IR reporting cycle, the Recreational Uses were not assessed, but the AU was split into two AUs: an upstream Class A AU (MA81-99) ending at the inlet of Lovell Reservoir, Fitchburg, and a downstream Class B AU (MA81-100), running from the outlet of Lovell Reservoir to the mouth at the confluence with Pearl Hill Brook, and the presumptive *E. coli* impairment was applied to the Recreational Uses of both AUs (despite the fact that there were only ever two CSOs on the new downstream AU and none on the upstream AU). The June 2022 map of CSO regulator and outfall locations for the City of Fitchburg reflects that both CSO FIT072 and FIT024 are closed (Weston & Sampson 2022). Since the presumptive impairment was applied to the upstream Falulah Brook AU (MA81-99) in error and all CSOs that formerly discharged to the downstream Falulah Brook AU (MA81-100) have been closed, the Escherichia Coli (E. Coli) impairment is being removed. Additionally, Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in Falulah Brook at NRWA_BK0430 [Rt. 2A, Fitchburg], in the vicinity of CSO FIT024, from May-Oct 2013 (n=3). While the *E. coli* data from NRWA_BK0430 are too limited according to the 2024 CALM to assess the Primary Contact Recreation Use, it should be noted that the seasonal GM was 74 CFU/100mL and the maximum sample result was 114 CFU/100mL.

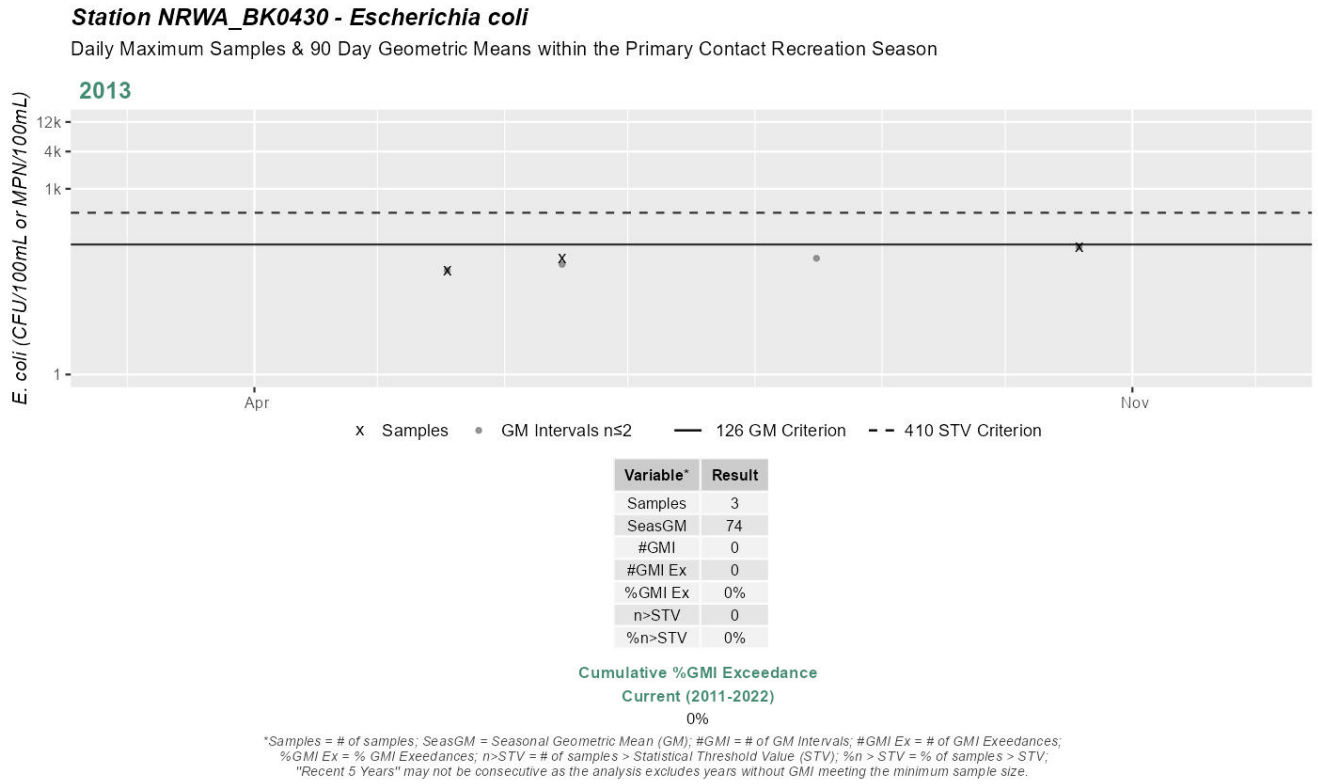
Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_BK0430	Nashua River Watershed Association	Water Quality	Baker Brook	Rt. 2A, Fitchburg	42.585800	-71.777000

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)
(NRWA 2022) (MassDEP Undated 2)
[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
NRWA_BK0430	Nashua River Watershed Association	E. coli	05/18/13	10/19/13	3	48	114	74



Variable*	Result
Samples	3
SeasGM	74
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary

Too limited bacteria data are available to assess the Secondary Contact Recreation Use for the Falulah Brook (MA81-100), so it is assessed as having Insufficient Information. The prior Escherichia Coli (E. Coli) impairment is being removed. Falulah Brook was originally (as of the 2016 IR cycle) one AU (MA81-63), running from the headwaters near Ringe Rd, Ashby to the mouth at the confluence with Pearl Hill Brook, forming the headwaters of Baker Brook. A presumptive impairment was identified for the recreational uses given the presence of two CSO discharges to the brook without a CSO variance in place (according to City of Fitchburg records (McNamara November 23, 2022), CSO FIT072 was located at Pearl St and Townsend St, while CSO FIT024 was located at Boutelle St and Lunenburg St/Rt 2A). During the 2018/20 IR reporting cycle, the recreational uses were not assessed, but the AU was split into two AUs: an upstream Class A AU (MA81-99) ending at the inlet of Lovell Reservoir, Fitchburg, and a downstream Class B AU (MA81-100), running from the outlet of Lovell Reservoir to the mouth at the confluence with Pearl Hill Brook, and the presumptive *E. coli* impairment was applied to the recreational uses of both AUs (despite the fact that there were only ever two CSOs on the new downstream AU and none on the upstream AU). The June 2022 map of CSO regulator and outfall locations for the City of Fitchburg reflects that both CSO FIT072 and FIT024 are closed (Weston & Sampson 2022). Since the presumptive impairment was applied to the upstream Falulah Brook AU (MA81-99) in error and all CSOs that formerly discharged to the downstream Falulah Brook AU (MA81-100) have been closed, the Escherichia Coli (E. Coli) impairment is being removed. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in Falulah Brook from 2008-2013 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: halfway down at W1837 [Fisher Rd, Fitchburg] from May-Sep 2008 (n=6), and close to the downstream end of the AU at NRWA_BK0430 [Rt. 2A, Fitchburg] from May-Oct 2013 (n=3). Analysis of the historic single year limited frequency *E. coli* dataset from W1837 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 42 CFU/100ml, which meets 2024 CALM guidance. Current *E. coli* data from NRWA_BK0430 are too limited according to the 2024 CALM to assess the Secondary Contact Recreation Use, though of note the seasonal GM was 74 CFU/100mL and the maximum sample result was 114 CFU/100mL. While the historic bacteria concentrations meet 2024 CALM guidance, too limited bacteria data from the current IR window (2011-2022) are available to assess the Secondary Contact Recreation Use.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1837	MassDEP	Water Quality	Falulah Brook	[Fisher Road, Fitchburg]	42.602204	-71.798803
NRWA_BK0430	Nashua River Watershed Association	Water Quality	Baker Brook	Rt. 2A, Fitchburg	42.585800	-71.777000

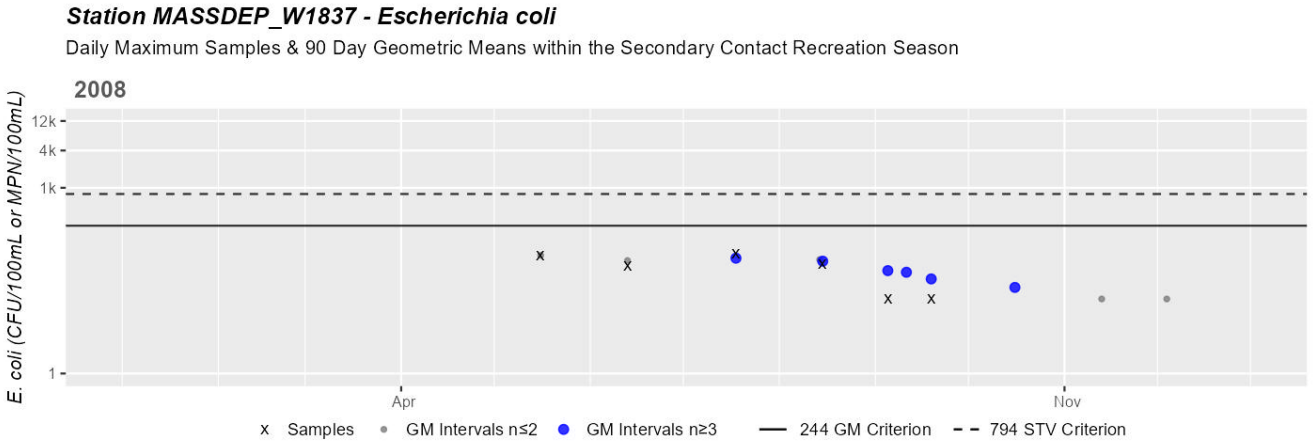
Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

[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
W1837	MassDEP	E. coli	05/15/08	09/18/08	6	16	87	42
NRWA_BK0430	Nashua River Watershed Association	E. coli	05/18/13	10/19/13	3	48	114	74



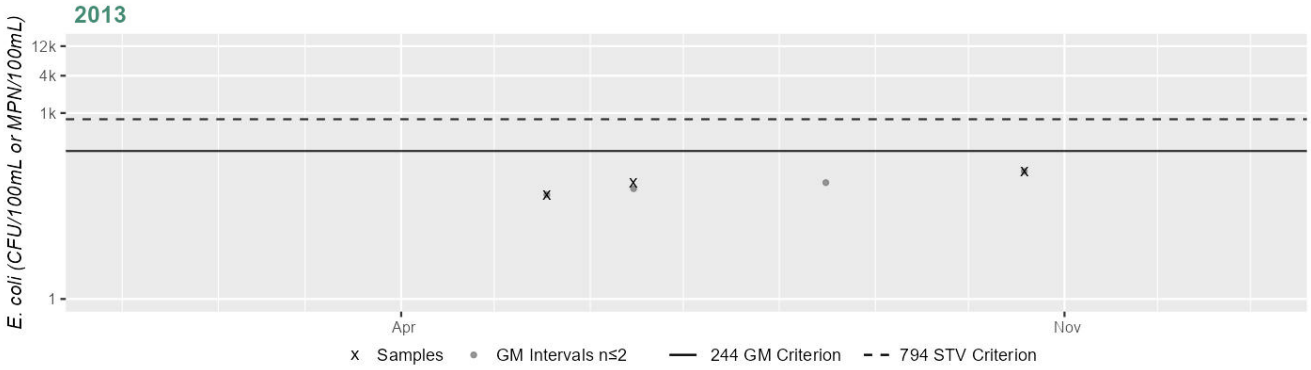
Variable*	Result
Samples	6
SeasGM	42
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_BK0430 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	3
SeasGM	74
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

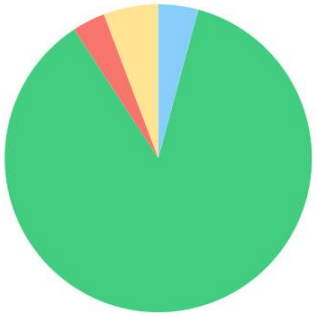
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Falulah Brook (MA81-99)

Location:	Headwaters near Ringe Road, Ashby to inlet Lovell Reservoir, Fitchburg (formerly part of 2016 segment: Falulah Brook MA81-63).
AU Type:	RIVER
AU Size:	2 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Falulah Brook (MA81-99)

Watershed Area: 4.15 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	4.15	3.72	2.39	2.25
Agriculture	5.8%	6.5%	3.9%	4.1%
Developed	3.4%	3.5%	2.8%	2.7%
Natural	86.6%	85.6%	86.8%	86.6%
Wetland	4.2%	4.4%	6.6%	6.6%
Impervious	1.6%	1.6%	1.6%	1.6%

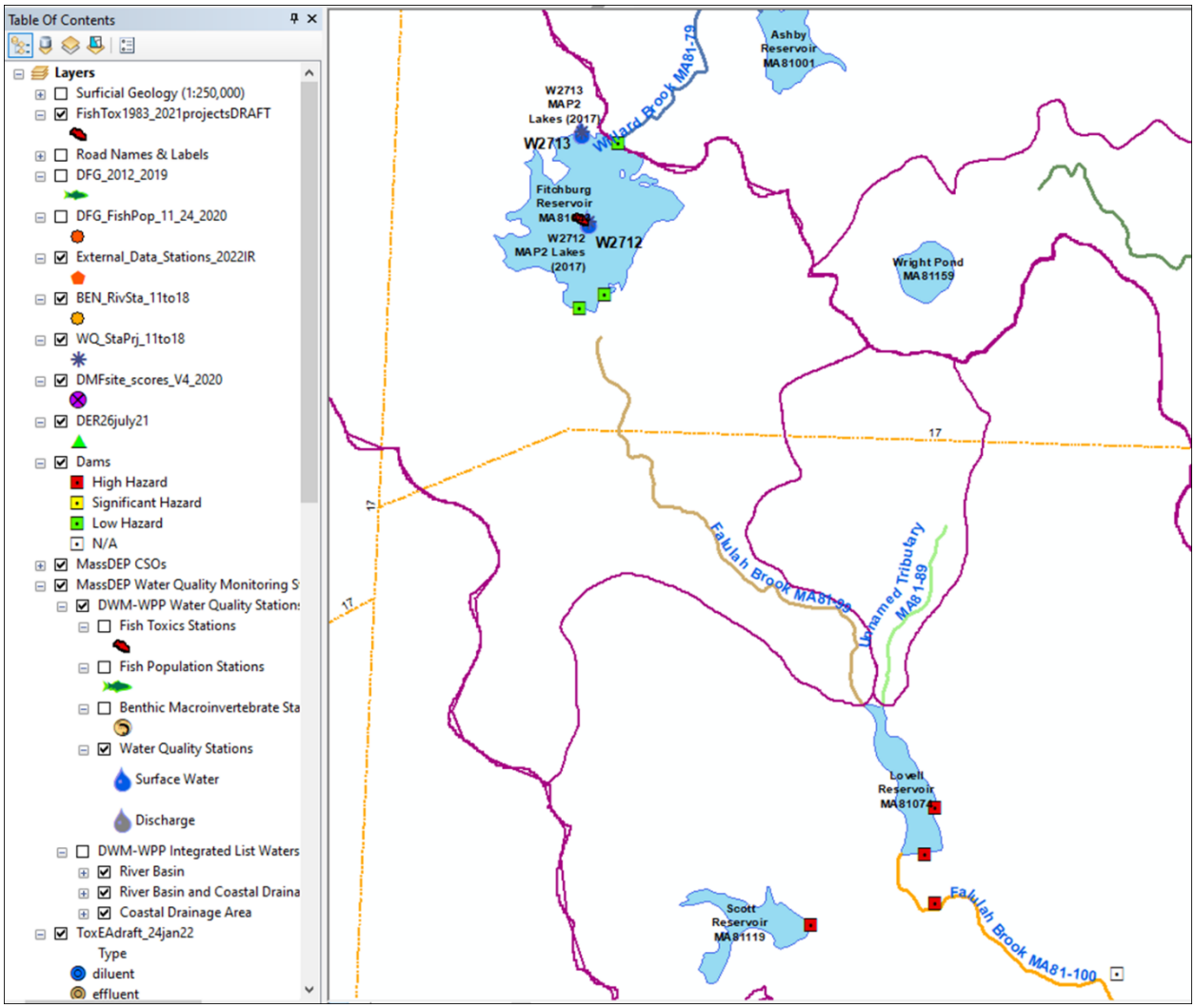
AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	2	Escherichia Coli (E. Coli)	--	Removed

Supporting Information for Removed Impairments

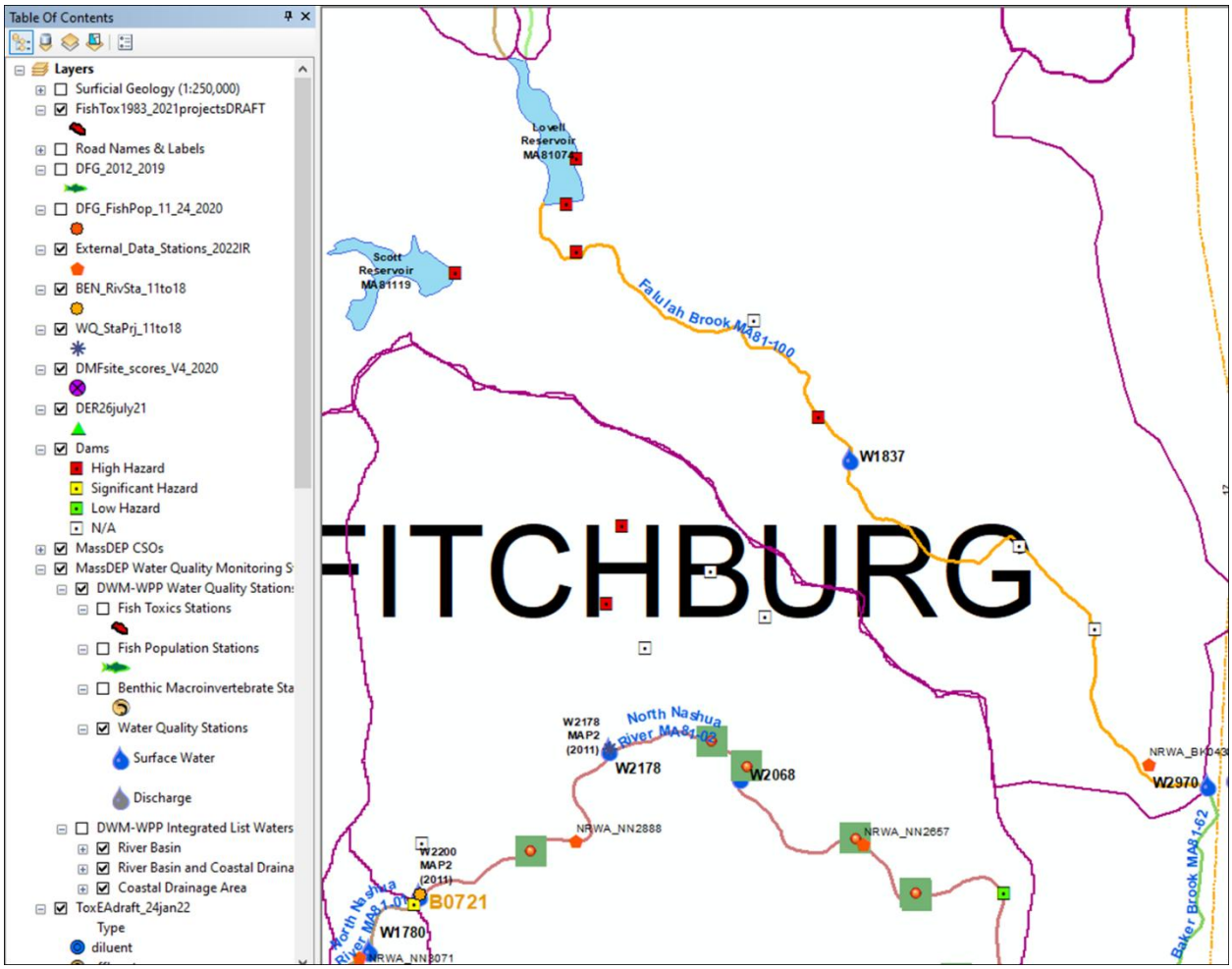
2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	Data and/or information lacking to determine WQ status; original basis for listing was incorrect	Falulah Brook was originally (as of the 2016 IR cycle) one AU (MA81-63), running from the headwaters near Ringe Rd, Ashby to the mouth at the confluence with Pearl Hill Brook, forming the headwaters of Baker Brook. A presumptive impairment was identified for the recreational uses given the presence of two CSO discharges to the brook without a CSO variance in place (according to City of Fitchburg records (McNamara November 23, 2022). CSO FIT072 was located at Pearl St and Townsend St, while CSO FIT024 was located at Boutelle St and Lunenburg St/Rt 2A). During the 2018/20 IR reporting cycle, the recreational uses were not assessed, but the AU was split into two AUs: an upstream Class A AU (MA81-99) ending at the inlet of Lovell Reservoir, Fitchburg, and a downstream Class B AU (MA81-100), running from the outlet of Lovell Reservoir to the mouth at the confluence with Pearl Hill Brook, and the presumptive Escherichia Coli (E. Coli) impairment was applied to the recreational uses of both AUs (despite the fact that there were only ever two CSOs on the new downstream AU, MA81-100, and none on the upstream AU, MA81-99). Since the presumptive impairment was applied to the upstream Falulah Brook AU (MA81-99) in error, the Escherichia Coli (E. Coli) impairment is being removed.

Escherichia coli (E. coli)

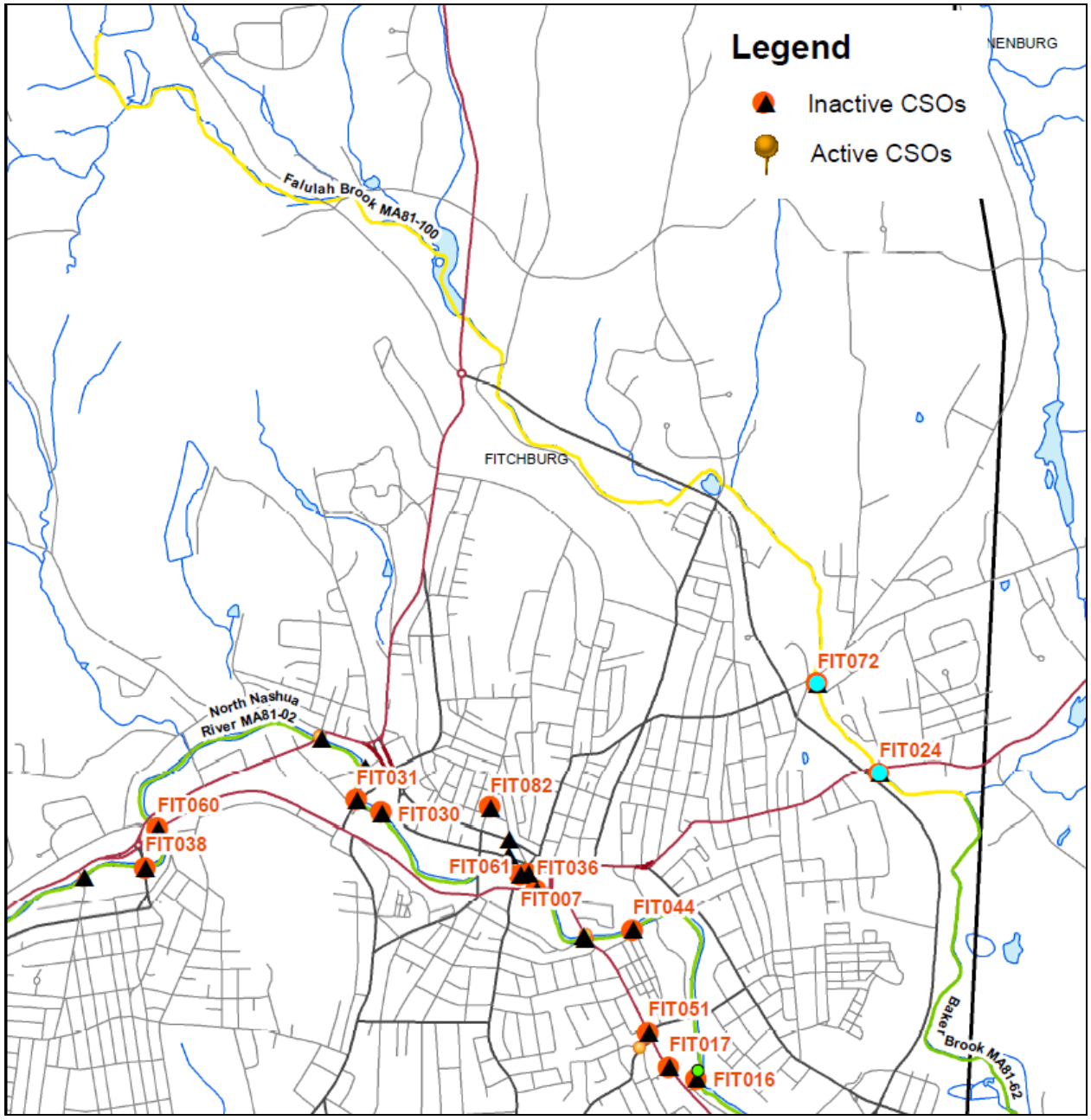
Screen capture of ArcMap project showing upstream AU (MA81-99):



Screen capture of ArcMap project showing downstream AU (MA81-100) along with the 2008 MassDEP water quality monitoring site (blue water drop) and 2013 NRWA monitoring site (orange pentagon):



Screen capture of former CSOs:



Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary

Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Falulah Brook (MA81-99) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Falulah Brook (MA81-99) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary
No bacteria data are available to assess the Primary Contact Recreation Use for the Falulah Brook (MA81-99) and it is assessed as having Insufficient Information. The prior Escherichia Coli (E. Coli) impairment is being removed. Falulah Brook was originally (as of the 2016 IR cycle) one AU (MA81-63), running from the headwaters near Ringe Rd, Ashby to the mouth at the confluence with Pearl Hill Brook, forming the headwaters of Baker Brook. A presumptive impairment was identified for the recreational uses given the presence of two CSO discharges to the brook without a CSO variance in place (according to City of Fitchburg records (McNamara November 23, 2022) CSO FIT072 was located at Pearl St and Townsend St, while CSO FIT024 was located at Boutelle St and Lunenburg St/Rt 2A). During the 2018/20 IR reporting cycle, the Recreational Uses were not assessed, but the AU was split into two AUs: an upstream Class A AU (MA81-99) ending at the inlet of Lovell Reservoir, Fitchburg, and a downstream Class B AU (MA81-100), running from the outlet of Lovell Reservoir to the mouth at the confluence with Pearl Hill Brook, and the presumptive *E. coli* impairment was applied to the recreational uses of both AUs (despite the fact that there were only ever two CSOs on the new downstream AU, MA81-100, and none on the upstream AU, MA81-99). Since the presumptive impairment was applied to the upstream Falulah Brook AU (MA81-99) in error, the Escherichia Coli (E. Coli) impairment is being removed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary

No bacteria data are available to assess the Secondary Contact Recreation Use for the Falulah Brook (MA81-99) and it is assessed as having Insufficient Information. The prior Escherichia Coli (E. Coli) impairment is being removed. Falulah Brook was originally (as of the 2016 IR cycle) one AU (MA81-63), running from the headwaters near Ringe Rd, Ashby to the mouth at the confluence with Pearl Hill Brook, forming the headwaters of Baker Brook. A presumptive impairment was identified for the recreational uses given the presence of two CSO discharges to the brook without a CSO variance in place (according to City of Fitchburg records (McNamara November 23, 2022) CSO FIT072 was located at Pearl St and Townsend St, while CSO FIT024 was located at Boutelle St and Lunenburg St/Rt 2A). During the 2018/20 IR reporting cycle, the Recreational Uses were not assessed, but the AU was split into two AUs: an upstream Class A AU (MA81-99) ending at the inlet of Lovell Reservoir, Fitchburg, and a downstream Class B AU (MA81-100), running from the outlet of Lovell Reservoir to the mouth at the confluence with Pearl Hill Brook, and the presumptive *E. coli* impairment was applied to the recreational uses of both AUs (despite the fact that there were only ever two CSOs on the new downstream AU, MA81-100, and none on the upstream AU, MA81-99). Since the presumptive impairment was applied to the upstream Falulah Brook AU (MA81-99) in error, the Escherichia Coli (E. Coli) impairment is being removed.

Fitchburg Reservoir (MA81043)

Location:	Ashby.
AU Type:	FRESHWATER LAKE
AU Size:	150 ACRES
Classification/Qualifier:	A: PWS, ORW

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Fitchburg Reservoir (MA81043) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Aesthetics Use for Fitchburg Reservoir (MA81043) is assessed as Fully Supporting. MassDEP staff recorded aesthetics observations as part of the MAP2 lake monitoring project in summer 2017 at two stations in Ashby, for Fitchburg Reservoir, at the northern most tip of reservoir south off Richardson Road (W2713/MAP2L-167S, n=5) and at the deep hole index station (W2712/MAP2L-167, n=3). There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, or littoral zone duckweed recorded in ten shoreline plots (n=1). During the MAP2 macrophyte mapping survey (n=1) in Aug 2017, less than 25% (1.3%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2712	MassDEP	Water Quality	Fitchburg Reservoir	[index site, Ashby]	42.648790	-71.843448
W2713	MassDEP	Water Quality	Fitchburg Reservoir	[northern most tip of reservoir south off Richardson Road, Ashby]	42.653488	-71.843929

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2712	2017	3	Aesthetic observations were made by MassDEP field sampling crews at Station W2712 (MAP2L-167) on Fitchburg Reservoir (MA81043) during 3 site visits between Jun 2017 and Aug 2017. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded. During the MAP2 macrophyte mapping survey (n=1) in Aug 2017, less than 25% (1.3%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%.
W2713	2017	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2713 (MAP2L-167S) on Fitchburg Reservoir (MA81043) during 5 site visits between May 2017 and Aug 2017. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded. During the MAP2 littoral survey (n=1), duckweed was not noted in any of the 10 shoreline plots.

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2712	Fitchburg Reservoir	2017	Aesthetics Impaired?	No	3	3

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2712	Fitchburg Reservoir	2017	Aquatic Plant Density, Overall	None	3	3
W2712	Fitchburg Reservoir	2017	Aquatic Plant Density, Whole Lake	None	1	2
W2712	Fitchburg Reservoir	2017	Aquatic Plant Density, Whole Lake	Unobservable	1	2
W2712	Fitchburg Reservoir	2017	Color	Light Yellow/Tan	2	3
W2712	Fitchburg Reservoir	2017	Color	None	1	3
W2712	Fitchburg Reservoir	2017	Duckweed Density, Whole Lake	None	2	2
W2712	Fitchburg Reservoir	2017	Objectionable Deposits	No	3	3
W2712	Fitchburg Reservoir	2017	Odor	None	3	3
W2712	Fitchburg Reservoir	2017	Scum	No	2	3
W2712	Fitchburg Reservoir	2017	Scum	Yes	1	3
W2712	Fitchburg Reservoir	2017	Turbidity	None	3	3
W2713	Fitchburg Reservoir	2017	Aesthetics Impaired?	No	5	5
W2713	Fitchburg Reservoir	2017	Color	Light Yellow/Tan	1	5
W2713	Fitchburg Reservoir	2017	Color	None	4	5
W2713	Fitchburg Reservoir	2017	Objectionable Deposits	No	5	5
W2713	Fitchburg Reservoir	2017	Odor	None	5	5
W2713	Fitchburg Reservoir	2017	Scum	No	5	5
W2713	Fitchburg Reservoir	2017	Turbidity	None	4	5
W2713	Fitchburg Reservoir	2017	Turbidity	Slightly Turbid	1	5

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Fitchburg Reservoir (MA81043) is assessed as Fully Supporting. In Fitchburg Reservoir MassDEP staff collected Secchi depth and cyanobacteria cell count data at W2712 [MAP2L-167, Index-deep hole] (2017) and cyanobacteria cell count and cyanotoxins data at W2713 [MAP2L-167S, Shoreline at northern most tip of reservoir S off Richardson Rd, Ashby] (2017). Secchi depth data indicated water clarity meeting the 1.2m (4ft) threshold at W2712 in 2017 (n=3, 3.7-5.7m). The cyanobacteria cell count did not exceed 70,000 cells/ml in any of the water samples in 2017 (n=6). Analysis of microcystins and cylindrospermopsin samples from W2713 in 2017 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L. In addition, MassDEP staff collected *E. coli* bacteria samples in Fitchburg Reservoir at shoreline station W2713 from May-Aug 2017 (n=5). Analysis of the single year limited frequency *E. coli* dataset from W2713 indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 10 CFU/100ml. *E. coli* data from W2713 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2712	MassDEP	Water Quality	Fitchburg Reservoir	[index site, Ashby]	42.648790	-71.843448
W2713	MassDEP	Water Quality	Fitchburg Reservoir	[northern most tip of reservoir south off Richardson Road, Ashby]	42.653488	-71.843929

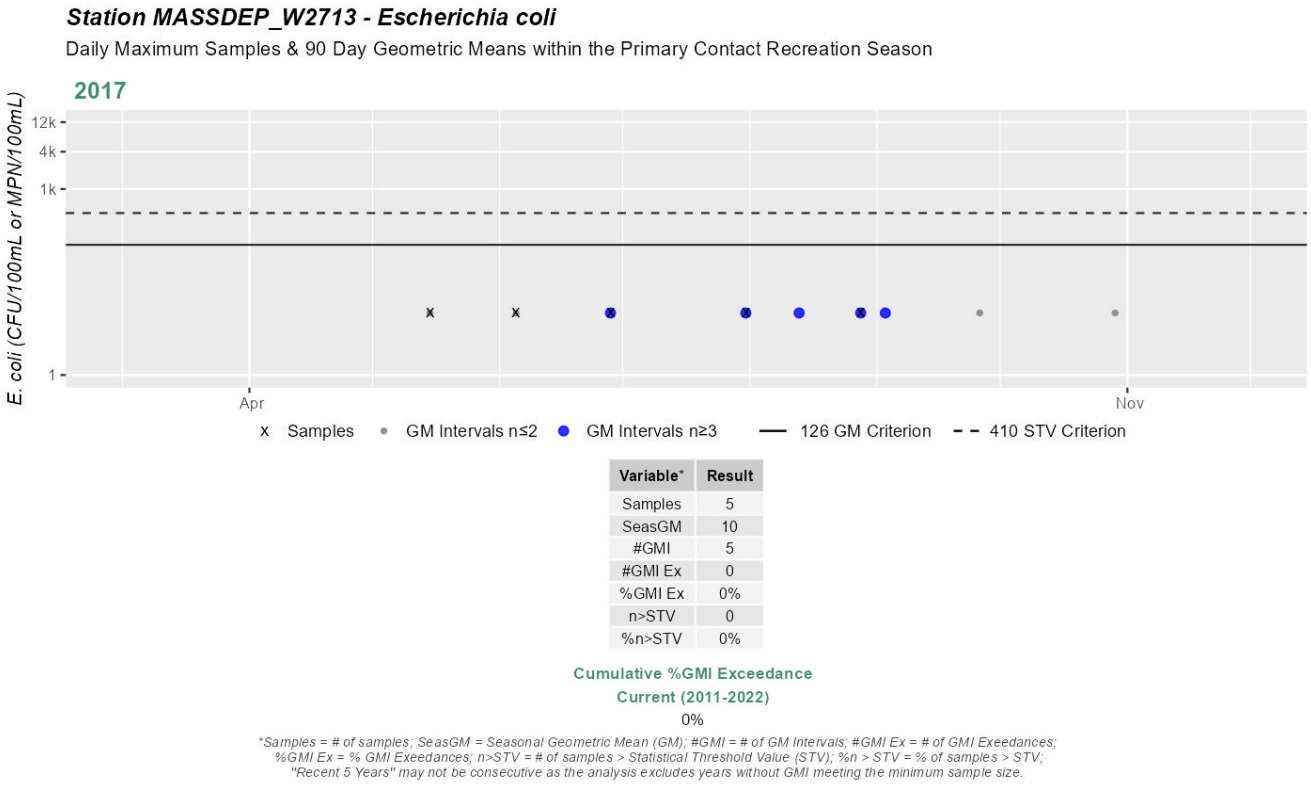
Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (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
W2713	MassDEP	E. coli	05/15/17	08/28/17	5	10	10	10



Other Indicators

Summary Statement for 2011-2022 Cyanobacteria Cell Count and Cyanotoxin Data, and Secchi Depth Data (MassDEP Undated 7) (MassDEP Undated 4)

Data Year(s)	Summary
2017	In Fitchburg Reservoir (MA81043) in 2017, MassDEP collected Secchi and cyanobacteria cell count data at W2712 [MAP2L-167, Index-deep hole], and cyanobacteria cell count and cyanotoxin data at W2713 [MAP2L-167S, Shoreline]. At station W2712 (station depth=6.3 m) the Secchi depth measurements ranged from 3.7-5.7 m (n=3) indicating water clarity meeting the 1.2 m (4 ft) threshold. The cyanobacteria cell count did not exceed 70,000 cells/mL in any of the water samples (n=6). Analysis of microcystins and cylindrospermopsin samples from the shoreline station W2713 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L.

MassDEP Cyanobacteria Cell Count Data Collected at Lakes and Impoundments (2016-2018) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Waterbody	Station Type	Data Year	Sample Count	Count >70,000 cells/mL	Exceedance Date(s)
W2712	Fitchburg Reservoir	Index	2017	3	0	NA
W2713	Fitchburg Reservoir	Shoreline	2017	3	0	NA

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Fitchburg Reservoir (MA81043) is assessed as Fully Supporting. In Fitchburg Reservoir MassDEP staff collected cyanobacteria cell count data at W2712 [MAP2L-167, Index-deep hole] (2017) and cyanobacteria cell count and cyanotoxins data at W2713 [MAP2L-167S, Shoreline at northern most tip of reservoir S off Richardson Rd, Ashby] (2017). The cyanobacteria cell count did not exceed 70,000 cells/ml in any of the water samples in 2017 (n=6). Analysis of microcystins and cylindrospermopsin samples from W2713 in 2017 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L. In addition, MassDEP staff collected *E. coli* bacteria samples in Fitchburg Reservoir at W2713 from May-Aug 2017 (n=5). Analysis of the single year limited frequency *E. coli* dataset from W2713 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 10 CFU/100ml. *E. coli* data from W2713 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2713	MassDEP	Water Quality	Fitchburg Reservoir	[northern most tip of reservoir south off Richardson Road, Ashby]	42.653488	-71.843929

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

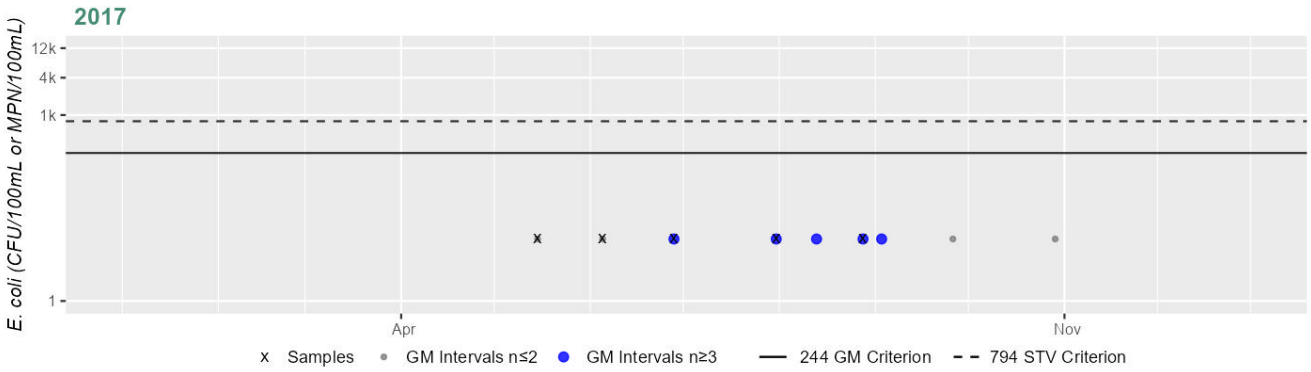
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W2713	MassDEP	E. coli	05/15/17	08/28/17	5	10	10	10

Station MASSDEP_W2713 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	10
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Flag Brook (MA81-10)

Location:	Headwaters, outlet Crocker Pond, Westminster to mouth at inlet of impoundment (Wachusett Station Pond) of North Nashua River, Fitchburg (excluding approximately 0.7 miles through Sawmill Pond segment MA81118).
AU Type:	RIVER
AU Size:	2.2 MILES
Classification/Qualifier:	B

Flag Brook (MA81-10)

Watershed Area: 12.74 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	12.74	5.89	5.83	1.88
Agriculture	1%	0.1%	0.9%	0%
Developed	12.2%	14.7%	12%	17.4%
Natural	81.9%	81.3%	78.9%	76.2%
Wetland	4.8%	4%	8.1%	6.4%
Impervious	5.4%	7.4%	5.7%	10%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	3	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary

Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Flag Brook (MA81-10) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Flag Brook (MA81-10) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Flag Brook (MA81-10) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Flag Brook (MA81-10) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MassDEP staff collected *E. coli* bacteria samples close to the downstream end of Flag Brook at W1807 [~150 ft upstream from railroad bridge crossing E of Rt. 31, Fitchburg] from May-Sep 2008 (n=6). Analysis of the historic single year limited frequency *E. coli* dataset from W1807 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 33 CFU/100ml. Historic *E. coli* data from W1807 meet 2024 CALM guidance. However, since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1807	MassDEP	Water Quality	Flag Brook	[approximately 150 feet upstream from railroad bridge crossing east of Route 31, Fitchburg]	42.558651	-71.843841

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

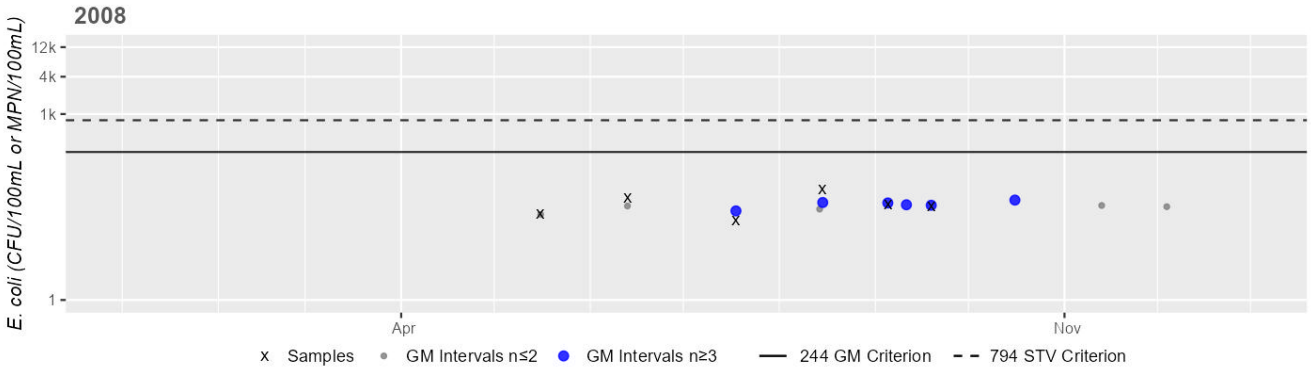
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W1807	MassDEP	E. coli	05/15/08	09/18/08	6	19	61	33

Station MASSDEP_W1807 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	33
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Flannagan Pond (MA81044)

Location:	Ayer.
AU Type:	FRESHWATER LAKE
AU Size:	80 ACRES
Classification/Qualifier:	B

No usable data were available for Flannagan Pond (MA81044) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Curly-leaf Pondweed*)	--	Unchanged
4c	4c	(Fanwort*)	--	Unchanged
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Fanwort*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Fort Pond (MA81046)

Location:	Lancaster.
AU Type:	FRESHWATER LAKE
AU Size:	76 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Dissolved Oxygen	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Dissolved Oxygen	Source Unknown (N)	X	--	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Fort Pond (MA81046) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Fort Pond (MA81046) is assessed as Fully Supporting. MassDEP staff recorded aesthetics observations as part of the MAP2 lake monitoring project in summer 2017 at two stations in Lancaster for Fort Pond, at the southwestern edge of pond, at public boat launch north off Fort Pond Road (W2714/MAP2L-168S, n=5) and at the deep hole index station (W0603/MAP2L-168, n=3). There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, or littoral zone duckweed recorded in ten shoreline plots (n=1). During the MAP2 macrophyte mapping survey (n=1) in Aug 2017, less than 25% (9.9%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0603	MassDEP	Water Quality	Fort Pond	[Lancaster]	42.523470	-71.688093
W2714	MassDEP	Water Quality	Fort Pond	[southwestern edge of pond, at public boat launch north off Fort Pond Road, Lancaster]	42.520615	-71.690573

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W0603	2017	3	Aesthetic observations were made by MassDEP field sampling crews at Station W0603 (MAP2L-168) on Fort Pond (MA81046) during 3 site visits between Jun 2017 and Aug 2017. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded. During the MAP2 macrophyte mapping survey (n=1) in Aug 2017, less than 25% (9.9%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%.
W2714	2017	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2714 (MAP2L-168S) on Fort Pond (MA81046) during 5 site visits between May 2017 and Aug 2017. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded. During the MAP2 littoral survey (n=1), duckweed was not noted in any of the 10 shoreline plots.

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W0603	Fort Pond	2017	Aesthetics Impaired?	No	3	3

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W0603	Fort Pond	2017	Aquatic Plant Density, Overall	None	2	3
W0603	Fort Pond	2017	Aquatic Plant Density, Overall	NR	1	3
W0603	Fort Pond	2017	Aquatic Plant Density, Whole Lake	None	1	2
W0603	Fort Pond	2017	Aquatic Plant Density, Whole Lake	Unobservable	1	2
W0603	Fort Pond	2017	Color	Light Yellow/Tan	2	3
W0603	Fort Pond	2017	Color	None	1	3
W0603	Fort Pond	2017	Duckweed Density, Whole Lake	None	1	2
W0603	Fort Pond	2017	Duckweed Density, Whole Lake	Unobservable	1	2
W0603	Fort Pond	2017	Objectionable Deposits	No	3	3
W0603	Fort Pond	2017	Odor	None	3	3
W0603	Fort Pond	2017	Scum	No	3	3
W0603	Fort Pond	2017	Turbidity	None	1	3
W0603	Fort Pond	2017	Turbidity	Slightly Turbid	2	3
W2714	Fort Pond	2017	Aesthetics Impaired?	No	5	5
W2714	Fort Pond	2017	Color	Light Yellow/Tan	1	5
W2714	Fort Pond	2017	Color	None	3	5
W2714	Fort Pond	2017	Color	NR	1	5
W2714	Fort Pond	2017	Objectionable Deposits	No	5	5
W2714	Fort Pond	2017	Odor	None	5	5
W2714	Fort Pond	2017	Scum	No	4	5
W2714	Fort Pond	2017	Scum	Yes	1	5
W2714	Fort Pond	2017	Turbidity	None	4	5
W2714	Fort Pond	2017	Turbidity	Slightly Turbid	1	5

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for Fort Pond (MA81046) is assessed as Fully Supporting. In Fort Pond MassDEP collected Secchi depth and cyanobacteria cell count data at W0603 [MAP2L-168, Index-deep hole] (2017) and cyanobacteria cell count and cyanotoxins data at W2714 [MAP2L-168S, Shoreline at southwestern edge of pond, at public boat launch N off Fort Pond Rd, Lancaster] (2017). Secchi depth data indicated water clarity meeting the 1.2m (4ft) threshold at W0603 in 2017 (n=3, 2.47-4.44m). The cyanobacteria cell count did not exceed 70,000 cells/ml in any of the water samples in 2017 (n=6). Analysis of microcystins and cylindrospermopsin samples from W2714 in 2017 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L. In addition, MassDEP staff collected *E. coli* bacteria samples in Fort Pond at shoreline station W2714 from May-Aug 2017 (n=5). Analysis of the single year limited frequency *E. coli* dataset from W2714 indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 10 CFU/100ml. *E. coli* data from W2714 meet 2024 CALM guidance.

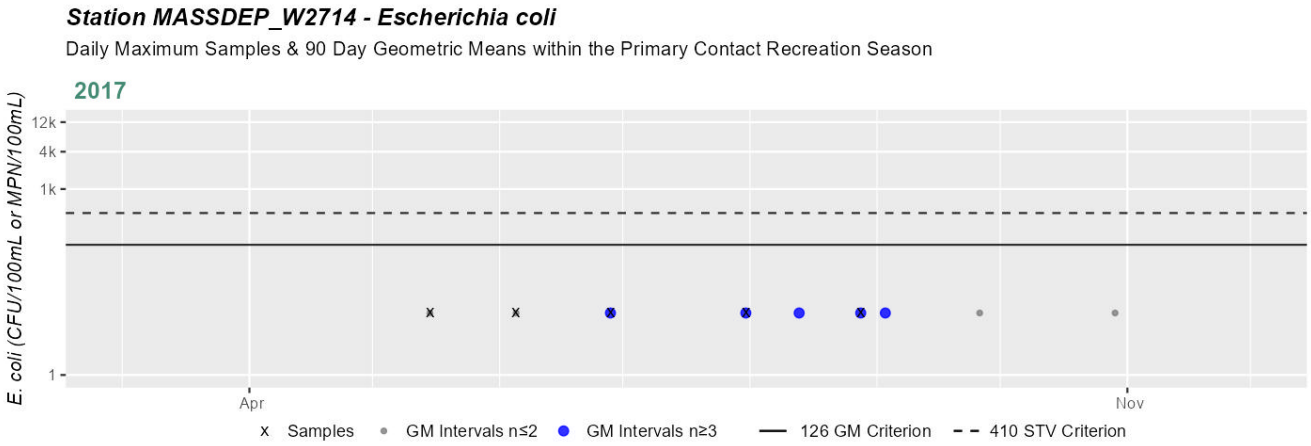
Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0603	MassDEP	Water Quality	Fort Pond	[Lancaster]	42.523470	-71.688093
W2714	MassDEP	Water Quality	Fort Pond	[southwestern edge of pond, at public boat launch north off Fort Pond Road, Lancaster]	42.520615	-71.690573

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)
(MassDEP Undated 7) (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
W2714	MassDEP	E. coli	05/15/17	08/28/17	5	10	10	10



Variable*	Result
Samples	5
SeasGM	10
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Other Indicators

Summary Statement for 2011-2022 Cyanobacteria Cell Count and Cyanotoxin Data, and Secchi Depth Data (MassDEP Undated 7) (MassDEP Undated 4)

Data Year(s)	Summary
2017	In Fort Pond (MA81046) in 2017, MassDEP collected Secchi and cyanobacteria cell count data at W0603 [MAP2L-168, Index-deep hole], and cyanobacteria cell count and cyanotoxin data at W2714 [MAP2L-168S, Shoreline]. At station W0603 (station depth=14.8 m) the Secchi depth measurements ranged from 2.47-4.44 m (n=3) indicating water clarity meeting the 1.2 m (4 ft) threshold. The cyanobacteria cell count did not exceed 70,000 cells/mL in any of the water samples (n=6). Analysis of microcystins and cylindrospermopsin samples from the shoreline station W2714 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L.

MassDEP Cyanobacteria Cell Count Data Collected at Lakes and Impoundments (2016-2018) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Waterbody	Station Type	Data Year	Sample Count	Count >70,000 cells/mL	Exceedance Date(s)
W0603	Fort Pond	Index	2017	3	0	NA
W2714	Fort Pond	Shoreline	2017	3	0	NA

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Fort Pond (MA81046) is assessed as Fully Supporting. In Fort Pond MassDEP staff collected cyanobacteria cell count data at W0603 [MAP2L-168, Index-deep hole] (2017) and cyanobacteria cell count and cyanotoxins data at W2714 [MAP2L-168S, Shoreline at southwestern edge of pond, at public boat launch N off Fort Pond Rd, Lancaster] (2017). The cyanobacteria cell count did not exceed 70,000 cells/ml in any of the water samples in 2017 (n=6). Analysis of microcystins and cylindrospermopsin samples from W2714 in 2017 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L. In addition, MassDEP staff collected *E. coli* bacteria samples in Fort Pond at shoreline station W2714 from May-Aug 2017 (n=5). Analysis of the single year limited frequency *E. coli* dataset from W2714 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 10 CFU/100ml. *E. coli* data from W2714 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2714	MassDEP	Water Quality	Fort Pond	[southwestern edge of pond, at public boat launch north off Fort Pond Road, Lancaster]	42.520615	-71.690573

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

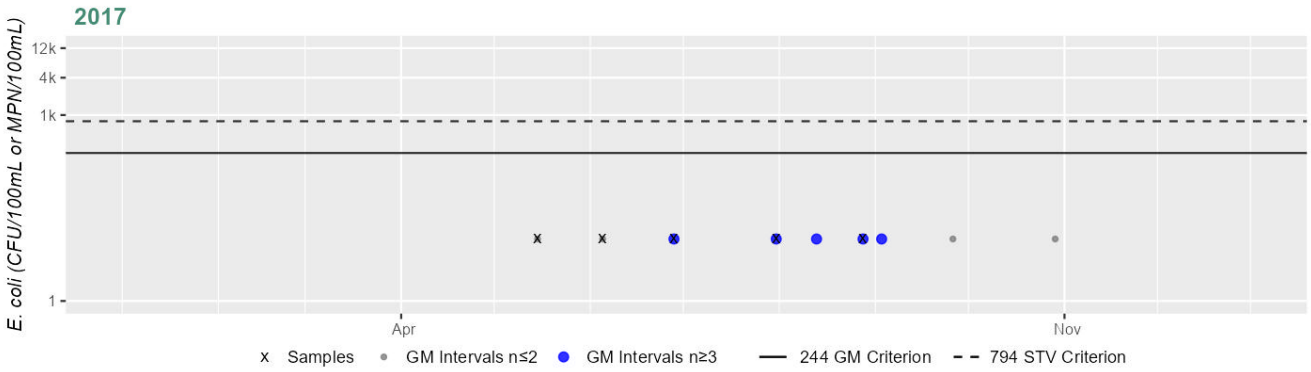
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W2714	MassDEP	E. coli	05/15/17	08/28/17	5	10	10	10

Station MASSDEP_W2714 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	10
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

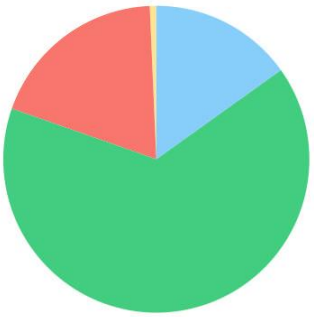
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

French Brook (MA81-48)

Location:	Headwaters, west of Linden Street, Boylston to mouth at inlet Wachusett Reservoir (Andrews Harbor), Boylston.
AU Type:	RIVER
AU Size:	1.4 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

French Brook (MA81-48)

Watershed Area: 2.01 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	2.01	2.01	1.27	1.27
Agriculture	0.7%	0.7%	0.7%	0.7%
Developed	19%	19%	14.7%	14.7%
Natural	65.2%	65.2%	61.8%	61.8%
Wetland	15.1%	15.1%	22.7%	22.7%
Impervious	4.8%	4.8%	3.4%	3.4%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	5	Escherichia Coli (E. Coli)	--	Added

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for French Brook (MA81-48) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for French Brook (MA81-48) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for French Brook (MA81-48) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at 1 station in 2018-2022. MA DCR (DCRWS) staff collected *E. coli* bacteria samples close to the downstream end of French Brook at DCRWS_MD01 [downstream of Rt. 70, Boylston MA] from 2011-2022 (n=11-31/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from DCRWS_MD01 indicated 4 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2018-2019 and 2021-2022, 22-73%), 2 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2021 and 2022, n=2 & 3), and cumulatively across years 41% of intervals had GMs >126 CFU/100ml. *E. coli* data from DCRWS_MD01 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD01	MA DCR Division of Water Supply Protection	Water Quality	FRENCH BROOK	DOWNSTREAM OF RT. 70, BOYLSTON MA	42.366766	-71.729000

Bacteria Data

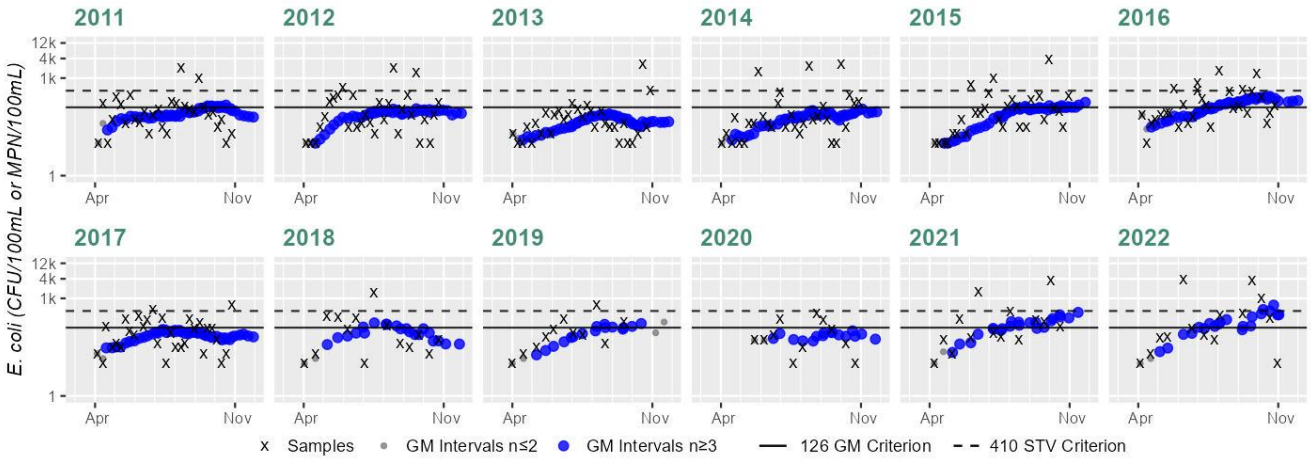
Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 2)

[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
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	04/06/11	11/22/11	30	10	2000	74
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	04/04/12	12/05/12	30	10	2000	74
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	04/02/13	12/04/13	31	10	2600	44
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	04/02/14	12/17/14	31	10	2610	61
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	04/09/15	11/04/15	29	10	3650	77
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	04/06/16	11/30/16	29	10	1720	133
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	04/04/17	12/19/17	30	10	629	69
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	04/02/18	10/24/18	14	10	1520	71
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	04/01/19	09/18/19	11	10	624	72
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	05/21/20	12/15/20	11	10	336	61
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	04/08/21	10/18/21	14	10	3450	132
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	04/04/22	10/31/22	14	10	3870	141

Station DCRWS_MD01 & MASSDEP_W2066 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	30
SeasGM	74
#GMI	55
#GMI Ex	8
%GMI Ex	14%
n>STV	2
%n>STV	6%

Variable*	Result
Samples	30
SeasGM	74
#GMI	50
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	31
SeasGM	44
#GMI	55
#GMI Ex	2
%GMI Ex	3%
n>STV	2
%n>STV	6%

Variable*	Result
Samples	31
SeasGM	61
#GMI	51
#GMI Ex	4
%GMI Ex	7%
n>STV	3
%n>STV	9%

Variable*	Result
Samples	29
SeasGM	77
#GMI	51
#GMI Ex	12
%GMI Ex	23%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	29
SeasGM	133
#GMI	51
#GMI Ex	30
%GMI Ex	58%
n>STV	5
%n>STV	17%

Variable*	Result
Samples	30
SeasGM	69
#GMI	52
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	6%

Variable*	Result
Samples	14
SeasGM	71
#GMI	22
#GMI Ex	5
%GMI Ex	22%
n>STV	1
%n>STV	7%

Variable*	Result
Samples	11
SeasGM	72
#GMI	16
#GMI Ex	6
%GMI Ex	37%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	11
SeasGM	61
#GMI	17
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	14
SeasGM	132
#GMI	23
#GMI Ex	14
%GMI Ex	60%
n>STV	2
%n>STV	14%

Variable*	Result
Samples	14
SeasGM	141
#GMI	23
#GMI Ex	17
%GMI Ex	73%
n>STV	3
%n>STV	21%

Cumulative %GMI Exceedance Current (2011-2022)
21%

Cumulative %GMI Exceedance Current (Recent 5 Years)
41%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for French Brook (MA81-48) continues to be assessed as Fully Supporting. MA DCR (DCRWS) and MassDEP staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in French Brook at combined station DCRWS_MD01 & W2066 [~500 ft upstream from the inlet of Wachusett Reservoir, W of Main St Circle, Boylston & downstream of RT. 70, BOYLSTON MA] from 2008-2010 (historic n=45-53/yr) and 2011-2022 (current n=17-51/yr). Since bacteria data from the historic IR window are indicative of poor water quality conditions, only the analysis from the current IR window will be summarized here: Analysis of the recent five years of the multi-year high frequency *E. coli* dataset from DCRWS_MD01 & W2066 indicated 1 out of 5 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml (2022, 20%), 1 yr had >10% of samples exceed the 794 CFU/100ml STV (2022, 13%), and cumulatively across years 6% of intervals had GMs >244 CFU/100ml. *E. coli* data from DCRWS_MD01 & W2066 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD01	MA DCR Division of Water Supply Protection	Water Quality	FRENCH BROOK	DOWNSTREAM OF RT. 70, BOYLSTON MA	42.366766	-71.729000
W2066	MassDEP	Water Quality	French Brook	[approximately 500 feet upstream from the inlet of Wachusett Reservoir, west of Main Street Circle, Boylston]	42.366699	-71.728927

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1) (MassDEP Undated 7) (MassDEP Undated 3)

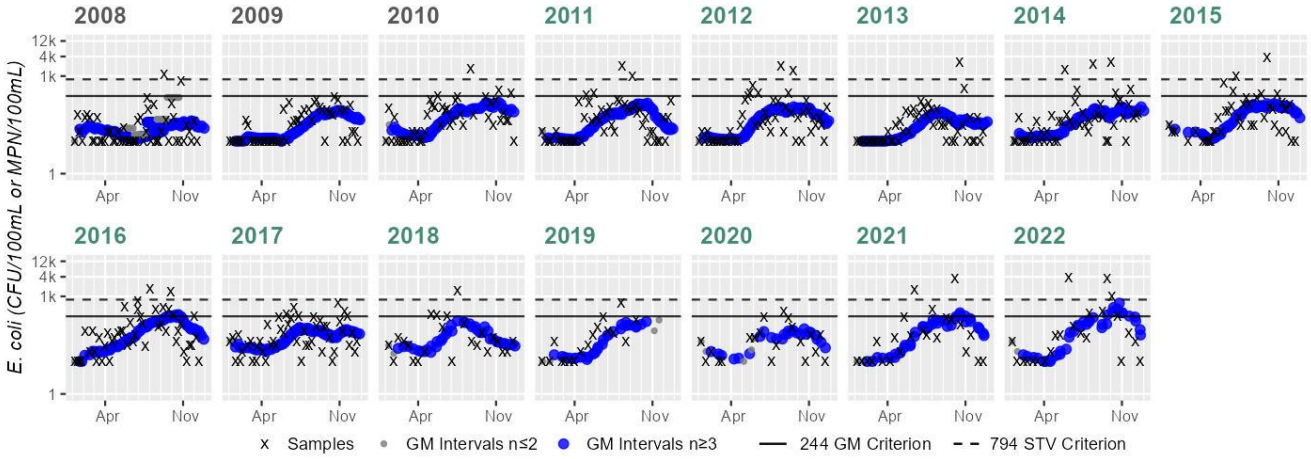
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	01/07/08	12/08/08	50	10	1110	21
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	01/05/09	12/22/09	50	10	222	27
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	01/04/10	12/20/10	45	10	1650	47
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	01/03/11	12/22/11	50	10	2000	39

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	01/04/12	12/19/12	51	10	2000	41
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	01/08/13	12/19/13	50	10	2600	27
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	01/09/14	12/17/14	50	10	2610	44
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	01/06/15	12/17/15	41	10	3650	57
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	01/07/16	12/14/16	48	10	1720	67
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	01/05/17	12/19/17	50	10	629	55
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	01/10/18	12/17/18	24	10	1520	46
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	01/03/19	09/18/19	17	10	624	39
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	01/09/20	12/15/20	20	10	336	37
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	01/07/21	12/20/21	24	10	3450	53
DCRWS_MD01	MA DCR Division of Water Supply Protection	E. coli	01/03/22	12/22/22	23	10	3870	61
W2066	MassDEP	E. coli	05/22/08	07/24/08	3	10	220	38

Station DCRWS_MD01 & MASSDEP_W2066 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	53
SeasGM	22
#GMI	104
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	1%

Variable*	Result
Samples	50
SeasGM	27
#GMI	89
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	45
SeasGM	47
#GMI	77
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	50
SeasGM	39
#GMI	92
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	51
SeasGM	41
#GMI	87
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	3%

Variable*	Result
Samples	50
SeasGM	27
#GMI	88
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	50
SeasGM	44
#GMI	80
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	6%

Variable*	Result
Samples	41
SeasGM	57
#GMI	73
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	48
SeasGM	67
#GMI	80
#GMI Ex	6
%GMI Ex	7%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	50
SeasGM	55
#GMI	87
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	24
SeasGM	46
#GMI	42
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	17
SeasGM	39
#GMI	28
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	37
#GMI	29
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	24
SeasGM	53
#GMI	43
#GMI Ex	3
%GMI Ex	6%
n>STV	2
%n>STV	8%

Variable*	Result
Samples	23
SeasGM	61
#GMI	40
#GMI Ex	8
%GMI Ex	20%
n>STV	3
%n>STV	13%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

Cumulative %GMI Exceedance
Current (2011-2022)
2%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
6%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Gates Brook (MA81-24)

Location:	Headwaters west of Prospect Street, West Boylston to mouth at inlet Wachusett Reservoir (Gates Cove), West Boylston.
AU Type:	RIVER
AU Size:	3.4 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Gates Brook (MA81-24)

Watershed Area: 3.13 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	3.13	3.13	2.08	2.08
Agriculture	4.1%	4.1%	3.8%	3.8%
Developed	39%	39%	36.6%	36.6%
Natural	46.6%	46.6%	44.8%	44.8%
Wetland	10.4%	10.4%	14.7%	14.7%
Impervious	17.8%	17.8%	17.5%	17.5%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Chloride	--	Unchanged
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
5	5	Fecal Coliform	R1_MA_2024_04	Changed

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Chloride	Highway/Road/Bridge Runoff (Non-construction Related) (Y)	X	--	--	--	--
Chloride	Impervious Surface/Parking Lot Runoff (Y)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Chloride	Source Unknown (N)	X	--	--	--	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
Fecal Coliform	Source Unknown (N)	--	--	--	X	--

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Gates Brook (MA81-24) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Gates Brook (MA81-24) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Gates Brook (MA81-24) continues to be assessed as Not Supporting. The prior Escherichia Coli (E. Coli) impairment is being carried forward based on bacteria data not meeting the threshold at 6 stations in 2011-2013 & 2018-2022. The prior Fecal Coliform impairment is also being carried forward. MA DCR (DCRWS) staff collected *E. coli* bacteria samples in Gates Brook from 2011-2022 at 6 stations. Samples were collected from the following stations/sample years from upstream to downstream: a quarter of the way down the AU at DCRWS_MD75 [downstream of Woodland St, W Boylston] from 2011-2013 and 2017 (n=2-31/yr), a little further down at DCRWS_MD74 [upstream of Lombard Ave, W Boylston] from 2011-2013 and 2017 (n=2-30/yr), halfway down at DCRWS_MD73 [upstream of Pierce St, W Boylston] from 2011-2022 (n=11-31/yr), two-thirds of the way down at DCRWS_MD72 [upstream of Worcester St Behind Walmart, W Boylston] from Apr-Nov 2011 (n=30), three-quarters of the way down at DCRWS_MD71 [downstream of Rt. 140, W Boylston] from 2011-2013 (n=30-31/yr), and the downstream end at DCRWS_MD04 [downstream of Bridge Inside Gate 25, W Boylston] from 2011-2022 (n=11-34/yr). Analysis of the multi-year high frequency *E. coli* dataset from DCRWS_MD75 indicated 3 out of 3 sufficient data yrs had intervals where >10% of the GMs were >126 CFU/100ml (2011-2013, 52-57%), 2 yrs had >10% of samples exceed the 410 CFU/100ml STV (2011 and 2012, 10 & 30%), and cumulatively across years 54% of intervals had GMs >126 CFU/100ml. Analysis of the multi-year high frequency *E. coli* dataset from DCRWS_MD74 indicated 3 out of 3 sufficient data yrs had intervals where >10% of the GMs were >126 CFU/100ml (2011-2013, 87-100%), 3 yrs had >10% of samples exceed the 410 CFU/100ml STV (2011-2013, 30-70%), and cumulatively across years 95% of intervals had GMs >126 CFU/100ml. Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from DCRWS_MD73 indicated 5 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2018-2022, 88-100%), 4 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2019-2022, n=2-7), and cumulatively across years 96% of intervals had GMs >126 CFU/100ml. Analysis of the single year high frequency *E. coli* dataset from DCRWS_MD72 indicated 45% of intervals had GMs >126 CFU/100ml and 13% of samples exceeded the 410 CFU/100ml STV. Analysis of the multi-year high frequency *E. coli* dataset from DCRWS_MD71 indicated 2 out of 3 sufficient data yrs had intervals where >10% of the GMs were >126 CFU/100ml (2011 and 2012, 38 & 66%), 2 yrs had >10% of samples exceed the 410 CFU/100ml STV (2011 and 2012, 13 & 10%), and cumulatively across years 33% of intervals had GMs >126 CFU/100ml. Analysis of the recent five years of the multi-year moderate frequency *E. coli* dataset from DCRWS_MD04 indicated 3 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2019 and 2021-2022, 24-73%), 2 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2021 and 2022, n=3 & 2), and cumulatively across years 27% of intervals had GMs >126 CFU/100ml. *E. coli* data from all 6 stations are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD04	MA DCR Division of Water Supply Protection	Water Quality	GATES BROOK	DOWNSTREAM OF BRIDGE INSIDE GATE 25, WEST BOYLSTON	42.364955	-71.775786
DCRWS_MD71	MA DCR Division of Water Supply Protection	Water Quality	GATES BROOK	DOWNSTREAM OF RT. 140, WEST BOYLSTON	42.358196	-71.779102
DCRWS_MD72	MA DCR Division of Water Supply Protection	Water Quality	GATES BROOK	UPSTREAM OF WORCESTER ST BEHIND WALMART, WEST BOYLSTON	42.354268	-71.781701
DCRWS_MD73	MA DCR Division of Water Supply Protection	Water Quality	GATES BROOK	UPSTREAM OF PIERCE ST, WEST BOYLSTON	42.348116	-71.783438
DCRWS_MD74	MA DCR Division of Water Supply Protection	Water Quality	GATES BROOK	UPSTREAM OF LOMBARD AVE, WEST BOYLSTON	42.342201	-71.786530
DCRWS_MD75	MA DCR Division of Water Supply Protection	Water Quality	GATES BROOK	DOWNSTREAM OF WOODLAND ST, WEST BOYLSTON	42.340086	-71.791791

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 2)

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

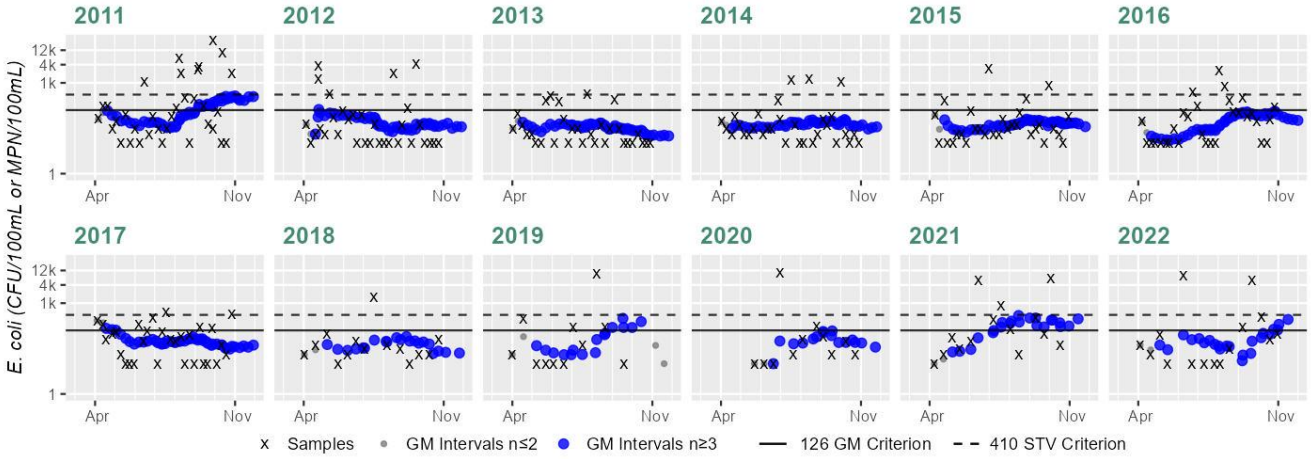
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	04/06/11	11/22/11	34	10	24200	124
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	04/04/12	12/05/12	32	10	4110	44
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	04/02/13	12/04/13	31	10	410	28
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	04/02/14	12/17/14	31	10	1350	39
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	04/09/15	11/04/15	30	10	2910	40
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	04/06/16	11/30/16	30	10	2480	46

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	04/04/17	12/19/17	30	10	512	51
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	04/02/18	10/24/18	14	10	1560	37
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	04/01/19	09/18/19	11	10	9210	50
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	05/21/20	12/15/20	11	10	9800	48
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	04/08/21	10/18/21	14	10	6490	135
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	04/04/22	10/31/22	15	10	8160	68
DCRWS_MD71	MA DCR Division of Water Supply Protection	E. coli	04/06/11	11/22/11	30	10	2000	101
DCRWS_MD71	MA DCR Division of Water Supply Protection	E. coli	04/04/12	12/05/12	30	10	4352	135
DCRWS_MD71	MA DCR Division of Water Supply Protection	E. coli	04/02/13	12/04/13	31	10	487	54
DCRWS_MD72	MA DCR Division of Water Supply Protection	E. coli	04/06/11	11/22/11	30	10	2000	122
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	04/06/11	11/22/11	30	10	2060	244
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	04/04/12	12/05/12	30	63	4106	352
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	04/02/13	12/04/13	31	10	1420	135
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	04/02/14	12/17/14	31	10	8660	156
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	04/09/15	11/04/15	30	10	1780	191
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	04/06/16	11/30/16	31	10	6130	168
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	04/04/17	12/19/17	31	10	1320	177

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	04/02/18	10/24/18	14	73	6490	248
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	04/01/19	09/18/19	11	52	6130	236
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	05/21/20	12/15/20	11	41	24200	331
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	04/08/21	10/18/21	14	63	8660	529
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	04/04/22	10/31/22	15	10	17300	256
DCRWS_MD74	MA DCR Division of Water Supply Protection	E. coli	04/06/11	11/22/11	30	86	2000	361
DCRWS_MD74	MA DCR Division of Water Supply Protection	E. coli	04/04/12	12/05/12	30	164	2613	628
DCRWS_MD74	MA DCR Division of Water Supply Protection	E. coli	04/02/13	12/04/13	30	10	1610	187
DCRWS_MD74	MA DCR Division of Water Supply Protection	E. coli	06/14/17	06/15/17	2	292	295	293
DCRWS_MD75	MA DCR Division of Water Supply Protection	E. coli	04/06/11	11/22/11	30	10	1650	118
DCRWS_MD75	MA DCR Division of Water Supply Protection	E. coli	04/04/12	12/05/12	30	10	2760	161
DCRWS_MD75	MA DCR Division of Water Supply Protection	E. coli	04/02/13	12/04/13	31	10	880	113
DCRWS_MD75	MA DCR Division of Water Supply Protection	E. coli	06/14/17	06/15/17	2	448	546	494

Station DCRWS_MD04 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	34
SeasGM	124
#GMI	62
#GMI Ex	32
%GMI Ex	51%
n>STV	8
%n>STV	23%

Variable*	Result
Samples	32
SeasGM	44
#GMI	54
#GMI Ex	1
%GMI Ex	1%
n>STV	5
%n>STV	15%

Variable*	Result
Samples	31
SeasGM	28
#GMI	55
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	31
SeasGM	39
#GMI	51
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	9%

Variable*	Result
Samples	30
SeasGM	40
#GMI	53
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	6%

Variable*	Result
Samples	30
SeasGM	46
#GMI	54
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	30
SeasGM	51
#GMI	52
#GMI Ex	3
%GMI Ex	5%
n>STV	2
%n>STV	6%

Variable*	Result
Samples	14
SeasGM	37
#GMI	22
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	7%

Variable*	Result
Samples	11
SeasGM	50
#GMI	16
#GMI Ex	5
%GMI Ex	31%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	11
SeasGM	48
#GMI	17
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	14
SeasGM	135
#GMI	23
#GMI Ex	17
%GMI Ex	73%
n>STV	3
%n>STV	21%

Variable*	Result
Samples	15
SeasGM	68
#GMI	25
#GMI Ex	6
%GMI Ex	24%
n>STV	2
%n>STV	13%

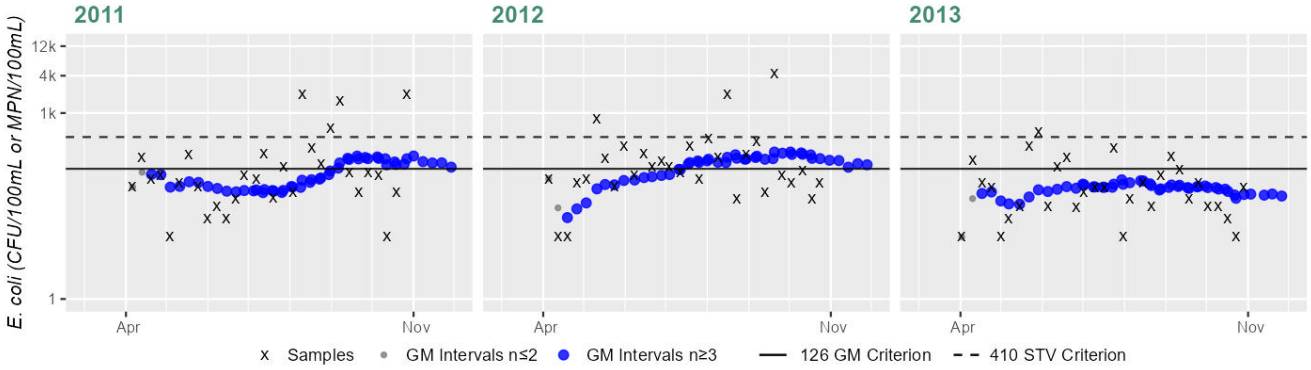
Cumulative %GMI Exceedance Current (2011-2022)
13%

Cumulative %GMI Exceedance Current (Recent 5 Years)
27%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station DCRWS_MD71 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	30
SeasGM	101
#GMI	55
#GMI Ex	21
%GMI Ex	38%
n>STV	4
%n>STV	13%

Variable*	Result
Samples	30
SeasGM	135
#GMI	50
#GMI Ex	33
%GMI Ex	66%
n>STV	3
%n>STV	10%

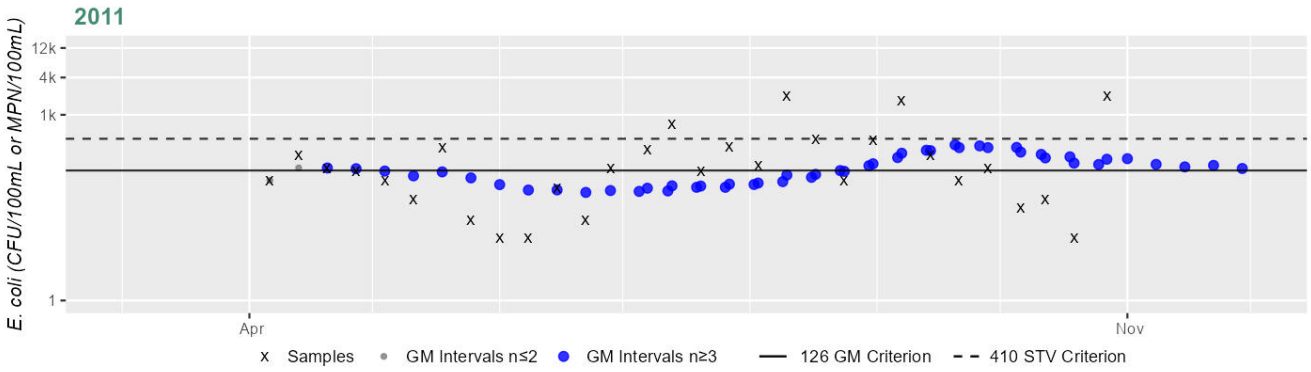
Variable*	Result
Samples	31
SeasGM	54
#GMI	55
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	3%

Cumulative %GMI Exceedance
Current (2011-2022)
33%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station DCRWS_MD72 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



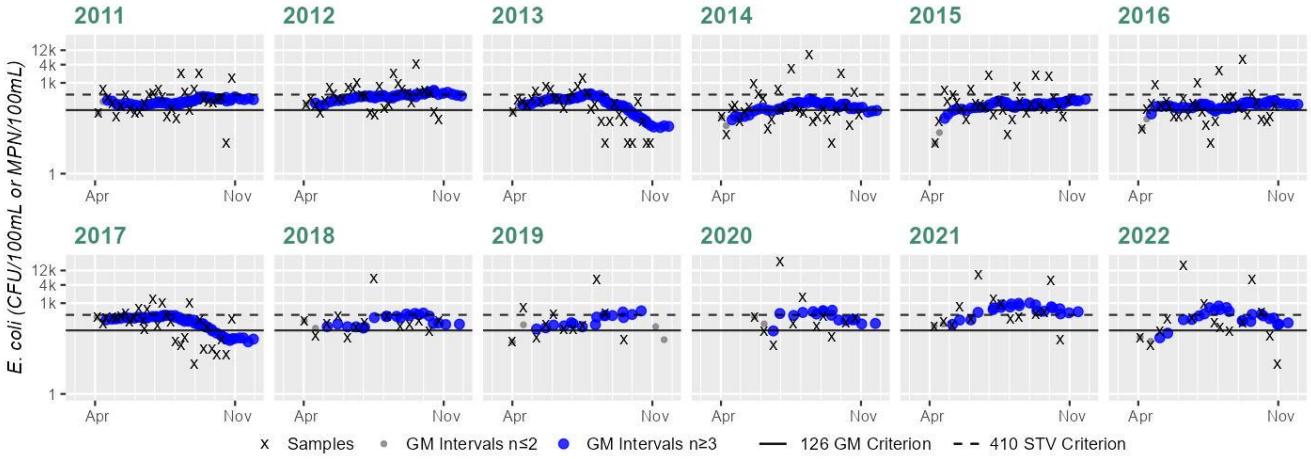
Variable*	Result
Samples	30
SeasGM	122
#GMI	55
#GMI Ex	25
%GMI Ex	45%
n>STV	4
%n>STV	13%

Cumulative %GMI Exceedance
Current (2011-2022)
45%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station DCRWS_MD73 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	30
SeasGM	244
#GMI	55
#GMI Ex	55
%GMI Ex	100%
n>STV	8
%n>STV	26%

Variable*	Result
Samples	30
SeasGM	352
#GMI	50
#GMI Ex	50
%GMI Ex	100%
n>STV	14
%n>STV	46%

Variable*	Result
Samples	31
SeasGM	135
#GMI	55
#GMI Ex	35
%GMI Ex	63%
n>STV	7
%n>STV	22%

Variable*	Result
Samples	31
SeasGM	156
#GMI	51
#GMI Ex	39
%GMI Ex	76%
n>STV	7
%n>STV	22%

Variable*	Result
Samples	30
SeasGM	191
#GMI	53
#GMI Ex	49
%GMI Ex	92%
n>STV	6
%n>STV	20%

Variable*	Result
Samples	31
SeasGM	168
#GMI	55
#GMI Ex	47
%GMI Ex	85%
n>STV	5
%n>STV	16%

Variable*	Result
Samples	31
SeasGM	177
#GMI	54
#GMI Ex	36
%GMI Ex	66%
n>STV	6
%n>STV	19%

Variable*	Result
Samples	14
SeasGM	248
#GMI	22
#GMI Ex	22
%GMI Ex	100%
n>STV	1
%n>STV	7%

Variable*	Result
Samples	11
SeasGM	236
#GMI	16
#GMI Ex	16
%GMI Ex	100%
n>STV	4
%n>STV	36%

Variable*	Result
Samples	11
SeasGM	331
#GMI	17
#GMI Ex	16
%GMI Ex	94%
n>STV	2
%n>STV	18%

Variable*	Result
Samples	14
SeasGM	529
#GMI	23
#GMI Ex	23
%GMI Ex	100%
n>STV	7
%n>STV	50%

Variable*	Result
Samples	15
SeasGM	256
#GMI	25
#GMI Ex	22
%GMI Ex	88%
n>STV	4
%n>STV	26%

Cumulative %GMI Exceedance Current (2011-2022)

86%

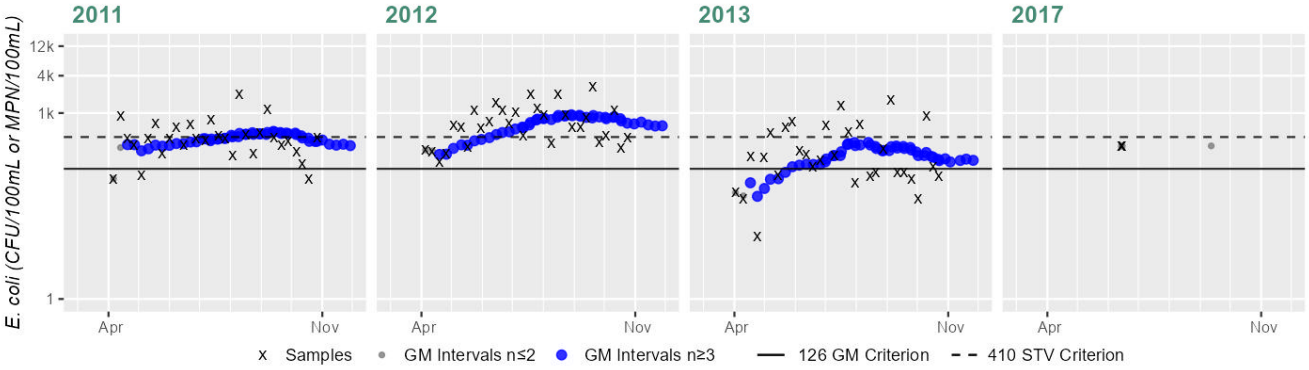
Cumulative %GMI Exceedance Current (Recent 5 Years)

96%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station DCRWS_MD74 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	30
SeasGM	361
#GMI	55
#GMI Ex	55
%GMI Ex	100%
n>STV	10
%n>STV	33%

Variable*	Result
Samples	30
SeasGM	628
#GMI	50
#GMI Ex	50
%GMI Ex	100%
n>STV	21
%n>STV	70%

Variable*	Result
Samples	30
SeasGM	187
#GMI	54
#GMI Ex	47
%GMI Ex	87%
n>STV	9
%n>STV	30%

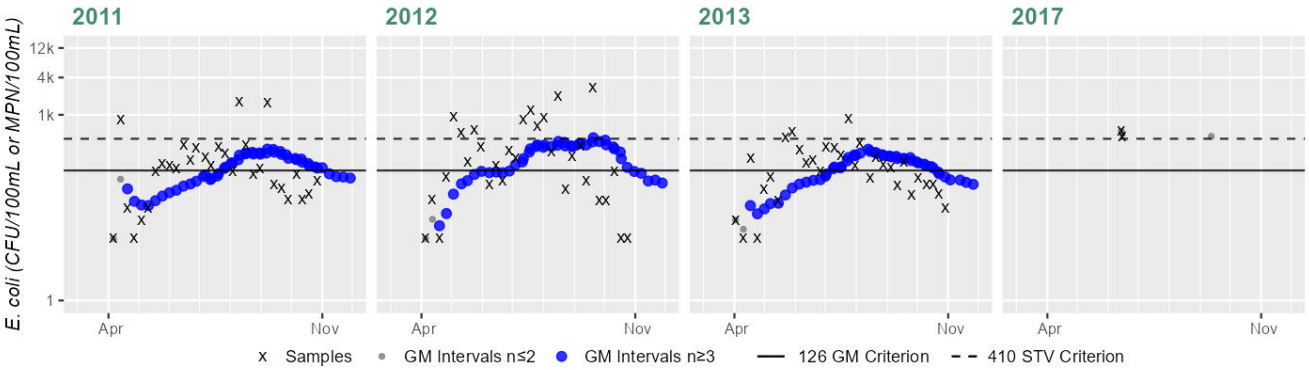
Variable*	Result
Samples	2
SeasGM	293
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
95%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station DCRWS_MD75 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	30
SeasGM	118
#GMI	55
#GMI Ex	29
%GMI Ex	52%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	30
SeasGM	161
#GMI	50
#GMI Ex	29
%GMI Ex	57%
n>STV	9
%n>STV	30%

Variable*	Result
Samples	31
SeasGM	113
#GMI	55
#GMI Ex	29
%GMI Ex	52%
n>STV	3
%n>STV	9%

Variable*	Result
Samples	2
SeasGM	494
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	100%

Cumulative %GMI Exceedance
Current (2011-2022)
54%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Gates Brook (MA81-24) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at 3 stations in 2011-2013, 2015 & 2018-2022. MA DCR (DCRWS) and MassDEP staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in Gates Brook from 2008-2022 at 7 stations. Samples were collected from the following stations/sample years from upstream to downstream: a quarter of the way down the AU at DCRWS_MD75 [downstream of Woodland St, W Boylston] from 2008-2010 (historic n=49-51/yr), 2011-2013, 2015, and 2017 (current n=2-51/yr), a little further down at DCRWS_MD74 [upstream of Lombard Ave, W Boylston] from 2008-2010 (historic n=49-51/yr), 2011-2013 and 2017 (current n=2-50/yr), halfway down at DCRWS_MD73 [upstream of Pierce St, W Boylston] from 2008-2010 (historic n=49-51/yr) and 2011-2022 (current n=17-51/yr), two-thirds of the way down at DCRWS_MD72 [upstream of Worcester St Behind Walmart, W Boylston] from 2008-2010 (historic n=49-51/yr) and Jan-Dec 2011 (current n=50), three-quarters of the way down at DCRWS_MD71 [downstream of Rt. 140, W Boylston] from 2008-2010 (historic n=47-51/yr), 2011-2013 and 2015 (current n=5-51/yr), the downstream end at W1817 [~600 ft from confluence with Wachusett Reservoir (Gates Cove), W Boylston] from May-Aug 2008 (n=4), and DCRWS_MD04 [downstream of Bridge Inside Gate 25, W Boylston] from 2008-2010 (historic n=48-51/yr) and 2011-2022 (current n=17-56/yr). Analysis of the multi-year high frequency *E. coli* dataset from DCRWS_MD75 indicated 2 out of 4 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml (2012 and 2015, 27 & 80%), 2 yrs had >10% of samples exceed the 794 CFU/100ml STV (2012 and 2015, 11 & 60%), and cumulatively across years 13% of intervals had GMs >244 CFU/100ml. Analysis of the multi-year high frequency *E. coli* dataset from DCRWS_MD74 indicated 3 out of 3 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml (2011-2013, 21-70%), 2 yrs had >10% of samples exceed the 794 CFU/100ml STV (2011 and 2012, 10 & 26%), and cumulatively across years 48% of intervals had GMs >244 CFU/100ml. Analysis of the recent five years of this multi-year high frequency *E. coli* dataset from DCRWS_MD73 indicated 5 out of 5 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml (2018-2022, 26-65%), 3 yrs had >10% of samples exceed the 794 CFU/100ml STV (2020-2022, 10-16%), and cumulatively across years 42% of intervals had GMs >244 CFU/100ml. Analysis of the single year high frequency *E. coli* dataset from DCRWS_MD72 indicated 10% of intervals had GMs >244 CFU/100ml and 6% of samples exceeded the 794 CFU/100ml STV. Analysis of the multi-year high frequency *E. coli* dataset from DCRWS_MD71 indicated 1 out of 4 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml (2015, 80%), 1 yr had >10% of samples exceed the 794 CFU/100ml STV (2015, 40%), and cumulatively across years 2% of intervals had GMs >244 CFU/100ml. Analysis of the recent five years of this multi-year high frequency *E. coli* dataset from DCRWS_MD04 indicated 1 out of 5 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml (2021, 13%), 1 yr had >10% of samples exceed the 794 CFU/100ml STV (2021, 12%), and cumulatively across years 4% of intervals had GMs >244 CFU/100ml. While *E. coli* data from DCRWS_MD72, DCRWS_MD71, and DCRWS_MD04 meet 2024 CALM guidance, *E. coli* data from DCRWS_MD75, DCRWS_MD74, and DCRWS_MD73 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD04	MA DCR Division of Water Supply Protection	Water Quality	GATES BROOK	DOWNSTREAM OF BRIDGE INSIDE GATE 25, WEST BOYLSTON	42.364955	-71.775786
DCRWS_MD71	MA DCR Division of Water Supply Protection	Water Quality	GATES BROOK	DOWNSTREAM OF RT. 140, WEST BOYLSTON	42.358196	-71.779102
DCRWS_MD72	MA DCR Division of Water Supply Protection	Water Quality	GATES BROOK	UPSTREAM OF WORCESTER ST BEHIND WALMART, WEST BOYLSTON	42.354268	-71.781701
DCRWS_MD73	MA DCR Division of Water Supply Protection	Water Quality	GATES BROOK	UPSTREAM OF PIERCE ST, WEST BOYLSTON	42.348116	-71.783438
DCRWS_MD74	MA DCR Division of Water Supply Protection	Water Quality	GATES BROOK	UPSTREAM OF LOMBARD AVE, WEST BOYLSTON	42.342201	-71.786530
DCRWS_MD75	MA DCR Division of Water Supply Protection	Water Quality	GATES BROOK	DOWNSTREAM OF WOODLAND ST, WEST BOYLSTON	42.340086	-71.791791
W1817	MassDEP	Water Quality	Gates Brook	[approximately 600 feet from confluence with Wachusett Reservoir (Gates Cove), West Boylston]	42.364151	-71.775807

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1) (MassDEP Undated 7) (MassDEP Undated 3)

[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
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	01/07/08	12/08/08	48	10	2250	35

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	01/05/09	12/22/09	50	10	1730	30
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	01/04/10	12/20/10	51	10	1650	34
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	01/03/11	12/22/11	56	10	24200	98
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	01/04/12	12/19/12	54	10	4110	41
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	01/08/13	12/19/13	50	10	479	31
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	01/09/14	12/17/14	50	10	1350	34
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	01/06/15	12/17/15	47	10	2910	42
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	01/07/16	12/14/16	49	10	2480	41
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	01/05/17	12/19/17	50	10	512	50
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	01/10/18	12/17/18	24	10	1560	44
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	01/03/19	09/18/19	17	10	9210	34
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	01/09/20	12/15/20	20	10	9800	50
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	01/07/21	12/20/21	24	10	6490	84
DCRWS_MD04	MA DCR Division of Water Supply Protection	E. coli	01/03/22	12/22/22	24	10	8160	60
DCRWS_MD71	MA DCR Division of Water Supply Protection	E. coli	01/07/08	12/08/08	47	10	1860	63
DCRWS_MD71	MA DCR Division of Water Supply Protection	E. coli	01/05/09	12/22/09	51	10	2060	49
DCRWS_MD71	MA DCR Division of Water Supply Protection	E. coli	01/04/10	12/20/10	51	10	2010	103

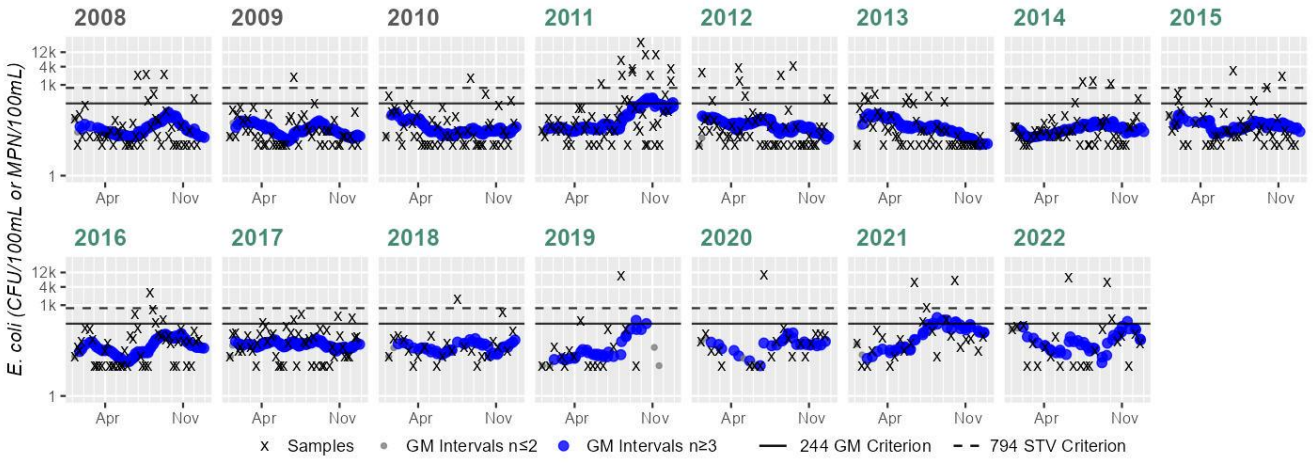
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD71	MA DCR Division of Water Supply Protection	E. coli	01/03/11	12/22/11	50	10	2000	83
DCRWS_MD71	MA DCR Division of Water Supply Protection	E. coli	01/04/12	12/19/12	51	10	4352	102
DCRWS_MD71	MA DCR Division of Water Supply Protection	E. coli	01/08/13	12/19/13	50	10	1080	49
DCRWS_MD71	MA DCR Division of Water Supply Protection	E. coli	01/26/15	02/13/15	5	20	2360	453
DCRWS_MD72	MA DCR Division of Water Supply Protection	E. coli	01/07/08	12/08/08	49	10	3080	52
DCRWS_MD72	MA DCR Division of Water Supply Protection	E. coli	01/05/09	12/22/09	51	10	2010	55
DCRWS_MD72	MA DCR Division of Water Supply Protection	E. coli	01/04/10	12/20/10	51	10	2000	95
DCRWS_MD72	MA DCR Division of Water Supply Protection	E. coli	01/03/11	12/22/11	50	10	2000	98
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	01/07/08	12/08/08	49	10	3450	79
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	01/05/09	12/22/09	51	10	2010	78
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	01/04/10	12/20/10	51	20	2000	139
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	01/03/11	12/22/11	50	10	2060	181
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	01/04/12	12/19/12	51	10	4106	223
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	01/08/13	12/19/13	50	10	1780	93
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	01/09/14	12/17/14	50	10	8660	113
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	01/06/15	12/17/15	47	10	19900	206
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	01/07/16	12/14/16	50	10	6130	134

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	01/05/17	12/19/17	51	10	11200	172
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	01/10/18	12/17/18	24	20	6490	184
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	01/03/19	09/18/19	17	10	6130	116
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	01/09/20	12/15/20	20	41	24200	222
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	01/07/21	12/20/21	24	10	8660	283
DCRWS_MD73	MA DCR Division of Water Supply Protection	E. coli	01/03/22	12/22/22	24	10	17300	179
DCRWS_MD74	MA DCR Division of Water Supply Protection	E. coli	01/07/08	12/08/08	49	10	3870	95
DCRWS_MD74	MA DCR Division of Water Supply Protection	E. coli	01/05/09	12/22/09	51	10	2010	67
DCRWS_MD74	MA DCR Division of Water Supply Protection	E. coli	01/04/10	12/20/10	51	10	2005	113
DCRWS_MD74	MA DCR Division of Water Supply Protection	E. coli	01/03/11	12/22/11	50	10	2000	229
DCRWS_MD74	MA DCR Division of Water Supply Protection	E. coli	01/04/12	12/19/12	50	31	2613	340
DCRWS_MD74	MA DCR Division of Water Supply Protection	E. coli	01/08/13	12/19/13	49	10	1610	116
DCRWS_MD74	MA DCR Division of Water Supply Protection	E. coli	06/14/17	06/15/17	2	292	295	293
DCRWS_MD75	MA DCR Division of Water Supply Protection	E. coli	01/07/08	12/08/08	49	10	3080	53
DCRWS_MD75	MA DCR Division of Water Supply Protection	E. coli	01/05/09	12/22/09	50	10	798	45
DCRWS_MD75	MA DCR Division of Water Supply Protection	E. coli	01/04/10	12/20/10	51	10	2000	105
DCRWS_MD75	MA DCR Division of Water Supply Protection	E. coli	01/03/11	12/22/11	50	10	1650	65

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD75	MA DCR Division of Water Supply Protection	E. coli	01/04/12	12/19/12	51	10	2760	85
DCRWS_MD75	MA DCR Division of Water Supply Protection	E. coli	01/08/13	12/19/13	50	10	880	58
DCRWS_MD75	MA DCR Division of Water Supply Protection	E. coli	01/26/15	02/13/15	5	41	130000	927
DCRWS_MD75	MA DCR Division of Water Supply Protection	E. coli	06/14/17	06/15/17	2	448	546	494
W1817	MassDEP	E. coli	05/22/08	08/21/08	4	10	1200	49

Station DCRWS_MD04 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	48
SeasGM	35
#GMI	85
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	6%

Variable*	Result
Samples	50
SeasGM	30
#GMI	89
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	51
SeasGM	34
#GMI	88
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	1%

Variable*	Result
Samples	56
SeasGM	98
#GMI	103
#GMI Ex	20
%GMI Ex	19%
n>STV	11
%n>STV	19%

Variable*	Result
Samples	54
SeasGM	41
#GMI	92
#GMI Ex	0
%GMI Ex	0%
n>STV	5
%n>STV	9%

Variable*	Result
Samples	50
SeasGM	31
#GMI	88
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	50
SeasGM	34
#GMI	80
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	6%

Variable*	Result
Samples	47
SeasGM	42
#GMI	84
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	6%

Variable*	Result
Samples	49
SeasGM	41
#GMI	83
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	50
SeasGM	50
#GMI	87
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	24
SeasGM	44
#GMI	42
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	17
SeasGM	34
#GMI	28
#GMI Ex	2
%GMI Ex	7%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	20
SeasGM	50
#GMI	29
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	24
SeasGM	84
#GMI	43
#GMI Ex	6
%GMI Ex	13%
n>STV	3
%n>STV	12%

Variable*	Result
Samples	24
SeasGM	60
#GMI	42
#GMI Ex	1
%GMI Ex	2%
n>STV	2
%n>STV	8%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

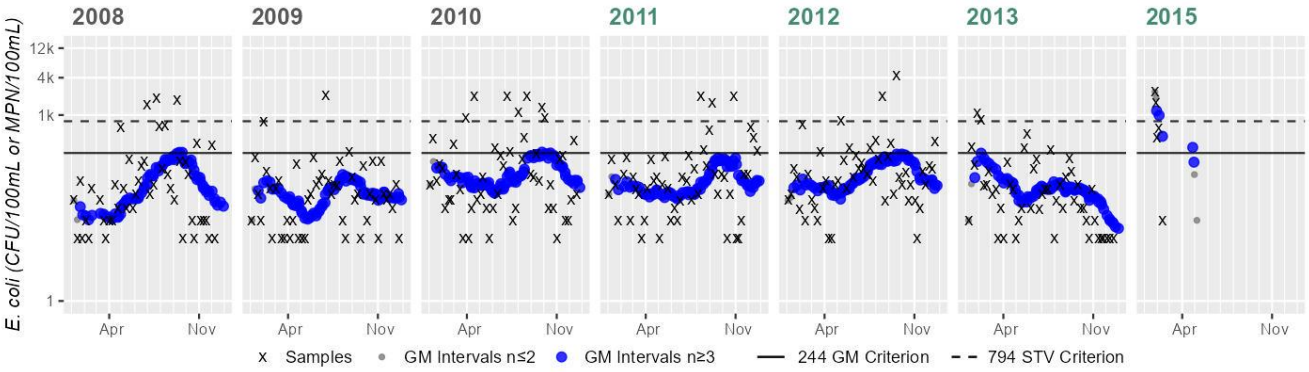
Cumulative %GMI Exceedance
Current (2011-2022)
3%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
4%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station DCRWS_MD71 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	47
SeasGM	63
#GMI	83
#GMI Ex	2
%GMI Ex	2%
n>STV	3
%n>STV	6%

Variable*	Result
Samples	51
SeasGM	49
#GMI	91
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	1%

Variable*	Result
Samples	51
SeasGM	103
#GMI	88
#GMI Ex	2
%GMI Ex	2%
n>STV	7
%n>STV	13%

Variable*	Result
Samples	50
SeasGM	83
#GMI	92
#GMI Ex	2
%GMI Ex	2%
n>STV	3
%n>STV	6%

Variable*	Result
Samples	51
SeasGM	102
#GMI	87
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	5%

Variable*	Result
Samples	50
SeasGM	49
#GMI	88
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	5
SeasGM	453
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	2
%n>STV	40%

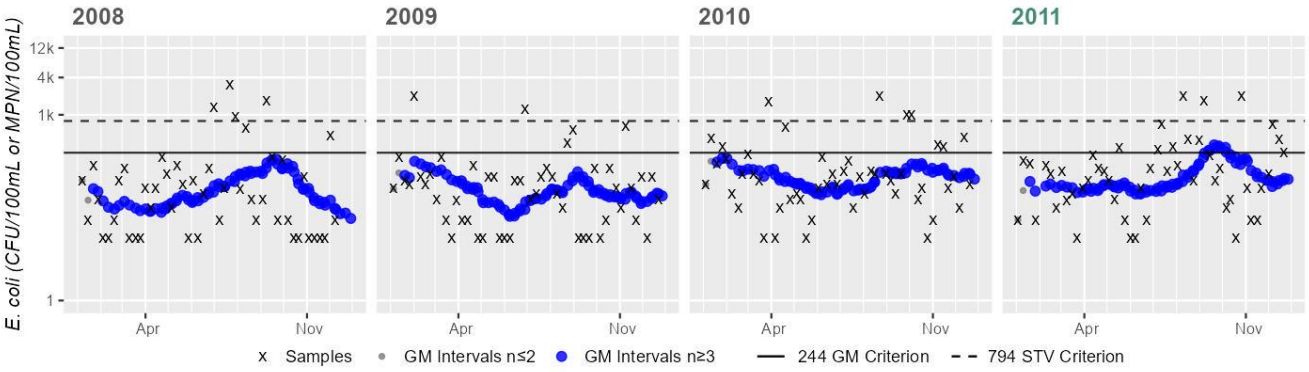
Cumulative %GMI Exceedance Historic (1997-2010)
1%

Cumulative %GMI Exceedance Current (2011-2022)
2%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station DCRWS_MD72 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	49
SeasGM	52
#GMI	87
#GMI Ex	0
%GMI Ex	0%
n>STV	4
%n>STV	8%

Variable*	Result
Samples	51
SeasGM	55
#GMI	91
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	3%

Variable*	Result
Samples	51
SeasGM	95
#GMI	88
#GMI Ex	0
%GMI Ex	0%
n>STV	4
%n>STV	7%

Variable*	Result
Samples	50
SeasGM	98
#GMI	92
#GMI Ex	10
%GMI Ex	10%
n>STV	3
%n>STV	6%

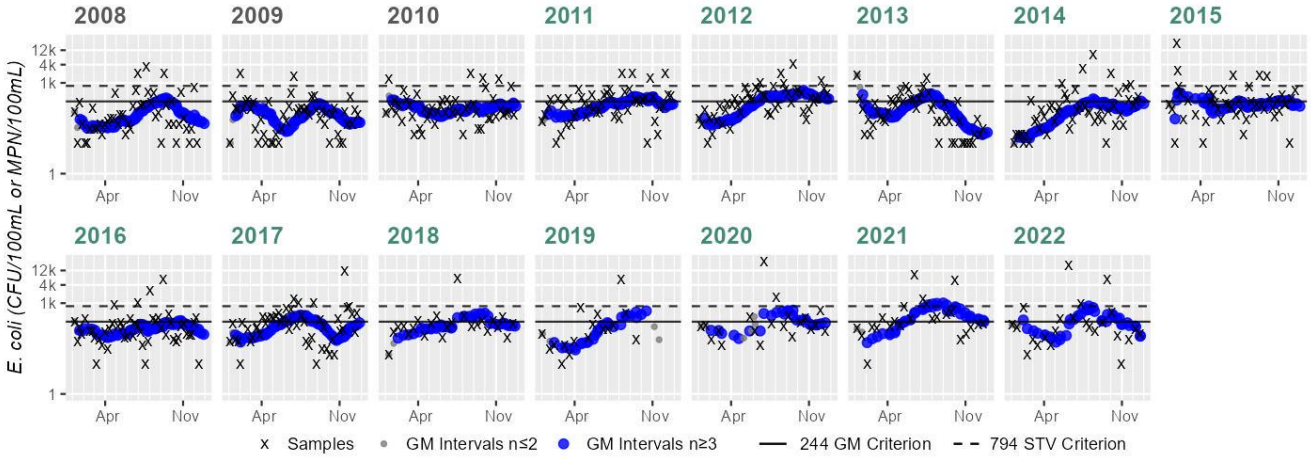
Cumulative %GMI Exceedance Historic (1997-2010)
0%

Cumulative %GMI Exceedance Current (2011-2022)
10%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station DCRWS_MD73 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	49
SeasGM	79
#GMI	87
#GMI Ex	7
%GMI Ex	8%
n>STV	3
%n>STV	6%

Variable*	Result
Samples	51
SeasGM	78
#GMI	91
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	3%

Variable*	Result
Samples	51
SeasGM	139
#GMI	88
#GMI Ex	2
%GMI Ex	2%
n>STV	4
%n>STV	7%

Variable*	Result
Samples	50
SeasGM	181
#GMI	92
#GMI Ex	27
%GMI Ex	29%
n>STV	4
%n>STV	8%

Variable*	Result
Samples	51
SeasGM	223
#GMI	87
#GMI Ex	57
%GMI Ex	65%
n>STV	5
%n>STV	9%

Variable*	Result
Samples	50
SeasGM	93
#GMI	88
#GMI Ex	19
%GMI Ex	21%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	50
SeasGM	113
#GMI	80
#GMI Ex	9
%GMI Ex	11%
n>STV	5
%n>STV	10%

Variable*	Result
Samples	47
SeasGM	206
#GMI	84
#GMI Ex	20
%GMI Ex	23%
n>STV	5
%n>STV	10%

Variable*	Result
Samples	50
SeasGM	134
#GMI	84
#GMI Ex	3
%GMI Ex	3%
n>STV	4
%n>STV	8%

Variable*	Result
Samples	51
SeasGM	172
#GMI	88
#GMI Ex	32
%GMI Ex	36%
n>STV	4
%n>STV	7%

Variable*	Result
Samples	24
SeasGM	184
#GMI	42
#GMI Ex	11
%GMI Ex	26%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	17
SeasGM	116
#GMI	28
#GMI Ex	8
%GMI Ex	28%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	20
SeasGM	222
#GMI	29
#GMI Ex	13
%GMI Ex	44%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	24
SeasGM	283
#GMI	43
#GMI Ex	28
%GMI Ex	65%
n>STV	4
%n>STV	16%

Variable*	Result
Samples	24
SeasGM	179
#GMI	42
#GMI Ex	19
%GMI Ex	45%
n>STV	3
%n>STV	12%

Cumulative %GMI Exceedance
Historic (1997-2010)
3%

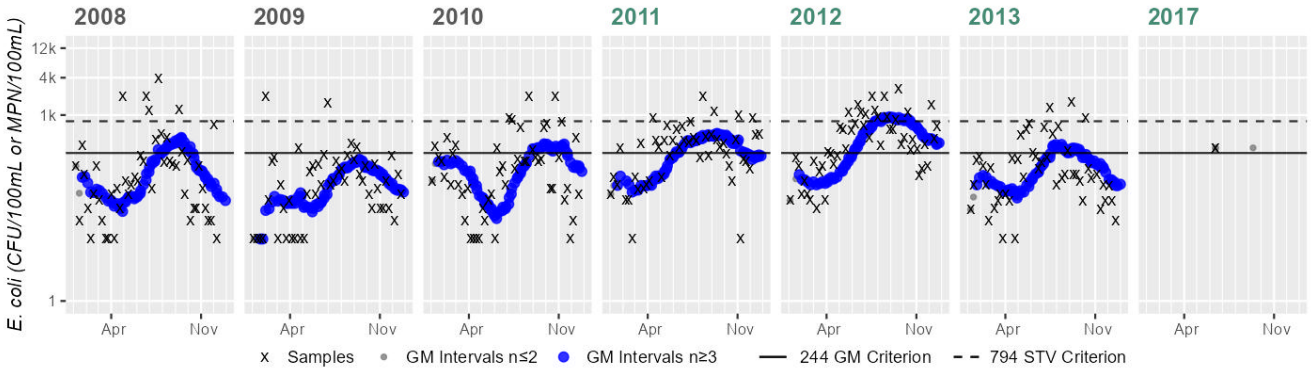
Cumulative %GMI Exceedance
Current (2011-2022)
31%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
42%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station DCRWS_MD74 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	49
SeasGM	95
#GMI	87
#GMI Ex	21
%GMI Ex	24%
n>STV	5
%n>STV	10%

Variable*	Result
Samples	51
SeasGM	67
#GMI	91
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	3%

Variable*	Result
Samples	51
SeasGM	113
#GMI	88
#GMI Ex	22
%GMI Ex	25%
n>STV	4
%n>STV	7%

Variable*	Result
Samples	50
SeasGM	229
#GMI	92
#GMI Ex	50
%GMI Ex	54%
n>STV	5
%n>STV	10%

Variable*	Result
Samples	50
SeasGM	340
#GMI	85
#GMI Ex	60
%GMI Ex	70%
n>STV	13
%n>STV	26%

Variable*	Result
Samples	49
SeasGM	116
#GMI	87
#GMI Ex	19
%GMI Ex	21%
n>STV	3
%n>STV	6%

Variable*	Result
Samples	2
SeasGM	293
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

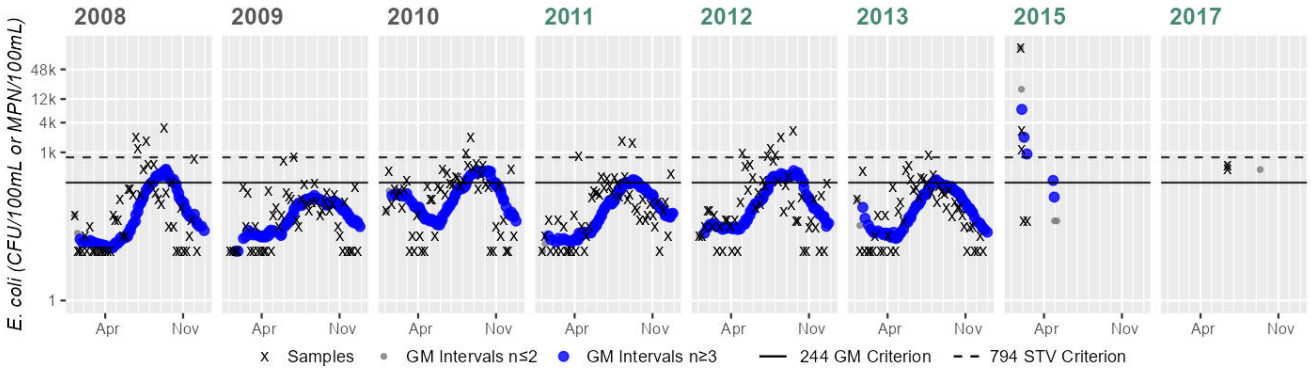
Cumulative %GMI Exceedance Historic (1997-2010)
16%

Cumulative %GMI Exceedance Current (2011-2022)
48%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station DCRWS_MD75 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	49
SeasGM	53
#GMI	87
#GMI Ex	16
%GMI Ex	18%
n>STV	4
%n>STV	8%

Variable*	Result
Samples	50
SeasGM	45
#GMI	89
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	51
SeasGM	105
#GMI	88
#GMI Ex	17
%GMI Ex	19%
n>STV	2
%n>STV	3%

Variable*	Result
Samples	50
SeasGM	65
#GMI	92
#GMI Ex	5
%GMI Ex	5%
n>STV	3
%n>STV	6%

Variable*	Result
Samples	51
SeasGM	85
#GMI	87
#GMI Ex	24
%GMI Ex	27%
n>STV	6
%n>STV	11%

Variable*	Result
Samples	50
SeasGM	58
#GMI	88
#GMI Ex	3
%GMI Ex	3%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	5
SeasGM	927
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	3
%n>STV	60%

Variable*	Result
Samples	2
SeasGM	494
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

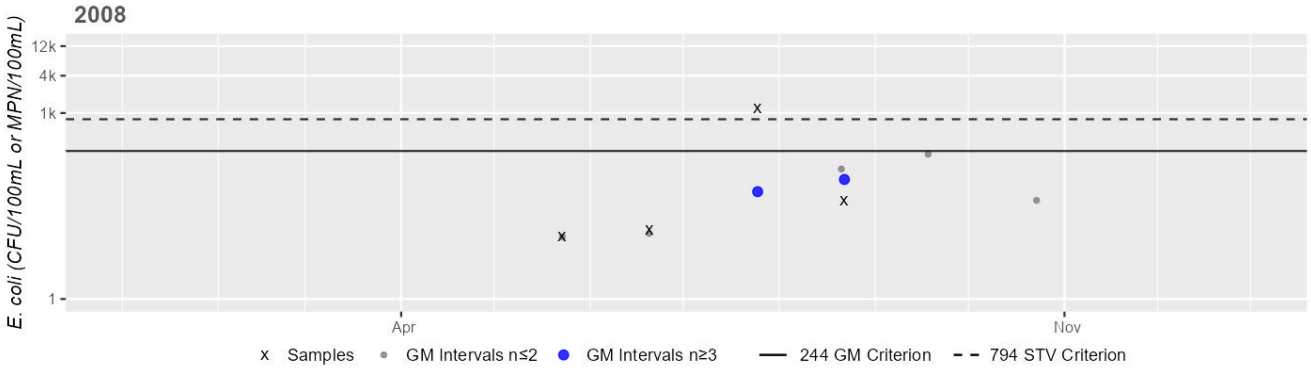
Cumulative %GMI Exceedance Historic (1997-2010)
12%

Cumulative %GMI Exceedance Current (2011-2022)
13%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W1817 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	4
SeasGM	49
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	25%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Goodridge Brook (MA81-66)

Location:	Headwaters, outlet impoundment at Old Ice Pond Dam (NATID: MA01560), Lancaster to mouth at confluence with Nashua River ("South Branch Nashua River"), Lancaster.
AU Type:	RIVER
AU Size:	1.8 MILES
Classification/Qualifier:	B: CWF

Goodridge Brook (MA81-66)

Watershed Area: 2.82 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	2.82	2.82	0.80	0.80
Agriculture	12%	12%	6.1%	6.1%
Developed	31.8%	31.8%	22.3%	22.3%
Natural	41.2%	41.2%	38.1%	38.1%
Wetland	15%	15%	33.5%	33.5%
Impervious	11.8%	11.8%	7.2%	7.2%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	5	Escherichia Coli (E. Coli)	--	Added

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Goodridge Brook (MA81-66) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Goodridge Brook (MA81-66) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Goodridge Brook (MA81-66) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at 1 station in 2022. Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in Goodridge Brook at NRWA_GR4770 [N Main St. Condos, Clinton] from Jul-Oct 2022 (n=4). Analysis of the single year limited frequency *E. coli* dataset from NRWA_GR4770 indicated 100% of intervals had GMs >126 CFU/100ml, 1 sample exceeded the 410 CFU/100ml STV (488 CFU), and the seasonal GM was 181 CFU/100ml. *E. coli* data from NRWA_GR4770 are indicative of an *E. coli* impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_GR4770	Nashua River Watershed Association	Water Quality	Goodridge Brook	North Main St. Condos, Clinton	42.435540	-71.684460

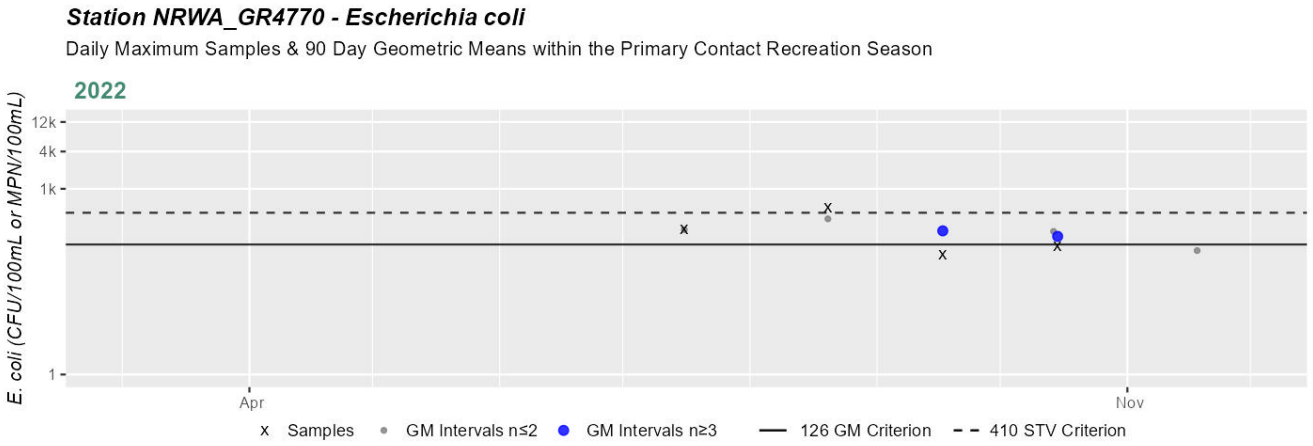
Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

(NRWA 2022) (MassDEP Undated 2)

[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
NRWA_GR4770	Nashua River Watershed Association	E. coli	07/16/22	10/15/22	4	85	488	181



Variable*	Result
Samples	4
SeasGM	181
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	1
%n>STV	25%

Cumulative %GMI Exceedance

Current (2011-2022)

100%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Goodridge Brook (MA81-66) is assessed as Fully Supporting. Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples close to the downstream end of Goodridge Brook at NRWA_GR4770 [N Main St. Condos, Clinton] from Jul-Oct 2022 (n=4). Analysis of the single year limited frequency *E. coli* dataset from NRWA_GR4770 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 181 CFU/100ml. *E. coli* data from NRWA_GR4770 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_GR4770	Nashua River Watershed Association	Water Quality	Goodridge Brook	North Main St. Condos, Clinton	42.435540	-71.684460

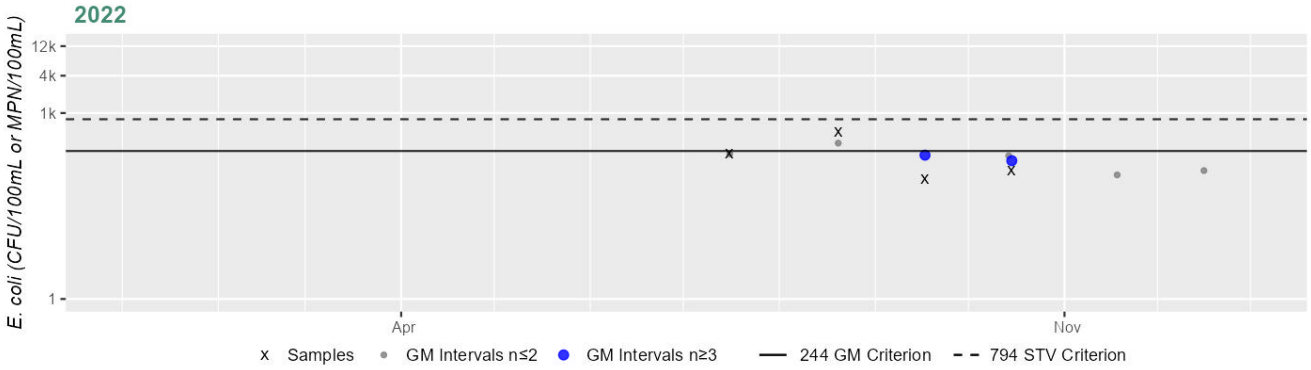
Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)
(NRWA 2022) (MassDEP Undated 1)
[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
NRWA_GR4770	Nashua River Watershed Association	E. coli	07/16/22	10/15/22	4	85	488	181

Station NRWA_GR4770 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	4
SeasGM	181
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance

Current (2011-2022)

0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Governor Brook (MA81-70)

Location:	Headwaters, east of Worcester Road (Route 31), and south of Flagg Hill, Princeton to mouth at confluence with Trout Brook, Holden.
AU Type:	RIVER
AU Size:	4.4 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Governor Brook (MA81-70)

Watershed Area: 5.55 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	5.55	4.52	3.11	2.60
Agriculture	5.3%	5.5%	4.3%	4.2%
Developed	5.5%	3.4%	3.5%	2.3%
Natural	74.4%	74.5%	69.1%	68.1%
Wetland	14.7%	16.5%	23.2%	25.4%
Impervious	2.4%	1.5%	1.7%	1.2%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Governor Brook (MA81-70) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Governor Brook (MA81-70) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Governor Brook (MA81-70) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Governor Brook (MA81-70) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MassDEP staff collected *E. coli* bacteria samples close to the downstream end of Governor Brook at W1839 [Sterling Rd, Holden] from May-Sep 2008 (n=6). Analysis of the historic single year limited frequency *E. coli* dataset from W1839 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 22 CFU/100ml. Historic *E. coli* data from W1839 meet 2024 CALM guidance. However, since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1839	MassDEP	Water Quality	Governor Brook	[Sterling Road, Holden]	42.405589	-71.846098

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

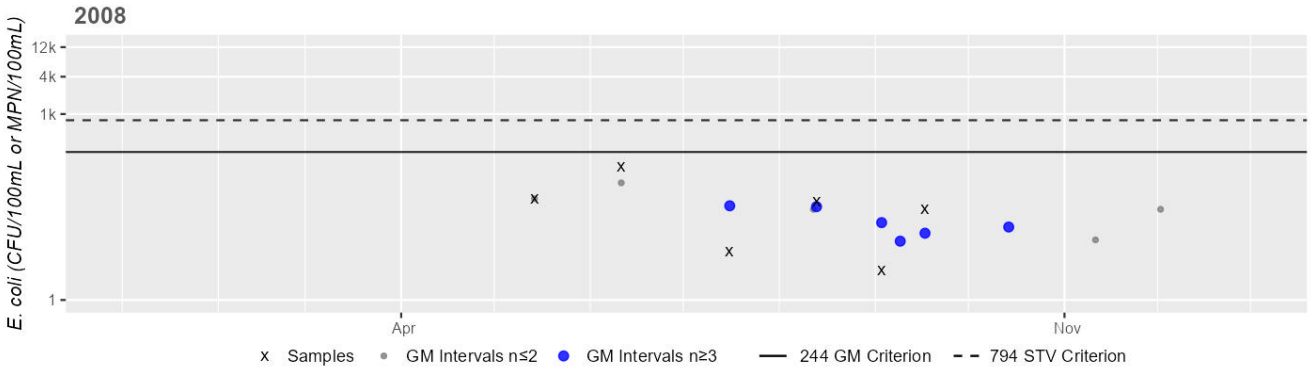
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W1839	MassDEP	E. coli	05/13/08	09/16/08	6	3	140	22

Station MASSDEP_W1839 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	22
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Grove Pond (MA81053)

Location:	Ayer.
AU Type:	FRESHWATER LAKE
AU Size:	68 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Aquatic Plants (Macrophytes)*)	--	Changed
5	5	(Curly-leaf Pondweed*)	--	Unchanged
5	5	(Fanwort*)	--	Unchanged
5	5	(Non-Native Aquatic Plants*)	--	Unchanged
5	5	Arsenic	--	Unchanged
5	5	DEHP (Di-sec-octyl phthalate)	--	Unchanged
5	5	Mercury in Fish Tissue	--	Unchanged
5	5	Nutrient/Eutrophication Biological Indicators	--	Added
5	5	Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	--	Unchanged
5	5	Sediment Bioassay [Chronic Toxicity Freshwater]	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Aquatic Plants (Macrophytes)*)	Source Unknown (N)	--	--	X	X	X
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Fanwort*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Arsenic	Contaminated Groundwater (Y)	--	--	--	X	X
Arsenic	Contaminated Sediments (Y)	--	--	--	X	X
Arsenic	Source Unknown (N)	--	--	--	X	X
DEHP (Di-sec-octyl phthalate)	Contaminated Groundwater (Y)	--	--	--	X	X
DEHP (Di-sec-octyl phthalate)	Contaminated Sediments (Y)	--	--	--	X	X
DEHP (Di-sec-octyl phthalate)	Source Unknown (N)	--	--	--	X	X
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--
Nutrient/Eutrophication Biological Indicators	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Source Unknown (N)	--	--	X	X	X
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Contaminated Groundwater (Y)	--	--	--	X	X

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Contaminated Sediments (Y)	--	--	--	X	X
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Source Unknown (N)	--	--	--	X	X
Sediment Bioassay [Chronic Toxicity Freshwater]	Contaminated Groundwater (Y)	X	--	--	--	--
Sediment Bioassay [Chronic Toxicity Freshwater]	Contaminated Sediments (Y)	X	--	--	--	--
Sediment Bioassay [Chronic Toxicity Freshwater]	Source Unknown (N)	X	--	--	--	--

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Aquatic Plants (Macrophytes)	Not caused by a pollutant (4c)	As described in detail in the 2024 CALM guidance document the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Grove Pond (MA81053) was first listed as impaired for Noxious Aquatic Plants in 2002 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2010 IR cycle (MassDEP 2024). The original impairment was based on a July 1998 synoptic survey conducted by MassDEP staff in which it was noted that most of the pond was covered with very dense floating and submerged aquatic plants, including the non-rooted, floating species, *Lemna*/*Wolffia*/*Spirodela*/*Utricularia* spp. and *Ceratophyllum demersum* (MassDEP 1998, MassDEP 2002). Google Earth images from August 2013, June 2015 and June 2019 show high amounts of plant coverage over more than half of the pond (Google Earth Pro Undated). Nutrient/Eutrophication Biological Indicators is being added as an impairment based on the presence of multiple non-rooted, floating, aquatic macrophyte species. Additionally, Aquatic Plants (Macrophytes) impairment is being delisted as a pollutant and added again as a non-pollutant since more than 25% of the pond was covered in aquatic macrophytes in recent years.

Aquatic Plants (Macrophytes)

2002 WBS Coding Sheet (MassDEP 2002):

WBID:	MA81053	WATERSHED:	Nashua (81)		(Printed 07/27/00)
NAME:	Grove Pond	TYPE:	Lake/Pond		
CODE:	81053	SIZE:	67.00(acres)	CLASS:	B

LATITUDE: 42.55278
LONGITUDE: 71.58472 (423310/713505)
Lake/Pond Name: Grove Pond, Ayer
Ecoregion Name: ()
Description:

Assessment Date: ~~9609~~ 0009 **Begin Sampling:** ~~8407~~ 9807
Cycle: ~~99~~ 02 **End Sampling:** ~~8407~~ 9807

Lake Specific Information

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

Uses	Support	Threat	Partial	Non-Sup	Not-Asses	Not-Attain
OVERALL USE SUPPORT				67.00		
ALUS			67.00			
FISH CONSUMPTION				67.00		
PRIMARY CONTACT				67.0	~~67.00~~	
SECONDARY CONTACT				67.0	~~67.00~~	
Aesthetics				67.0	~~67.00~~	

Nonattainment Causes

Code	Size	Magnitude
~~0200- Pesticides~~ 2200 noxious aquatic plants	~~67.00~~	~~H~~
~~2400- Total toxics~~ 0500 metals	~~67.00~~	~~H~~
2600- Exotic species 0501 Hg	67.00	M

"New"

Code	Size	Magnitude
2200	67.0	M
2600	67.0	M
0500	67.0	M
0501	67.0	M
2400	67.0	M

Nonattainment Sources

Code	Size	Magnitude
9000- SOURCE UNKNOWN	67.00	H

"New"

Code	Size	Magnitude
9000	67.0	H

Assessment Type

(Assessment Category = > Evaluated)
B05- Best Proffesional Judgement
B10- Biological Monitoring data >5 years old
P05- DPH Health Advisory used to assess Fish Consumption use

"New" Assessment Category = > M E NA

B05, B25, R20, R35, P05

Media/Pollutants Assessed (Toxics Monitoring = > N)

"New" Toxics Monitoring = > YES or NO

03, 07, 11

Comments:

HISTORICALLY TRANSPARENCY BELOW THE SAFETY CRITERIA (4 FT. SECCHI DISK), BUT THESE DATA ARE TOO OLD TO USE IN MAKING ASSESSMENTS. HISTORICALLY VERY DENSE GROWTH OF AQUATIC MACROPHYTES (NYMPHAEA SP., CABOMBA CAROLINIANA, AND UTRICULARIA SP.) COVERING THE ENTIRE POND; THIS INFORMATION WAS CONSIDERED ADEQUATE FOR MAKING ASSESSMENTS.

1996:
Only presence of non-native macrophytes used for assessment. Fish advisory due to pesticides.

1998 Synoptic Survey Field Sheet (MassDEP 1998):

LAKE/POND: Grove Pond SIZE (acres): 67 PALIS NO. 81053

TOWN/CITY: Ayer USGS TOPO. SHEET: Ayer

DATE: 7/30/98 WATERSHED: Nashua OBSERVERS: Colonna-Romano/McVoy

ACCESS – Location [describe each observation site and assign sequential numbers (1, 2, 3, etc.) to use in subsequent records; be specific in descriptions (e.g., public boat ramp at west cove area off Simpson St., etc.)]

Site (1) East end at Third St. bridge, Bowers Brk. inlet

Site (2) Middle Grove Pond/northside from park "Albert J Pirone Memorial Park" Ayer

Site (3)

ACCESS – Type (for multiple observation sites use numbers in boxes that apply)

Formal Boat Ramp ☐☐☐ and/or Beach ☐☐☐ Informal Boat Ramp ☐[2]☐ and/or Beach ☐☐☐

Park ☐[2]☐ Conservation Area ☐☐☐ Right-of-Way: Road [1]☐☐ Other ☐☐☐

Other (describe): [1]

[2] boat ramp western edge of park

☐

ACCESS – Ownership (for multiple observation sites use numbers in boxes that apply)

Public ☐[2]☐ Private ☐☐☐ Uncertain [1]☐☐

Names of Owners ☐ No. & Street Name ☐

[2] Town of Ayer No. & Street Name ☐

☐ No. & Street Name ☐

SIGN POSTINGS –

☐☐☐ Warning: Stop Aquatic Plant Spread ☐☐☐ Fishing Advisory or Ban

☐☐☐ Public Access without Restrictions ☐☐☐ Public Access with Restrictions

Describe any restrictions (or other notes) [1] catch/release fishing only no swimming

[2] catch/release fishing only no swimming no hunting

☐

WATER/LAKE QUALITY OBSERVATIONS –

Turbidity: ☐[3]☐ Slight [1]☐☐ Moderate ☐☐☐ Excessive

Diss. Organics: ☐[3]☐ Slight [1]☐☐ Moderate ☐☐☐ Dark

Algal Bloom: [1][2]☐ Slight ☐☐☐ Moderate ☐☐☐ Dense

Transparency: ☐☐☐ < 1.2 m. (4 ft.) [1][2]☐ > 1.2 m. (4 ft.)

☐[2]☐ Estimated visually

[1]☐☐ Measured w/ Secchi Disk [1] 0.8+ meters

☐ meters

☐ meters

Bottom Type: [1]☐☐ Undecomposed matter [1]☐☐ Muck/silt ☐☐☐ Sand ☐☐☐ Gravel ☐☐☐ Cobble ☐☐☐ Boulders

[1]☐☐ Vegetation Other ☐ ☐ ☐

Other Observations: [1] not much apparent vegetation/lined w/ trees/woody buffer tent pyramids possibly plastic

[2] Severe goose droppings

☐

AESTHETICALLY OBJECTIONABLE – Substances attributable to wastewater or other discharges (point or nonpoint) that:

☐☐☐ Settle to form objectionable deposits

Describe:

[1]☐☐ Float as debris, scum or other matter to form a nuisance

Describe: [1] very slight oily sheen [2] tires

[1]☐☐ Produce objectionable odor, color, taste, or turbidity

Describe: turbidity slightly brown

☐☐☐ Produce undesirable nuisance species of aquatic life

Describe:

RECORD OF AQUATIC PLANT "SPECIES" OBSERVED –

NON-NATIVE WETLANDS SPECIES PRESENT: ☑1 ☑2 ☐3 *Lythrum Salicaria* ☐1 ☐2 ☐3 *Phragmites* sp.

NON-NATIVE AQUATIC SPECIES PRESENT: ☐1 ☐2 ☐3 *Butomus umbellatus* ☑1 ☑2 ☐3 [redacted] ☐1 ☐2 ☐3 *Egeria densa*

☐1 ☐2 ☐3 *Eichornia crassipes* ☐1 ☐2 ☐3 *Hydrilla verticillata* ☐1 ☐2 ☐3 *Hydrocharis morsus-ranae* ☐1 ☐2 ☐3 *Marsilea quadrifolia*

☐1 ☐2 ☐3 *Myriophyllum aquaticum* ☐1 ☐2 ☐3 *Myriophyllum heterophyllum* ☐1 ☐2 ☐3 *Myriophyllum spicatum*

☐1 ☐2 ☐3 *M.* sp. (*M. [redacted]*) requiring [redacted] when flowering heads are evident) Tidal Stems

☐1 ☐2 ☐3 *Najas minor* ☐1 ☐2 ☐3 *Nelumbo lutea* ☐1 ☐2 ☐3 *Nymphoides peltata* ☐1 ☐2 ☐3 [redacted] ☐1 ☐2 ☐3 *Trapa natans*

NATIVE SPECIES POPULATIONS:

Emergent Plants	Floating Leaf Plants	Submergent Plants
☐1 ☑2 ☐3 Peltandra	☐1 ☑2 ☐3 Nymphaea	☐1 ☐2 ☐3 Elodea
☐1 ☑2 ☐3 Pontederia	☐1 ☑2 ☐3 Lemna	☐1 ☑2 ☐3 Ceratophylum demersum
☐1 ☐2 ☐3 Sparganium	☐1 ☑2 ☐3 Spirodella	☐1 ☐2 ☐3 P. epihydrus
☐1 ☑2 ☐3 Cephalanthus	☐1 ☑2 ☐3 Wolffia	☐1 ☑2 ☐3 Utricularia sp.
☐1 ☑2 ☐3 Polygonum	☐1 ☑2 ☐3 Brasenia	☐1 ☑2 ☐3 U. vulgaris
☐1 ☑2 ☐3 Typha latifolia	☐1 ☑2 ☐3 Nuphar	☐1 ☐2 ☐3
☐1 ☐2 ☐3	☐1 ☐2 ☐3	☐1 ☐2 ☐3
☐1 ☐2 ☐3	☐1 ☐2 ☐3	☐1 ☐2 ☐3
☐1 ☐2 ☐3	☐1 ☐2 ☐3	☐1 ☐2 ☐3
☐1 ☐2 ☐3	☐1 ☐2 ☐3	☐1 ☐2 ☐3
☐1 ☐2 ☐3	☐1 ☐2 ☐3	☐1 ☐2 ☐3
☐1 ☐2 ☐3	☐1 ☐2 ☐3	☐1 ☐2 ☐3

AQUATIC PLANT DENSITY –

Percent of sufface area (at observation site) with dense (50 - 75 %) aquatic plant cover ☐1 ____ % ☐2 ____ % ☐3 ____ %

Forms [(E)mergent, (F)loating, or (S)ubmerent] present ☐1 ____ ☐2 ____ ☐3 ____

Percent of surface area (observation site) with very dense (75 - 100 %) plant cover ☑1 75 % ☑2 100 % ☐3 ____ %

Forms [(E)mergent, (F)loating, or (S)ubmerent) present ☑1 E, F ☑2 F, S ☐3 ____

Percent of entire lake surface covered with dense or very dense aquatic plants see map % Forms ____

Describe locations of dense and/or very dense plant beds Most of pond very dense floating + flowers of submergents (particularly Cabomba)

Loss of open water habitat over entire lake (estimated): ☐ >90 - 100 % ☐ >60 - 90 % ☐ >25 - 60 % ☒ ≤ 25 %

ASSESSMENTS –

TROPHIC STATUS ESTIMATE: ☐ Oligotrophic ☐ Mesotrophic ☑ Eutrophic ☐ Hypereutrophic ☐ Dystrophic ☐ Undetermined

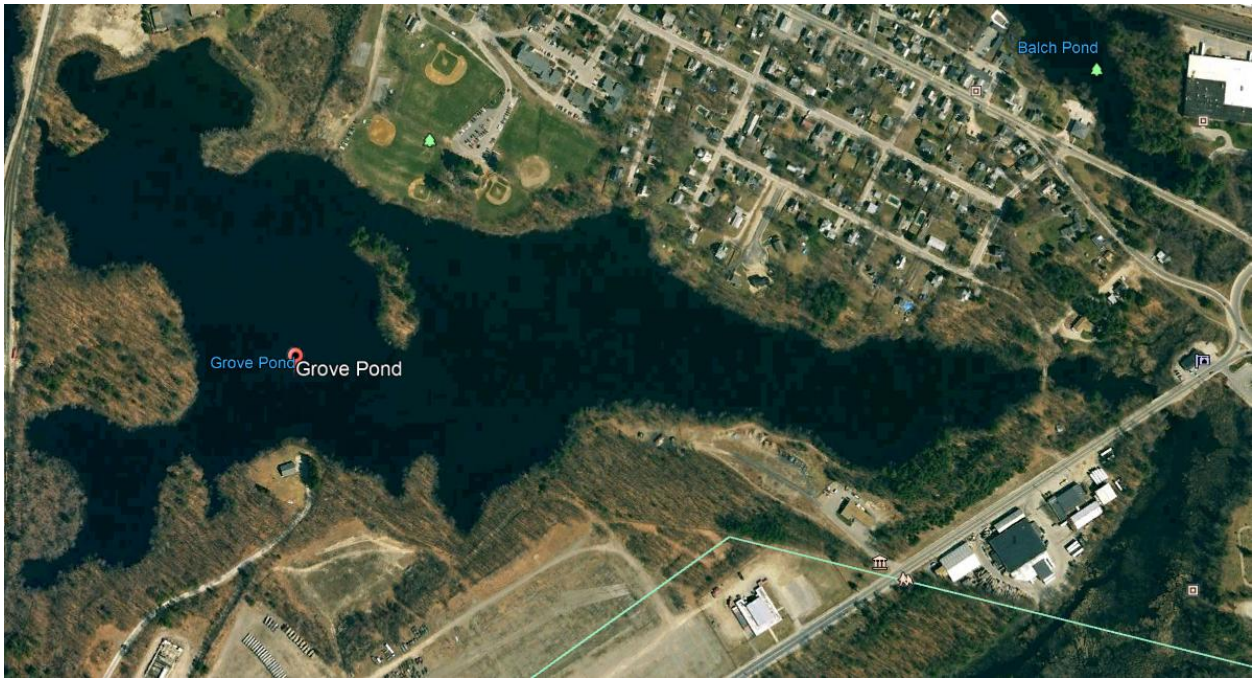
305(b) USE IMPAIRMENT ASSESSMENTS (Acres):

USES	Full Support	Threatened	Partial Support	Non-support	Not Assessed	Not Attainable
Aquatic Life			67.0			
Fish Consumption				67.0		
Primary Contact				67.0		
Secondary Contact				67.0		
Aesthetics				67.0		

CAUSES: ☒ Noxious plants (2200) – Size 67.0 acres / Magnitude M ☒ Exotic plants (2600) – Size 67.0 acres / Magnitude M
☐ Turbidity (2500) – Size ____ acres / Magnitude ____ ☐ Flow alteration (1500) – Size ____ acres / Magnitude ____
☒ Metals (0500) ☒ Hg (0501) – Size 67.0 acres / Magnitude M ☐ Siltation (1100) – Size ____ acres / Magnitude ____
☐ ____ ( ) – Size ____ acres / Magnitude ____ ☐ ____ ( ) – Size ____ acres / Magnitude ____

SOURCES: Describe any obvious sources of impairment ____

Google Earth image of Grove Pond while clear, 3/30/2005 (Google Earth Pro Undated):



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

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

Google Earth image of Grove Pond, 6/22/2019 (Google Earth Pro Undated):

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for Grove Pond (MA81053) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. DPH included a site-specific advisory for Grove Pond in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Grove Pond (MA81053) continues to be assessed as Not Supporting. The prior pollutant Aquatic Plants (Macrophytes) impairment is being removed and replaced with a non-pollutant Aquatic Plants (Macrophytes) impairment. Additionally, a Nutrient/Eutrophication Biological Indicators impairment being added. Since the Non-Native Aquatic Plants impairment was redundantly duplicated across multiple uses for this waterbody, the Non-Native Aquatic Plants impairment is being removed from the Aesthetics Use but will continue to be maintained under the Aquatic Life Use. As described in detail in the 2024 CALM guidance document the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Grove Pond was first listed as impaired for Noxious Aquatic Plants in 2002 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2010 IR cycle (MassDEP 2015). The original impairment was based on a July 1998 synoptic survey conducted by MassDEP staff in which it was noted that most of the pond was covered with very dense floating and submerged aquatic plants, including the non-rooted, floating species, *Lemna/Wolffia/Spirodela/Utricularia* spp. and *Ceratophyllum demersum* (MassDEP 1998, MassDEP 2002). Google Earth images from August 2013, June 2015 and June 2019 show high amounts of plant coverage over more than half of the pond (Google Earth Pro Undated). Nutrient/Eutrophication Biological Indicators is being added as an impairment based on the presence of multiple non-rooted, floating, aquatic macrophyte species. Additionally, Aquatic Plants (Macrophytes) is being delisted as a pollutant and added again as a non-pollutant since more than 25% of the pond was covered in aquatic macrophytes in recent years. No new data are available to evaluate the Aesthetics Use for Grove Pond.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Grove Pond (MA81053) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior Arsenic, DEHP (di-sec-octyl phthalate), and Polycyclic Aromatic Hydrocarbons (PAHS) (Aquatic Ecosystems) impairments are being carried forward. The prior pollutant Aquatic Plants (Macrophytes) impairment is being removed and replaced with a non-pollutant Aquatic Plants (Macrophytes) impairment (from the Aesthetics Use). A Nutrient/Eutrophication Biological Indicators impairment is being added (from the Aesthetics Use). Since the Non-Native Aquatic Plants impairment is being removed from the Aesthetics Use this cycle, this impairment is also being removed from the Primary Contact Recreation Use.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Grove Pond (MA81053) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use continues to be assessed as Not Supporting. The prior Arsenic, DEHP (di-sec-octyl phthalate), and Polycyclic Aromatic Hydrocarbons (PAHS) (Aquatic Ecosystems) impairments are being carried forward. The prior pollutant Aquatic Plants (Macrophytes) impairment is being removed and replaced with a non-pollutant Aquatic Plants (Macrophytes) impairment (from the Aesthetics Use). Nutrient/Eutrophication Biological Indicators impairment is being added (from the Aesthetics Use). Since the Non-Native Aquatic Plants impairment is being removed from the Aesthetics Use this cycle, this impairment is also being removed from the Secondary Contact Recreation Use.

Gulf Brook (MA81-76)

Location:	Headwaters, outlet Heald Pond, Pepperell to the New Hampshire border, Pepperell approximately 0.2 miles upstream of mouth at confluence with Nissitissit River.
AU Type:	RIVER
AU Size:	2.6 MILES
Classification/Qualifier:	B: ORW, CWF

Gulf Brook (MA81-76)

Watershed Area: 3.63 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	3.63	3.61	0.87	0.87
Agriculture	1.7%	1.7%	0%	0%
Developed	8.2%	8.3%	4.9%	4.9%
Natural	80.9%	80.8%	80.9%	80.9%
Wetland	9.2%	9.2%	14.2%	14.2%
Impervious	3.3%	3.3%	2.3%	2.3%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Gulf Brook (MA81-76) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Gulf Brook (MA81-76) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Gulf Brook (MA81-76) continues to be assessed as Fully Supporting. Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples three-quarters of the way down the AU Gulf Brook at NRWA_GB0312 [Gulf Brook u.s. of Chestnut St, Pepperell] from 2011-2018 (n=2-7/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from NRWA_GB0312 indicated 1 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2016, 20%), 0 yrs had ≥2 samples exceed the 410 CFU/100ml STV, and cumulatively across years 4% of intervals had GMs >126 CFU/100ml. *E. coli* data from NRWA_GB0312 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_GB0312	Nashua River Watershed Association	Water Quality	Gulf Brook	Gulf Brook u.s. of Chestnut Street, Pepperell	42.685020	-71.630740

Bacteria Data

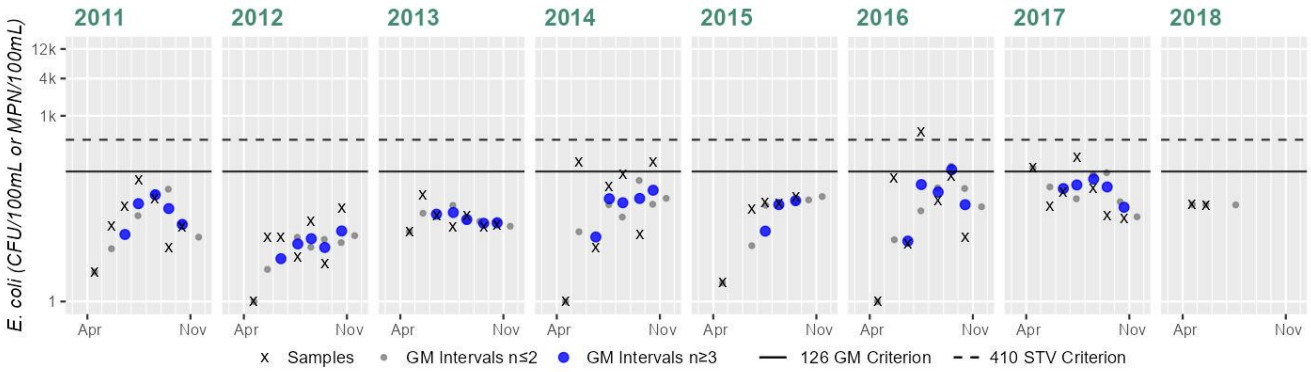
Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)
(NRWA 2022) (MassDEP Undated 2)
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_GB0312	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	3	93	19

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_GB0312	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	1	32	7
NRWA_GB0312	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	13	53	21
NRWA_GB0312	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	1	178	30
NRWA_GB0312	Nashua River Watershed Association	E. coli	04/20/15	09/19/15	5	2	49	21
NRWA_GB0312	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	1	547	30
NRWA_GB0312	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	22	214	58
NRWA_GB0312	Nashua River Watershed Association	E. coli	04/21/18	05/19/18	2	36	36	36

Station NRWA_GB0312 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	19
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	7
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	21
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	30
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	21
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	30
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	58
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	36
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Current (2011-2022)

3%

Cumulative %GMI Exceedance Current (Recent 5 Years)

4%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Gulf Brook (MA81-76) continues to be assessed as Fully Supporting. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in Gulf Brook from 2008-2018 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: halfway down the AU at NRWA_GB0312 [Gulf Brook u.s. of Chestnut St, Pepperell] from 2008-2010 (historic n=5-7/yr) and 2011-2018 (current n=2-7/yr), and three-quarters of the way down at W1844 [Lawrence St, Pepperell] from May-Sep 2008 (n=6). Analysis of the recent five years of the multi-year moderate frequency *E. coli* dataset from NRWA_GB0312 indicated 0 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml, 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. *E. coli* data from NRWA_GB0312 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1844	MassDEP	Water Quality	Gulf Brook	[Lawrence Street, Pepperell]	42.696157	-71.634496
NRWA_GB0312	Nashua River Watershed Association	Water Quality	Gulf Brook	Gulf Brook u.s. of Chestnut Street, Pepperell	42.685020	-71.630740

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

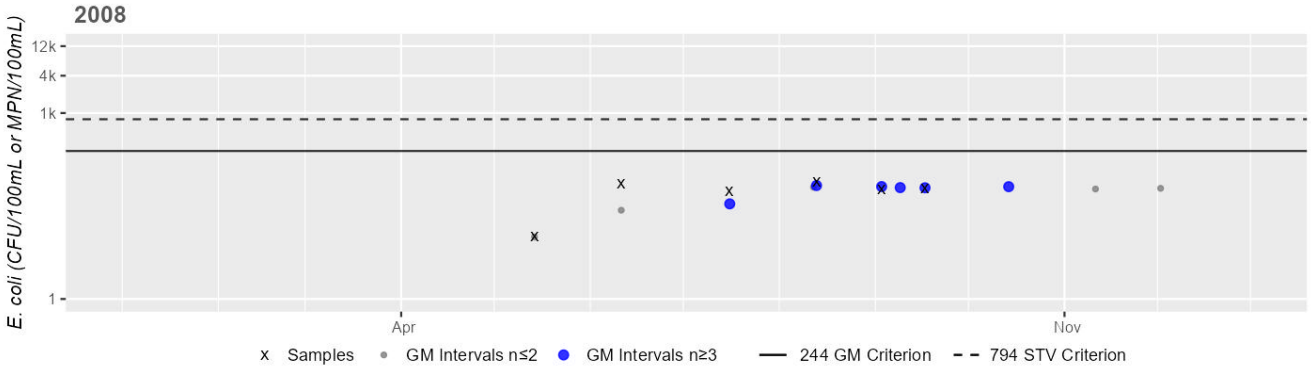
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1844	MassDEP	E. coli	05/13/08	09/16/08	6	10	77	47
NRWA_GB0312	Nashua River Watershed Association	E. coli	04/19/08	10/18/08	5	6	87	34
NRWA_GB0312	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	3	204	28

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_GB0312	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	7	2	517	29
NRWA_GB0312	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	3	93	19
NRWA_GB0312	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	1	32	7
NRWA_GB0312	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	13	53	21
NRWA_GB0312	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	1	178	30
NRWA_GB0312	Nashua River Watershed Association	E. coli	04/20/15	09/19/15	5	2	49	21
NRWA_GB0312	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	1	547	30
NRWA_GB0312	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	22	214	58
NRWA_GB0312	Nashua River Watershed Association	E. coli	04/21/18	05/19/18	2	36	36	36

Station MASSDEP_W1844 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



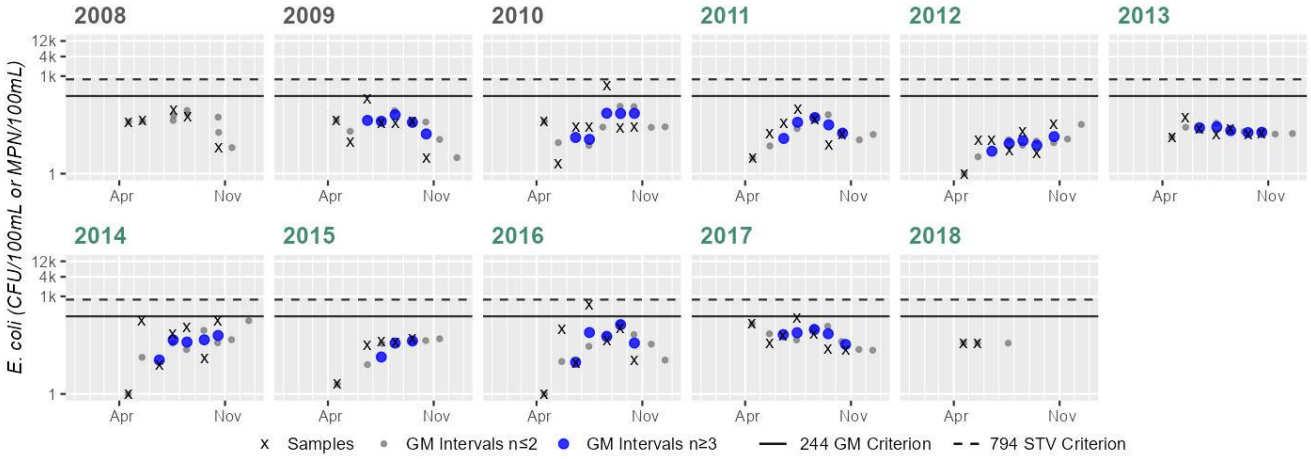
Variable*	Result
Samples	6
SeasGM	47
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_GB0312 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	34
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	28
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	29
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	19
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	7
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	21
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	30
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	21
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	30
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	58
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	36
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Haynes Reservoir (MA81055)

Location:	Leominster.
AU Type:	FRESHWATER LAKE
AU Size:	56 ACRES
Classification/Qualifier:	A: PWS, ORW (PWS and Tributary to PWS)

No usable data were available for Haynes Reservoir (MA81055) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Heald Pond (MA81056)

Location:	Pepperell.
AU Type:	FRESHWATER LAKE
AU Size:	28 ACRES
Classification/Qualifier:	B: ORW

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Heald Pond (MA81056) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Heald Pond (MA81056) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Heald Pond (MA81056) is assessed as Fully Supporting. Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in Heald Pond in 2022 at 2 stations towards the upstream end of the pond. Samples were collected from the following stations/sample years: NRWA_HealdPd [Heald Pond, Pepperell] from Jul-Aug 2022 (n=4), NRWA_NM3120 [Fitch bridge, Groton] from Jul-Aug 2022 (n=4). Analysis of the single year limited frequency *E. coli* dataset from NRWA_HealdPd indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 12 CFU/100ml. Analysis of the single year limited frequency *E. coli* dataset from NRWA_NM3120 indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 46 CFU/100ml. *E. coli* data from NRWA_HealdPd and NRWA_NM3120 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_HealdPd	Nashua River Watershed Association	Water Quality	Heald Pond	Heald Pond, Pepperell	42.668220	-71.633960
NRWA_NM3120	Nashua River Watershed Association	Water Quality	Nashua River	Fitch bridge, Groton	42.668430	-71.634530

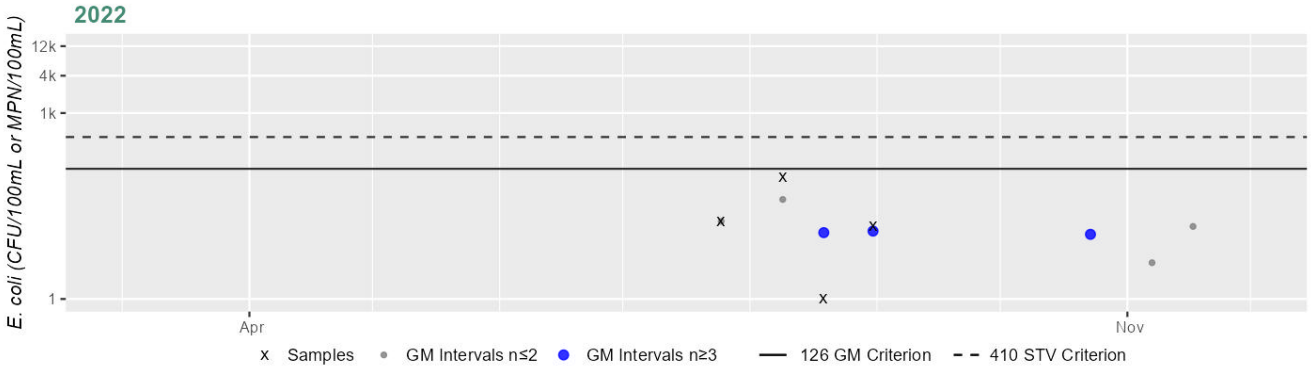
Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)
(NRWA 2022) (MassDEP Undated 2)
[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
NRWA_HealdPd	Nashua River Watershed Association	E. coli	07/25/22	08/31/22	4	1	90	12
NRWA_NM3120	Nashua River Watershed Association	E. coli	07/25/22	08/31/22	4	37	53	46

Station NRWA_HealdPd - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



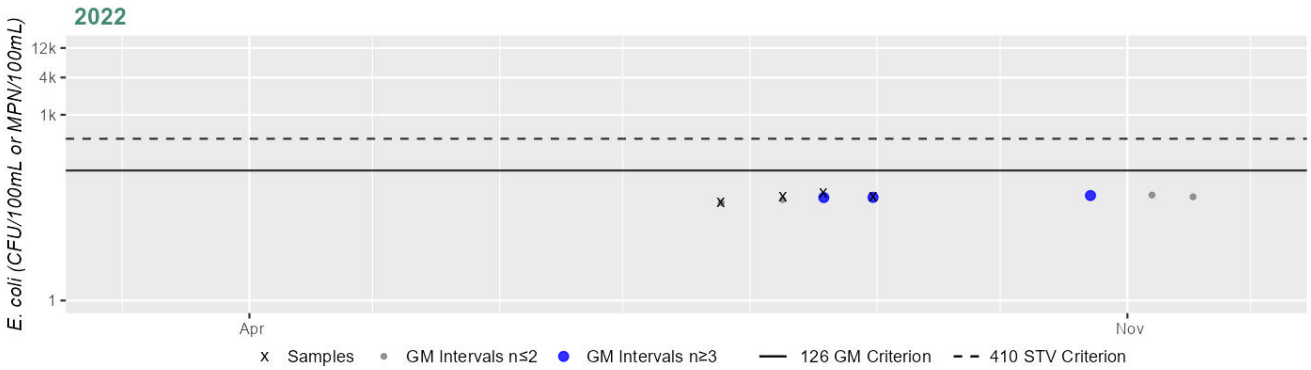
Variable*	Result
Samples	4
SeasGM	12
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NM3120 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	4
SeasGM	46
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Heald Pond (MA81056) is assessed as Fully Supporting. Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in Heald Pond from 2022 at 2 stations. Samples were collected from the following stations/sample years: NRWA_HealdPd [Heald Pond, Pepperell] from Jul-Aug 2022 (n=4), NRWA_NM3120 [Fitch bridge, Groton] from Jul-Aug 2022 (n=4). Analysis of the single year limited frequency *E. coli* dataset from NRWA_HealdPd indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 12 CFU/100ml. Analysis of the single year limited frequency *E. coli* dataset from NRWA_NM3120 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 46 CFU/100ml. *E. coli* data from NRWA_HealdPd and NRWA_NM3120 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_HealdPd	Nashua River Watershed Association	Water Quality	Heald Pond	Heald Pond, Pepperell	42.668220	-71.633960
NRWA_NM3120	Nashua River Watershed Association	Water Quality	Nashua River	Fitch bridge, Groton	42.668430	-71.634530

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

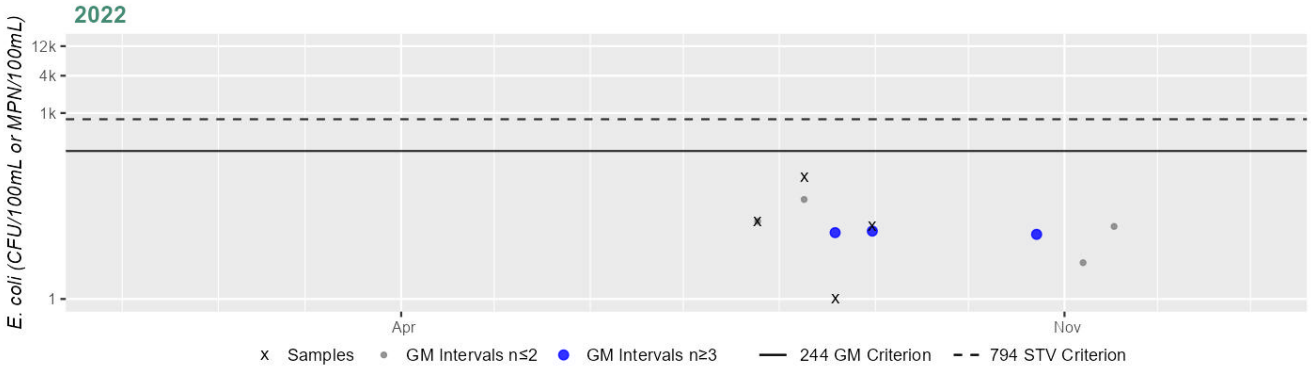
(NRWA 2022) (MassDEP Undated 1)

[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
NRWA_HealdPd	Nashua River Watershed Association	E. coli	07/25/22	08/31/22	4	1	90	12
NRWA_NM3120	Nashua River Watershed Association	E. coli	07/25/22	08/31/22	4	37	53	46

Station NRWA_HealdPd - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



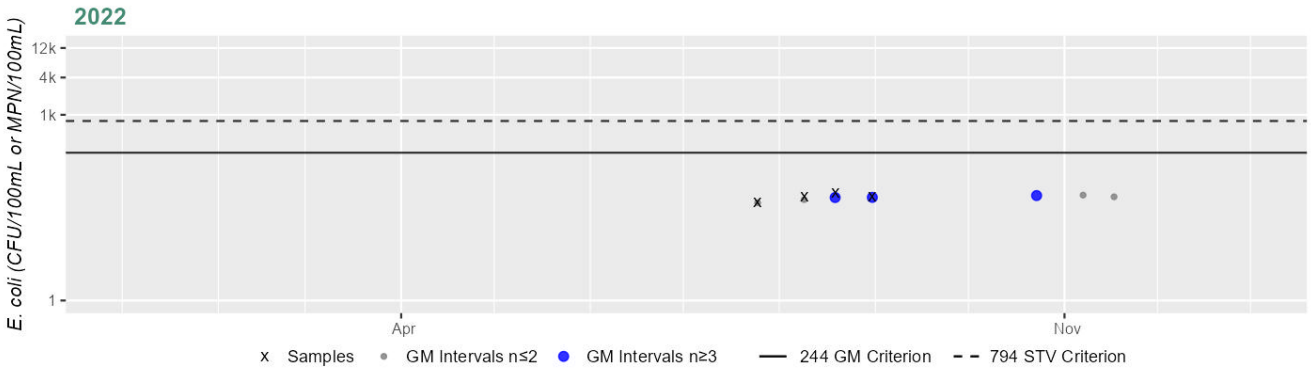
Variable*	Result
Samples	4
SeasGM	12
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NM3120 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	4
SeasGM	46
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Hickory Hills Lake (MA81031)

Location:	Lunenburg.
AU Type:	FRESHWATER LAKE
AU Size:	311 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	Mercury in Fish Tissue	33880	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for Hickory Hills Lake (MA81031) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. DPH included a site-specific advisory for Hickory Hills Lake in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Hickory Hills Lake (MA81031) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Hickory Hills Lake (MA81031) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Hickory Hills Lake (MA81031) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.

Houghton Brook (MA81-55)

Location:	Headwaters, south of Merrill Road, Sterling to mouth at confluence with Stillwater River, Sterling.
AU Type:	RIVER
AU Size:	1.5 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Houghton Brook (MA81-55)

Watershed Area: 0.90 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	0.90	0.90	0.62	0.62
Agriculture	12.9%	12.9%	14.6%	14.6%
Developed	14.8%	14.8%	13.7%	13.7%
Natural	62.4%	62.4%	57.4%	57.4%
Wetland	10%	10%	14.3%	14.3%
Impervious	7.1%	7.1%	6.7%	6.7%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Houghton Brook (MA81-55) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Houghton Brook (MA81-55) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Houghton Brook (MA81-55) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Houghton Brook (MA81-55) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MA DCR (DCRWS) staff collected *E. coli* bacteria samples three-quarters of the way down Houghton Brook at DCRWS_MD92 [Rt. 140, Sterling] from Jan-Dec 2008 (n=49). Analysis of the historic single year high frequency *E. coli* dataset from DCRWS_MD92 indicated 0% of intervals had GMs >244 CFU/100ml and 2% of samples exceeded the 794 CFU/100ml STV. Historic *E. coli* data from DCRWS_MD92 meet 2024 CALM guidance. However, since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD92	MA DCR Division of Water Supply Protection	Water Quality	HOUGHTON BROOK	Rt. 140, Sterling	42.415777	-71.802576

Bacteria Data

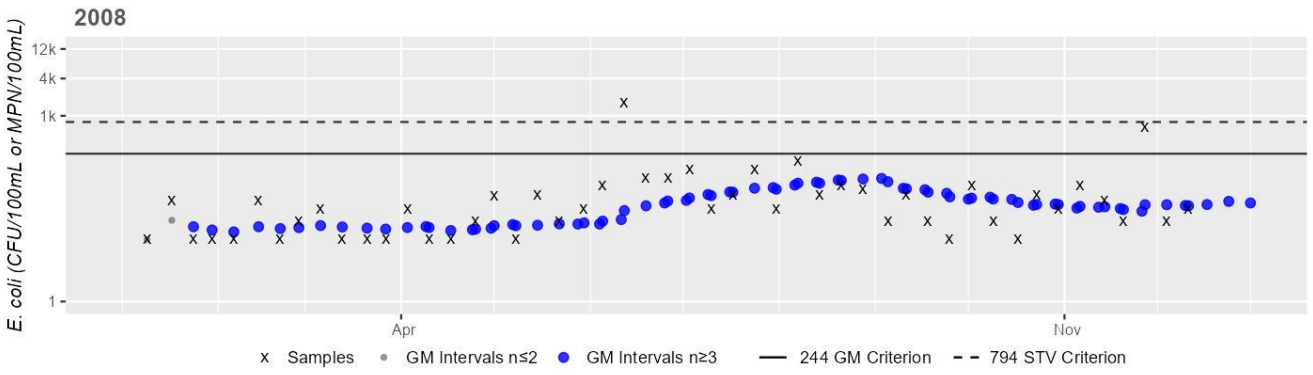
Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

[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
DCRWS_MD92	MA DCR Division of Water Supply Protection	E. coli	01/09/08	12/10/08	49	10	1650	33

Station DCRWS_MD92 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	49
SeasGM	33
#GMI	86
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Hy-Crest Pond (MA81060)

Location:	Sterling.
AU Type:	FRESHWATER LAKE
AU Size:	104 ACRES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for Hy-Crest Pond (MA81060) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

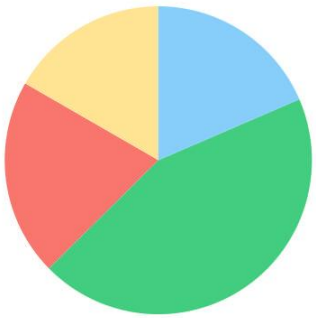
AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

James Brook (MA81-20)

Location:	Headwaters, Groton to mouth at confluence with Nashua River, Ayer/Groton.
AU Type:	RIVER
AU Size:	3.9 MILES
Classification/Qualifier:	B

James Brook (MA81-20)

Watershed Area: 4.38 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	4.38	4.36	1.18	1.18
Agriculture	16.7%	16.8%	13.2%	13.2%
Developed	20.7%	20.5%	14.3%	14.3%
Natural	44.1%	44%	34.8%	34.8%
Wetland	18.5%	18.6%	37.7%	37.7%
Impervious	8.8%	8.8%	6.2%	6.2%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Dissolved Oxygen	--	Unchanged
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Dissolved Oxygen	Source Unknown (N)	X	--	--	--	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for James Brook (MA81-20) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for James Brook (MA81-20) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for James Brook (MA81-20) continues to be assessed as Not Supporting. The prior Escherichia Coli (E. Coli) impairment is being carried forward based on bacteria data not meeting the threshold at 4 stations in 2011-2016 & 2018-2020. Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in James Brook from 2011-2022 at 5 stations. Samples were collected from the following stations/sample years from upstream to downstream: the upstream end of the AU at NRWA_JB0583 [off Court St. Groton] from Apr-Oct 2011 (n=7), a quarter of the way down at NRWA_JB0960 [Near 57 Old Ayer Rd. Bates Conserv. Land, Groton] from 2021-2022 (n=2-5/yr), a third of the way down at NRWA_JB0887 [Indian Hill Rd., Groton] from 2019-2021 (n=2-11/yr), halfway down at NRWA_JB0200 [Old Ayer Rd., Groton] from 2012-2016 and 2022 (n=1-7/yr), and three-quarters of the way down at NRWA_JB0121 [U.S. Rt. 111 Bridge, Ayer] from 2011-2018 and 2022 (n=2-7/yr). Analysis of the single year moderate frequency *E. coli* dataset from NRWA_JB0583 indicated 60% of intervals had GMs >126 CFU/100ml and 1 sample exceeded the 410 CFU/100ml STV (2,419 CFU). Analysis of the single year limited frequency *E. coli* dataset from NRWA_JB0960 indicated 66% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 104 CFU/100ml. Analysis of the multi-year moderate frequency *E. coli* dataset from NRWA_JB0887 indicated 2 out of 2 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2019 and 2020, 100 & 66%), 2 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2019 and 2020, n=2 & 5), and cumulatively across years 81% of intervals had GMs >126 CFU/100ml. Analysis of the multi-year moderate frequency *E. coli* dataset from NRWA_JB0200 indicated 4 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2012-2015, 20-100%), 3 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2012-2014, n=2), and cumulatively across years 47% of intervals had GMs >126 CFU/100ml. Analysis of the recent five years of this multi-year limited frequency *E. coli* dataset from NRWA_JB0121 indicated 4 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2014 and 2016-2018, 33-100%), 2 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2014 and 2016, n=4 & 2), and cumulatively across years 52% of intervals had GMs >126 CFU/100ml. While *E. coli* data from NRWA_JB0960 meet 2024 CALM guidance, *E. coli* data from NRWA_JB0583, NRWA_JB0887, NRWA_JB0200, and NRWA_JB0121 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_JB0121	Nashua River Watershed Association	Water Quality	James Brook	U.S. Rt. 111 Bridge, Ayer	42.579600	-71.588900
NRWA_JB0200	Nashua River Watershed Association	Water Quality	Gulf Brook; James Brook	Old Ayer Rd., Groton	42.584900	-71.572300
NRWA_JB0583	Nashua River Watershed Association	Water Quality	James Brook	off Court St. Groton	42.607800	-71.573500

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_JB0887	Nashua River Watershed Association	Water Quality	James Brook	Indian Hill Rd., Groton	42.590290	-71.568380
NRWA_JB0960	Nashua River Watershed Association	Water Quality	James Brook	Near 57 Old Ayer Rd. Bates Conserv. Land, Groton	42.597562	-71.569347

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

(NRWA 2022) (MassDEP Undated 2)

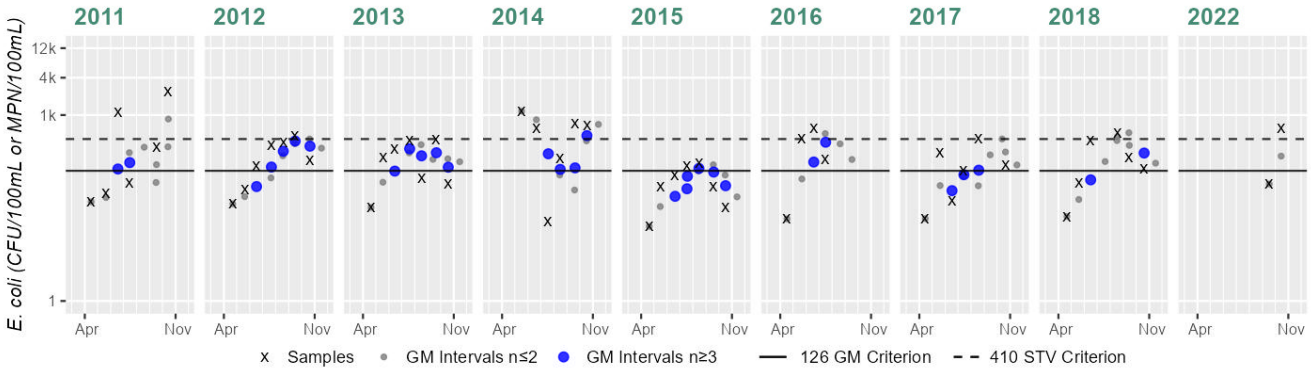
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_JB0121	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	6	39	2419	230
NRWA_JB0121	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	36	461	166
NRWA_JB0121	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	32	403	155
NRWA_JB0121	Nashua River Watershed Association	E. coli	05/17/14	10/18/14	6	18	1150	332
NRWA_JB0121	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	16	165	67
NRWA_JB0121	Nashua River Watershed Association	E. coli	04/16/16	07/16/16	4	21	613	178
NRWA_JB0121	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	6	21	410	109
NRWA_JB0121	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	6	23	517	148
NRWA_JB0121	Nashua River Watershed Association	E. coli	09/17/22	10/15/22	2	77	613	217
NRWA_JB0200	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	25	770	127
NRWA_JB0200	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	6	25	816	177
NRWA_JB0200	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	21	2419	186

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_JB0200	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	7	367	88
NRWA_JB0200	Nashua River Watershed Association	E. coli	04/16/16	08/20/16	4	20	435	86
NRWA_JB0200	Nashua River Watershed Association	E. coli	07/16/22	07/16/22	1	613	613	613
NRWA_JB0583	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	23	2419	183
NRWA_JB0887	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	9	88	2400	238
NRWA_JB0887	Nashua River Watershed Association	E. coli	04/07/20	10/17/20	11	7	2419	233
NRWA_JB0887	Nashua River Watershed Association	E. coli	04/20/21	05/15/21	2	24	85	45
NRWA_JB0960	Nashua River Watershed Association	E. coli	06/19/21	10/16/21	5	50	260	104
NRWA_JB0960	Nashua River Watershed Association	E. coli	05/21/22	06/18/22	2	52	128	81

Station MASSDEP_W1000 & NRWA_JB0121 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	230
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	7
SeasGM	166
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	155
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	332
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	4
%n>STV	66%

Variable*	Result
Samples	7
SeasGM	67
#GMI	6
#GMI Ex	1
%GMI Ex	16%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	178
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	2
%n>STV	50%

Variable*	Result
Samples	6
SeasGM	109
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	6
SeasGM	148
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	2
SeasGM	217
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

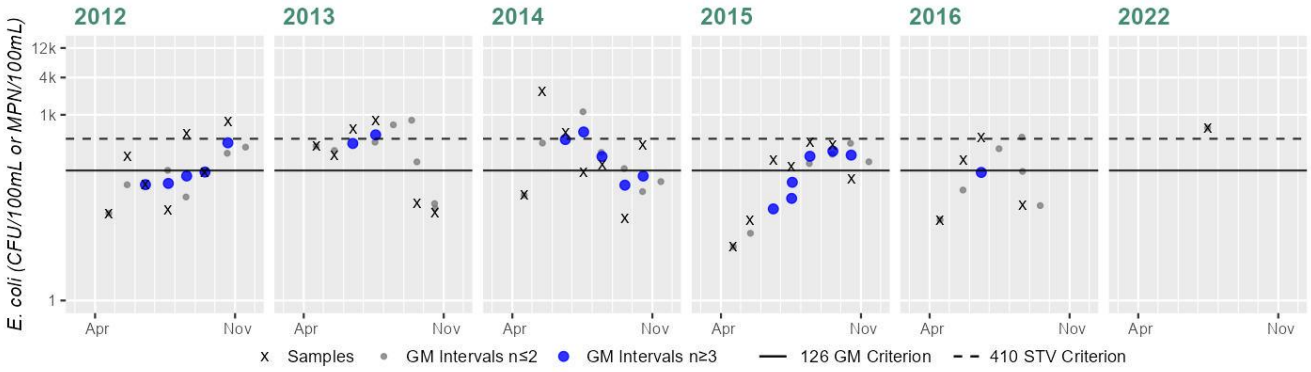
Cumulative %GMI Exceedance Current (2011-2022)
65%

Cumulative %GMI Exceedance Current (Recent 5 Years)
52%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_JB0200 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	127
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	6
SeasGM	177
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	7
SeasGM	186
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	88
#GMI	6
#GMI Ex	3
%GMI Ex	50%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	86
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	25%

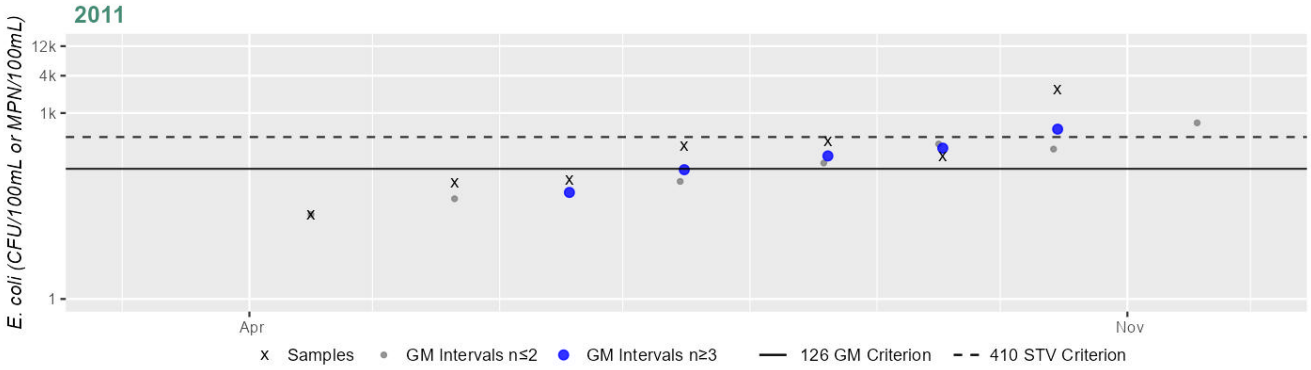
Variable*	Result
Samples	1
SeasGM	613
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	100%

Cumulative %GMI Exceedance Current (2011-2022)
47%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_JB0583 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



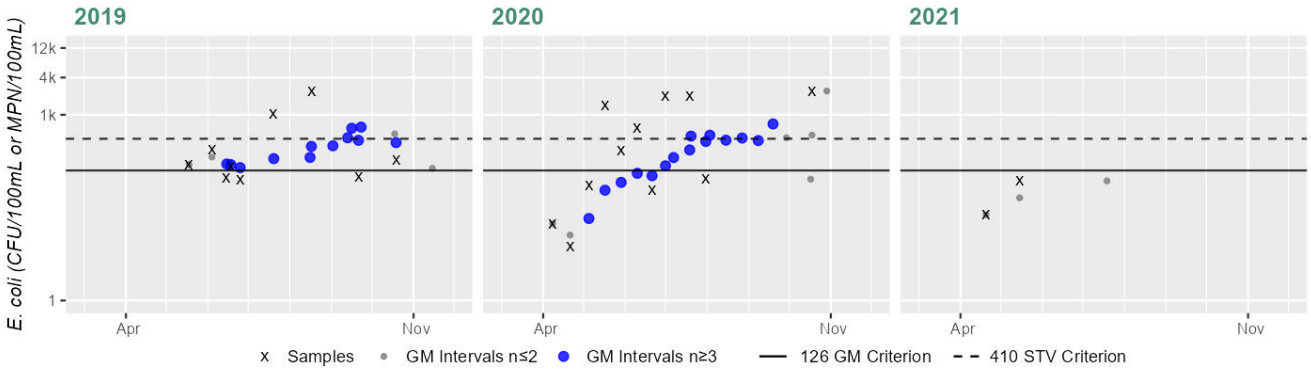
Variable*	Result
Samples	7
SeasGM	183
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	1
%n>STV	14%

Cumulative %GMI Exceedance
Current (2011-2022)
60%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_JB0887 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	9
SeasGM	238
#GMI	12
#GMI Ex	12
%GMI Ex	100%
n>STV	2
%n>STV	22%

Variable*	Result
Samples	11
SeasGM	233
#GMI	15
#GMI Ex	10
%GMI Ex	66%
n>STV	5
%n>STV	45%

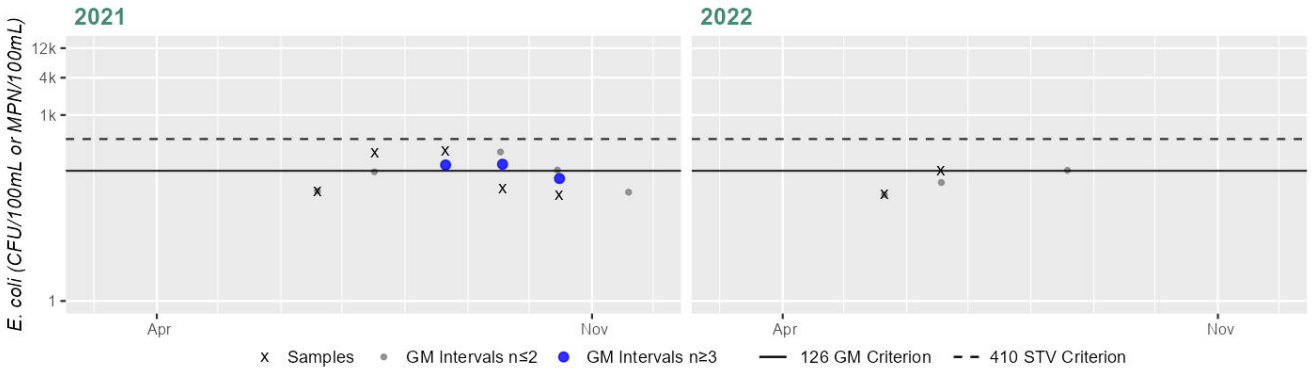
Variable*	Result
Samples	2
SeasGM	45
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
81%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_JB0960 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	104
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	81
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
66%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for James Brook (MA81-20) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at 2 stations in 2012-2016 & 2019-2020. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in James Brook from 2003-2022 at 5 stations/combined stations. Samples were collected from the following stations/sample years from upstream to downstream: the upstream end of the AU at NRWA_JB0583 [off Court St. Groton] from 2008-2010 (historic n=5-7/yr) and Apr-Oct 2011 (current n=7), a quarter of the way down at NRWA_JB0960 [Near 57 Old Ayer Rd. Bates Conserv. Land, Groton] from 2021-2022 (n=2-5/yr), a third of the way down at NRWA_JB0887 [Indian Hill Rd., Groton] from 2019-2021 (n=2-11/yr), halfway down at NRWA_JB0200 [Old Ayer Rd., Groton] from 2012-2016 and 2022 (n=1-7/yr), three-quarters of the way down at combined station W1000 & NRWA_JB0121 [Rt. 111, Ayer & U.S. Rt. 111 Bridge, Ayer] in 2003, 2008, and 2010 (historic n=5-6/yr) as well as 2011-2018 and 2022 (current n=2-7/yr). Since bacteria data from the historic IR window (at 2 stations) are indicative of good water quality conditions, only the analysis from the current IR window will be summarized here: Analysis of the current single year moderate frequency *E. coli* dataset from NRWA_JB0583 indicated 40% of intervals had GMs >244 CFU/100ml and 1 sample exceeded the 794 CFU/100ml STV (2,419 CFU). Analysis of the single year limited frequency *E. coli* dataset from NRWA_JB0960 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 104 CFU/100ml. Analysis of the multi-year moderate frequency *E. coli* dataset from NRWA_JB0887 indicated 2 out of 2 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2019 and 2020, 58 & 53%), 2 yrs had ≥2 samples exceed the 794 CFU/100ml STV (2019 and 2020, n=2 & 4), and cumulatively across years 55% of intervals had GMs >244 CFU/100ml. Analysis of the multi-year moderate frequency *E. coli* dataset from NRWA_JB0200 indicated 3 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2012-2014, 20-100%), 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 31% of intervals had GMs >244 CFU/100ml. Analysis of the recent five years of this multi-year limited frequency *E. coli* dataset from W1000 & NRWA_JB0121 indicated 2 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2014 and 2016, 25 & 50%), 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 11% of intervals had GMs >244 CFU/100ml. While *E. coli* data from NRWA_JB0583, NRWA_JB0960, and W1000 & NRWA_JB0121 meet 2024 CALM guidance, *E. coli* data from NRWA_JB0887 and NRWA_JB0200 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1000	MassDEP	Water Quality	James Brook	[Route 111, Ayer]	42.579467	-71.588617

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_JB0121	Nashua River Watershed Association	Water Quality	James Brook	U.S. Rt. 111 Bridge, Ayer	42.579600	-71.588900
NRWA_JB0200	Nashua River Watershed Association	Water Quality	Gulf Brook; James Brook	Old Ayer Rd., Groton	42.584900	-71.572300
NRWA_JB0583	Nashua River Watershed Association	Water Quality	James Brook	off Court St. Groton	42.607800	-71.573500
NRWA_JB0887	Nashua River Watershed Association	Water Quality	James Brook	Indian Hill Rd., Groton	42.590290	-71.568380
NRWA_JB0960	Nashua River Watershed Association	Water Quality	James Brook	Near 57 Old Ayer Rd. Bates Conserv. Land, Groton	42.597562	-71.569347

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

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

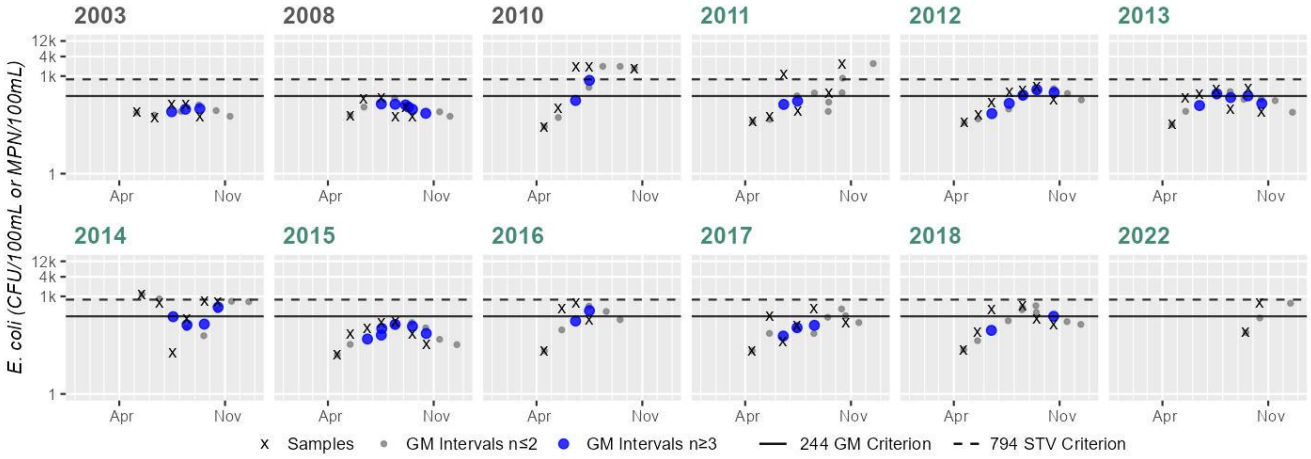
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1000	MassDEP	E. coli	05/06/03	09/11/03	5	52	130	82
W1000	MassDEP	E. coli	05/15/08	09/18/08	6	58	220	100
NRWA_JB0121	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	5	27	1986	454
NRWA_JB0121	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	6	39	2419	230
NRWA_JB0121	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	36	461	166
NRWA_JB0121	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	32	403	155
NRWA_JB0121	Nashua River Watershed Association	E. coli	05/17/14	10/18/14	6	18	1150	332
NRWA_JB0121	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	16	165	67

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_JB0121	Nashua River Watershed Association	E. coli	04/16/16	07/16/16	4	21	613	178
NRWA_JB0121	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	6	21	410	109
NRWA_JB0121	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	6	23	517	148
NRWA_JB0121	Nashua River Watershed Association	E. coli	09/17/22	10/15/22	2	77	613	217
NRWA_JB0200	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	25	770	127
NRWA_JB0200	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	6	25	816	177
NRWA_JB0200	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	21	2419	186
NRWA_JB0200	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	7	367	88
NRWA_JB0200	Nashua River Watershed Association	E. coli	04/16/16	08/20/16	4	20	435	86
NRWA_JB0200	Nashua River Watershed Association	E. coli	07/16/22	07/16/22	1	613	613	613
NRWA_JB0583	Nashua River Watershed Association	E. coli	04/19/08	10/18/08	6	53	686	137
NRWA_JB0583	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	30	1986	136
NRWA_JB0583	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	5	55	2419	500
NRWA_JB0583	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	23	2419	183
NRWA_JB0887	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	9	88	2400	238
NRWA_JB0887	Nashua River Watershed Association	E. coli	04/07/20	10/17/20	11	7	2419	233
NRWA_JB0887	Nashua River Watershed Association	E. coli	04/20/21	05/15/21	2	24	85	45

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_JB0960	Nashua River Watershed Association	E. coli	06/19/21	10/16/21	5	50	260	104
NRWA_JB0960	Nashua River Watershed Association	E. coli	05/21/22	06/18/22	2	52	128	81

Station MASSDEP_W1000 & NRWA_JB0121 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	82
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	100
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	454
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	3
%n>STV	60%

Variable*	Result
Samples	6
SeasGM	230
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	7
SeasGM	166
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	155
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	332
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	7
SeasGM	67
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	178
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	109
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	148
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	217
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)
9%

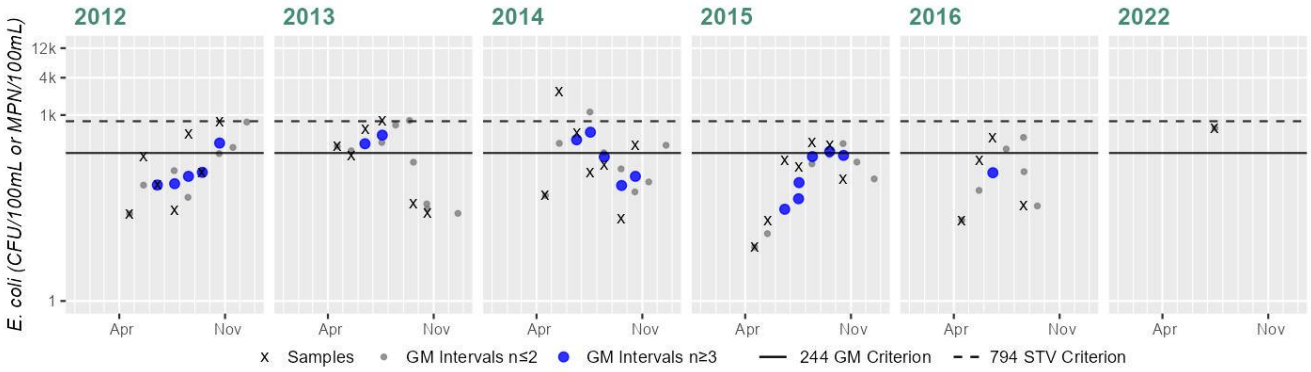
Cumulative %GMI Exceedance Current (2011-2022)
24%

Cumulative %GMI Exceedance Current (Recent 5 Years)
11%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_JB0200 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	127
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	177
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	7
SeasGM	186
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	88
#GMI	6
#GMI Ex	1
%GMI Ex	16%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	86
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

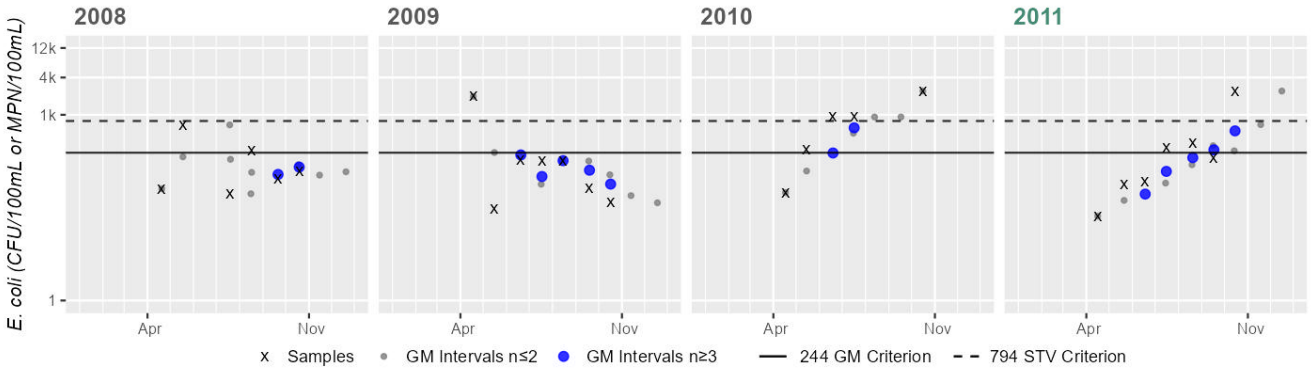
Variable*	Result
Samples	1
SeasGM	613
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
31%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_JB0583 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	137
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	136
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	5
SeasGM	500
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	3
%n>STV	60%

Variable*	Result
Samples	7
SeasGM	183
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	1
%n>STV	14%

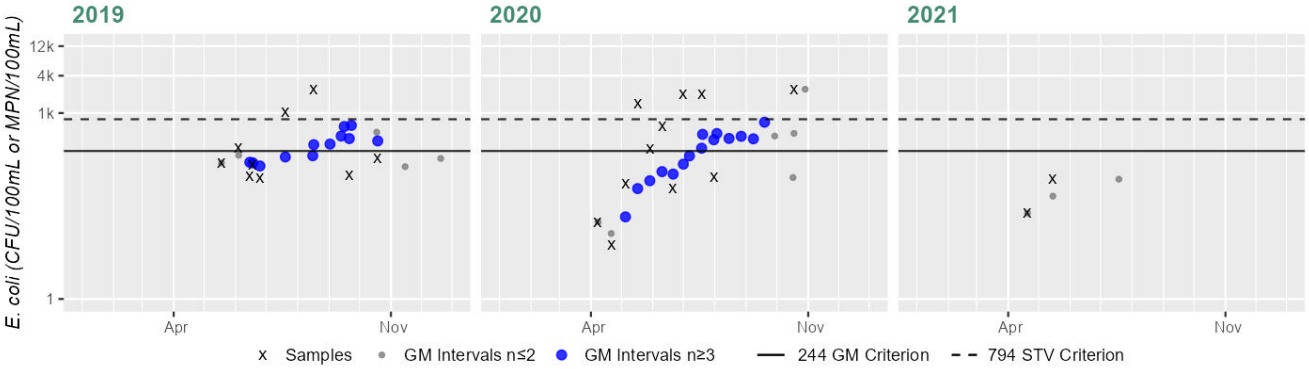
Cumulative %GMI Exceedance
Historic (1997-2010)
11%

Cumulative %GMI Exceedance
Current (2011-2022)
40%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_JB0887 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	9
SeasGM	238
#GMI	12
#GMI Ex	7
%GMI Ex	58%
n>STV	2
%n>STV	22%

Variable*	Result
Samples	11
SeasGM	233
#GMI	15
#GMI Ex	8
%GMI Ex	53%
n>STV	4
%n>STV	36%

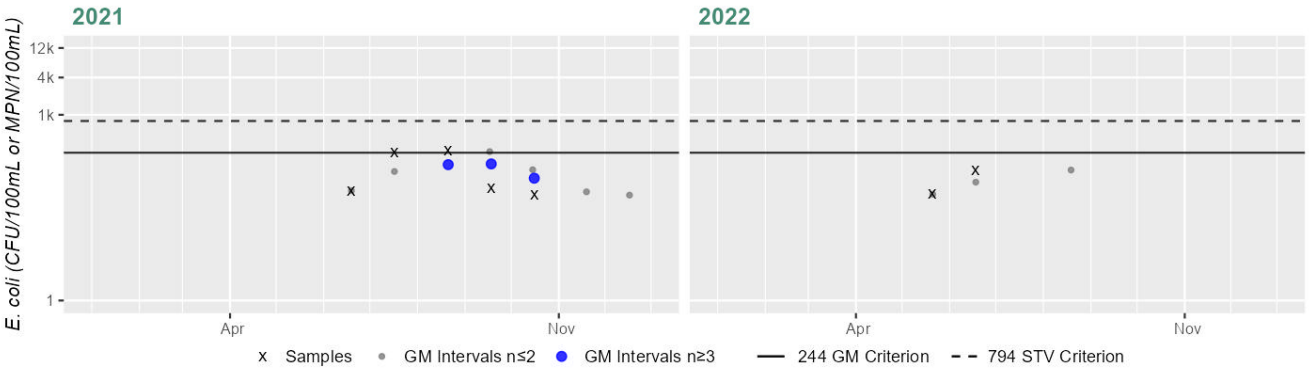
Variable*	Result
Samples	2
SeasGM	45
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
55%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_JB0960 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	104
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	81
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Justice Brook (MA81-41)

Location:	Headwaters, outlet Stuart Pond, Sterling to mouth at confluence with Keyes Brook forming headwaters Stillwater River, Princeton/Sterling.
AU Type:	RIVER
AU Size:	1 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Justice Brook (MA81-41)

Watershed Area: 5.11 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	5.11	4.56	2.70	2.45
Agriculture	2.7%	3.1%	1.1%	1.2%
Developed	4.6%	5%	4.4%	4.6%
Natural	83.5%	82.3%	80.7%	79.9%
Wetland	9.2%	9.7%	13.9%	14.3%
Impervious	2%	2.1%	2.1%	2.2%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Justice Brook (MA81-41) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Justice Brook (MA81-41) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Justice Brook (MA81-41) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Justice Brook (MA81-41) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MA DCR (DCRWS) staff collected *E. coli* bacteria samples in Justice Brook at DCRWS_MD93 [Rt. 140 at Sterling/Princeton line] from Jan-Dec 2008 (n=49). Analysis of the historic single year high frequency *E. coli* dataset from DCRWS_MD93 indicated 0% of intervals had GMs >244 CFU/100ml and 0% of samples exceeded the 794 CFU/100ml STV, which meets 2024 CALM guidance. However, since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

Monitoring Stations

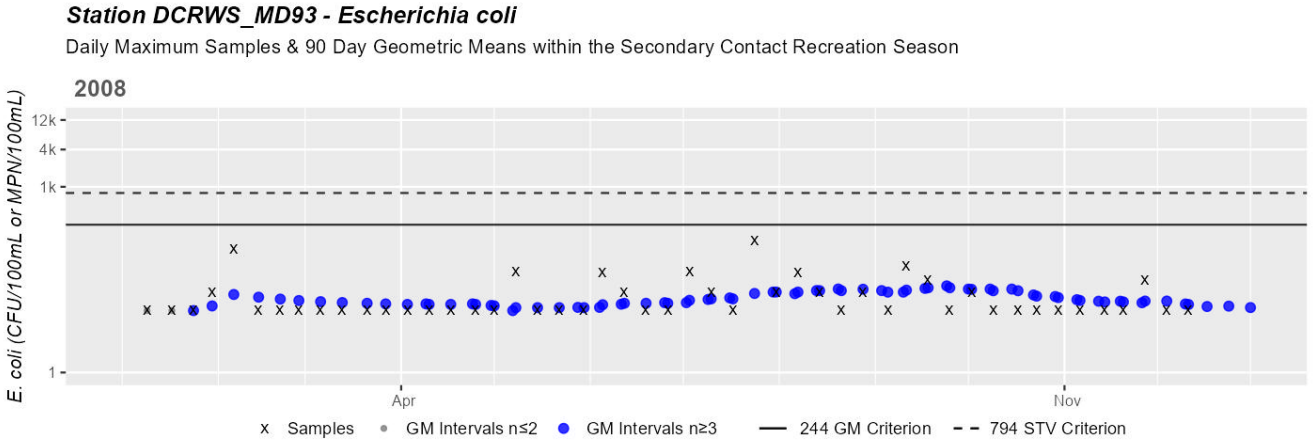
Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD93	MA DCR Division of Water Supply Protection	Water Quality	JUSTICE BROOK	Rt. 140 at Sterling/Princeton line	42.467104	-71.827872

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

[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
DCRWS_MD93	MA DCR Division of Water Supply Protection	E. coli	01/09/08	12/10/08	49	10	137	14



Variable*	Result
Samples	49
SeasGM	14
#GMI	86
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Kendall Reservoir (MA81062)

Location:	Holden.
AU Type:	FRESHWATER LAKE
AU Size:	179 ACRES
Classification/Qualifier:	A: PWS, ORW (PWS and Tributary to PWS)

No usable data were available for Kendall Reservoir (MA81062) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Keyes Brook (MA81-40)

Location:	Headwaters, outlet Paradise Pond, Princeton to mouth at confluence with Justice Brook forming headwaters Stillwater River, Princeton/Sterling.
AU Type:	RIVER
AU Size:	3.2 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Keyes Brook (MA81-40)

Watershed Area: 5.11 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	5.11	3.76	2.89	2.33
Agriculture	0.8%	0.9%	0.6%	0.6%
Developed	6%	6.9%	7%	7.5%
Natural	84.6%	83.6%	78%	78.4%
Wetland	8.6%	8.6%	14.4%	13.5%
Impervious	3%	3.3%	3.7%	3.9%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Keyes Brook (MA81-40) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Keyes Brook (MA81-40) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Keyes Brook (MA81-40) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Keyes Brook (MA81-40) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MA DCR (DCRWS) staff collected *E. coli* bacteria samples in Keyes Brook in 2008 at 3 stations. Samples were collected from the following stations/sample years from upstream to downstream: a quarter of the way down at DCRWS_MD96 [Hobbs Rd, Princeton] from Jan-Dec 2008 (n=49), just over halfway down at DCRWS_MD95 [Pond outlet behind quik-stop, Rt. 140, Princeton] from Jan-Dec 2008 (n=49), and three-quarters of the way down at DCRWS_MD94 [Gleason Rd, Princeton] from Jan-Dec 2008 (n=44). Analysis of the historic single year high frequency *E. coli* dataset from DCRWS_MD96 indicated 0% of intervals had GMs >244 CFU/100ml and 0% of samples exceeded the 794 CFU/100ml STV. Analysis of the historic single year high frequency *E. coli* dataset from DCRWS_MD95 indicated 0% of intervals had GMs >244 CFU/100ml and 2% of samples exceeded the 794 CFU/100ml STV. Analysis of the historic single year high frequency *E. coli* dataset from DCRWS_MD94 indicated 0% of intervals had GMs >244 CFU/100ml and 0% of samples exceeded the 794 CFU/100ml STV. Historic *E. coli* data from DCRWS_MD96, DCRWS_MD95, and DCRWS_MD94 meet 2024 CALM guidance. However, since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD94	MA DCR Division of Water Supply Protection	Water Quality	KEYES BROOK	Gleason Rd, Princeton	42.471928	-71.837844
DCRWS_MD95	MA DCR Division of Water Supply Protection	Water Quality	KEYES BROOK	Pond outlet behind quik-stop, Rt. 140, Princeton	42.476594	-71.841838
DCRWS_MD96	MA DCR Division of Water Supply Protection	Water Quality	KEYES BROOK	Hobbs Rd, Princeton	42.489611	-71.850483

Bacteria Data

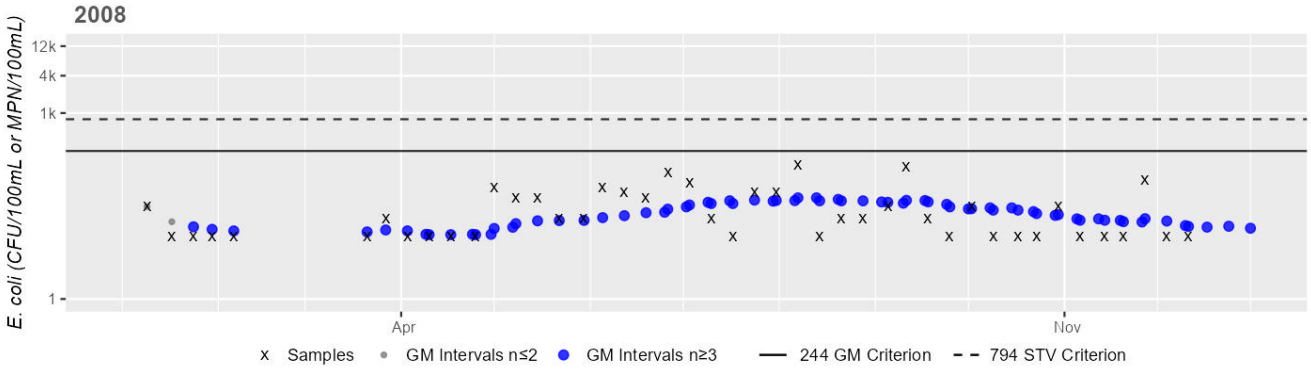
Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

[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
DCRWS_MD94	MA DCR Division of Water Supply Protection	E. coli	01/09/08	12/10/08	44	10	146	21
DCRWS_MD95	MA DCR Division of Water Supply Protection	E. coli	01/09/08	12/10/08	49	10	3260	25
DCRWS_MD96	MA DCR Division of Water Supply Protection	E. coli	01/09/08	12/10/08	49	10	738	34

Station DCRWS_MD94 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



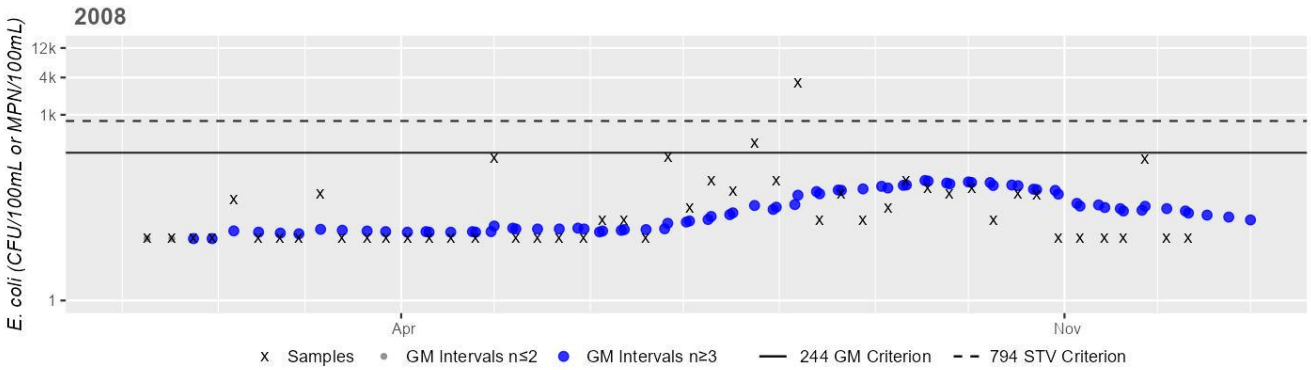
Variable*	Result
Samples	44
SeasGM	21
#GMI	78
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station DCRWS_MD95 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



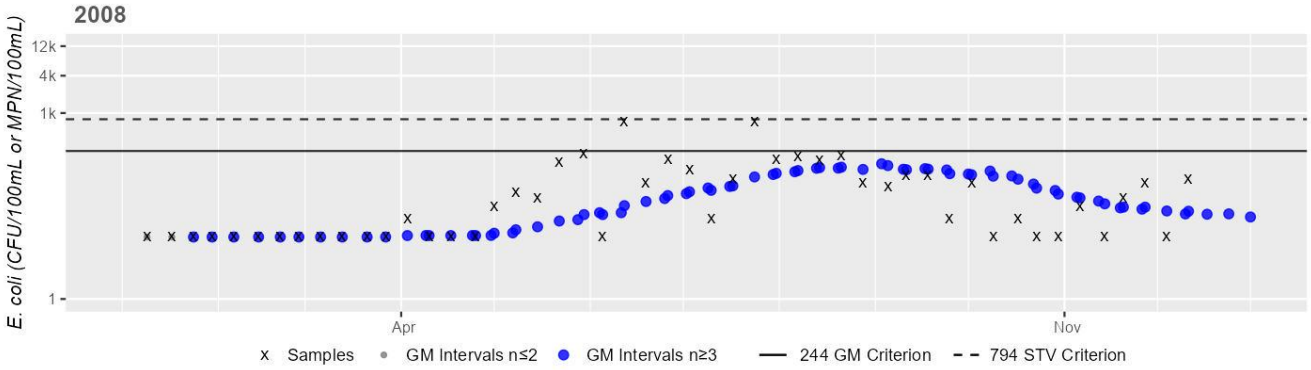
Variable*	Result
Samples	49
SeasGM	25
#GMI	86
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station DCRWS_MD96 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	49
SeasGM	34
#GMI	86
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Lake Samoset (MA81116)

Location:	Leominster.
AU Type:	FRESHWATER LAKE
AU Size:	35 ACRES
Classification/Qualifier:	B

No usable data were available for Lake Samoset (MA81116) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Lake Shirley (MA81122)

Location:	Lunenburg/Shirley.
AU Type:	FRESHWATER LAKE
AU Size:	360 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Brittle Naiad, Najas Minor*)	--	Unchanged
5	5	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
5	5	(Fanwort*)	--	Unchanged
5	5	(Non-Native Aquatic Plants*)	--	Unchanged
5	5	Dissolved Oxygen	--	Unchanged
5	5	Harmful Algal Blooms	--	Unchanged
5	5	Mercury in Fish Tissue	42399	Unchanged
5	5	Turbidity	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Brittle Naiad, Najas Minor*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Eurasian Water Milfoil, Myriophyllum Spicatum*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Fanwort*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Dissolved Oxygen	Source Unknown (N)	X	--	--	--	--
Harmful Algal Blooms	Source Unknown (N)	X	--	X	X	X
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--
Turbidity	Source Unknown (N)	--	--	X	X	X

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for Lake Shirley (MA81122) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. DPH included a site-specific advisory for Lake Shirley (referred to by MDPH as ''Shirley Lake'') in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Aesthetics Use for Lake Shirley (MA81122) continues to be assessed as Not Supporting with the prior Harmful Algal Blooms and Turbidity impairments being carried forward. No new data are available to evaluate the Aesthetics Use for Lake Shirley.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Lake Shirley (MA81122) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior Harmful Algal Blooms and Turbidity impairments (from the Aesthetics Use) are being carried forward.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Lake Shirley (MA81122) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use continues to be assessed as Not Supporting. The prior Harmful Algal Blooms and Turbidity impairments (from the Aesthetics Use) are being carried forward.

Lake Wampanoag (MA81151)

Location:	Ashburnham/Gardner.
AU Type:	FRESHWATER LAKE
AU Size:	224 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	Mercury in Fish Tissue	33880	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for Lake Wampanoag (MA81151) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. DPH included a site-specific advisory for Lake Wampanoag (referred to by MDPH as ''Wampanoag, Lake'') in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Lake Wampanoag (MA81151) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Lake Wampanoag (MA81151) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Lake Wampanoag (MA81151) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.

Lake Whalom (MA81154)

Location:	Lunenburg/Leominster.
AU Type:	FRESHWATER LAKE
AU Size:	97 ACRES
Classification/Qualifier:	B

No usable data were available for Lake Whalom (MA81154) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Curly-leaf Pondweed*)	--	Unchanged
4c	4c	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Eurasian Water Milfoil, Myriophyllum Spicatum*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Lancaster Millpond (MA81065)

Location:	Clinton.
AU Type:	FRESHWATER LAKE
AU Size:	21 ACRES
Classification/Qualifier:	B

No usable data were available for Lancaster Millpond (MA81065) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Lily Pond (MA81067)

Location:	Middle Basin, West Boylston.
AU Type:	FRESHWATER LAKE
AU Size:	5 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
--	4c	(Aquatic Plants (Macrophytes)*)	--	Added

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Aquatic Plants (Macrophytes)*)	Source Unknown (N)	--	--	X	X	X

Recommendations

2024/26 Recommendations
2024/26 IR [HARMFUL ALGAL BLOOMS, MEDIUM] Additional sampling is recommended for Lily Pond (MA81067) at the Middle Basin, southwestern edge of pond {W2700} due to elevated cyanobacteria cell counts on Jul 19, 2017. This is of medium priority.

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Lily Pond (MA81067) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Lily Pond (MA81067) is assessed as Not Supporting based on the observations made during a 2017 macrophyte mapping survey, with an Aquatic Plants (Macrophytes) non-pollutant impairment being added. MassDEP staff recorded aesthetics observations as part of the MAP2 lake monitoring project in summer 2017 at two stations in West Boylston, for Lily Pond; at the Middle Basin, southwestern edge of pond (W2700/MAP2L-156S), n=5) and at the deep hole index site (W2699/MAP2L-156, n=3). There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, or littoral zone duckweed recorded in ten shoreline plots (n=1). However, during the MAP2 macrophyte mapping survey (n=1) in Sep 2017, greater than 25% (26.2%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2699	MassDEP	Water Quality	Lily Pond	[Middle Basin, index site, West Boylston]	42.376655	-71.769551
W2700	MassDEP	Water Quality	Lily Pond	[Middle Basin, southwestern edge of pond, West Boylston]	42.376630	-71.770660

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2699	2017	3	Aesthetic observations were made by MassDEP field sampling crews at Station W2699 (MAP2L-156) on Lily Pond (MA81067) during 3 site visits between Jun 2017 and Sep 2017. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, though field staff noted green water color (n=1). During the MAP2 macrophyte mapping survey (n=1) in Sep 2017, greater than 25% (26.2%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%. The observations from the MAP2 survey are indicative of an Aesthetics Use impairment.
W2700	2017	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2700 (MAP2L-156S) on Lily Pond (MA81067) during 5 site visits between May 2017 and Sep 2017. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded. During the MAP2 littoral survey (n=1), duckweed was not noted in any of the 10 shoreline plots.

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2699	Lily Pond	2017	Aesthetics Impaired?	No	3	3
W2699	Lily Pond	2017	Aquatic Plant Density, Overall	None	1	3
W2699	Lily Pond	2017	Aquatic Plant Density, Overall	NR	1	3
W2699	Lily Pond	2017	Aquatic Plant Density, Overall	Unobservable	1	3
W2699	Lily Pond	2017	Aquatic Plant Density, Whole Lake	Unobservable	2	2
W2699	Lily Pond	2017	Color	Greenish	1	3
W2699	Lily Pond	2017	Color	None	2	3
W2699	Lily Pond	2017	Duckweed Density, Whole Lake	None	1	2
W2699	Lily Pond	2017	Duckweed Density, Whole Lake	Unobservable	1	2
W2699	Lily Pond	2017	Objectionable Deposits	No	3	3
W2699	Lily Pond	2017	Odor	None	3	3
W2699	Lily Pond	2017	Scum	No	2	3
W2699	Lily Pond	2017	Scum	Yes	1	3
W2699	Lily Pond	2017	Turbidity	None	2	3
W2699	Lily Pond	2017	Turbidity	Slightly Turbid	1	3
W2700	Lily Pond	2017	Aesthetics Impaired?	No	5	5
W2700	Lily Pond	2017	Color	None	5	5
W2700	Lily Pond	2017	Objectionable Deposits	No	4	5

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2700	Lily Pond	2017	Objectionable Deposits	Yes	1	5
W2700	Lily Pond	2017	Odor	Musty (Basement)	1	5
W2700	Lily Pond	2017	Odor	None	4	5
W2700	Lily Pond	2017	Scum	No	4	5
W2700	Lily Pond	2017	Scum	Yes	1	5
W2700	Lily Pond	2017	Turbidity	None	3	5
W2700	Lily Pond	2017	Turbidity	Slightly Turbid	2	5

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	YES

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for Lily Pond (MA81067) is assessed as Not Supporting. An Aquatic Plants (Macrophytes) impairment is being added (from the Aesthetics Use). An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU. In Lily Pond MassDEP staff collected Secchi depth and cyanobacteria cell count data at W2699 [MAP2L-156, Index-deep hole] (2017) and cyanobacteria cell count and cyanotoxins data at W2700 [MAP2L-156S, Shoreline at Middle Basin, southwestern edge of pond, W Boylston] (2017). Secchi depth data indicated water clarity meeting the 1.2m (4ft) threshold at W2699 in 2017 (n=3, 2.8-4.15m). However, the cyanobacteria cell count exceeded 70,000 cells/ml for a single sample on Jul 19, 2017 in 2017 (n=6), which is indicative of a Harmful Algal Bloom Alert. Analysis of microcystins and cylindrospermopsin samples from W2700 in 2017 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L. In addition, MassDEP staff collected *E. coli* bacteria samples in Lily Pond at shoreline station W2700 from May-Sep 2017 (n=5). Analysis of the single year limited frequency *E. coli* dataset from W2700 indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 10 CFU/100ml. *E. coli* data from W2700 meet 2024 CALM guidance.

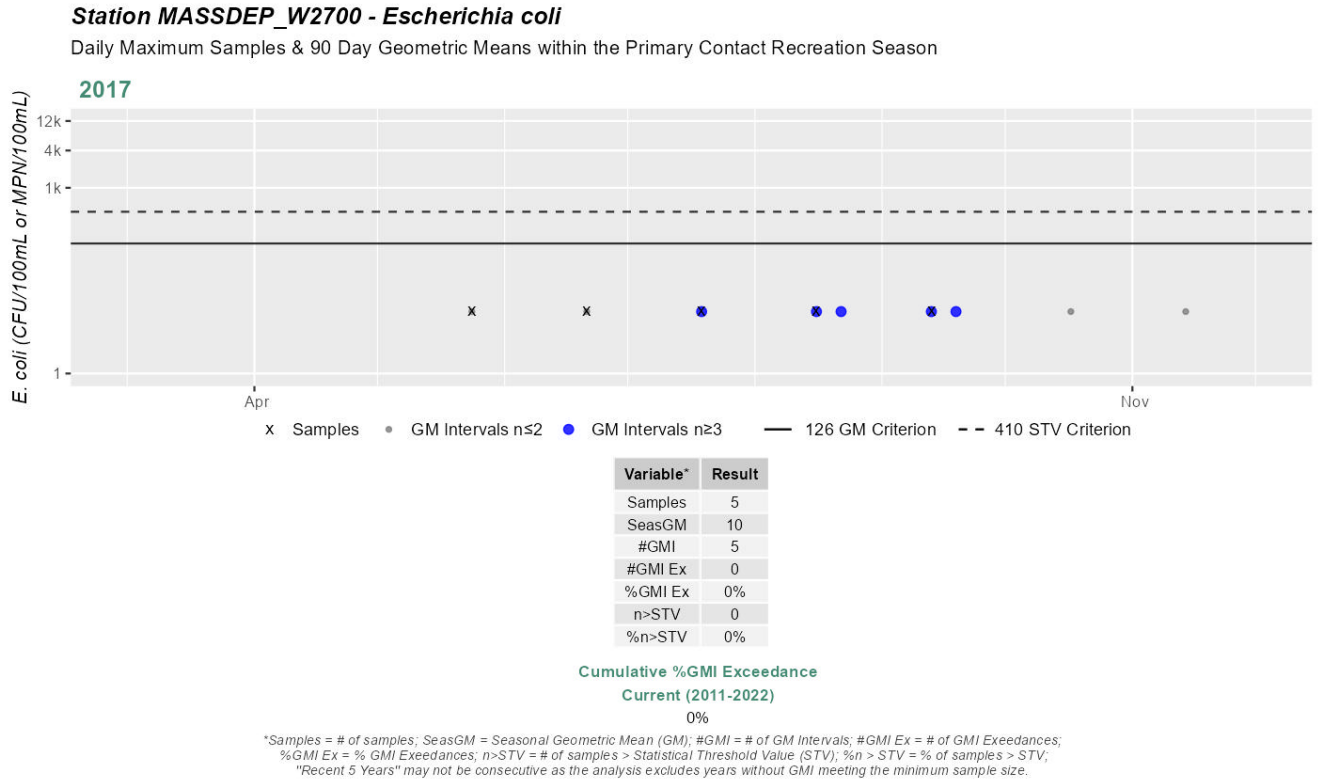
Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2699	MassDEP	Water Quality	Lily Pond	[Middle Basin, index site, West Boylston]	42.376655	-71.769551
W2700	MassDEP	Water Quality	Lily Pond	[Middle Basin, southwestern edge of pond, West Boylston]	42.376630	-71.770660

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)
(MassDEP Undated 7) (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
W2700	MassDEP	E. coli	05/24/17	09/13/17	5	10	10	10



Variable*	Result
Samples	5
SeasGM	10
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Other Indicators

Summary Statement for 2011-2022 Cyanobacteria Cell Count and Cyanotoxin Data, and Secchi Depth Data
(MassDEP Undated 7) (MassDEP Undated 4)

Data Year(s)	Summary
2017	In Lily Pond (MA81067) in 2017, MassDEP collected Secchi and cyanobacteria cell count data at W2699 [MAP2L-156, Index-deep hole], and cyanobacteria cell count and cyanotoxin data at W2700 [MAP2L-156S, Shoreline]. At station W2699 (station depth=5.2 m) the Secchi depth measurements ranged from 2.8-4.15 m (n=3) indicating water clarity meeting the 1.2 m (4 ft) threshold. The cyanobacteria cell count exceeded 70,000 cells/mL for a single sample on Jul 19, 2017 (n=6). The elevated cyanobacteria cell count measurement is indicative of a Harmful Algal Blooms Alert. Analysis of microcystins and cylindrospermopsin samples from the shoreline station W2700 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L.

MassDEP Cyanobacteria Cell Count Data Collected at Lakes and Impoundments (2016-2018) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Waterbody	Station Type	Data Year	Sample Count	Count >70,000 cells/mL	Exceedance Date(s)
W2699	Lily Pond	Index	2017	3	0	NA
W2700	Lily Pond	Shoreline	2017	3	1	7/19/2017

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	YES

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Lily Pond (MA81067) is assessed as Not Supporting. An Aquatic Plants (Macrophytes) impairment is being added (from the Aesthetics Use). An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU. In Lily Pond MassDEP staff collected cyanobacteria cell count data at W2699 [MAP2L-156, Index-deep hole] (2017) and cyanobacteria cell count and cyanotoxins data at W2700 [MAP2L-156S, Shoreline at Middle Basin, southwestern edge of pond, W Boylston] (2017). The cyanobacteria cell count exceeded 70,000 cells/ml for a single sample on Jul 19, 2017 in 2017 (n=6). The elevated cyanobacteria cell count measurement is indicative of a Harmful Algal Blooms Alert. Analysis of microcystins and cylindrospermopsin samples from W2700 in 2017 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L. In addition, MassDEP staff collected *E. coli* bacteria samples in Lily Pond at shoreline station W2700 from May-Sep 2017 (n=5). Analysis of the single year limited frequency *E. coli* dataset from W2700 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 10 CFU/100ml. *E. coli* data from W2700 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2700	MassDEP	Water Quality	Lily Pond	[Middle Basin, southwestern edge of pond, West Boylston]	42.376630	-71.770660

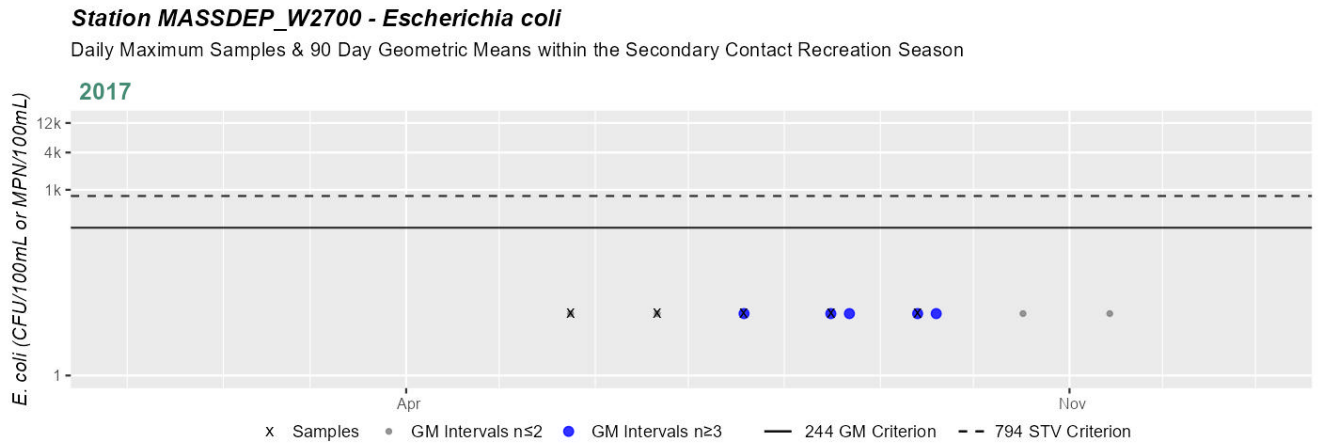
Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3)

[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
W2700	MassDEP	E. coli	05/24/17	09/13/17	5	10	10	10



Variable*	Result
Samples	5
SeasGM	10
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Lincoln Pond (MA81070)

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

No usable data were available for Lincoln Pond (MA81070) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

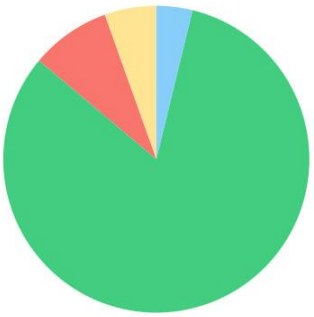
AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Locke Brook (MA81-78)

Location:	From New Hampshire border, Ashby to mouth at confluence with Willard Brook, Townsend.
AU Type:	RIVER
AU Size:	4.4 MILES
Classification/Qualifier:	B: ORW

Locke Brook (MA81-78)

Watershed Area: 4.31 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	2.79	2.34	0.98	0.90
Agriculture	5.5%	5%	6.2%	6.8%
Developed	8.4%	9.3%	6.7%	7.3%
Natural	82.3%	82%	78.6%	78.7%
Wetland	3.8%	3.6%	8.5%	7.3%
Impervious	3.2%	3.5%	2.7%	2.9%

**Land cover analysis only includes watershed area within Massachusetts.*

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Locke Brook (MA81-78) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Locke Brook (MA81-78) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Locke Brook (MA81-78) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Locke Brook (MA81-78) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MassDEP staff collected *E. coli* bacteria samples in Locke Brook at W1834 [W Meadow Rd, Townsend] from May-Sep 2008 (n=5). Analysis of the historic single year limited frequency *E. coli* dataset from W1834 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 18 CFU/100ml, which meets 2024 CALM guidance. However, since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1834	MassDEP	Water Quality	Locke Brook	[West Meadow Road, Townsend]	42.678548	-71.758324

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

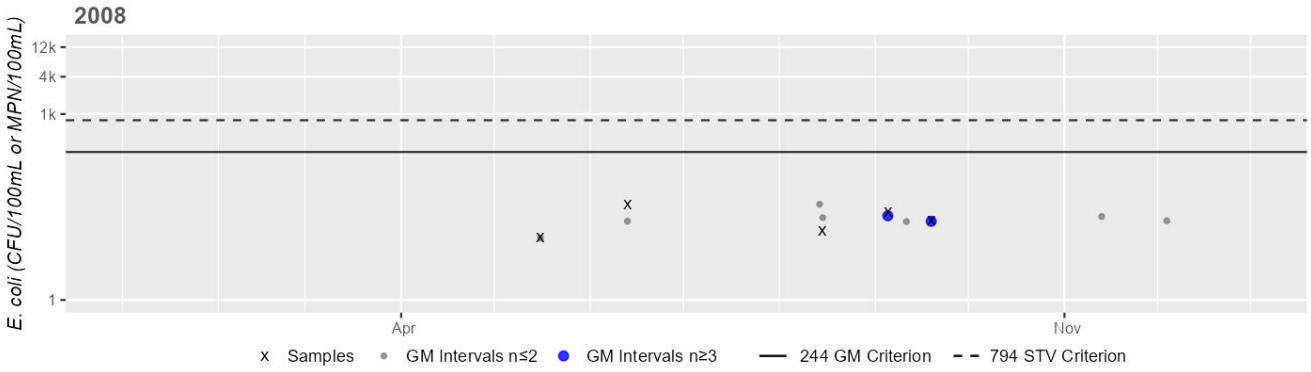
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W1834	MassDEP	E. coli	05/15/08	09/18/08	5	10	35	18

Station MASSDEP_W1834 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	18
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Long Pond (MA81073)

Location:	Ayer/Groton.
AU Type:	FRESHWATER LAKE
AU Size:	46 ACRES
Classification/Qualifier:	B

No usable data were available for Long Pond (MA81073) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Lovell Reservoir (MA81074)

Location:	Fitchburg.
AU Type:	FRESHWATER LAKE
AU Size:	35 ACRES
Classification/Qualifier:	A: PWS, ORW (PWS and Tributary to PWS)

No usable data were available for Lovell Reservoir (MA81074) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Lower Crow Hill Pond (MA81026)

Location:	Princeton/Westminster.
AU Type:	FRESHWATER LAKE
AU Size:	14 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Aquatic Plants (Macrophytes)*)	--	Added
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Aquatic Plants (Macrophytes)*)	Source Unknown (N)	--	--	X	X	X
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary

Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Lower Crow Hill Pond (MA81026) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Aesthetics Use for Lower Crow Hill Pond (MA81026) is assessed as Not Supporting based on the observations made during a 2017 macrophyte mapping survey, with an Aquatic Plants (Macrophytes) non-pollutant impairment being added. MassDEP staff recorded aesthetics observations as part of the MAP2 lake monitoring project in summer 2017 at two stations in Princeton, for Lower Crow Hill Pond; at the upper northwestern edge of pond, east of Route 31, from public access area southwest of Upper Crow Hills Pond Dam (NAT ID: MA03273) (W2709/MAP2L-163S, n=5) and at the index site at the southern end of pond, (W2708/MAP2L-163, n=3). There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, or littoral zone duckweed recorded in ten shoreline plots (n=1). However, During the MAP2 macrophyte mapping survey in Aug 2017 (n=1), greater than 25% (33.2%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2708	MassDEP	Water Quality	Lower Crow Hill Pond	[index site, Princeton]	42.516803	-71.855447
W2709	MassDEP	Water Quality	Lower Crow Hill Pond	[upper northwestern edge of pond, east of Route 31, from public access area southwest of Upper Crow Hills Pond Dam (NAT ID: MA03273), Princeton]	42.518329	-71.855764

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2708	2017	3	Aesthetic observations were made by MassDEP field sampling crews at Station W2708 (MAP2L-163) on Lower Crow Hill Pond (MA81026) during 3 site visits between Jun 2017 and Sep 2017. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded. During the MAP2 macrophyte mapping survey (n=1) in Aug 2017, greater than 25% (33.2%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%. The observations from the MAP2 survey are indicative of an Aesthetics Use impairment.
W2709	2017	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2709 (MAP2L-163S) on Lower Crow Hill Pond (MA81026) during 5 site visits between May 2017 and Aug 2017. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded. During the MAP2 littoral survey (n=1), duckweed was not noted in any of the 10 shoreline plots.

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2708	Lower Crow Hill Pond	2017	Aesthetics Impaired?	No	3	3
W2708	Lower Crow Hill Pond	2017	Aquatic Plant Density, Overall	None	2	3
W2708	Lower Crow Hill Pond	2017	Aquatic Plant Density, Overall	Sparse	1	3
W2708	Lower Crow Hill Pond	2017	Aquatic Plant Density, Whole Lake	Sparse	1	2
W2708	Lower Crow Hill Pond	2017	Aquatic Plant Density, Whole Lake	Unobservable	1	2
W2708	Lower Crow Hill Pond	2017	Color	Light Yellow/Tan	3	3
W2708	Lower Crow Hill Pond	2017	Duckweed Density, Whole Lake	None	1	2
W2708	Lower Crow Hill Pond	2017	Duckweed Density, Whole Lake	Unobservable	1	2
W2708	Lower Crow Hill Pond	2017	Objectionable Deposits	No	3	3
W2708	Lower Crow Hill Pond	2017	Odor	None	3	3
W2708	Lower Crow Hill Pond	2017	Scum	No	3	3
W2708	Lower Crow Hill Pond	2017	Turbidity	None	3	3

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2709	Lower Crow Hill Pond	2017	Aesthetics Impaired?	No	5	5
W2709	Lower Crow Hill Pond	2017	Color	Light Yellow/Tan	2	5
W2709	Lower Crow Hill Pond	2017	Color	None	2	5
W2709	Lower Crow Hill Pond	2017	Color	NR	1	5
W2709	Lower Crow Hill Pond	2017	Objectionable Deposits	No	5	5
W2709	Lower Crow Hill Pond	2017	Odor	None	5	5
W2709	Lower Crow Hill Pond	2017	Scum	No	3	5
W2709	Lower Crow Hill Pond	2017	Scum	Yes	2	5
W2709	Lower Crow Hill Pond	2017	Turbidity	None	4	5
W2709	Lower Crow Hill Pond	2017	Turbidity	Slightly Turbid	1	5

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for Lower Crow Hill Pond (MA81026) is assessed as Not Supporting. An Aquatic Plants (Macrophytes) impairment is being added (from the Aesthetics Use). In Lower Crow Hill Pond MassDEP staff collected Secchi depth and cyanobacteria cell count data at W2708 [MAP2L-163, Index-deep hole] (2017) and cyanobacteria cell count and cyanotoxins data at W2709 [MAP2L-163S, Shoreline at upper northwestern edge of pond, E of Rt. 31, from public access area SW of Upper Crow Hills Pond Dam (T ID: MA03273), Princeton] (2017). Secchi depth data indicated water clarity meeting the 1.2m (4ft) threshold at W2708 in 2017 (n=3, 2.65-3.04m). The cyanobacteria cell count did not exceed 70,000 cells/ml in any of the water samples in 2017 (n=6). Analysis of microcystins and cylindrospermopsin samples from W2709 in 2017 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L. In addition, MassDEP staff collected *E. coli* bacteria samples in Lower Crow Hill Pond at shoreline station W2709 from May-Aug 2017 (n=5). Analysis of the single year limited frequency *E. coli* dataset from W2709 indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 15 CFU/100ml. *E. coli* data from W2709 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2708	MassDEP	Water Quality	Lower Crow Hill Pond	[index site, Princeton]	42.516803	-71.855447
W2709	MassDEP	Water Quality	Lower Crow Hill Pond	[upper northwestern edge of pond, east of Route 31, from public access area southwest of Upper Crow Hills Pond Dam (NAT ID: MA03273), Princeton]	42.518329	-71.855764

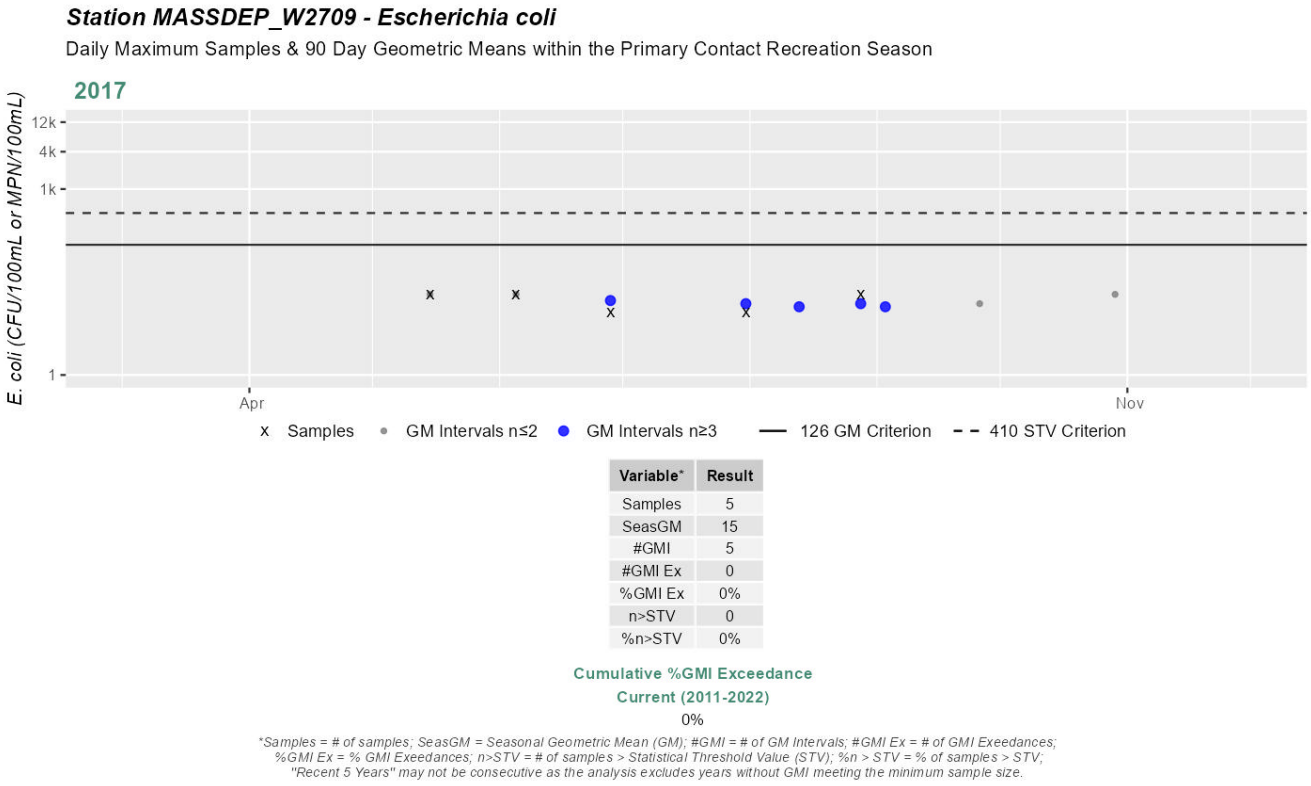
Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (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
W2709	MassDEP	E. coli	05/15/17	08/28/17	5	10	20	15



Other Indicators

Summary Statement for 2011-2022 Cyanobacteria Cell Count and Cyanotoxin Data, and Secchi Depth Data (MassDEP Undated 7) (MassDEP Undated 4)

Data Year(s)	Summary
2017	In Lower Crow Hill Pond (MA81026) in 2017, MassDEP collected Secchi and cyanobacteria cell count data at W2708 [MAP2L-163, Index-deep hole], and cyanobacteria cell count and cyanotoxin data at W2709 [MAP2L-163S, Shoreline]. At station W2708 (station depth=3 m) the Secchi depth measurements ranged from 2.65-3.04 m (n=3) indicating water clarity meeting the 1.2 m (4 ft) threshold. The cyanobacteria cell count did not exceed 70,000 cells/mL in any of the water samples (n=6). Analysis of microcystins and cylindrospermopsin samples from the shoreline station W2709 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L.

MassDEP Cyanobacteria Cell Count Data Collected at Lakes and Impoundments (2016-2018) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Waterbody	Station Type	Data Year	Sample Count	Count >70,000 cells/mL	Exceedance Date(s)
W2708	Lower Crow Hill Pond	Index	2017	3	0	NA
W2709	Lower Crow Hill Pond	Shoreline	2017	3	0	NA

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Lower Crow Hill Pond (MA81026) is assessed as Not Supporting. An Aquatic Plants (Macrophytes) impairment is being added (from the Aesthetics Use). In Lower Crow Hill Pond MassDEP staff collected cyanobacteria cell count data at W2708 [MAP2L-163, Index-deep hole] (2017) and cyanobacteria cell count and cyanotoxins data at W2709 [MAP2L-163S, Shoreline at upper northwestern edge of pond, E of Rt. 31, from public access area SW of Upper Crow Hills Pond Dam (T ID: MA03273), Princeton] (2017). The cyanobacteria cell count did not exceed 70,000 cells/ml in any of the water samples in 2017 (n=6). Analysis of microcystins and cylindrospermopsin samples from W2709 in 2017 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L. In addition, MassDEP staff collected *E. coli* bacteria samples in Lower Crow Hill Pond at shoreline station W2709 from May-Aug 2017 (n=5). Analysis of the single year limited frequency *E. coli* dataset from W2709 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 15 CFU/100ml. *E. coli* data from W2709 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2709	MassDEP	Water Quality	Lower Crow Hill Pond	[upper northwestern edge of pond, east of Route 31, from public access area southwest of Upper Crow Hills Pond Dam (NAT ID: MA03273), Princeton]	42.518329	-71.855764

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

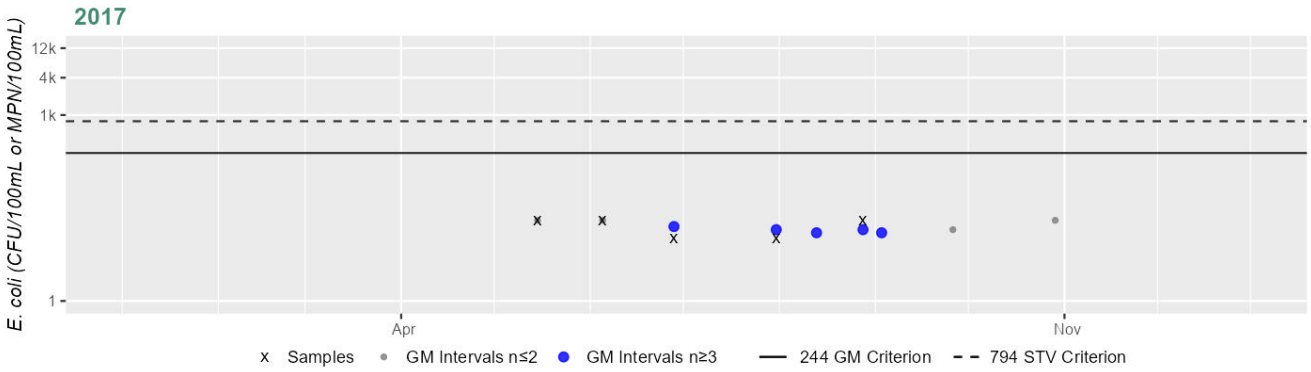
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W2709	MassDEP	E. coli	05/15/17	08/28/17	5	10	20	15

Station MASSDEP_W2709 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	15
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

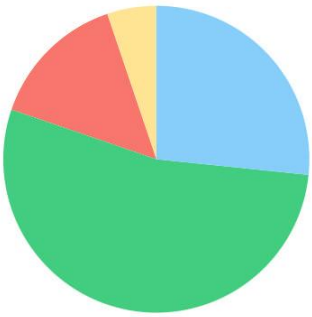
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Malagasco Brook (MA81-29)

Location:	Headwaters southwest of Apron Hill, Boylston through Pine Swamp to mouth at inlet Wachusett Reservoir (South Bay), Boylston.
AU Type:	RIVER
AU Size:	2.4 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Malagasco Brook (MA81-29)

Watershed Area: 0.99 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	0.99	0.99	0.60	0.60
Agriculture	5.2%	5.2%	3.8%	3.8%
Developed	14.6%	14.6%	11.3%	11.3%
Natural	53.6%	53.6%	46.1%	46.1%
Wetland	26.6%	26.6%	38.9%	38.9%
Impervious	7.2%	7.2%	5.5%	5.5%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Benthic Macroinvertebrates	--	Unchanged
5	5	Escherichia Coli (E. Coli)	--	Added

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Benthic Macroinvertebrates	Agriculture (Y)	X	--	--	--	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Malagasco Brook (MA81-29) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Malagasco Brook (MA81-29) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Malagasco Brook (MA81-29) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at 1 station in 2018-2022. MA DCR (DCRWS) staff collected *E. coli* bacteria samples at the downstream end of Malagasco Brook at DCRWS_MD02 [upstream of W. Temple St. Extension Boylston] from 2011-2022 (n=11-31/yr). Analysis of the recent five years of the multi-year moderate frequency *E. coli* dataset from DCRWS_MD02 indicated 3 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2018 and 2021-2022, 31-72%), 2 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2021 and 2022, n=2 & 3), and cumulatively across years 37% of intervals had GMs >126 CFU/100ml. *E. coli* data from DCRWS_MD02 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD02	MA DCR Division of Water Supply Protection	Water Quality	MALAGASCO BROOK	UPSTREAM OF W. TEMPLE ST. EXTENSION BOYLSTON	42.341234	-71.747818

Bacteria Data

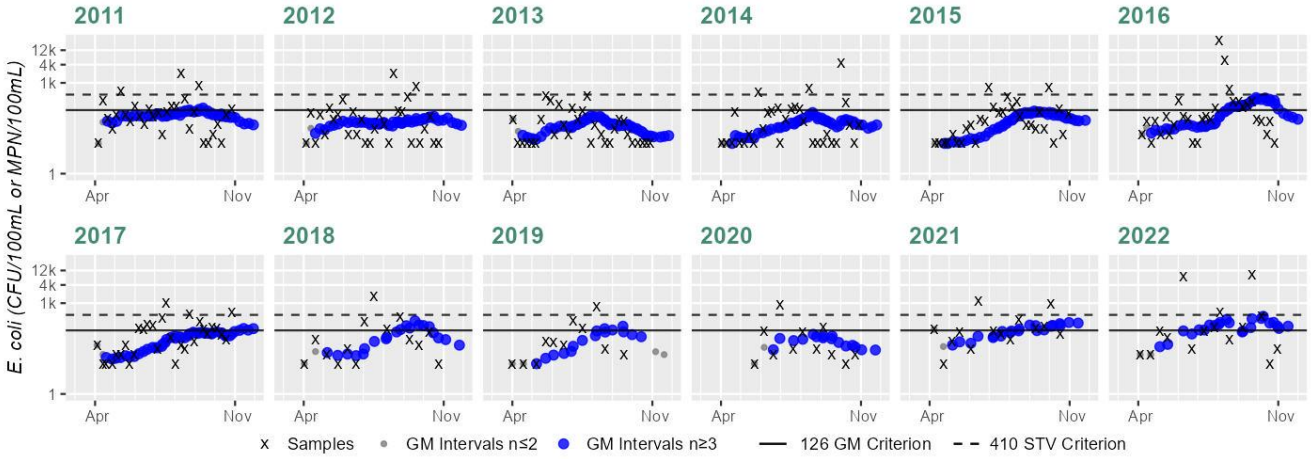
Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 2)

[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
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	04/06/11	11/22/11	30	10	2000	77
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	04/04/12	12/05/12	30	10	2005	47
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	04/02/13	12/04/13	31	10	364	30
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	04/02/14	12/17/14	31	10	4350	41
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	04/09/15	11/04/15	30	10	683	48
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	04/06/16	11/30/16	30	10	24200	83
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	04/04/17	12/19/17	30	10	1010	65
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	04/02/18	10/24/18	14	10	1720	54
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	04/01/19	09/18/19	11	10	759	45
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	05/21/20	12/15/20	11	10	909	44
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	04/08/21	10/18/21	14	10	1180	120
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	04/04/22	10/31/22	15	10	8660	133

Station DCRWS_MD02 & MASSDEP_W1819 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	30
SeasGM	77
#GMI	55
#GMI Ex	3
%GMI Ex	5%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	30
SeasGM	47
#GMI	50
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	6%

Variable*	Result
Samples	31
SeasGM	30
#GMI	55
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	31
SeasGM	41
#GMI	51
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	9%

Variable*	Result
Samples	30
SeasGM	48
#GMI	53
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	6%

Variable*	Result
Samples	30
SeasGM	83
#GMI	54
#GMI Ex	22
%GMI Ex	40%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	30
SeasGM	65
#GMI	52
#GMI Ex	9
%GMI Ex	17%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	14
SeasGM	54
#GMI	22
#GMI Ex	7
%GMI Ex	31%
n>STV	1
%n>STV	7%

Variable*	Result
Samples	11
SeasGM	45
#GMI	16
#GMI Ex	3
%GMI Ex	18%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	11
SeasGM	44
#GMI	17
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	14
SeasGM	120
#GMI	23
#GMI Ex	11
%GMI Ex	47%
n>STV	2
%n>STV	14%

Variable*	Result
Samples	15
SeasGM	133
#GMI	25
#GMI Ex	18
%GMI Ex	72%
n>STV	3
%n>STV	20%

Cumulative %GMI Exceedance Current (2011-2022)
15%

Cumulative %GMI Exceedance Current (Recent 5 Years)
37%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Malagasco Brook (MA81-29) continues to be assessed as Fully Supporting. MA DCR (DCRWS) and MassDEP staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) at the downstream end of Malagasco Brook at combined station DCRWS_MD02 & W1819 [W Temple St, Boylston & upstream OF W. TEMPLE ST. EXTENSION BOYLSTON] from 2008-2010 (historic n=51-55/yr) and 2011-2022 (current n=17-51/yr). Analysis of the recent five years of the multi-year high frequency *E. coli* dataset from DCRWS_MD02 & W1819 indicated 0 out of 5 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml, 0 yrs had >10% of samples exceed the 794 CFU/100ml STV, and cumulatively across years 2% of intervals had GMs >244 CFU/100ml. *E. coli* data from DCRWS_MD02 & W1819 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD02	MA DCR Division of Water Supply Protection	Water Quality	MALAGASCO BROOK	UPSTREAM OF W. TEMPLE ST. EXTENSION BOYLSTON	42.341234	-71.747818
W1819	MassDEP	Water Quality	Malagasco Brook	[West Temple Street, Boylston]	42.341264	-71.747781

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1) (MassDEP Undated 7) (MassDEP Undated 3)

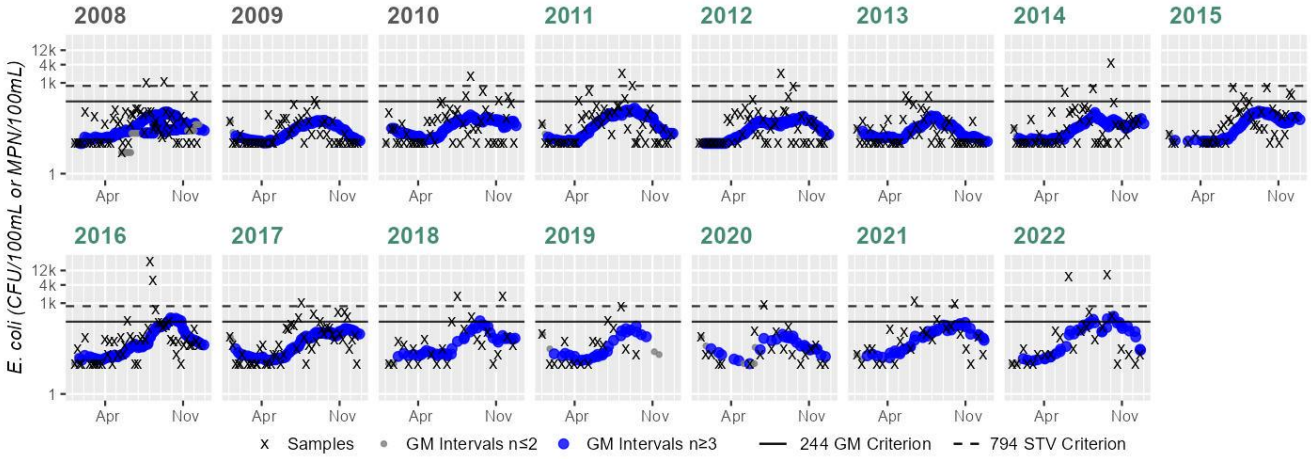
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	01/07/08	12/08/08	49	10	1090	36
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	01/05/09	12/22/09	51	10	254	21
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	01/04/10	12/20/10	51	10	1650	35
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	01/03/11	12/22/11	50	10	2000	38
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	01/04/12	12/19/12	51	10	2005	29
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	01/08/13	12/19/13	50	10	364	22

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	01/09/14	12/17/14	50	10	4350	32
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	01/06/15	12/17/15	42	10	683	44
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	01/07/16	12/14/16	49	10	24200	51
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	01/05/17	12/19/17	50	10	1010	47
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	01/10/18	12/17/18	24	10	1720	47
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	01/03/19	09/18/19	17	10	759	33
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	01/09/20	12/15/20	20	10	909	30
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	01/07/21	12/20/21	24	10	1180	56
DCRWS_MD02	MA DCR Division of Water Supply Protection	E. coli	01/03/22	12/22/22	24	10	8660	57
W1819	MassDEP	E. coli	05/15/08	09/18/08	6	5	93	25

Station DCRWS_MD02 & MASSDEP_W1819 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	55
SeasGM	34
#GMI	137
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	3%

Variable*	Result
Samples	51
SeasGM	21
#GMI	91
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	51
SeasGM	35
#GMI	88
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	1%

Variable*	Result
Samples	50
SeasGM	38
#GMI	92
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	51
SeasGM	29
#GMI	87
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	1%

Variable*	Result
Samples	50
SeasGM	22
#GMI	88
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	50
SeasGM	32
#GMI	80
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	42
SeasGM	44
#GMI	75
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	49
SeasGM	51
#GMI	83
#GMI Ex	10
%GMI Ex	12%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	50
SeasGM	47
#GMI	87
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	24
SeasGM	47
#GMI	42
#GMI Ex	1
%GMI Ex	2%
n>STV	2
%n>STV	8%

Variable*	Result
Samples	17
SeasGM	33
#GMI	28
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	30
#GMI	29
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	24
SeasGM	56
#GMI	43
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	8%

Variable*	Result
Samples	24
SeasGM	57
#GMI	42
#GMI Ex	4
%GMI Ex	9%
n>STV	2
%n>STV	8%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

Cumulative %GMI Exceedance
Current (2011-2022)
1%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
2%

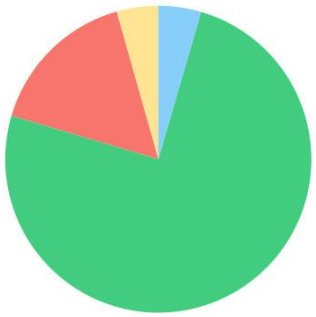
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Malden Brook (MA81-27)

Location:	Headwaters northeast of Lee Street, West Boylston to mouth at inlet Wachusett Reservoir (Thomas Basin), West Boylston.
AU Type:	RIVER
AU Size:	1.9 MILES
Classification/Qualifier:	A: PWS, ORW, CWF (Tributary)

Malden Brook (MA81-27)

Watershed Area: 1.29 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	1.29	1.29	0.63	0.63
Agriculture	4.4%	4.4%	0.9%	0.9%
Developed	16%	16%	12.9%	12.9%
Natural	75.1%	75.1%	77.5%	77.5%
Wetland	4.5%	4.5%	8.7%	8.7%
Impervious	5.2%	5.2%	4.1%	4.1%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Temperature	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Temperature	Source Unknown (N)	X	--	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Malden Brook (MA81-27) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Malden Brook (MA81-27) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Malden Brook (MA81-27) continues to be assessed as Fully Supporting. MA DCR (DCRWS) staff collected *E. coli* bacteria samples at the downstream end of Malden Brook at DCRWS_MD06 [upstream of Thomas St, W Boylston] from 2011-2022 (n=11-31/yr). Analysis of the recent five years of the multi-year moderate frequency *E. coli* dataset from DCRWS_MD06 indicated 1 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2022, 44%), 1 yr had ≥2 samples exceed the 410 CFU/100ml STV (2022, n=2), and cumulatively across years 13% of intervals had GMs >126 CFU/100ml. *E. coli* data from DCRWS_MD06 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD06	MA DCR Division of Water Supply Protection	Water Quality	MALDEN BROOK	UPSTREAM OF THOMAS ST, WEST BOYLSTON	42.381241	-71.795547

Bacteria Data

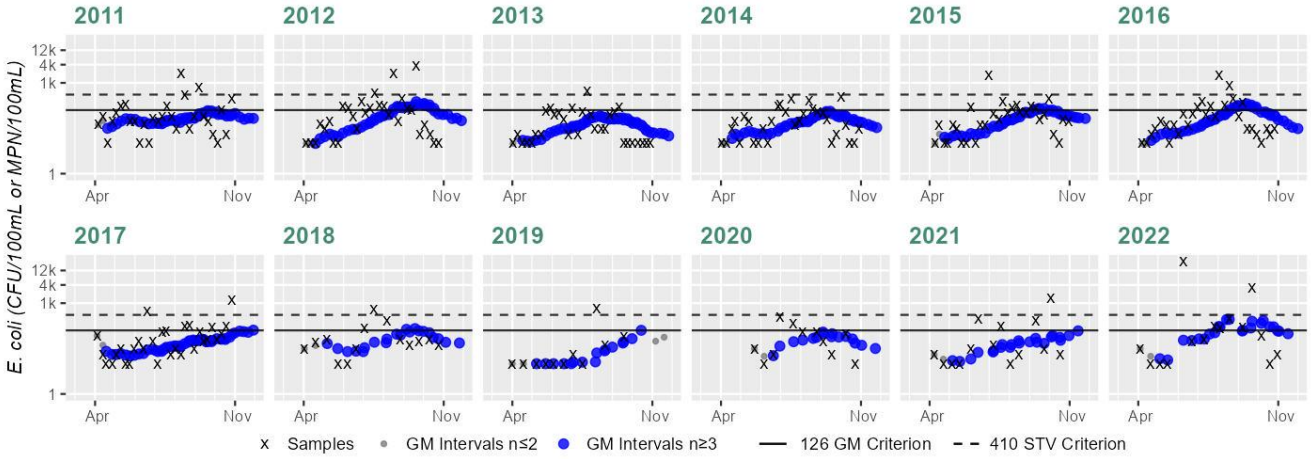
Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 2)

[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
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	04/06/11	11/22/11	30	10	2000	66
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	04/04/12	12/05/12	30	10	3650	66
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	04/02/13	12/04/13	31	10	529	32
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	04/02/14	12/17/14	31	10	331	43
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	04/09/15	11/04/15	30	10	1720	55
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	04/06/16	11/30/16	30	10	1780	57
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	04/04/17	12/19/17	30	10	1220	50
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	04/02/18	10/24/18	14	10	633	55
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	04/01/19	09/18/19	11	10	663	21
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	05/21/20	12/15/20	11	10	341	50
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	04/08/21	10/18/21	14	10	1400	41
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	04/04/22	10/31/22	15	10	24200	88

Station DCRWS_MD06 & MASSDEP_W1818 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	30
SeasGM	66
#GMI	55
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	6%

Variable*	Result
Samples	30
SeasGM	66
#GMI	50
#GMI Ex	16
%GMI Ex	32%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	31
SeasGM	32
#GMI	55
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	31
SeasGM	43
#GMI	51
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	30
SeasGM	55
#GMI	53
#GMI Ex	6
%GMI Ex	11%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	30
SeasGM	57
#GMI	54
#GMI Ex	13
%GMI Ex	24%
n>STV	2
%n>STV	6%

Variable*	Result
Samples	30
SeasGM	50
#GMI	52
#GMI Ex	6
%GMI Ex	11%
n>STV	2
%n>STV	6%

Variable*	Result
Samples	14
SeasGM	55
#GMI	22
#GMI Ex	2
%GMI Ex	9%
n>STV	1
%n>STV	7%

Variable*	Result
Samples	11
SeasGM	21
#GMI	16
#GMI Ex	1
%GMI Ex	6%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	11
SeasGM	50
#GMI	17
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	14
SeasGM	41
#GMI	23
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	7%

Variable*	Result
Samples	15
SeasGM	88
#GMI	25
#GMI Ex	11
%GMI Ex	44%
n>STV	2
%n>STV	13%

Cumulative %GMI Exceedance Current (2011-2022)
11%

Cumulative %GMI Exceedance Current (Recent 5 Years)
13%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Malden Brook (MA81-27) continues to be assessed as Fully Supporting. MA DCR (DCRWS) and MassDEP staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) at the downstream end of Malden Brook at combined station DCRWS_MD06 & W1818 [Thomas St, W Boylston & upstream OF THOMAS ST, W BOYLSTON] from 2008-2010 (historic n=51-53/yr) and 2011-2022 (current n=17-51/yr). Analysis of the recent five years of the multi-year high frequency *E. coli* dataset from DCRWS_MD06 & W1818 indicated 0 out of 5 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml, 0 yrs had >10% of samples exceed the 794 CFU/100ml STV, and cumulatively across years 2% of intervals had GMs >244 CFU/100ml. *E. coli* data from DCRWS_MD06 & W1818 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD06	MA DCR Division of Water Supply Protection	Water Quality	MALDEN BROOK	UPSTREAM OF THOMAS ST, WEST BOYLSTON	42.381241	-71.795547
W1818	MassDEP	Water Quality	Malden Brook	[Thomas Street, West Boylston]	42.381252	-71.795495

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1) (MassDEP Undated 7) (MassDEP Undated 3)

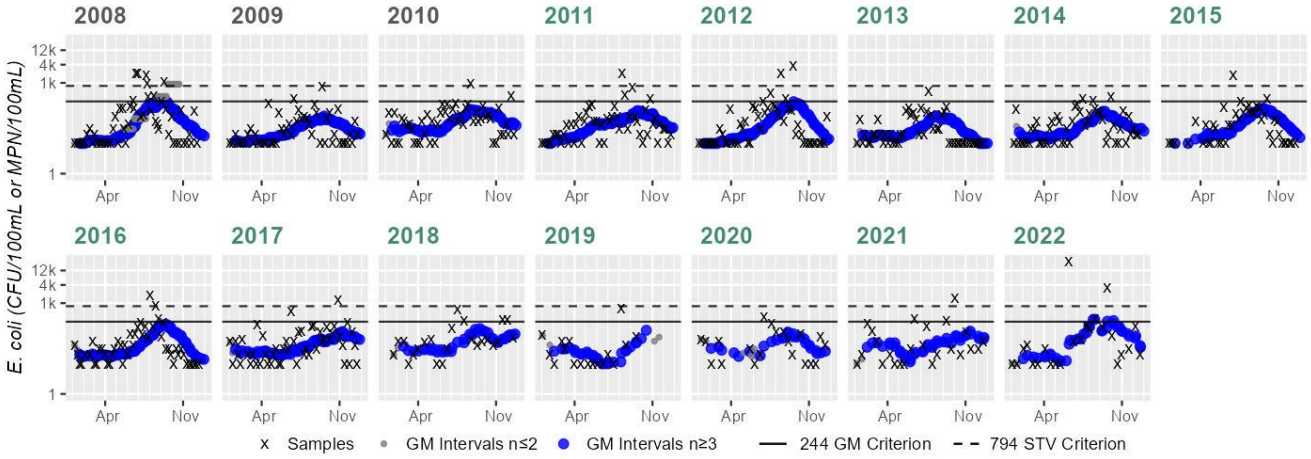
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	01/07/08	12/08/08	50	10	2010	41
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	01/05/09	12/22/09	51	10	738	26
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	01/04/10	12/20/10	51	10	945	48
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	01/03/11	12/22/11	51	10	2000	39
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	01/04/12	12/19/12	51	10	3650	34
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	01/08/13	12/19/13	50	10	529	24

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	01/09/14	12/17/14	50	10	331	32
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	01/06/15	12/17/15	42	10	1720	36
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	01/07/16	12/14/16	49	10	1780	35
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	01/05/17	12/19/17	50	10	1220	40
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	01/24/18	12/17/18	23	10	633	54
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	01/03/19	09/18/19	17	10	663	25
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	01/09/20	12/15/20	20	10	341	37
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	01/07/21	12/20/21	24	10	1400	41
DCRWS_MD06	MA DCR Division of Water Supply Protection	E. coli	01/03/22	12/22/22	24	10	24200	52
W1818	MassDEP	E. coli	05/22/08	07/24/08	3	30	900	155

Station DCRWS_MD06 & MASSDEP_W1818 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	53
SeasGM	44
#GMI	104
#GMI Ex	2
%GMI Ex	1%
n>STV	5
%n>STV	9%

Variable*	Result
Samples	51
SeasGM	26
#GMI	91
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	51
SeasGM	48
#GMI	88
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	1%

Variable*	Result
Samples	51
SeasGM	39
#GMI	93
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	1%

Variable*	Result
Samples	51
SeasGM	34
#GMI	87
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	3%

Variable*	Result
Samples	50
SeasGM	24
#GMI	88
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	50
SeasGM	32
#GMI	80
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	42
SeasGM	36
#GMI	75
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	49
SeasGM	35
#GMI	83
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	50
SeasGM	40
#GMI	87
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	23
SeasGM	54
#GMI	40
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	17
SeasGM	25
#GMI	28
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	37
#GMI	29
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	24
SeasGM	41
#GMI	43
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	24
SeasGM	52
#GMI	42
#GMI Ex	4
%GMI Ex	9%
n>STV	2
%n>STV	8%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
2%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Maple Spring Pond (MA81077)

Location:	Holden.
AU Type:	FRESHWATER LAKE
AU Size:	38 ACRES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for Maple Spring Pond (MA81077) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Mason Brook (MA81-102)

Location:	From the MA/NH border west of Route 123, Townsend to mouth at confluence with Willard Brook forming headwaters Squannacook River, Townsend.
AU Type:	RIVER
AU Size:	2.3 MILES
Classification/Qualifier:	B: ORW

Mason Brook (MA81-102)

Watershed Area: 17.78 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	3.36	3.36	0.71	0.71
Agriculture	3.6%	3.6%	4.9%	4.9%
Developed	5.6%	5.6%	7.1%	7.1%
Natural	80.9%	80.9%	59.8%	59.8%
Wetland	9.8%	9.8%	28.1%	28.1%
Impervious	2.1%	2.1%	2.8%	2.8%

**Land cover analysis only includes watershed area within Massachusetts.*

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
--	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Mason Brook (MA81-102) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Mason Brook (MA81-102) is assessed as Fully Supporting. MassDEP staff recorded aesthetics observations at two stations close to the upstream end of Mason Brook in Townsend; ~1450 feet upstream/north from Brooks Crossing (W2409) during the summers of 2013 and 2014 (n=4-5/yr) and a little further downstream ~80 feet upstream/north of Brooks Crossing (W2888) during the summers of 2019 (n=4) as part of the Reference Site Network monitoring project. No persistent objectionable conditions (i.e., odors, deposits, growths, or turbidity) were observed during any of the surveys.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2409	MassDEP	Water Quality	Mason Brook	[approximately 1450 feet upstream/north from Brooks Crossing, Townsend]	42.706137	-71.751964
W2888	MassDEP	Water Quality	Mason Brook	[approximately 80 feet upstream/north of Brooks Crossing, Townsend]	42.702889	-71.751773

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2409	2013	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2409 on Mason Brook (MA81-102) during 5 site visits between May 2013 and Oct 2013. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.
W2409	2014	4	Aesthetic observations were made by MassDEP field sampling crews at Station W2409 on Mason Brook (MA81-102) during 4 site visits between Jun 2014 and Aug 2014. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.
W2888	2019	4	Aesthetic observations were made by MassDEP field sampling crews at Station W2888 on Mason Brook (MA81-102) during 4 site visits between Jun 2019 and Sep 2019. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2409	2013	5	4	0
W2409	2014	4	4	0
W2888	2019	4	4	0

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2409	Mason Brook	2013	Aesthetics Impaired?	No	5	5
W2409	Mason Brook	2013	Aquatic Plant Density, Overall	None	2	5
W2409	Mason Brook	2013	Aquatic Plant Density, Overall	Sparse	3	5
W2409	Mason Brook	2013	Color	Light Yellow/Tan	3	5
W2409	Mason Brook	2013	Color	None	1	5
W2409	Mason Brook	2013	Color	NR	1	5
W2409	Mason Brook	2013	Objectionable Deposits	No	5	5
W2409	Mason Brook	2013	Odor	None	5	5
W2409	Mason Brook	2013	Periphyton Density, Filamentous	None	3	5
W2409	Mason Brook	2013	Periphyton Density, Filamentous	NR	2	5
W2409	Mason Brook	2013	Periphyton Density, Film	None	3	5
W2409	Mason Brook	2013	Periphyton Density, Film	NR	1	5
W2409	Mason Brook	2013	Periphyton Density, Film	Sparse	1	5
W2409	Mason Brook	2013	Scum	No	5	5
W2409	Mason Brook	2013	Turbidity	None	5	5
W2409	Mason Brook	2014	Aesthetics Impaired?	No	4	4
W2409	Mason Brook	2014	Aquatic Plant Density, Overall	Sparse	4	4
W2409	Mason Brook	2014	Color	None	4	4
W2409	Mason Brook	2014	Objectionable Deposits	No	4	4
W2409	Mason Brook	2014	Odor	None	4	4
W2409	Mason Brook	2014	Periphyton Density, Filamentous	None	4	4
W2409	Mason Brook	2014	Periphyton Density, Film	None	4	4
W2409	Mason Brook	2014	Scum	No	4	4
W2409	Mason Brook	2014	Turbidity	None	4	4
W2888	Mason Brook	2019	Aesthetics Impaired?	No	4	4
W2888	Mason Brook	2019	Aquatic Plant Density, Overall	None	3	4
W2888	Mason Brook	2019	Aquatic Plant Density, Overall	Sparse	1	4
W2888	Mason Brook	2019	Color	Light Yellow/Tan	1	4
W2888	Mason Brook	2019	Color	None	3	4

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2888	Mason Brook	2019	Objectionable Deposits	No	4	4
W2888	Mason Brook	2019	Odor	None	4	4
W2888	Mason Brook	2019	Periphyton Density, Filamentous	None	4	4
W2888	Mason Brook	2019	Periphyton Density, Film	None	4	4
W2888	Mason Brook	2019	Scum	No	4	4
W2888	Mason Brook	2019	Turbidity	None	4	4

Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary
No bacteria data are available to assess the Primary Contact Recreation Use for Mason Brook (MA81-102) and available aesthetics observations for this AU did not result in any impairment, so it is assessed as having Insufficient Information.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary
No bacteria data are available to assess the Secondary Contact Recreation Use for Mason Brook (MA81-102) and available aesthetics observations for this AU did not result in any impairment, so it is assessed as having Insufficient Information.

Massapoag Pond (MA81080)

Location:	Lunenburg.
AU Type:	FRESHWATER LAKE
AU Size:	64 ACRES
Classification/Qualifier:	B

No usable data were available for Massapoag Pond (MA81080) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Meetinghouse Pond (MA81083)

Location:	Westminster.
AU Type:	FRESHWATER LAKE
AU Size:	151 ACRES
Classification/Qualifier:	A: PWS, ORW

No usable data were available for Meetinghouse Pond (MA81083) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Mirror Lake (MA81084)

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

No usable data were available for Mirror Lake (MA81084) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Mirror Lake (MA81085)

Location:	Harvard.
AU Type:	FRESHWATER LAKE
AU Size:	28 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Curly-leaf Pondweed*)	--	Unchanged
5	5	Mercury in Fish Tissue	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary

The Fish Consumption Use for Mirror Lake (MA81085) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. DPH included a site-specific advisory for Mirror Lake in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Mirror Lake (MA81085) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Mirror Lake (MA81085) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

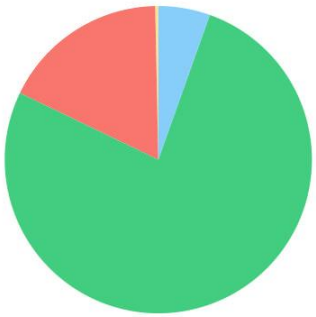
2024/26 Use Attainment Summary
No bacteria or other indicator data for Mirror Lake (MA81085) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.

Monoosnoc Brook (MA81-13)

Location:	Headwaters, outlet Simonds Pond, Leominster to mouth at confluence with North Nashua River, Leominster (through former 2008 segments: Pierce Pond MA81101 and Rockwell Pond MA81112) (prior to 2002 this segment was only lower portion (1.5 miles) of brook).
AU Type:	RIVER
AU Size:	6.1 MILES
Classification/Qualifier:	B

Monoosnoc Brook (MA81-13)

Watershed Area: 11.19 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	11.19	3.84	4.71	1.37
Agriculture	0.3%	0.3%	0.3%	0%
Developed	17.5%	38.4%	10.9%	28.4%
Natural	76.7%	58.3%	78.3%	65.3%
Wetland	5.4%	3%	10.5%	6.3%
Impervious	10.7%	24.9%	7.2%	19.3%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	(Non-Native Aquatic Plants*)	--	Unchanged
5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Wet Weather Discharges (Non-Point Source) (Y)	--	--	--	X	X

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

Recommendations

2024/26 Recommendations
2016 IR [FIELD OBSERVATIONS, LOW] Additional monitoring is recommended for Monoosnoc Brook (MA81-13) at {W0994} due to observations of trash at Commercial Road, Leominster in 2008 and very dense aquatic plant coverage observed in 2003 at the same location.

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Monoosnoc Brook (MA81-13) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert

Fully Supporting	YES

2024/26 Use Attainment Summary

The Aesthetics Use for Monoosnoc Brook (MA81-13) continues to be assessed as Fully Supporting. However, the prior Alerts are being carried forward i.e. Trash (based on observations of trash at Commercial Road, Leominster (W0994) in 2008 (MassDEP Undated 6) and very dense aquatic plant coverage observed in 2003 at the same location (MassDEP 2008). MassDEP staff recorded aesthetics observations as part of the MAP2 wadeable streams monitoring project for Monoosnoc Brook three-quarters of the way down the AU ~475 feet downstream from Mechanic Street, Leominster (W2180, n=4). No persistent objectionable conditions (i.e., odors, deposits, growths, or turbidity) were observed during any of the surveys, though field staff noted minor deposits of trash on four occasions, which is reflective of the historical concerns and the existing Alert for trash deposits on this AU.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2180	MassDEP	Water Quality	Monoosnoc Brook	[approximately 475 feet downstream from Mechanic Street, Leominster]	42.526618	-71.756915

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2180	2011	6	Aesthetic observations were made by MassDEP field sampling crews at Station W2180 on Monoosnoc Brook (MA81-13) during 6 site visits between May 2011 and Sep 2011. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, though field staff noted objectionable deposits (n=4).

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2180	2011	6	6	3

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2180	Monoosnoc Brook	2011	Aquatic Plant Density, Overall	None	6	6
W2180	Monoosnoc Brook	2011	Color	Brownish	1	6
W2180	Monoosnoc Brook	2011	Color	Light Yellow/Tan	1	6
W2180	Monoosnoc Brook	2011	Color	None	4	6
W2180	Monoosnoc Brook	2011	Objectionable Deposits	No	2	6
W2180	Monoosnoc Brook	2011	Objectionable Deposits	Yes	4	6
W2180	Monoosnoc Brook	2011	Odor	Musty (Basement)	2	6
W2180	Monoosnoc Brook	2011	Odor	None	3	6
W2180	Monoosnoc Brook	2011	Odor	Raw sewage	1	6
W2180	Monoosnoc Brook	2011	Periphyton Density, Filamentous	Dense	1	6
W2180	Monoosnoc Brook	2011	Periphyton Density, Filamentous	None	5	6
W2180	Monoosnoc Brook	2011	Periphyton Density, Film	Dense	1	6
W2180	Monoosnoc Brook	2011	Periphyton Density, Film	None	3	6
W2180	Monoosnoc Brook	2011	Periphyton Density, Film	Sparse	1	6
W2180	Monoosnoc Brook	2011	Periphyton Density, Film	Very Dense	1	6
W2180	Monoosnoc Brook	2011	Scum	No	5	6
W2180	Monoosnoc Brook	2011	Scum	Yes	1	6
W2180	Monoosnoc Brook	2011	Turbidity	Moderately Turbid	1	6
W2180	Monoosnoc Brook	2011	Turbidity	None	5	6

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Monoosnoc Brook (MA81-13) continues to be assessed as Not Supporting. The prior Escherichia Coli (E. Coli) impairment is being carried forward based on bacteria data not meeting the threshold at 5 stations in 2011-2022. The prior Alert for Trash and Aquatic Plants (Macrophytes) are being removed from the Recreational Uses, but they will both continue to be maintained under the Aesthetics Use. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in Monoosnoc Brook from 2011-2022 at 6 stations. Samples were collected from the following stations/sample years from upstream to downstream: a third of the way down at NRWA_MN0630 [W St & Fairfield, Leominster] from Jun-Oct 2017 (n=5), almost halfway down at NRWA_MN0520 [Granite St, Leominster] from 2011-2017 (n=1-7/yr), roughly three-quarters of the way down at NRWA_MN0419 [Behind Friendly's at 24 Monument Square, Leominster. Through wrought iron fence to access N side of brook] from 2011-2013 (n=1-7/yr), and W2180 [~475 ft downstream from Mechanic St, Leominster] from May-Sep 2011 (n=6), and NRWA_MN0223 [Whitney Carriage Parking Lot, Leominster] from 2011-2022 (n=6-16/yr), close to the downstream end at NRWA_MN0009 [U.S. of Commercial Rd. Bridge, Leominster] from 2011-2019 (n=6-7/yr). Analysis of the single year limited frequency *E. coli* dataset from NRWA_MN0630 indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 18 CFU/100ml. Analysis of the recent five years of this multi-year limited frequency *E. coli* dataset from NRWA_MN0520 indicated 4 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2012 and 2014-2016, 20-100%), 1 yr had ≥2 samples exceed the 410 CFU/100ml STV (2012, n=3), and cumulatively across years 50% of intervals had GMs >126 CFU/100ml. Analysis of the single year moderate frequency *E. coli* dataset from NRWA_MN0419 indicated 80% of intervals had GMs >126 CFU/100ml and 3 samples exceeded the 410 CFU/100ml STV. Analysis of the single year limited frequency *E. coli* dataset from W2180 indicated 100% of intervals had GMs >126 CFU/100ml, 1 sample exceeded the 410 CFU/100ml STV, and the seasonal GM was 182 CFU/100ml. Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from NRWA_MN0223 indicated 5 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2018-2022, 88-100%), 5 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2018-2022, n=4-12), and cumulatively across years 94% of intervals had GMs >126 CFU/100ml. Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from NRWA_MN0009 indicated 5 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2015-2019, 60-100%), 2 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2015 and 2017, n=2 & 3), and cumulatively across years 83% of intervals had GMs >126 CFU/100ml. While *E. coli* data from NRWA_MN0630 meet 2024 CALM guidance, *E. coli* data from NRWA_MN0520, NRWA_MN0419, W2180, NRWA_MN0223, and NRWA_MN0009 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2180	MassDEP	Water Quality	Monoosnoc Brook	[approximately 475 feet downstream from Mechanic Street, Leominster]	42.526618	-71.756915
NRWA_MN0009	Nashua River Watershed Association	Water Quality	Monoosnoc Brook	U.S. of Commercial Rd. Bridge, Leominster	42.527360	-71.743740
NRWA_MN0223	Nashua River Watershed Association	Water Quality	Monoosnoc Brook	Whitney Carriage Parking Lot, Leominster	42.527360	-71.754500
NRWA_MN0419	Nashua River Watershed Association	Water Quality	Monoosnoc	Behind Friendly's at 24 Monument Square, Leominster. Through wrought iron fence to access north side of brook.	42.525400	-71.758700
NRWA_MN0520	Nashua River Watershed Association	Water Quality	Monoosnoc Brook	Granite Street, Leominster	42.535500	-71.775900
NRWA_MN0630	Nashua River Watershed Association	Water Quality	Monoosnoc Brook	West St & Fairfield, Leominster	42.541900	-71.780300

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 4) (NRWA 2022) (MassDEP Undated 2)

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

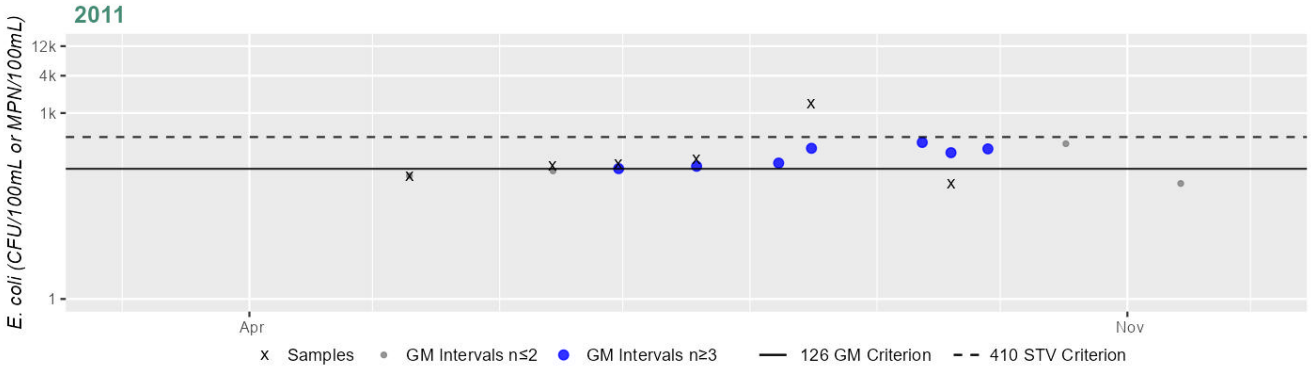
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2180	MassDEP	E. coli	05/10/11	09/19/11	6	73	1400	182
NRWA_MN0009	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	75	648	203
NRWA_MN0009	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	6	75	1732	295
NRWA_MN0009	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	6	37	547	159
NRWA_MN0009	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	13	1732	133
NRWA_MN0009	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	45	913	198
NRWA_MN0009	Nashua River Watershed Association	E. coli	05/21/16	10/15/16	6	31	248	154

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_MN0009	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	24	727	141
NRWA_MN0009	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	105	686	254
NRWA_MN0009	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	88	613	242
NRWA_MN0223	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	41	2419	467
NRWA_MN0223	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	6	228	2419	924
NRWA_MN0223	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	6	17	1119	270
NRWA_MN0223	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	51	1203	565
NRWA_MN0223	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	60	1011	260
NRWA_MN0223	Nashua River Watershed Association	E. coli	05/21/16	10/15/16	6	290	2419	636
NRWA_MN0223	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	6	15	2419	193
NRWA_MN0223	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	101	2419	607
NRWA_MN0223	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	9	88	866	466
NRWA_MN0223	Nashua River Watershed Association	E. coli	04/07/20	10/17/20	16	24	2419	614
NRWA_MN0223	Nashua River Watershed Association	E. coli	04/27/21	10/16/21	7	45	1732	631
NRWA_MN0223	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	365	2419	852
NRWA_MN0419	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	16	1413	250
NRWA_MN0419	Nashua River Watershed Association	E. coli	04/21/12	04/21/12	1	74	74	74

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_MN0419	Nashua River Watershed Association	E. coli	10/19/13	10/19/13	1	79	79	79
NRWA_MN0520	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	21	261	98
NRWA_MN0520	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	6	25	1203	301
NRWA_MN0520	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	6	24	118	52
NRWA_MN0520	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	7	2419	105
NRWA_MN0520	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	5	38	721	178
NRWA_MN0520	Nashua River Watershed Association	E. coli	05/21/16	10/15/16	5	160	488	281
NRWA_MN0520	Nashua River Watershed Association	E. coli	04/15/17	04/15/17	1	6	6	6
NRWA_MN0630	Nashua River Watershed Association	E. coli	06/17/17	10/21/17	5	5	60	18

Station MASSDEP_W2180 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



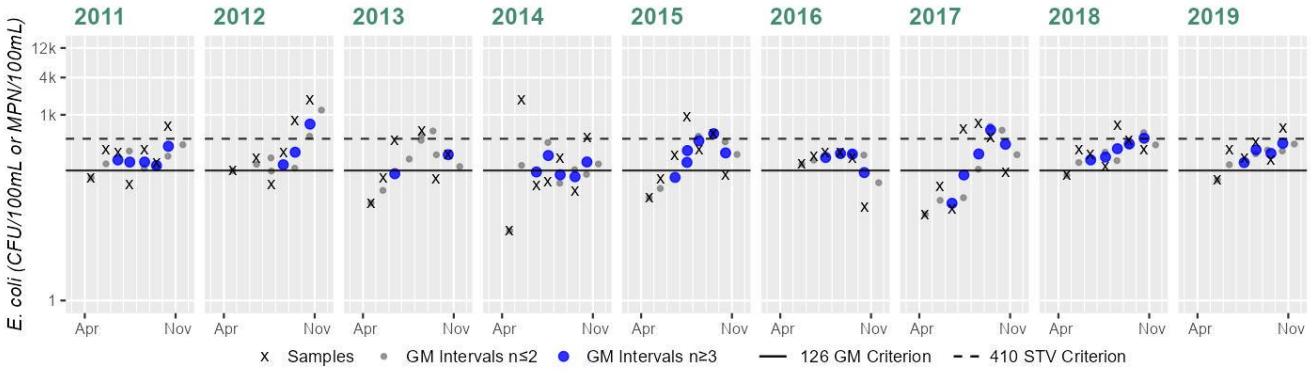
Variable*	Result
Samples	6
SeasGM	182
#GMI	7
#GMI Ex	7
%GMI Ex	100%
n>STV	1
%n>STV	16%

Cumulative %GMI Exceedance
Current (2011-2022)
100%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_MN0009 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	203
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	295
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	6
SeasGM	159
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	7
SeasGM	133
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	198
#GMI	6
#GMI Ex	5
%GMI Ex	83%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	6
SeasGM	154
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	141
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	3
%n>STV	42%

Variable*	Result
Samples	7
SeasGM	254
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	242
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	1
%n>STV	16%

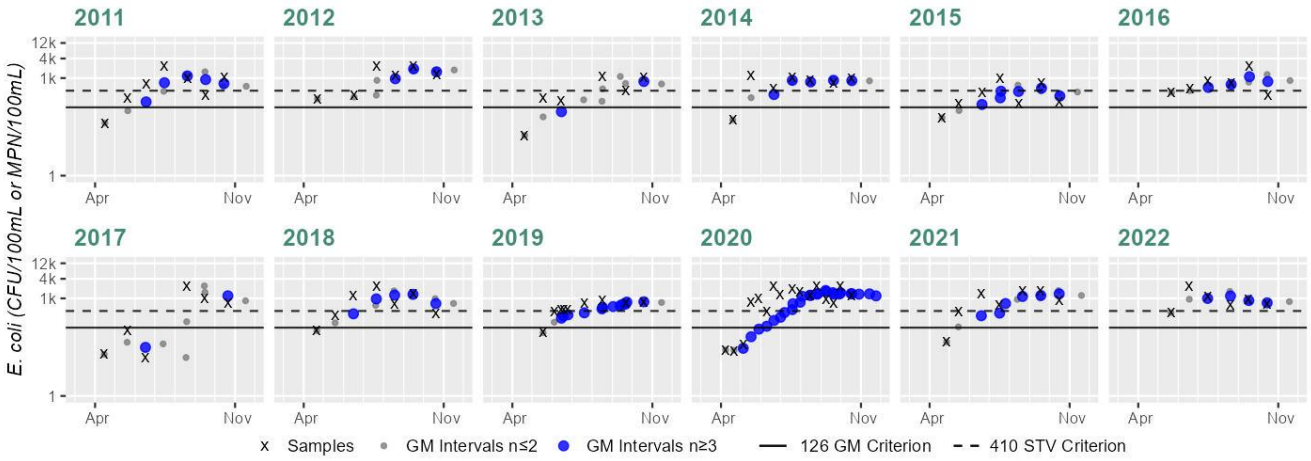
Cumulative %GMI Exceedance
Current (2011-2022)
79%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
83%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_MN0223 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	467
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	4
%n>STV	57%

Variable*	Result
Samples	6
SeasGM	924
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	4
%n>STV	66%

Variable*	Result
Samples	6
SeasGM	270
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	3
%n>STV	50%

Variable*	Result
Samples	7
SeasGM	565
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	6
%n>STV	85%

Variable*	Result
Samples	7
SeasGM	260
#GMI	6
#GMI Ex	6
%GMI Ex	100%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	6
SeasGM	636
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	4
%n>STV	66%

Variable*	Result
Samples	6
SeasGM	193
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	3
%n>STV	50%

Variable*	Result
Samples	7
SeasGM	607
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	4
%n>STV	57%

Variable*	Result
Samples	9
SeasGM	466
#GMI	12
#GMI Ex	12
%GMI Ex	100%
n>STV	7
%n>STV	77%

Variable*	Result
Samples	16
SeasGM	614
#GMI	27
#GMI Ex	24
%GMI Ex	88%
n>STV	12
%n>STV	75%

Variable*	Result
Samples	7
SeasGM	631
#GMI	6
#GMI Ex	6
%GMI Ex	100%
n>STV	5
%n>STV	71%

Variable*	Result
Samples	6
SeasGM	852
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	5
%n>STV	83%

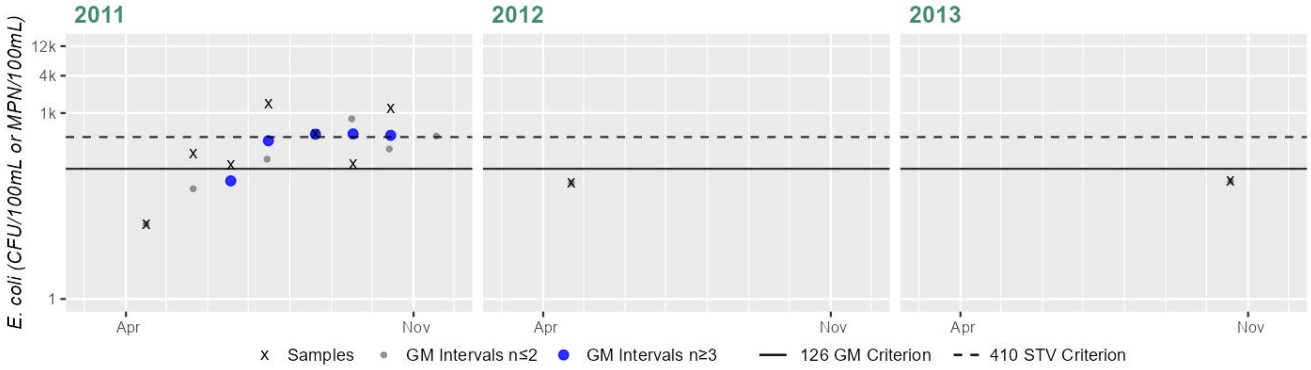
Cumulative %GMI Exceedance Current (2011-2022)
93%

Cumulative %GMI Exceedance Current (Recent 5 Years)
94%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_MN0419 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	250
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	3
%n>STV	42%

Variable*	Result
Samples	1
SeasGM	74
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

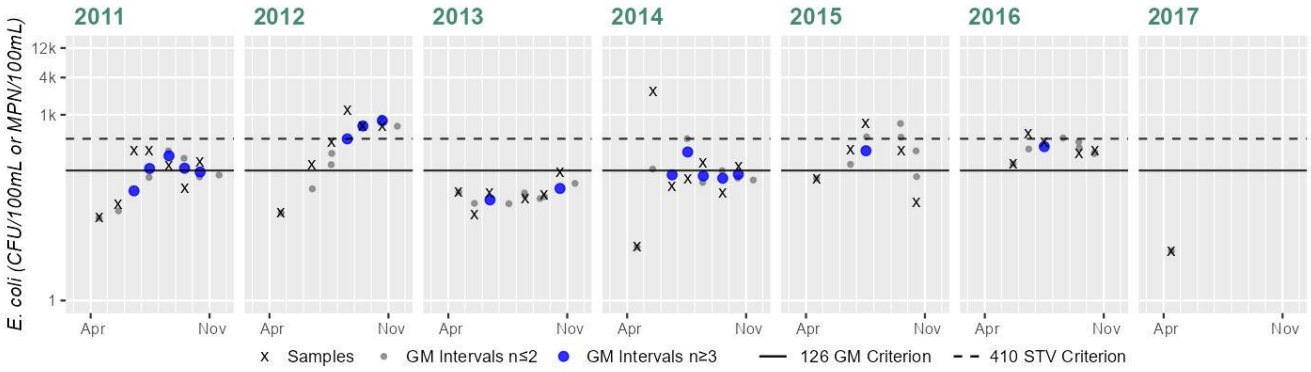
Variable*	Result
Samples	1
SeasGM	79
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
80%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_MN0520 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	98
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	301
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	3
%n>STV	50%

Variable*	Result
Samples	6
SeasGM	52
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	105
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	5
SeasGM	178
#GMI	1
#GMI Ex	1
%GMI Ex	100%
n>STV	1
%n>STV	20%

Variable*	Result
Samples	5
SeasGM	281
#GMI	1
#GMI Ex	1
%GMI Ex	100%
n>STV	1
%n>STV	20%

Variable*	Result
Samples	1
SeasGM	6
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

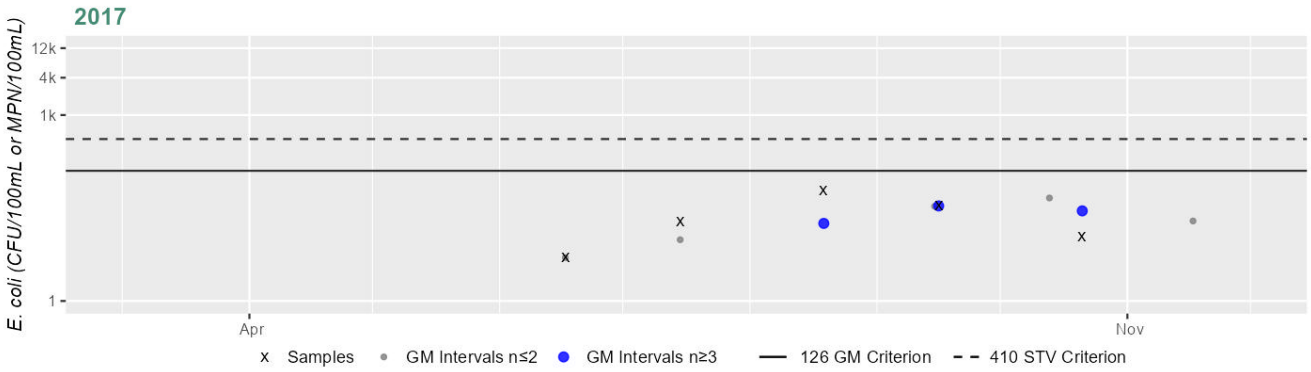
Cumulative %GMI Exceedance
Current (2011-2022)
52%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
50%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_MN0630 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	18
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Monoosnoc Brook (MA81-13) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at 4 stations in 2011-2022. The prior Alert for Trash and Aquatic Plants (Macrophytes) are being removed from the Recreational Uses, but they will both continue to be maintained under the Aesthetics Use. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in Monoosnoc Brook from 2003-2022 at 8 stations in Leominster. Samples were collected from the following stations/sample years from upstream to downstream: a third of the way down at NRWA_MN0630 [W St & Fairfield] from Jun-Oct 2017 (n=5), almost halfway down at NRWA_MN0520 [Granite St] from 2008-2010 (historic n=4-5/yr) & 2011-2017 (current n=1-7/yr), & W1810 [Granite St] from May-Sep 2008 (n=6), roughly three-quarters of the way down at NRWA_MN0419 [Behind Friendly's at 24 Monument Square. Through wrought iron fence to access N side of brook] from 2008-2010 (historic n=3-6/yr) & 2011-2013 (current n=1-7/yr), W2180 [~475 ft downstream from Mechanic St] from May-Sep 2011 (n=6), & NRWA_MN0223 [Whitney Carriage Parking Lot] from 2008-2010 (historic n=5-7/yr) & 2011-2022 (current n=6-16/yr), close to the downstream end at NRWA_MN0009 [U.S. of Commercial Rd. Bridge] from 2008-2010 (historic n=5-6/yr) & 2011-2019 (current n=6-7/yr), the downstream end of the AU at W0994 [Commercial Rd] in 2003 & 2008 (n=5-6/yr). Since there are some bacteria data from the current IR window that are indicative of poor water quality conditions (with a mix of good and poor conditions in the historic window), only the analysis from the current IR window will be summarized here as follows: Analysis of the single yr limited frequency *E. coli* dataset from NRWA_MN0630 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, & the overall GM was 18 CFU/100ml. Analysis of the recent five yrs of the multi-year limited frequency *E. coli* dataset from NRWA_MN0520 indicated 4 of 5 sufficient data yrs had intervals where >20% of GMs were >244 CFU/100ml (2012 and 2014-2016, 20-100%), 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, & cumulatively across years 50% of intervals had GMs >244 CFU/100ml. Analysis of the single yr moderate frequency *E. coli* dataset from NRWA_MN0419 indicated 80% of intervals had GMs >244 CFU/100ml & 2 samples exceeded the 794 CFU/100ml STV. Analysis of the single yr limited frequency *E. coli* dataset from W2180 indicated 42% of intervals had GMs >244 CFU/100ml, 1 sample exceeded the 794 CFU/100ml STV, & the overall GM was 182 CFU/100ml. Analysis of the recent five yrs of this multi-year moderate frequency *E. coli* dataset from NRWA_MN0223 indicated 5 of 5 sufficient data yrs had intervals where >20% of GMs were >244 CFU/100ml (2018-2022, 81-100%), 4 yrs had ≥2 samples exceed the 794 CFU/100ml STV (2018 and 2020-2022, n=3-10) & cumulatively across yrs 90% of intervals had GMs >244 CFU/100ml. Analysis of the recent five yrs of this multi-year moderate frequency *E. coli* dataset from NRWA_MN0009 indicated 4 of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2015 and 2017-2019, 40-60%), 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, & cumulatively across yrs 41% of intervals had GMs >244 CFU/100ml. *E. coli* data from W2180 are inconclusive according to the 2024 CALM to assess the Secondary Contact Recreation Use because this single yr, limited frequency dataset included both GMs below the threshold and STV exceedance of the threshold. While *E. coli* data from NRWA_MN0630 meet 2024 CALM guidance, *E. coli* data from NRWA_MN0520, NRWA_MN0419, NRWA_MN0223, and NRWA_MN0009 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0994	MassDEP	Water Quality	Monoosnoc Brook	[Commercial Road, Leominster]	42.524956	-71.737768
W1810	MassDEP	Water Quality	Monoosnoc Brook	[Granite Street, Leominster]	42.534895	-71.775738
W2180	MassDEP	Water Quality	Monoosnoc Brook	[approximately 475 feet downstream from Mechanic Street, Leominster]	42.526618	-71.756915
NRWA_MN0009	Nashua River Watershed Association	Water Quality	Monoosnoc Brook	U.S. of Commercial Rd. Bridge, Leominster	42.527360	-71.743740
NRWA_MN0223	Nashua River Watershed Association	Water Quality	Monoosnoc Brook	Whitney Carriage Parking Lot, Leominster	42.527360	-71.754500
NRWA_MN0419	Nashua River Watershed Association	Water Quality	Monoosnoc	Behind Friendly's at 24 Monument Square, Leominster. Through wrought iron fence to access north side of brook.	42.525400	-71.758700
NRWA_MN0520	Nashua River Watershed Association	Water Quality	Monoosnoc Brook	Granite Street, Leominster	42.535500	-71.775900
NRWA_MN0630	Nashua River Watershed Association	Water Quality	Monoosnoc Brook	West St & Fairfield, Leominster	42.541900	-71.780300

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

[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
W0994	MassDEP	E. coli	05/06/03	09/11/03	5	130	1200	315
W0994	MassDEP	E. coli	05/13/08	09/16/08	6	24	1000	249
W1810	MassDEP	E. coli	05/13/08	09/16/08	6	5	550	88
W2180	MassDEP	E. coli	05/10/11	09/19/11	6	73	1400	182
NRWA_MN0009	Nashua River Watershed Association	E. coli	04/19/08	10/18/08	6	31	344	91

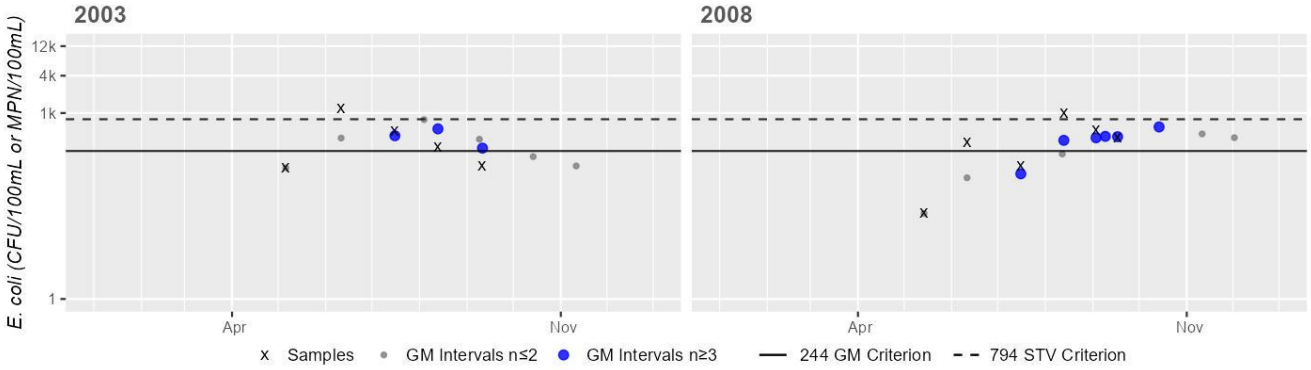
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_MN0009	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	6	35	648	98
NRWA_MN0009	Nashua River Watershed Association	E. coli	04/17/10	09/18/10	5	107	1119	403
NRWA_MN0009	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	75	648	203
NRWA_MN0009	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	6	75	1732	295
NRWA_MN0009	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	6	37	547	159
NRWA_MN0009	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	13	1732	133
NRWA_MN0009	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	45	913	198
NRWA_MN0009	Nashua River Watershed Association	E. coli	05/21/16	10/15/16	6	31	248	154
NRWA_MN0009	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	24	727	141
NRWA_MN0009	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	105	686	254
NRWA_MN0009	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	88	613	242
NRWA_MN0223	Nashua River Watershed Association	E. coli	04/19/08	10/18/08	6	12	980	100
NRWA_MN0223	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	52	2419	340
NRWA_MN0223	Nashua River Watershed Association	E. coli	04/17/10	09/18/10	5	50	2419	897
NRWA_MN0223	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	41	2419	467
NRWA_MN0223	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	6	228	2419	924
NRWA_MN0223	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	6	17	1119	270

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_MN0223	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	51	1203	565
NRWA_MN0223	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	60	1011	260
NRWA_MN0223	Nashua River Watershed Association	E. coli	05/21/16	10/15/16	6	290	2419	636
NRWA_MN0223	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	6	15	2419	193
NRWA_MN0223	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	101	2419	607
NRWA_MN0223	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	9	88	866	466
NRWA_MN0223	Nashua River Watershed Association	E. coli	04/07/20	10/17/20	16	24	2419	614
NRWA_MN0223	Nashua River Watershed Association	E. coli	04/27/21	10/16/21	7	45	1732	631
NRWA_MN0223	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	365	2419	852
NRWA_MN0419	Nashua River Watershed Association	E. coli	05/17/08	10/18/08	3	7	307	55
NRWA_MN0419	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	6	32	214	95
NRWA_MN0419	Nashua River Watershed Association	E. coli	06/19/10	09/18/10	4	133	1203	570
NRWA_MN0419	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	16	1413	250
NRWA_MN0419	Nashua River Watershed Association	E. coli	04/21/12	04/21/12	1	74	74	74
NRWA_MN0419	Nashua River Watershed Association	E. coli	10/19/13	10/19/13	1	79	79	79
NRWA_MN0520	Nashua River Watershed Association	E. coli	07/19/08	10/18/08	4	6	816	106
NRWA_MN0520	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	5	21	259	63

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_MN0520	Nashua River Watershed Association	E. coli	04/17/10	09/18/10	5	16	1203	311
NRWA_MN0520	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	21	261	98
NRWA_MN0520	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	6	25	1203	301
NRWA_MN0520	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	6	24	118	52
NRWA_MN0520	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	7	2419	105
NRWA_MN0520	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	5	38	721	178
NRWA_MN0520	Nashua River Watershed Association	E. coli	05/21/16	10/15/16	5	160	488	281
NRWA_MN0520	Nashua River Watershed Association	E. coli	04/15/17	04/15/17	1	6	6	6
NRWA_MN0630	Nashua River Watershed Association	E. coli	06/17/17	10/21/17	5	5	60	18

Station MASSDEP_W0994 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	315
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	1
%n>STV	20%

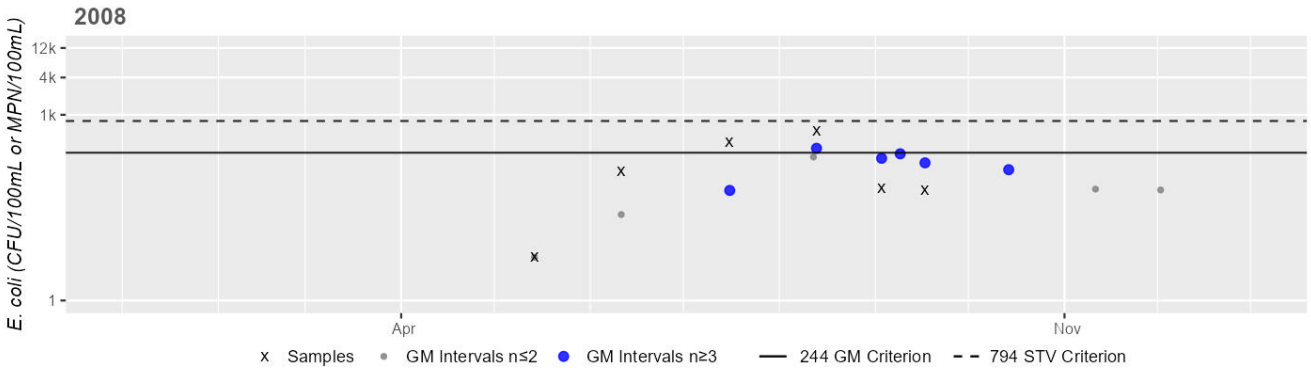
Variable*	Result
Samples	6
SeasGM	249
#GMI	6
#GMI Ex	5
%GMI Ex	83%
n>STV	1
%n>STV	16%

Cumulative %GMI Exceedance
Historic (1997-2010)
88%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W1810 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



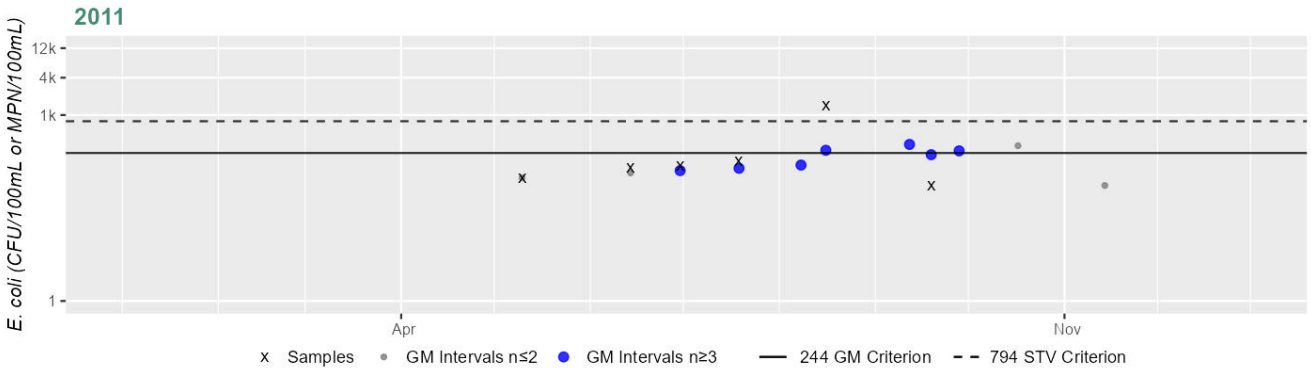
Variable*	Result
Samples	6
SeasGM	88
#GMI	6
#GMI Ex	1
%GMI Ex	16%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
16%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W2180 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



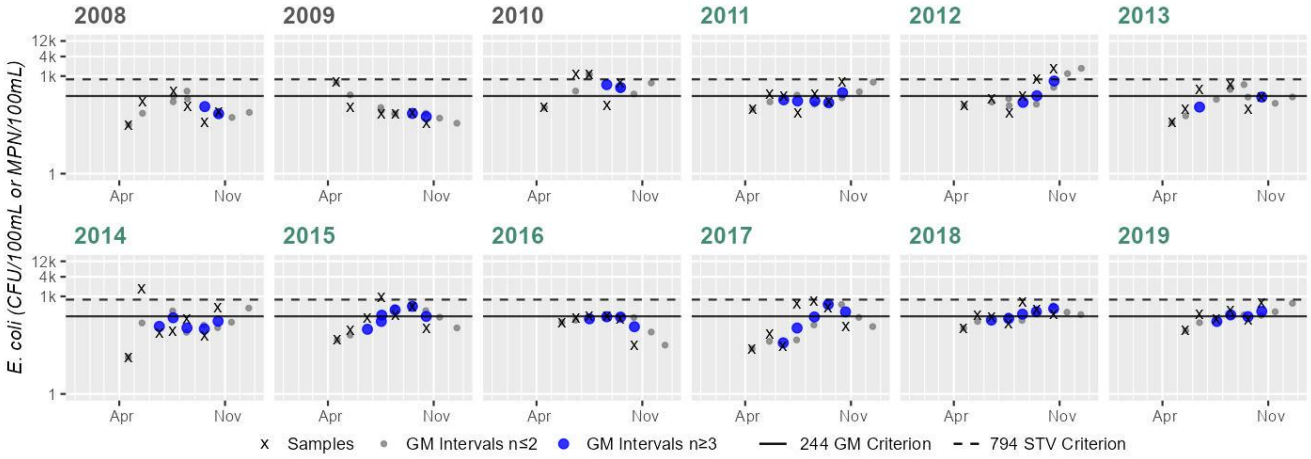
Variable*	Result
Samples	6
SeasGM	182
#GMI	7
#GMI Ex	3
%GMI Ex	42%
n>STV	1
%n>STV	16%

Cumulative %GMI Exceedance
Current (2011-2022)
42%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_MN0009 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	91
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	98
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	403
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	2
%n>STV	40%

Variable*	Result
Samples	7
SeasGM	203
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	295
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	6
SeasGM	159
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	133
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	198
#GMI	6
#GMI Ex	3
%GMI Ex	50%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	154
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	141
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	254
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	0
%n>STV	0%

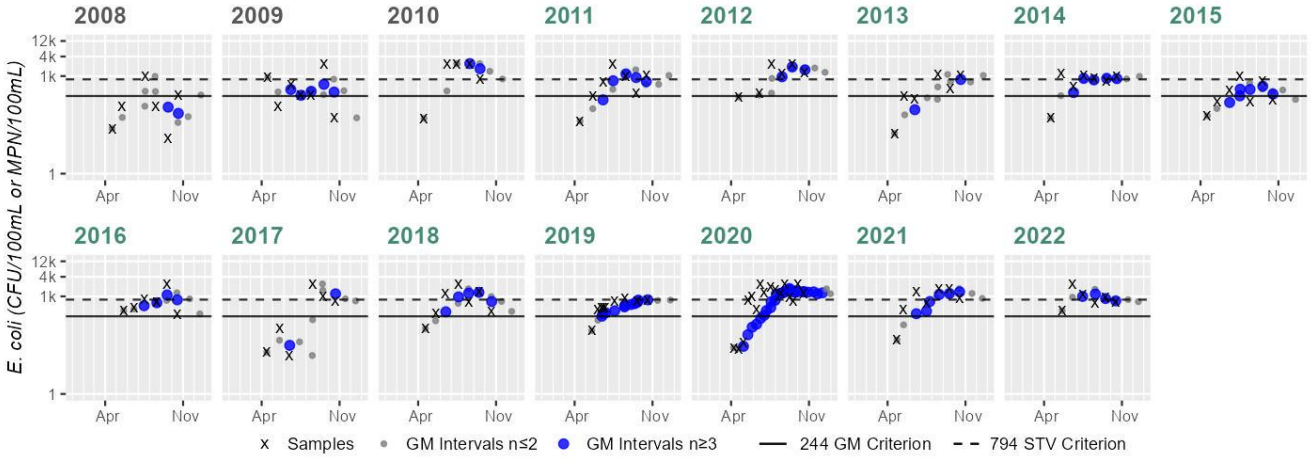
Variable*	Result
Samples	6
SeasGM	242
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
33%	33%	41%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_MN0223 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	100
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	7
SeasGM	340
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	5
SeasGM	897
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	4
%n>STV	80%

Variable*	Result
Samples	7
SeasGM	467
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	3
%n>STV	42%

Variable*	Result
Samples	6
SeasGM	924
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	4
%n>STV	66%

Variable*	Result
Samples	6
SeasGM	270
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	7
SeasGM	565
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	4
%n>STV	57%

Variable*	Result
Samples	7
SeasGM	260
#GMI	6
#GMI Ex	5
%GMI Ex	83%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	636
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	6
SeasGM	193
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	7
SeasGM	607
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	3
%n>STV	42%

Variable*	Result
Samples	9
SeasGM	466
#GMI	12
#GMI Ex	12
%GMI Ex	100%
n>STV	1
%n>STV	11%

Variable*	Result
Samples	16
SeasGM	614
#GMI	27
#GMI Ex	22
%GMI Ex	81%
n>STV	10
%n>STV	62%

Variable*	Result
Samples	7
SeasGM	631
#GMI	6
#GMI Ex	6
%GMI Ex	100%
n>STV	4
%n>STV	57%

Variable*	Result
Samples	6
SeasGM	852
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	3
%n>STV	50%

Cumulative %GMI Exceedance
Historic (1997-2010)
77%

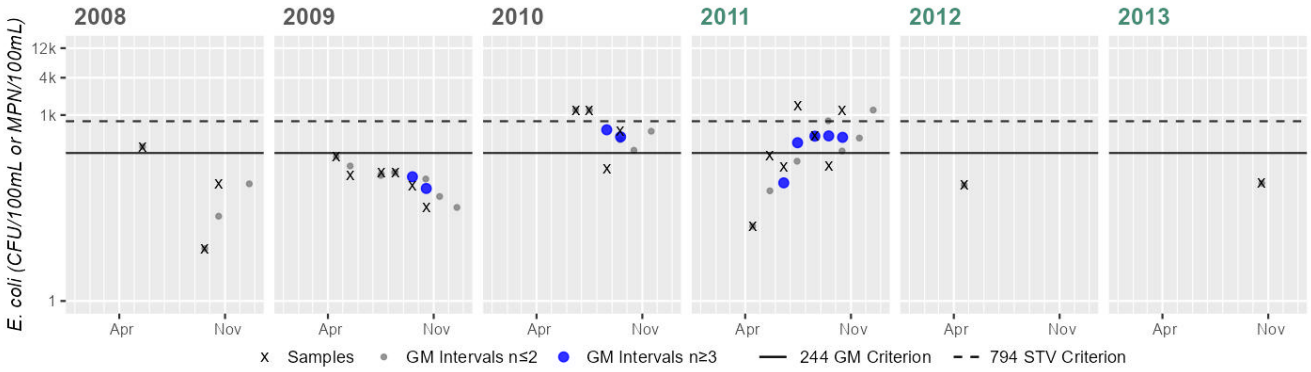
Cumulative %GMI Exceedance
Current (2011-2022)
88%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
90%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_MN0419 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	3
SeasGM	55
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	95
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	570
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	2
%n>STV	50%

Variable*	Result
Samples	7
SeasGM	250
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	1
SeasGM	74
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	1
SeasGM	79
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

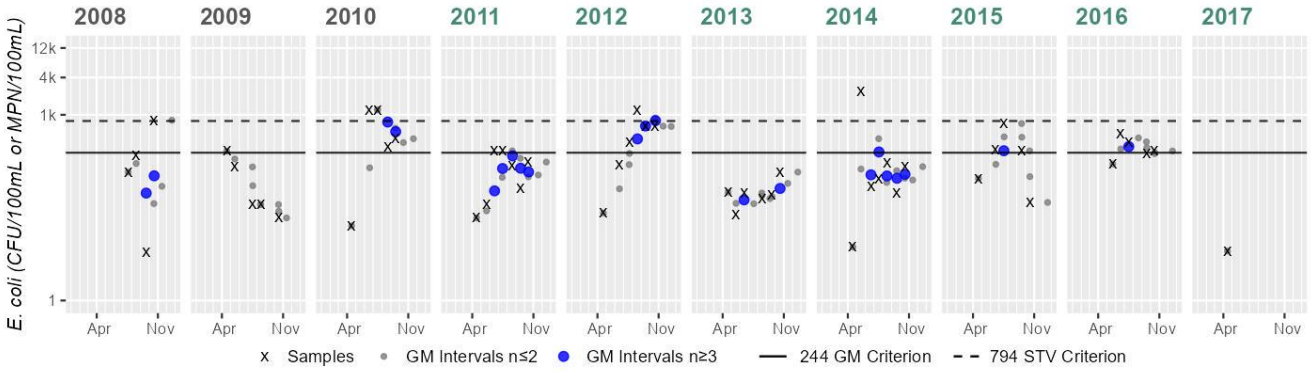
Cumulative %GMI Exceedance Historic (1997-2010)
50%

Cumulative %GMI Exceedance Current (2011-2022)
80%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_MN0520 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	4
SeasGM	106
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	25%

Variable*	Result
Samples	5
SeasGM	63
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	311
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	2
%n>STV	40%

Variable*	Result
Samples	7
SeasGM	98
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	301
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	6
SeasGM	52
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	105
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	5
SeasGM	178
#GMI	1
#GMI Ex	1
%GMI Ex	100%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	281
#GMI	1
#GMI Ex	1
%GMI Ex	100%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	1
SeasGM	6
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)
50%

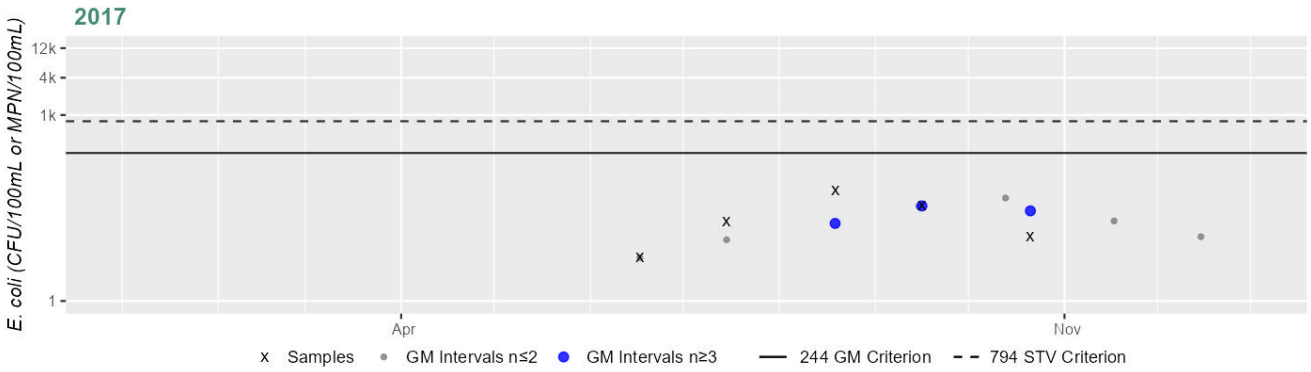
Cumulative %GMI Exceedance Current (2011-2022)
35%

Cumulative %GMI Exceedance Current (Recent 5 Years)
50%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_MN0630 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	18
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance

Current (2011-2022)

0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Morse Brook (MA81-84)

Location:	Headwaters north of Patterson Road, Shirley to mouth at confluence with the Nashua River, Shirley.
AU Type:	RIVER
AU Size:	1.4 MILES
Classification/Qualifier:	B: CWF

No usable data were available for Morse Brook (MA81-84) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Morse Reservoir (MA81086)

Location:	Leominster.
AU Type:	FRESHWATER LAKE
AU Size:	15 ACRES
Classification/Qualifier:	A: PWS, ORW (PWS and Tributary to PWS)

No usable data were available for Morse Reservoir (MA81086) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Muddy Brook (MA81-28)

Location:	Headwaters west of Shrewsbury Street, West Boylston to mouth at inlet Wachusett Reservoir (South Bay), West Boylston.
AU Type:	RIVER
AU Size:	0.8 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Muddy Brook (MA81-28)

Watershed Area: 0.84 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	0.84	0.84	0.52	0.52
Agriculture	2.1%	2.1%	2%	2%
Developed	16.9%	16.9%	17.2%	17.2%
Natural	69.8%	69.8%	63.1%	63.1%
Wetland	11.3%	11.3%	17.7%	17.7%
Impervious	6.8%	6.8%	7%	7%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Benthic Macroinvertebrates	--	Unchanged
5	5	Escherichia Coli (E. Coli)	--	Added

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Benthic Macroinvertebrates	Source Unknown (N)	X	--	--	--	--
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Muddy Brook (MA81-28) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Muddy Brook (MA81-28) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Muddy Brook (MA81-28) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at 1 station in 2018-2022. MA DCR (DCRWS) staff collected *E. coli* bacteria samples at the downstream end of Muddy Brook at DCRWS_MD03 [upstream of Rt 140. W Boylston MA] from 2011-2022 (n=11-32/yr). Analysis of the recent five years of the multi-year moderate frequency *E. coli* dataset from DCRWS_MD03 indicated 2 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2020 and 2022, 47 & 48%), 2 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2021 and 2022, n=2 & 3), and cumulatively across years 24% of intervals had GMs >126 CFU/100ml. *E. coli* data from DCRWS_MD03 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD03	MA DCR Division of Water Supply Protection	Water Quality	MUDDY BROOK	UPSTREAM OF RT 140. WEST BOYLSTON MA	42.347499	-71.765741

Bacteria Data

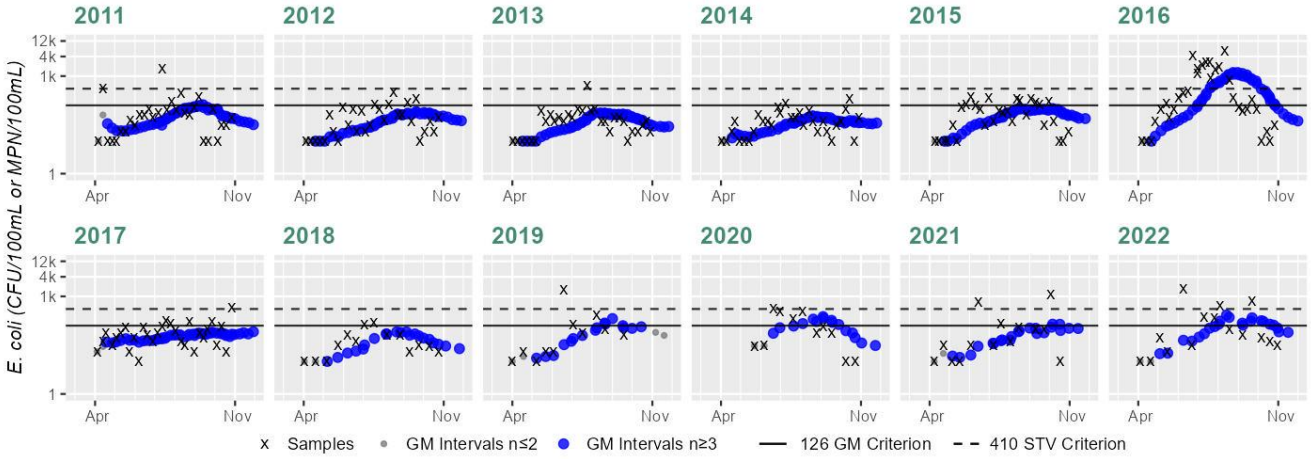
Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 2)

[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
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	04/06/11	11/22/11	30	10	1650	50
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	04/04/12	12/05/12	30	10	324	38
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	04/02/13	12/04/13	31	10	495	35
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	04/02/14	12/17/14	31	10	199	33
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	04/09/15	11/04/15	30	10	231	51
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	04/06/16	11/30/16	32	10	5790	195
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	04/04/17	12/19/17	30	10	457	61
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	04/02/18	10/24/18	14	10	158	33
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	04/01/19	09/18/19	11	10	1540	56
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	05/21/20	12/15/20	11	10	426	78
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	04/08/21	10/18/21	14	10	1170	53
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	04/04/22	10/31/22	15	10	1720	80

Station DCRWS_MD03 & MASSDEP_W2067 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	30
SeasGM	50
#GMI	55
#GMI Ex	1
%GMI Ex	1%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	30
SeasGM	38
#GMI	50
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	31
SeasGM	35
#GMI	55
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	31
SeasGM	33
#GMI	51
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	30
SeasGM	51
#GMI	53
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	32
SeasGM	195
#GMI	56
#GMI Ex	34
%GMI Ex	60%
n>STV	11
%n>STV	34%

Variable*	Result
Samples	30
SeasGM	61
#GMI	52
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	14
SeasGM	33
#GMI	22
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	56
#GMI	16
#GMI Ex	3
%GMI Ex	18%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	11
SeasGM	78
#GMI	17
#GMI Ex	8
%GMI Ex	47%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	14
SeasGM	53
#GMI	23
#GMI Ex	2
%GMI Ex	8%
n>STV	2
%n>STV	14%

Variable*	Result
Samples	15
SeasGM	80
#GMI	25
#GMI Ex	12
%GMI Ex	48%
n>STV	3
%n>STV	20%

Cumulative %GMI Exceedance Current (2011-2022)
12%

Cumulative %GMI Exceedance Current (Recent 5 Years)
24%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Muddy Brook (MA81-28) continues to be assessed as Fully Supporting. MA DCR (DCRWS) and MassDEP staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) at the downstream end of Muddy Brook at combined station DCRWS_MD03 & W2067 [Rt. 140, W Boylston & upstream of RT 140. W BOYLSTON MA] from 2008-2010 (historic n=51-53/yr) and 2011-2022 (current n=17-51/yr). Analysis of the recent five years of the multi-year high frequency *E. coli* dataset from DCRWS_MD03 & W2067 indicated 0 out of 5 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml, 0 yrs had >10% of samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. *E. coli* data from DCRWS_MD03 & W2067 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD03	MA DCR Division of Water Supply Protection	Water Quality	MUDDY BROOK	UPSTREAM OF RT 140. WEST BOYLSTON MA	42.347499	-71.765741
W2067	MassDEP	Water Quality	Muddy Brook	[Route 140, West Boylston]	42.347560	-71.765414

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1) (MassDEP Undated 7) (MassDEP Undated 3)

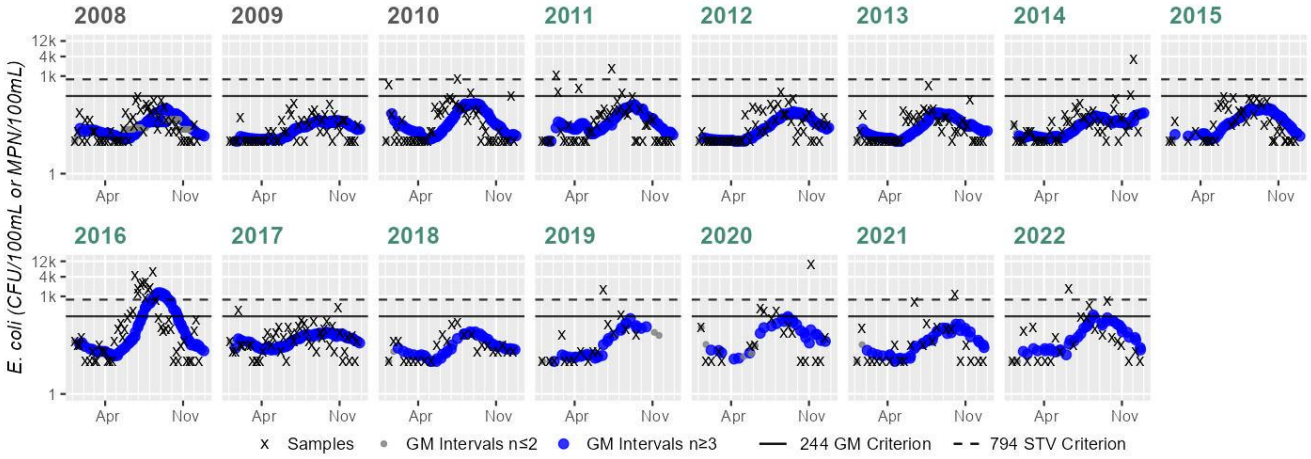
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	01/07/08	12/08/08	49	10	222	26
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	01/05/09	12/22/09	51	10	145	21
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	01/04/10	12/20/10	51	10	782	32
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	01/03/11	12/22/11	50	10	1650	33
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	01/04/12	12/19/12	51	10	324	25
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	01/08/13	12/19/13	50	10	495	24

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	01/09/14	12/17/14	50	10	3260	30
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	01/06/15	12/17/15	42	10	231	35
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	01/07/16	12/14/16	51	10	5790	86
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	01/05/17	12/19/17	50	10	457	42
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	01/10/18	12/17/18	24	10	158	26
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	01/03/19	09/18/19	17	10	1540	34
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	01/09/20	12/15/20	20	10	9800	55
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	01/07/21	12/20/21	24	10	1170	30
DCRWS_MD03	MA DCR Division of Water Supply Protection	E. coli	01/03/22	12/22/22	24	10	1720	45
W2067	MassDEP	E. coli	05/22/08	08/21/08	4	23	93	34

Station DCRWS_MD03 & MASSDEP_W2067 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	53
SeasGM	27
#GMI	112
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	51
SeasGM	21
#GMI	91
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	51
SeasGM	32
#GMI	88
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	50
SeasGM	33
#GMI	92
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	51
SeasGM	25
#GMI	87
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	50
SeasGM	24
#GMI	88
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	50
SeasGM	30
#GMI	80
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	42
SeasGM	35
#GMI	75
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	51
SeasGM	86
#GMI	85
#GMI Ex	27
%GMI Ex	31%
n>STV	10
%n>STV	19%

Variable*	Result
Samples	50
SeasGM	42
#GMI	87
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	24
SeasGM	26
#GMI	42
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	17
SeasGM	34
#GMI	28
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	20
SeasGM	55
#GMI	29
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	24
SeasGM	30
#GMI	43
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	24
SeasGM	45
#GMI	42
#GMI Ex	1
%GMI Ex	2%
n>STV	1
%n>STV	4%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

Cumulative %GMI Exceedance
Current (2011-2022)
3%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Mulpus Brook (MA81-36)

Location:	Headwaters, north of Howard Street, Lunenburg to the inlet of Hickory Hills Lake, Lunenburg (formerly part of 2008 segment: Mulpus Brook MA81-22).
AU Type:	RIVER
AU Size:	3.8 MILES
Classification/Qualifier:	B: CWF

Mulpus Brook (MA81-36)

Watershed Area: 5.67 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	5.67	5.67	1.28	1.28
Agriculture	3.7%	3.7%	3.1%	3.1%
Developed	11%	11%	8%	8%
Natural	74.7%	74.7%	69.7%	69.7%
Wetland	10.6%	10.6%	19.2%	19.2%
Impervious	4.1%	4.1%	3.1%	3.1%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Temperature	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Temperature	Source Unknown (N)	X	--	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Mulpus Brook (MA81-36) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Mulpus Brook (MA81-36) continues to be assessed as Fully Supporting. MassDEP staff recorded aesthetics observations at one station in the downstream half of Mulpus Brook ~2900 feet downstream/east of Holman Street, Lunenburg (W2887, n=4) as part of the Reference Site Network monitoring project, during the summer of 2019. No persistent objectionable conditions (i.e., odors, deposits, growths, or turbidity) were observed during any of the surveys.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2887	MassDEP	Water Quality	Mulpus Brook	[approximately 2900 feet downstream/east of Holman Street, Lunenburg]	42.617604	-71.726241

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2887	2019	4	Aesthetic observations were made by MassDEP field sampling crews at Station W2887 on Mulpus Brook (MA81-36) during 4 site visits between Jun 2019 and Sep 2019. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2887	2019	4	4	0

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2887	Mulpus Brook	2019	Aesthetics Impaired?	No	4	4
W2887	Mulpus Brook	2019	Aquatic Plant Density, Overall	None	4	4
W2887	Mulpus Brook	2019	Color	Light Yellow/Tan	1	4
W2887	Mulpus Brook	2019	Color	None	3	4
W2887	Mulpus Brook	2019	Objectionable Deposits	No	4	4
W2887	Mulpus Brook	2019	Odor	None	4	4
W2887	Mulpus Brook	2019	Periphyton Density, Filamentous	None	4	4
W2887	Mulpus Brook	2019	Periphyton Density, Film	None	4	4
W2887	Mulpus Brook	2019	Scum	No	4	4
W2887	Mulpus Brook	2019	Turbidity	None	4	4

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for Mulpus Brook (MA81-36) continues to be assessed as Fully Supporting. Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples close to the downstream end of Mulpus Brook at NRWA_MU2011 [Above Hickory Hills Lake behind 23 Valley Rd. inlet to lake, Lunenburg] from 2011-2018 (n=5-7/yr). Analysis of the recent five years of the multi-year limited frequency *E. coli* dataset from NRWA_MU2011 indicated 1 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2014, 40%), 0 yrs had ≥2 samples exceed the 410 CFU/100ml STV, and cumulatively across years 12% of intervals had GMs >126 CFU/100ml. *E. coli* data from NRWA_MU2011 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_MU2011	Nashua River Watershed Association	Water Quality	Mulpus Brook	Above Hickory Hills Lake behind 23 Valley Rd. inlet to lake, Lunenburg	42.617010	-71.721140

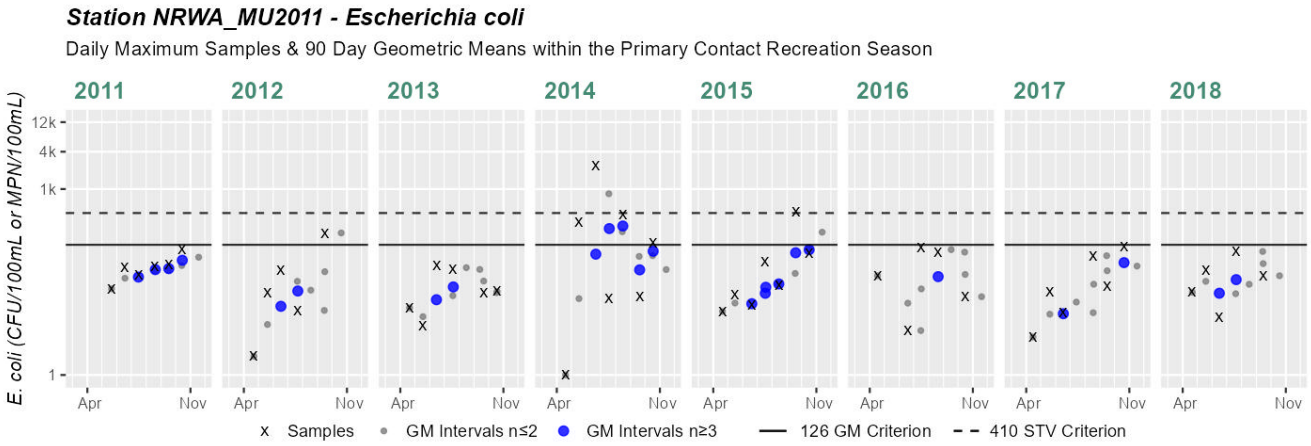
Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

(NRWA 2022) (MassDEP Undated 2)

[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
NRWA_MU2011	Nashua River Watershed Association	E. coli	05/21/11	10/15/11	6	24	104	51
NRWA_MU2011	Nashua River Watershed Association	E. coli	04/21/12	09/15/12	5	2	195	21
NRWA_MU2011	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	6	6	57	21
NRWA_MU2011	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	1	2419	73
NRWA_MU2011	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	10	435	41
NRWA_MU2011	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	5	5	115	33
NRWA_MU2011	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	6	4	118	25
NRWA_MU2011	Nashua River Watershed Association	E. coli	04/21/18	09/15/18	5	8	98	32



Variable*	Result
Samples	6
SeasGM	51
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	21
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	21
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	73
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	41
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	5
SeasGM	33
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	25
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	32
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Current (2011-2022)
8%

Cumulative %GMI Exceedance Current (Recent 5 Years)
12%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Mulpus Brook (MA81-36) continues to be assessed as Fully Supporting. MassDEP and NRWA staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in Mulpus Brook (MA81-36) from 2008-2018 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: two-thirds of the way down the AU at W1823 [Holman St, Lunenburg] from May-Sep 2008 (n=6), and close to the downstream end at NRWA_MU2011 [Above Hickory Hills Lake behind 23 Valley Rd. inlet to lake, Lunenburg] from 2011-2018 (n=5-7/yr). Since bacteria data from the historic IR window (at 1 station) are indicative of good water quality conditions, only the analysis from the current IR window (1 station) will be summarized here: Analysis of the recent five years of the multi-year limited frequency *E. coli* dataset from NRWA_MU2011 indicated 1 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2014, 20%), 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 6% of intervals had GMs >244 CFU/100ml. *E. coli* data from NRWA_MU2011 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1823	MassDEP	Water Quality	Mulpus Brook	[Holman Street, Lunenburg]	42.617303	-71.734278
NRWA_MU2011	Nashua River Watershed Association	Water Quality	Mulpus Brook	Above Hickory Hills Lake behind 23 Valley Rd. inlet to lake, Lunenburg	42.617010	-71.721140

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

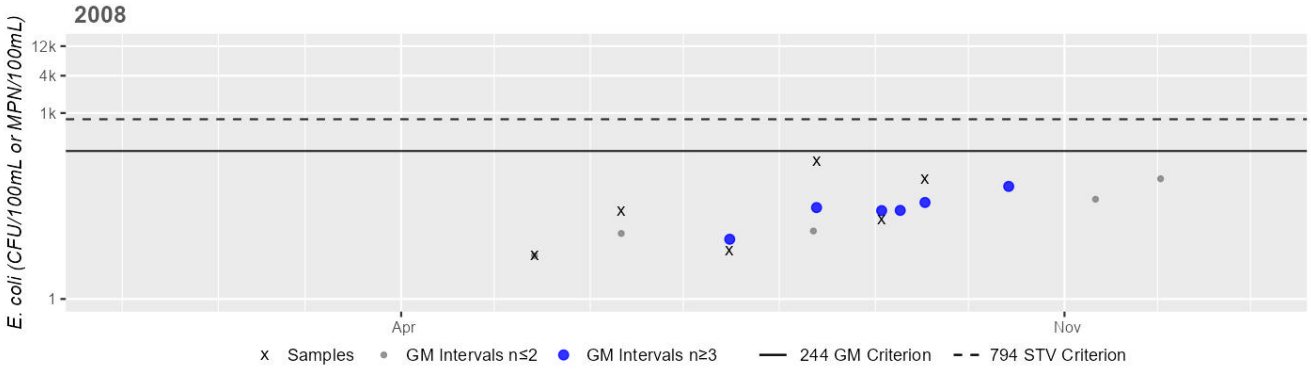
(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

[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
W1823	MassDEP	E. coli	05/13/08	09/16/08	6	5	170	24
NRWA_MU2011	Nashua River Watershed Association	E. coli	05/21/11	10/15/11	6	24	104	51
NRWA_MU2011	Nashua River Watershed Association	E. coli	04/21/12	09/15/12	5	2	195	21
NRWA_MU2011	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	6	6	57	21
NRWA_MU2011	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	1	2419	73
NRWA_MU2011	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	10	435	41
NRWA_MU2011	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	5	5	115	33
NRWA_MU2011	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	6	4	118	25
NRWA_MU2011	Nashua River Watershed Association	E. coli	04/21/18	09/15/18	5	8	98	32

Station MASSDEP_W1823 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



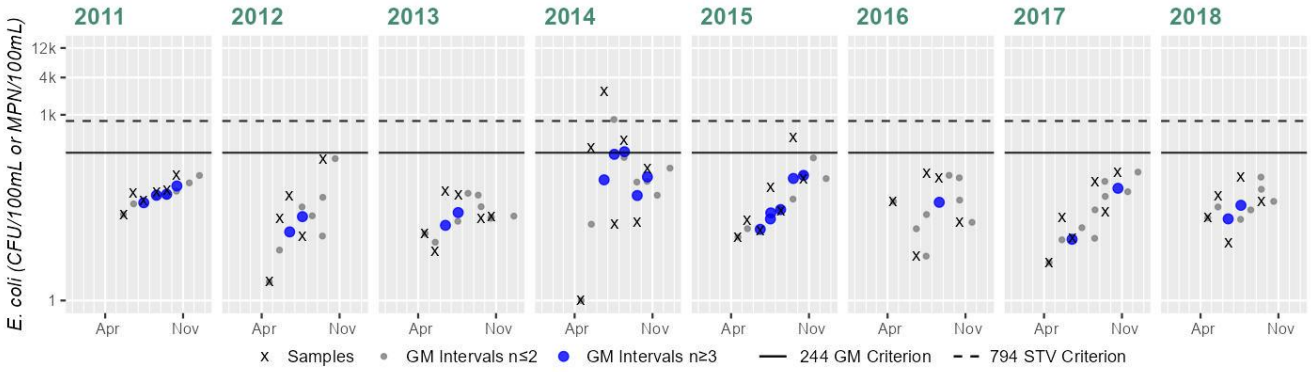
Variable*	Result
Samples	6
SeasGM	24
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_MU2011 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	51
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	21
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	21
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	73
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	41
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	33
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	25
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	32
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
4%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
6%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Mulpus Brook (MA81-37)

Location:	From outlet Hickory Hills Lake, Lunenburg to mouth at confluence with the Nashua River, Shirley (formerly part of 2008 segment: Mulpus Brook MA81-22).
AU Type:	RIVER
AU Size:	6.3 MILES
Classification/Qualifier:	B: CWF

Mulpus Brook (MA81-37)

Watershed Area: 15.93 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	15.93	4.17	4.00	0.88
Agriculture	4%	1.6%	2.2%	2.3%
Developed	12.6%	13.4%	11.1%	12.8%
Natural	72.9%	74.2%	68.1%	62.9%
Wetland	10.6%	10.8%	18.7%	22%
Impervious	5%	5.3%	5.2%	6.5%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Escherichia Coli (E. Coli)	--	Added
5	5	Lack of a Coldwater Assemblage	--	Unchanged
5	5	Temperature	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--
Lack of a Coldwater Assemblage	Dam or Impoundment (Y)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Lack of a Coldwater Assemblage	Source Unknown (N)	X	--	--	--	--
Temperature	Dam or Impoundment (Y)	X	--	--	--	--
Temperature	Source Unknown (N)	X	--	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Mulpus Brook (MA81-37) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Mulpus Brook (MA81-37) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for Mulpus Brook (MA81-37) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at 1 station in 2018-2022. Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in Mulpus Brook from 2011-2022 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: a third of the way down the AU at NRWA_MU0647 [Mulpus Brook on Brockelman Property, Lunenburg] from 2011-2022 (n=5-7/yr), and over three-quarters of the way down at NRWA_MU0101 [Hazen Rd off Rte. 2A, Ayer] from Apr-Oct 2017 (n=7). Analysis of the recent five years of this multi-year limited frequency *E. coli* dataset from NRWA_MU0647 indicated 3 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2018 and 2020-2021, 25-60%), and while 0 yrs had ≥2 samples exceed the 410 CFU/100ml STV, cumulatively across years 26% of intervals had GMs >126 CFU/100ml. Analysis of the single year moderate frequency *E. coli* dataset from NRWA_MU0101 indicated 20% of intervals had GMs >126 CFU/100ml and no samples exceeded the 410 CFU/100ml STV. While *E. coli* data from NRWA_MU0101 meet 2024 CALM guidance, *E. coli* data from NRWA_MU0647 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_MU0101	Nashua River Watershed Association	Water Quality	Mulpus Brook; Monoosnoc Brook	Hazen Rd off Rte. 2A, Ayer	42.574100	-71.624500
NRWA_MU0647	Nashua River Watershed Association	Water Quality	Mulpus Brook	Mulpus Brook on Brockelman Property, Lunenburg	42.596860	-71.673740

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

(NRWA 2022) (MassDEP Undated 2)

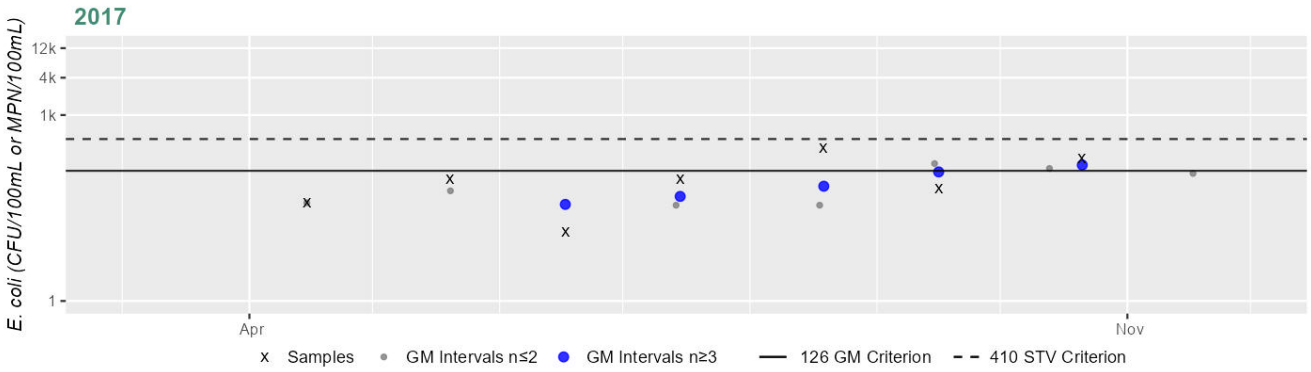
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_MU0101	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	13	290	77
NRWA_MU0647	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	36	387	97
NRWA_MU0647	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	5	1203	57

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_MU0647	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	20	90	32
NRWA_MU0647	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	18	261	50
NRWA_MU0647	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	7	51	21
NRWA_MU0647	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	16	34	24
NRWA_MU0647	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	4	214	38
NRWA_MU0647	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	16	1553	110
NRWA_MU0647	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	9	116	41
NRWA_MU0647	Nashua River Watershed Association	E. coli	05/16/20	10/17/20	5	14	290	98
NRWA_MU0647	Nashua River Watershed Association	E. coli	05/15/21	10/16/21	6	21	204	74
NRWA_MU0647	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	9	435	37

Station NRWA_MU0101 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



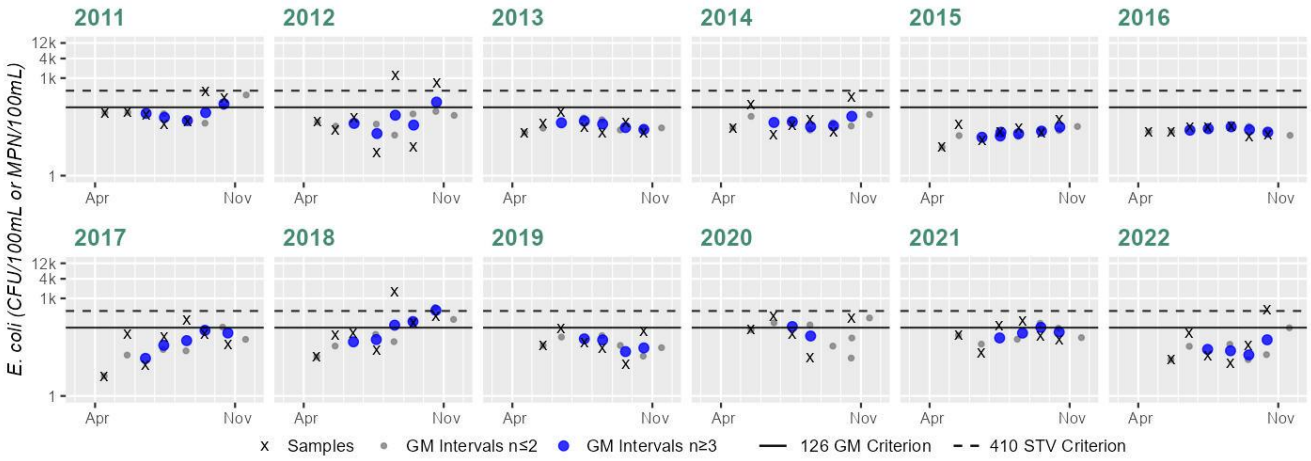
Variable*	Result
Samples	7
SeasGM	77
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
20%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_MU0647 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	97
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	57
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	32
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	50
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	21
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	24
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	38
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	110
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	41
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	98
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	74
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	37
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	16%

Cumulative %GMI Exceedance Current (2011-2022)
12%

Cumulative %GMI Exceedance Current (Recent 5 Years)
26%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Mulpus Brook (MA81-37) continues to be assessed as Fully Supporting. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in Mulpus Brook from 2003-2022 at 4 stations. Samples were collected from the following stations/sample years from upstream to downstream: a third of the way down the AU at NRWA_MU0647 [Mulpus Brook on Brockelman Property, Lunenburg] from 2008-2010 (historic n=5-7/yr) and 2011-2022 (current n=5-7/yr) and W1824 [Rt. 225, Lunenburg] from May-Sep 2008 (n=6), over three-quarters of the way down at NRWA_MU0101 [Hazen Rd off Rte. 2A, Ayer] from Apr-Oct 2017 (n=7) and W0998 [trailer park Rd directly across from Kittredge Rd, Shirley] in 2003 and 2008 (n=5-6/yr). Since bacteria data from the historic IR window are indicative of good water quality conditions, only the analysis from the current IR window will be summarized here: Analysis of the recent five years of this multi-year limited frequency *E. coli* dataset from NRWA_MU0647 indicated 1 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2018, 20%), 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 5% of intervals had GMs >244 CFU/100ml. Analysis of the single year moderate frequency *E. coli* dataset from NRWA_MU0101 indicated 0% of intervals had GMs >244 CFU/100ml and no samples exceeded the 794 CFU/100ml STV. *E. coli* data from NRWA_MU0647 and NRWA_MU0101 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0998	MassDEP	Water Quality	Mulpus Brook	[trailer park road directly across from Kittredge Road, Shirley]	42.575061	-71.620356
W1824	MassDEP	Water Quality	Mulpus Brook	[Route 225, Lunenburg]	42.596164	-71.670206
NRWA_MU0101	Nashua River Watershed Association	Water Quality	Mulpus Brook; Monoosnoc Brook	Hazen Rd off Rte. 2A, Ayer	42.574100	-71.624500
NRWA_MU0647	Nashua River Watershed Association	Water Quality	Mulpus Brook	Mulpus Brook on Brockelman Property, Lunenburg	42.596860	-71.673740

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

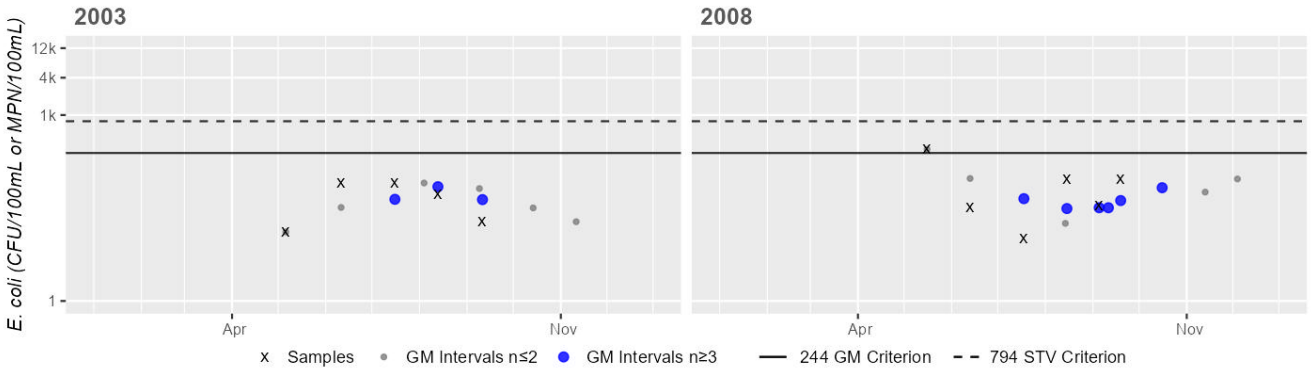
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W0998	MassDEP	E. coli	05/06/03	09/11/03	5	13	80	38
W0998	MassDEP	E. coli	05/15/08	09/18/08	6	10	280	54

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1824	MassDEP	E. coli	05/13/08	09/16/08	6	6	950	44
NRWA_MU0101	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	13	290	77
NRWA_MU0647	Nashua River Watershed Association	E. coli	04/19/08	09/20/08	5	13	54	34
NRWA_MU0647	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	12	686	66
NRWA_MU0647	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	7	31	435	70
NRWA_MU0647	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	36	387	97
NRWA_MU0647	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	5	1203	57
NRWA_MU0647	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	20	90	32
NRWA_MU0647	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	18	261	50
NRWA_MU0647	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	7	51	21
NRWA_MU0647	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	16	34	24
NRWA_MU0647	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	4	214	38
NRWA_MU0647	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	16	1553	110
NRWA_MU0647	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	9	116	41
NRWA_MU0647	Nashua River Watershed Association	E. coli	05/16/20	10/17/20	5	14	290	98
NRWA_MU0647	Nashua River Watershed Association	E. coli	05/15/21	10/16/21	6	21	204	74
NRWA_MU0647	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	9	435	37

Station MASSDEP_W0998 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	38
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

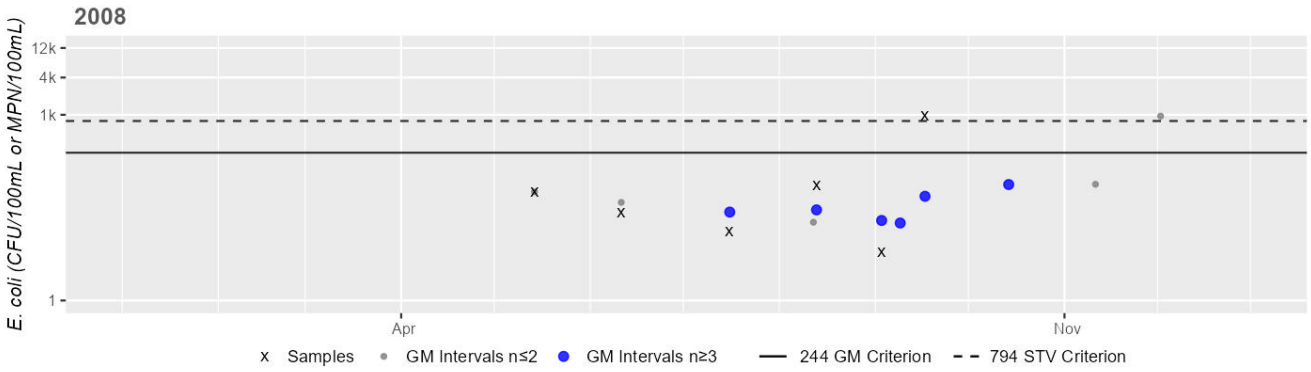
Variable*	Result
Samples	6
SeasGM	54
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W1824 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



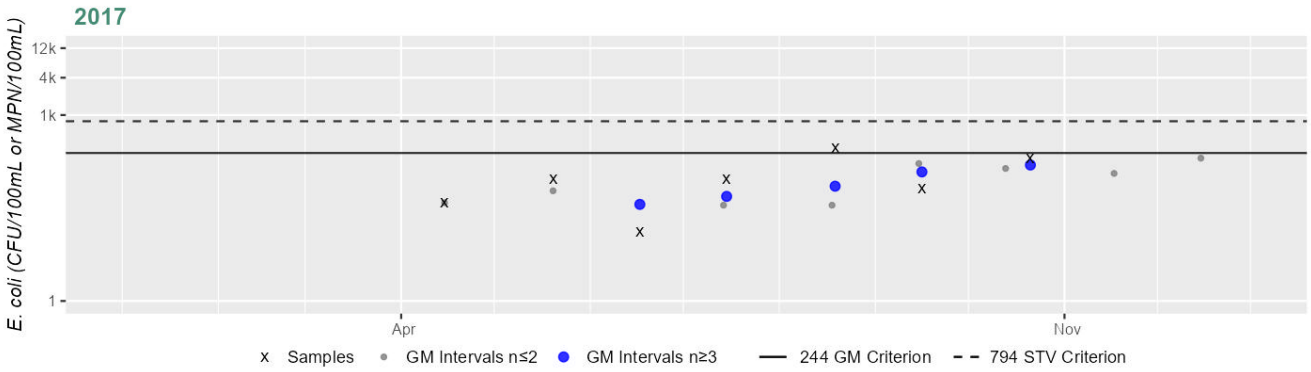
Variable*	Result
Samples	6
SeasGM	44
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	16%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_MU0101 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



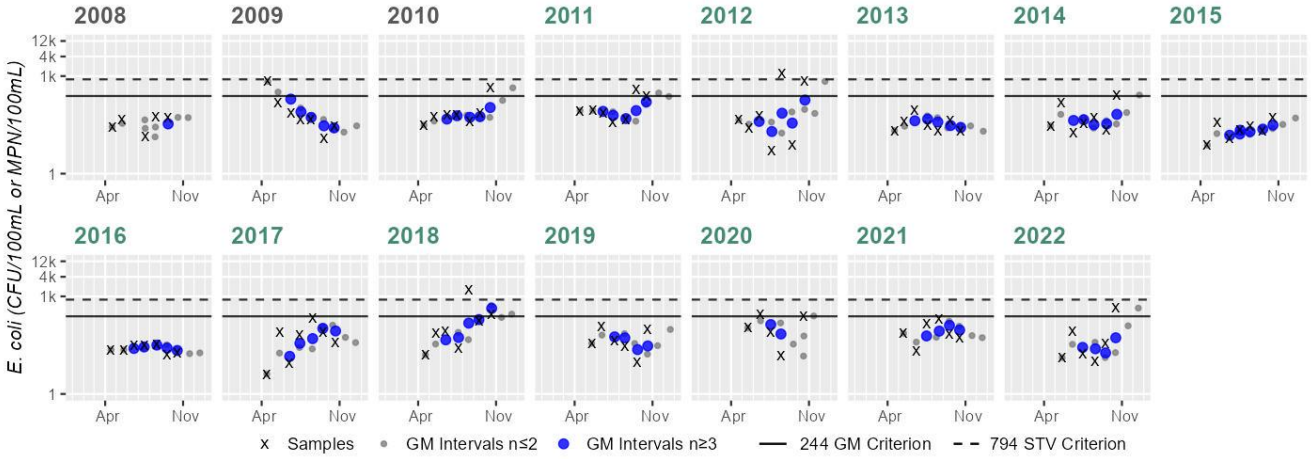
Variable*	Result
Samples	7
SeasGM	77
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_MU0647 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	34
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	66
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	70
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	97
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	57
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	32
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	50
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	21
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	24
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	38
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	110
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	41
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	98
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	74
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	37
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

Cumulative %GMI Exceedance
Current (2011-2022)
1%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
5%

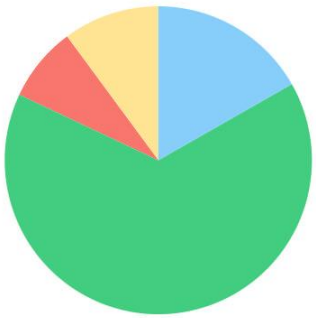
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Muschopauge Brook (MA81-69)

Location:	Headwaters, east of Glenwood Road, Rutland to mouth at inlet Quinapoxet Reservoir, Holden.
AU Type:	RIVER
AU Size:	3.5 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Muschopauge Brook (MA81-69)

Watershed Area: 4.01 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	4.01	3.67	2.69	2.52
Agriculture	10.1%	10.3%	7.3%	7.6%
Developed	7.9%	7.8%	6.8%	6.5%
Natural	65.2%	66.2%	63.5%	64.3%
Wetland	16.8%	15.7%	22.4%	21.6%
Impervious	3.2%	3.2%	2.7%	2.6%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Muschopauge Brook (MA81-69) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Muschopauge Brook (MA81-69) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Muschopauge Brook (MA81-69) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Muschopauge Brook (MA81-69) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MassDEP staff collected *E. coli* bacteria samples a third of the way down Muschopauge Brook at W1840 [Rt. 68, Rutland] from May-Sep 2008 (n=6). Analysis of the historic single year limited frequency *E. coli* dataset from W1840 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 19 CFU/100ml, which meets 2024 CALM guidance. Since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1840	MassDEP	Water Quality	Muschopauge Brook	[Route 68, Rutland]	42.397464	-71.916263

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

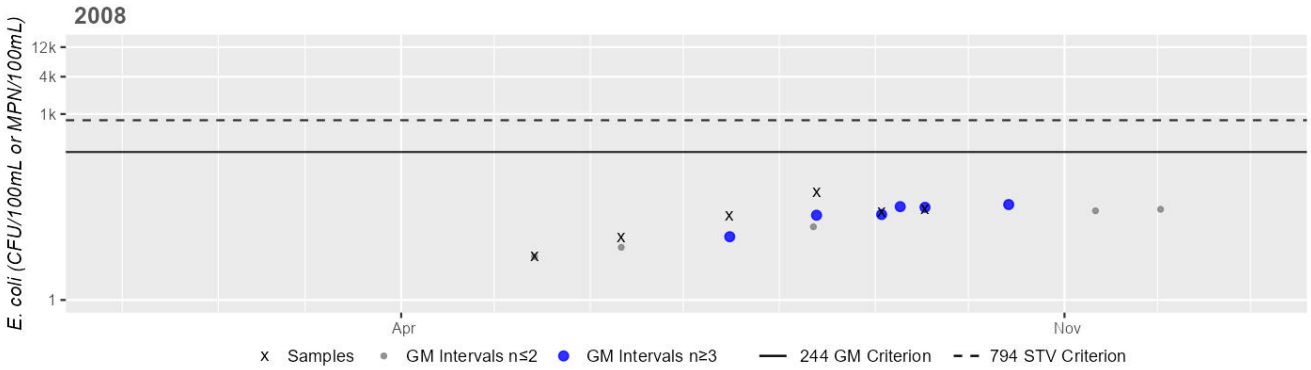
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W1840	MassDEP	E. coli	05/13/08	09/16/08	6	5	55	19

Station MASSDEP_W1840 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	19
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Muschopauge Pond (MA81089)

Location:	Rutland.
AU Type:	FRESHWATER LAKE
AU Size:	61 ACRES
Classification/Qualifier:	A: PWS, ORW (PWS and Tributary to PWS)

No usable data were available for Muschopauge Pond (MA81089) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Nashua River (MA81-05)

Location:	From confluence of North Nashua River, Lancaster to confluence of Squannacook River, Shirley/Groton/Ayer.
AU Type:	RIVER
AU Size:	14.2 MILES
Classification/Qualifier:	B: WWF

Nashua River (MA81-05)

Watershed Area: 343.50 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	343.50	15.97	146.01	4.35
Agriculture	4.2%	2.1%	3.3%	1.1%
Developed	17.2%	27%	11.6%	17.5%
Natural	68.9%	61%	69.3%	60.7%
Wetland	9.8%	9.9%	15.8%	20.7%
Impervious	7.8%	12.6%	5.4%	8.3%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Water Chestnut*)	--	Unchanged
5	5	Benthic Macroinvertebrates	--	Unchanged
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
5	5	PFAS in Fish Tissue	--	Added
5	5	Phosphorus, Total	--	Unchanged
5	5	Sediment Bioassay [Acute Toxicity Freshwater]	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Water Chestnut*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Benthic Macroinvertebrates	Contaminated Sediments (Y)	X	--	--	--	--
Benthic Macroinvertebrates	Municipal Point Source Discharges (Y)	X	--	--	--	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--
Escherichia Coli (E. Coli)	Wet Weather Discharges (Non-Point Source) (Y)	--	--	--	X	--
PFAS in Fish Tissue	Source Unknown (N)	--	X	--	--	--
Phosphorus, Total	Municipal Point Source Discharges (Y)	X	--	--	--	--
Sediment Bioassay [Acute Toxicity Freshwater]	Contaminated Sediments (Y)	X	--	--	--	--
Sediment Bioassay [Acute Toxicity Freshwater]	Municipal Point Source Discharges (Y)	X	--	--	--	--

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

Recommendations

2024/26 Recommendations
2016 IR [MACROPHYTES, LOW] Additional monitoring is recommended to monitor the growth of aquatic plants macrophytes in this Nashua River AU (MA81-05). The prior Alert for Aquatic plants (Macrophytes) was based on observations of dense macrophytes at Route 2A, Shirley/Ayer {W0488} in 2008. This is of low priority.

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for this Nashua River AU (MA81-05) is assessed as Not Supporting with a new impairment being added for PFAS in Fish Tissue. Fish toxics sampling was conducted in the next downstream Nashua River AU (MA81-06) at station F0489 (PFAS Study ID 49) [on Nashua River in impoundment (Pepperell Pond) of Pepperell Paper Co. Dam (NAT ID: MA00373) approximately 900 feet northeast/downstream from Route 111/119, Groton/Pepperell] on 07/21/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. MDPH issued a site-specific advisory for PFAS in the Nashua River in their May 2024 Freshwater Fish Consumption Advisory List and retained it in the January 2025 list. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations. No source of PFAS has been identified at this time.

Fish Tissue Data

Summary of Fish Tissue Data and Resulting Fish Consumption Advisories (MA DPH 2025) (MassDEP 2023) (MassDEP Undated 5)

Summary
Fish toxics sampling was conducted in the next downstream Nashua River AU (MA81-06) at station F0489 (PFAS Study ID 49) [on Nashua River in impoundment (Pepperell Pond) of Pepperell Paper Co. Dam (NAT ID: MA00373) approximately 900 feet northeast/downstream from Route 111/119, Groton/Pepperell] on 07/21/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. Because of elevated PFAS measured in fish filets, MDPH issued site-specific fish consumption advisories for the Nashua River in their May 2024 Freshwater Fish Consumption Advisory List and retained them in the January 2025 list. The site-specific DPH advisories are indicative of a Fish Consumption Use impairment for PFAS in Fish Tissue for this Nashua River AU (MA81-05).

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	YES

2024/26 Use Attainment Summary

There are no data available to assess the status of the Aesthetics Use for Nashua River (MA81-05), so it is Not Assessed. The prior Alert for Aquatic plants (Macrophytes) (based on observations of dense macrophytes at Route 2A, Shirley/Ayer W0488 in 2008 (MassDEP Undated 6) is being carried forward. Since the prior Alert identified for Total Phosphorus concentrations was redundantly duplicated across multiple uses for this waterbody, it is being removed from the Aesthetics Use but will continue to be maintained as an impairment under the Aquatic Life Use.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for the Nashua River (MA81-05) continues to be assessed as Not Supporting. The prior Escherichia Coli (E. Coli) impairment is being carried forward based on bacteria data not meeting the threshold at 3 stations in 2014-2018. The prior Alert for Total Phosphorus is being removed from the Recreational Uses but will continue to be maintained under the Aquatic Life Use. The prior Alert for Aquatic Plants (Macrophytes) is being removed from the Recreational Uses but will continue to be maintained under the Aesthetics Use. Surface water sampling was conducted by the USGS at stations USGS_01095862 (upstream of the Ayer WWTF discharge) and USGS_01095920 (downstream of the Ayer WWTF discharge) on three dates during August to October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities. The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS) were all less than the 90 ng/L (ppt) recreational screening value (HFPO-DA/GenX was not analyzed in this study). Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in the Nashua River from 2011-2022 at 5 stations. Samples were collected from the following stations/sample years from upstream to downstream: close to the upstream end at NRWA_NM5837 [Boat launch D.S. of Rt. 117, Lancaster] from 2011-2018 (n=6-7/yr), halfway down the AU at NRWA_NM6274 [Still River Depot Rd; Tank/Foot Bridge at Oxbow, Harvard] from 2015-2022 (n=5-16/yr), three-quarters of the way down at NRWA_NM4426 [Hospital Rd bridge, Devens] from 2015-2022 (n=2-7/yr), close to the downstream end at NRWA_NM4201 [Ice House Dam, Shirley] from 2011-2016 (n=6-7/yr), and NRWA_NM4010 [Filter Bed Rd E off Bishop Rd, Ayer] from 2017-2022 (n=5-7/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from NRWA_NM5837 indicated 5 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2014-2018, 33-75%), 2 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2014 and 2018, n=2 & 2), and cumulatively across years 55% of intervals had GMs >126 CFU/100ml. Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from NRWA_NM6274 indicated 5 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2018-2022, 25-78%), 1 yr had ≥2 samples exceed the 410 CFU/100ml STV (2020, n=3), and cumulatively across years 70% of intervals had GMs >126 CFU/100ml. Analysis of the recent five years of this multi-year limited frequency *E. coli* dataset from NRWA_NM4426 indicated 5 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2018-2022, 25-66%), 0 yrs had ≥2 samples exceed the 410 CFU/100ml STV, and cumulatively across years 38% of intervals had GMs >126 CFU/100ml. Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from NRWA_NM4201 indicated 2 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2012 and 2014, 25 & 25%), 0 yrs had ≥2 samples exceed the 410 CFU/100ml STV, and cumulatively across years 10% of intervals had GMs >126 CFU/100ml. Analysis of the recent five years of this multi-year limited frequency *E. coli* dataset from NRWA_NM4010 indicated 2 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2019 and 2022, 33 & 33%), 0 yrs had ≥2 samples exceed the 410 CFU/100ml STV, and cumulatively across years 18% of intervals had GMs >126 CFU/100ml. While *E. coli* data from NRWA_NM4201 and NRWA_NM4010 meet 2024 CALM guidance, *E. coli* data from NRWA_NM5837, NRWA_NM6274, and NRWA_NM4426 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_NM4010	Nashua River Watershed Association	Water Quality	Nashua Mainstem	Filter Bed Road East off Bishop Road, Ayer	42.566900	-71.607000
NRWA_NM4201	Nashua River Watershed Association	Water Quality	Nashua Mainstem	Ice House Dam, Shirley	42.553400	-71.618400
NRWA_NM4426	Nashua River Watershed Association	Water Quality	Nashua Mainstem	Hospital Road bridge, Devens	42.541100	-71.633800
NRWA_NM5837	Nashua River Watershed Association	Water Quality	Nashua Mainstem	Boat launch D.S. of Rt. 117, Lancaster	42.461750	-71.656340
NRWA_NM6274	Nashua River Watershed Association	Water Quality	Nashua Mainstem	Still River Depot Road; Tank/Foot Bridge at Oxbow, Harvard	42.495700	-71.626600
USGS-01095862	USGS Massachusetts Water Science Center	Water Quality	Nashua River	NASHUA RIVER NEAR MCPHERSON ROAD, SHIRLEY, MA; upstream of Ayer WWTF	42.555000	-71.611000
USGS-01095920	USGS Massachusetts Water Science Center	Water Quality	Nashua River	NASHUA RIVER NEAR AYER, MA; downstream of Ayer WWTF	42.578000	-71.609000

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (30-day Interval Analysis)
(NRWA 2022) (MassDEP Undated 2)
[Result units are CFU/100mL or MPN/100mL]

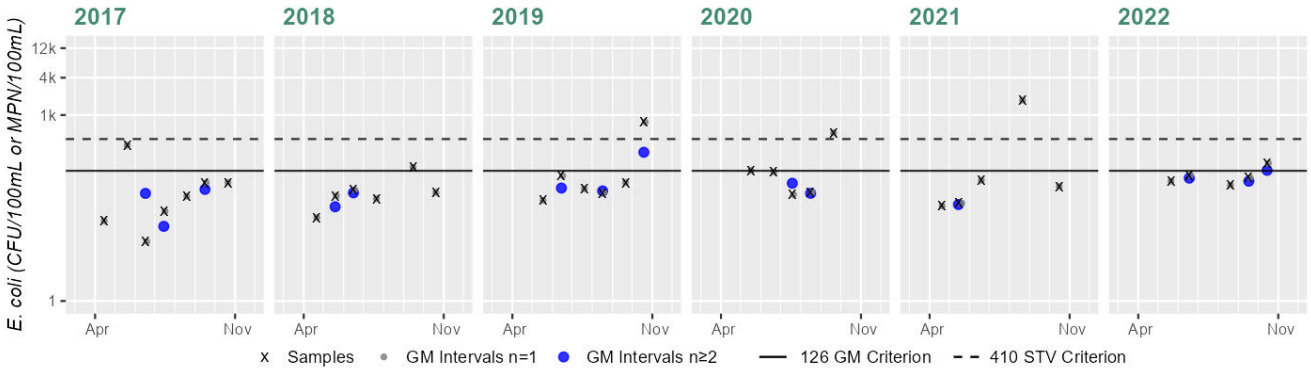
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_NM4010	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	9	325	47
NRWA_NM4010	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	6	22	143	54
NRWA_NM4010	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	42	770	99
NRWA_NM4010	Nashua River Watershed Association	E. coli	05/16/20	09/19/20	5	52	517	118
NRWA_NM4010	Nashua River Watershed Association	E. coli	04/20/21	10/16/21	5	34	1732	106

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_NM4010	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	5	74	167	102
NRWA_NM4201	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	45	1046	196
NRWA_NM4201	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	44	204	95
NRWA_NM4201	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	4	148	36
NRWA_NM4201	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	1	2419	53
NRWA_NM4201	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	6	29	127	47
NRWA_NM4201	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	14	87	27
NRWA_NM4426	Nashua River Watershed Association	E. coli	07/18/15	08/15/15	2	18	43	28
NRWA_NM4426	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	9	153	38
NRWA_NM4426	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	12	118	61
NRWA_NM4426	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	33	214	96
NRWA_NM4426	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	59	1119	123
NRWA_NM4426	Nashua River Watershed Association	E. coli	05/16/20	10/17/20	6	69	613	144
NRWA_NM4426	Nashua River Watershed Association	E. coli	04/27/21	10/16/21	7	15	1413	117
NRWA_NM4426	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	32	980	101
NRWA_NM5837	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	88	2419	473
NRWA_NM5837	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	98	2419	236

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_NM5837	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	6	29	260	86
NRWA_NM5837	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	52	920	140
NRWA_NM5837	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	42	387	123
NRWA_NM5837	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	24	248	99
NRWA_NM5837	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	34	770	150
NRWA_NM5837	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	6	38	727	152
NRWA_NM6274	Nashua River Watershed Association	E. coli	04/20/15	08/15/15	5	20	201	60
NRWA_NM6274	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	29	204	80
NRWA_NM6274	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	22	149	77
NRWA_NM6274	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	37	159	94
NRWA_NM6274	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	8	64	435	135
NRWA_NM6274	Nashua River Watershed Association	E. coli	04/07/20	10/17/20	16	18	1732	158
NRWA_NM6274	Nashua River Watershed Association	E. coli	04/27/21	10/16/21	7	60	1732	144
NRWA_NM6274	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	64	1299	198

Station NRWA_NM4010 - Escherichia coli

Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	47
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	54
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	99
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	5
SeasGM	118
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	20%

Variable*	Result
Samples	5
SeasGM	106
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	20%

Variable*	Result
Samples	5
SeasGM	102
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	0
%n>STV	0%

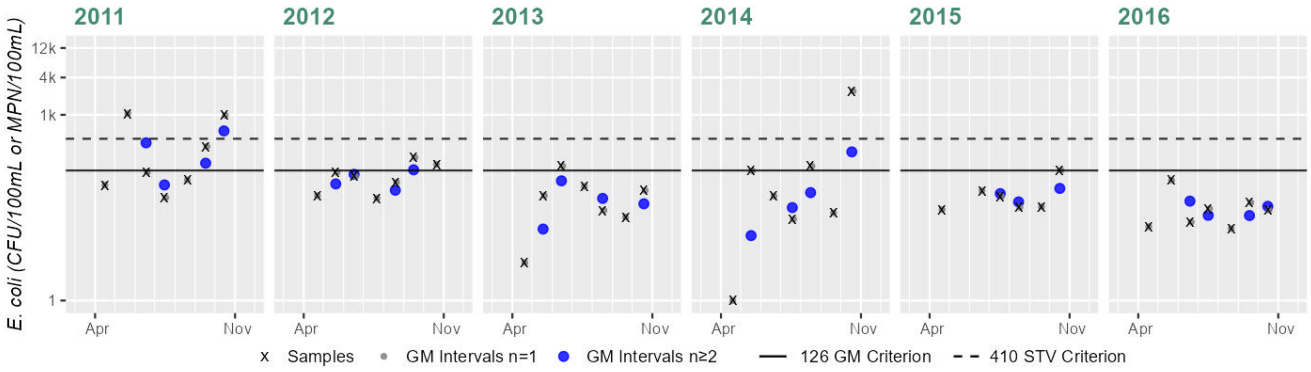
Cumulative %GMI Exceedance Current (2011-2022)
14%

Cumulative %GMI Exceedance Current (Recent 5 Years)
18%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NM4201 - Escherichia coli

Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	196
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	95
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	36
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	53
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	47
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	27
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

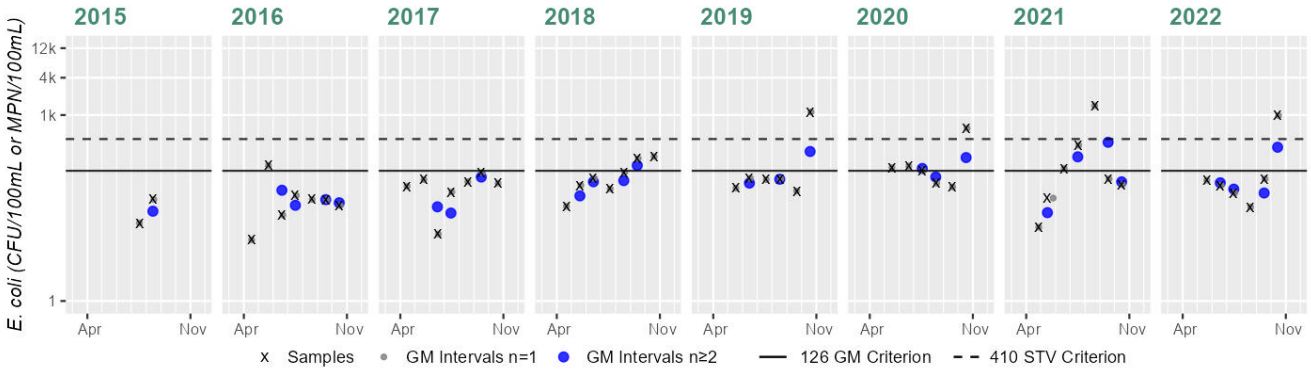
Cumulative %GMI Exceedance Current (2011-2022)
21%

Cumulative %GMI Exceedance Current (Recent 5 Years)
10%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NM4426 - Escherichia coli

Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	2
SeasGM	28
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	38
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	61
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	96
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	123
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	6
SeasGM	144
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	7
SeasGM	117
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	101
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	1
%n>STV	16%

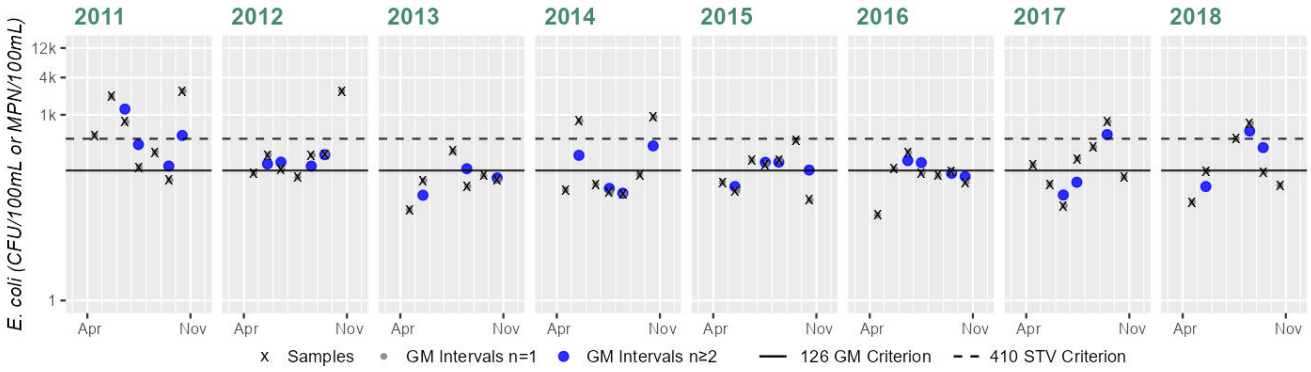
Cumulative %GMI Exceedance Current (2011-2022)
26%

Cumulative %GMI Exceedance Current (Recent 5 Years)
38%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NM5837 - Escherichia coli

Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	473
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	4
%n>STV	57%

Variable*	Result
Samples	7
SeasGM	236
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	86
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	140
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	123
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	99
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	0
%n>STV	0%

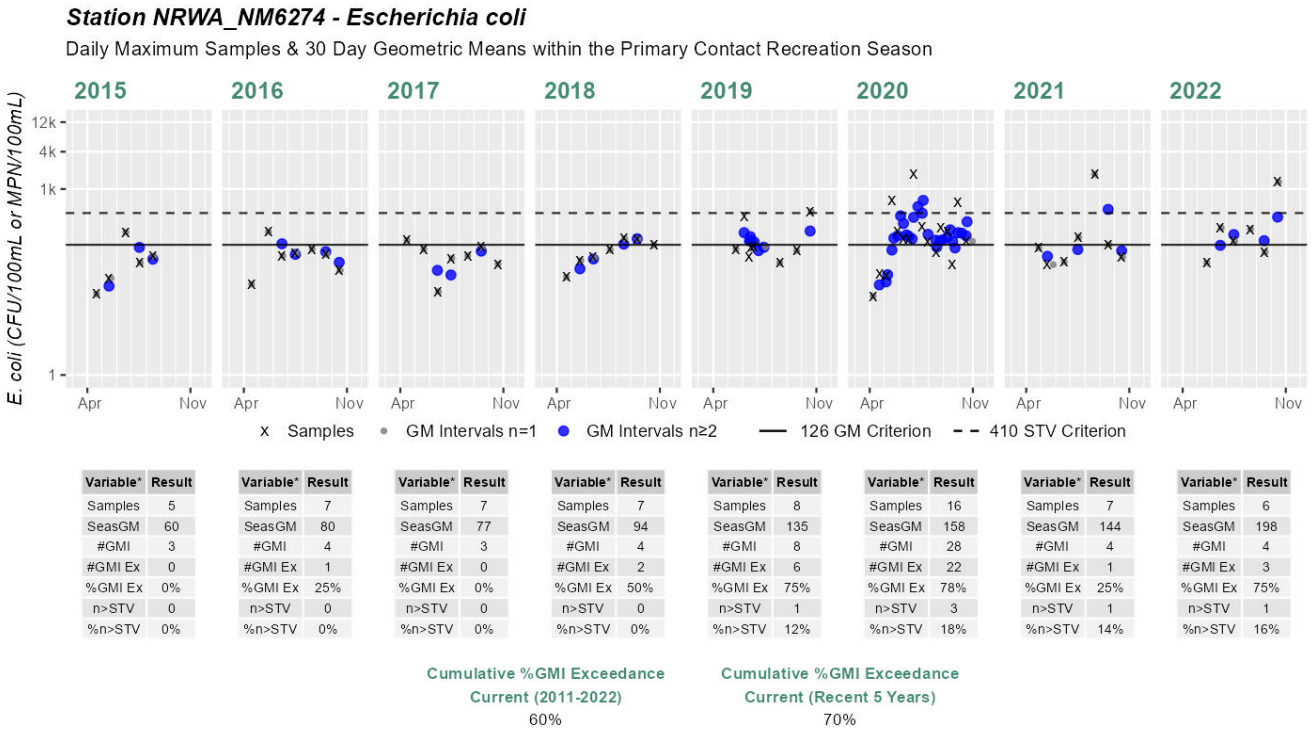
Variable*	Result
Samples	7
SeasGM	150
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	152
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	2
%n>STV	33%

Cumulative %GMI Exceedance Current (2011-2022)
65%

Cumulative %GMI Exceedance Current (Recent 5 Years)
55%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*



Variable*	Result
Samples	5
SeasGM	60
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	80
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	77
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	94
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	8
SeasGM	135
#GMI	8
#GMI Ex	6
%GMI Ex	75%
n>STV	1
%n>STV	12%

Variable*	Result
Samples	16
SeasGM	158
#GMI	28
#GMI Ex	22
%GMI Ex	78%
n>STV	3
%n>STV	18%

Variable*	Result
Samples	7
SeasGM	144
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	198
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	1
%n>STV	16%

Cumulative %GMI Exceedance Current (2011-2022)
60%

Cumulative %GMI Exceedance Current (Recent 5 Years)
70%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Other Indicators

Summary Statement(s) for USGS 2020 PFAS in Water Column Data (Savoie and Argue 2023) (MassDEP Undated 2)

Summary
Surface water sampling was conducted by the USGS upstream of the Ayer WWTF discharge on the Nashua River (MA81-05) at station USGS_01095862 on three dates during August to October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities. The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS) were all less than the 90 ng/L (ppt) recreational screening value (HFPO-DA/GenX was not analyzed in this study).
Surface water sampling was conducted by the USGS downstream of the Ayer WWTF discharge on the Nashua River (MA81-05) at station USGS_01095920 on three dates during August to October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities. The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS) were all less than the 90 ng/L (ppt) recreational screening value (HFPO-DA/GenX was not analyzed in this study).

USGS 2020 PFAS in Water Column Data Collected Upstream and Downstream of Wastewater Treatment Facilities (Savoie and Argue 2023) (MassDEP Undated 2)

[The ∑PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here). * indicates the ∑PFAS6 concentration is qualified since data for one or more individual PFAS6 analytes were qualified. A concentration with a "<" was less

than the reporting detection limit (RDL) and the RDL was used to calculate the ΣPFAS6. E = qualifier "value is estimated"; V = qualifier "value affected by field or laboratory contamination"]

Station Code	Sample Date	PFOA ng/L	PFOS ng/L	PFNA ng/L	PFHxS ng/L	PFBA ng/L	PFBS ng/L	ΣPFAS6 ng/L
USGS-01095862	8/20/2020	20.3	7.97	E1.62	3.38	14.5	22.7	45.7*
USGS-01095862	9/15/2020	19.7	E8.29	E1.57	3.15	14.1	21.2	44.3*
USGS-01095862	10/23/2020	E16.2	E5.06	E1.36	E2.3	8.01	9.87	34.8*
USGS-01095920	8/20/2020	21.3	12.6	E1.72	6.93	13.5	20.5	54.6*
USGS-01095920	9/15/2020	21.3	E13.4	E1.5	7.4	12.9	18.5	54.7*
USGS-01095920	10/23/2020	E16.4	E12.6	E1.27	10.9	6.24	6.15	50.3*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for the Nashua River (MA81-05) is assessed as Fully Supporting. The prior Alerts for Total Phosphorus & Aquatic Plants (Macrophytes) are being removed from the Recreational Uses but will continue to be maintained under the Aquatic Life Use & Aesthetics Use respectively. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in the Nashua River from 1998-2022 at 8 stations. Samples were collected from the following stations/sample years from upstream to downstream: close to the upstream end at NRWA_NM5837 [Boat launch D.S. of Rt. 117, Lancaster] from 2008-2010 (historic n=6-7/yr) and 2011-2018 (current n=6-7/yr), halfway down the AU at NRWA_NM6274 [Still River Depot Rd; Tank/Foot Bridge at Oxbow, Harvard] from 2015-2022 (n=5-16/yr), and W0484 [near tank bridge at Still River Depot Rd canoe launch, Harvard] in 1998, 2003, & 2008 (n=1-6/yr), further down at W0489 [Jackson Rd (bridge crossing nearest the Rt. 2 cloverleaf), Harvard] from May 1998 (n=1), three-quarters of the way down at NRWA_NM4426 [Hospital Rd bridge, Devens] from 2015-2022 (n=2-7/yr), close to the downstream end at NRWA_NM4201 [Ice House Dam, Shirley] from 2008-2010 (historic n=3-7/yr) & 2011-2016 (current n=6-7/yr), and NRWA_NM4010 [Filter Bed Rd E off Bishop Rd, Ayer] from 2017-2022 (n=5-7/yr), the downstream end at W0488 [Rt. 2A, Shirley/Ayer] in 1998, 2003, & 2008 (n=1-6/yr). Since the most recent bacteria data from the current IR window are indicative of good water quality conditions, in cases where there is both historic & current IR window data for a station, only the analysis from the current IR window will be summarized here. Analysis of the most recent 5 years of *E. coli* data (multi-year) from those stations are as follows: The moderate frequency dataset from NRWA_NM5837 indicated 2 of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2017 & 2018, 40 & 50%), 1 yr had ≥2 samples exceed the 794 CFU/100ml STV (2014, n=2) & cumulatively across years 13% of intervals had GMs >244 CFU/100ml. The moderate frequency dataset from NRWA_NM6274 indicated 2 of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2021 & 2022, 50 & 25%), 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, & cumulatively across years 17% of intervals had GMs >244 CFU/100ml. The limited frequency dataset from NRWA_NM4426 indicated 1 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2021, 33%), 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 8% of intervals had GMs >244 CFU/100ml. The moderate frequency dataset from NRWA_NM4201 indicated 0 of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml, 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV & cumulatively across years 0% of intervals had GMs >244 CFU/100ml. The limited frequency dataset from NRWA_NM4010 indicated 0 of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml, 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV & cumulatively across years 0% of intervals had GMs >244 CFU/100ml. Analysis of the historic multi-year limited frequency *E. coli* dataset from W0484 (the only data available for this station) indicated 2 of 2 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2003 & 2008, 66 & 33%), 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV & cumulatively across years 44% of intervals had GMs >244 CFU/100ml. While historic data from W0484 are indicative of an *Escherichia coli* impairment, recent data from nearby NRWA_NM6274 meets CALM guidance. Also the most recent of the current *E. coli* data from 5 stations

(NRWA_NM5837, NRWA_NM6274, NRWA_NM4426, NRWA_NM4201, and NRWA_NM4010) meet 2024 CALM guidance and are indicative of good water quality conditions.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0484	MassDEP	Water Quality	Nashua River	[near tank bridge at Still River Depot Road canoe launch, Harvard.]	42.496021	-71.626437
W0488	MassDEP	Water Quality	Nashua River	[Route 2A, Shirley/Ayer]	42.578124	-71.609769
W0489	MassDEP	Water Quality	Nashua River	[Jackson Road (bridge crossing nearest the Route 2 cloverleaf), Harvard]	42.521800	-71.633904
NRWA_NM4010	Nashua River Watershed Association	Water Quality	Nashua Mainstem	Filter Bed Road East off Bishop Road, Ayer	42.566900	-71.607000
NRWA_NM4201	Nashua River Watershed Association	Water Quality	Nashua Mainstem	Ice House Dam, Shirley	42.553400	-71.618400
NRWA_NM4426	Nashua River Watershed Association	Water Quality	Nashua Mainstem	Hospital Road bridge, Devens	42.541100	-71.633800
NRWA_NM5837	Nashua River Watershed Association	Water Quality	Nashua Mainstem	Boat launch D.S. of Rt. 117, Lancaster	42.461750	-71.656340
NRWA_NM6274	Nashua River Watershed Association	Water Quality	Nashua Mainstem	Still River Depot Road; Tank/Foot Bridge at Oxbow, Harvard	42.495700	-71.626600

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

[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
W0484	MassDEP	E. coli	05/27/98	05/27/98	1	20	20	19
W0484	MassDEP	E. coli	05/06/03	09/11/03	5	45	12000	258
W0484	MassDEP	E. coli	05/15/08	09/18/08	6	38	300	141
W0488	MassDEP	E. coli	05/27/98	05/27/98	1	20	20	19
W0488	MassDEP	E. coli	05/06/03	09/11/03	5	26	640	114
W0488	MassDEP	E. coli	05/15/08	09/18/08	6	16	250	56

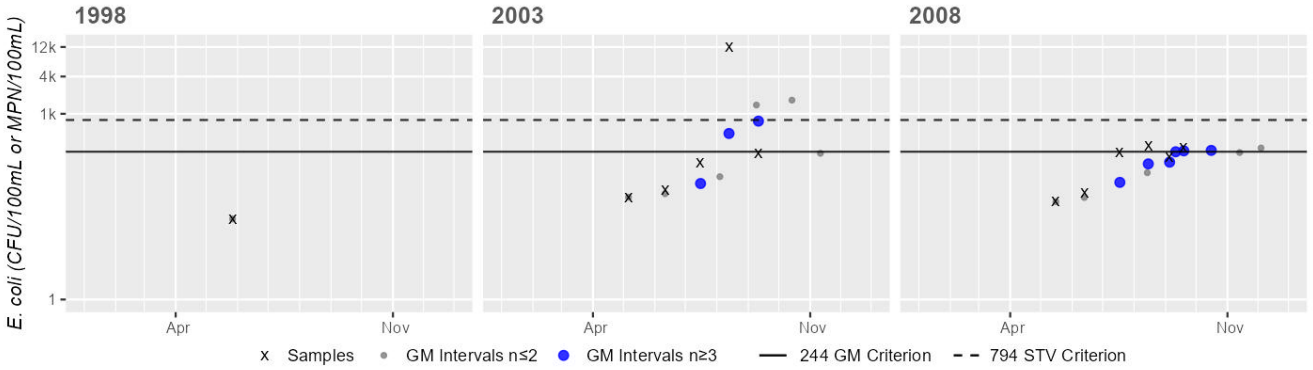
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W0489	MassDEP	E. coli	05/27/98	05/27/98	1	20	20	19
NRWA_NM4010	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	9	325	47
NRWA_NM4010	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	6	22	143	54
NRWA_NM4010	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	42	770	99
NRWA_NM4010	Nashua River Watershed Association	E. coli	05/16/20	09/19/20	5	52	517	118
NRWA_NM4010	Nashua River Watershed Association	E. coli	04/20/21	10/16/21	5	34	1732	106
NRWA_NM4010	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	5	74	167	102
NRWA_NM4201	Nashua River Watershed Association	E. coli	04/19/08	08/16/08	3	33	137	63
NRWA_NM4201	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	39	980	129
NRWA_NM4201	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	7	11	1203	81
NRWA_NM4201	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	45	1046	196
NRWA_NM4201	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	44	204	95
NRWA_NM4201	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	4	148	36
NRWA_NM4201	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	1	2419	53
NRWA_NM4201	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	6	29	127	47
NRWA_NM4201	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	14	87	27
NRWA_NM4426	Nashua River Watershed Association	E. coli	07/18/15	08/15/15	2	18	43	28
NRWA_NM4426	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	9	153	38

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_NM4426	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	12	118	61
NRWA_NM4426	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	33	214	96
NRWA_NM4426	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	59	1119	123
NRWA_NM4426	Nashua River Watershed Association	E. coli	05/16/20	10/17/20	6	69	613	144
NRWA_NM4426	Nashua River Watershed Association	E. coli	04/27/21	10/16/21	7	15	1413	117
NRWA_NM4426	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	32	980	101
NRWA_NM5837	Nashua River Watershed Association	E. coli	04/19/08	10/18/08	6	74	980	299
NRWA_NM5837	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	71	2419	263
NRWA_NM5837	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	7	58	2419	560
NRWA_NM5837	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	88	2419	473
NRWA_NM5837	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	98	2419	236
NRWA_NM5837	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	6	29	260	86
NRWA_NM5837	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	52	920	140
NRWA_NM5837	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	42	387	123
NRWA_NM5837	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	24	248	99
NRWA_NM5837	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	34	770	150
NRWA_NM5837	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	6	38	727	152

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_NM6274	Nashua River Watershed Association	E. coli	04/20/15	08/15/15	5	20	201	60
NRWA_NM6274	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	29	204	80
NRWA_NM6274	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	22	149	77
NRWA_NM6274	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	37	159	94
NRWA_NM6274	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	8	64	435	135
NRWA_NM6274	Nashua River Watershed Association	E. coli	04/07/20	10/17/20	16	18	1732	158
NRWA_NM6274	Nashua River Watershed Association	E. coli	04/27/21	10/16/21	7	60	1732	144
NRWA_NM6274	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	64	1299	198

Station MASSDEP_W0484 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	1
SeasGM	20
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	258
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	1
%n>STV	20%

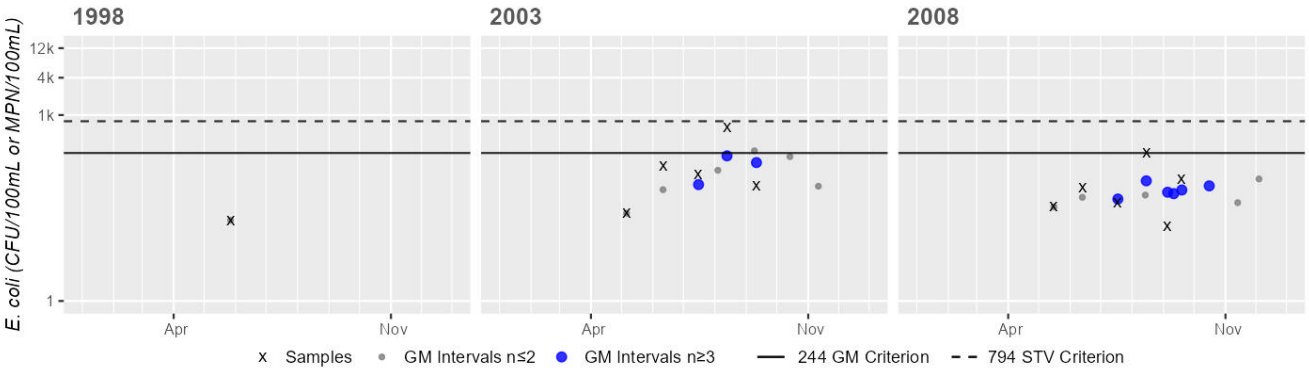
Variable*	Result
Samples	6
SeasGM	141
#GMI	6
#GMI Ex	2
%GMI Ex	33%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
44%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W0488 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	1
SeasGM	20
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	114
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

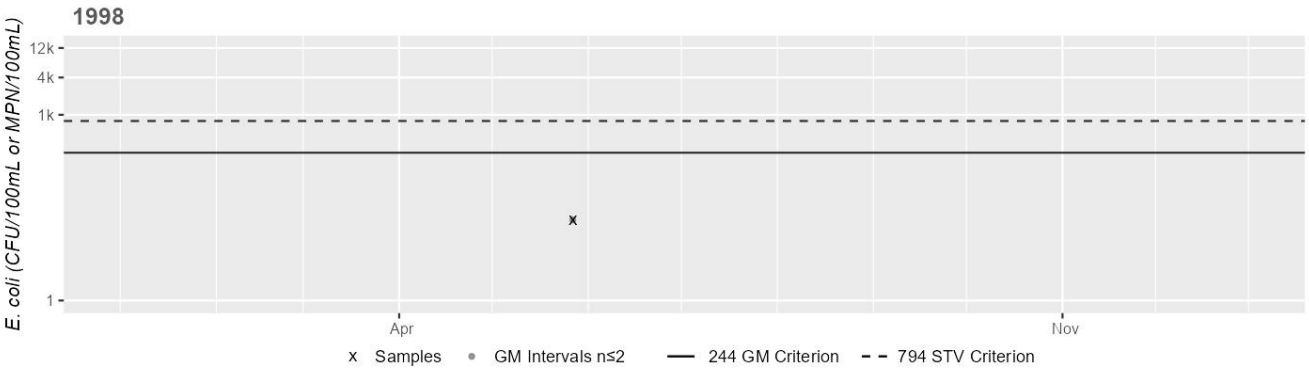
Variable*	Result
Samples	6
SeasGM	56
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W0489 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



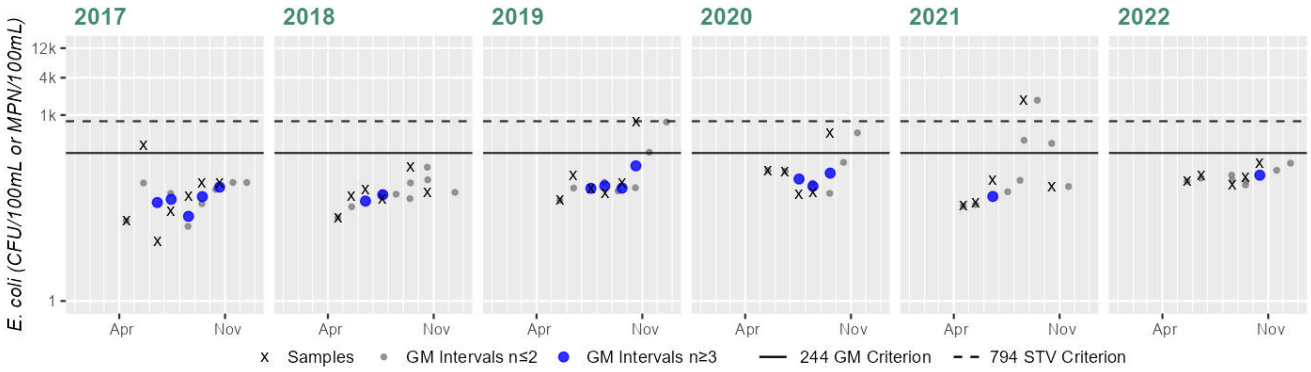
Variable*	Result
Samples	1
SeasGM	20
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NM4010 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	47
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	54
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	99
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	118
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	106
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	20%

Variable*	Result
Samples	5
SeasGM	102
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

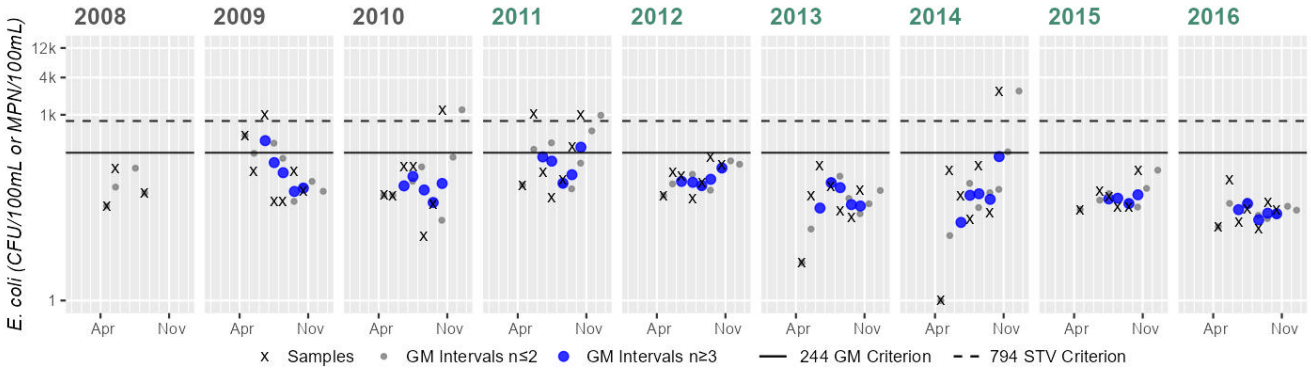
Cumulative %GMI Exceedance Current (2011-2022)
0%

Cumulative %GMI Exceedance Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NM4201 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	3
SeasGM	63
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	129
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	81
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	196
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	95
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	36
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	53
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	47
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	27
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)
10%

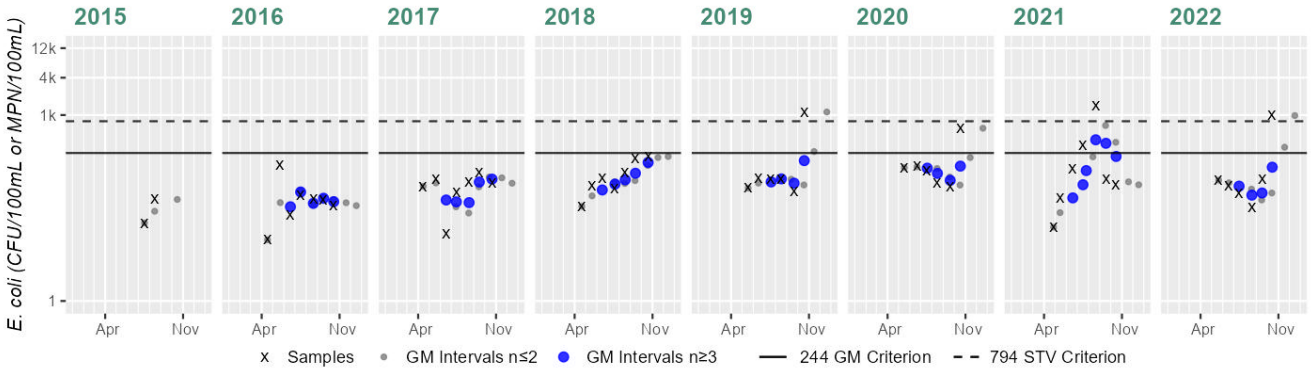
Cumulative %GMI Exceedance Current (2011-2022)
3%

Cumulative %GMI Exceedance Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NM4426 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	2
SeasGM	28
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	38
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	61
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	96
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	123
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	6
SeasGM	144
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	117
#GMI	6
#GMI Ex	2
%GMI Ex	33%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	101
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	16%

Cumulative %GMI Exceedance Current (2011-2022)

6%

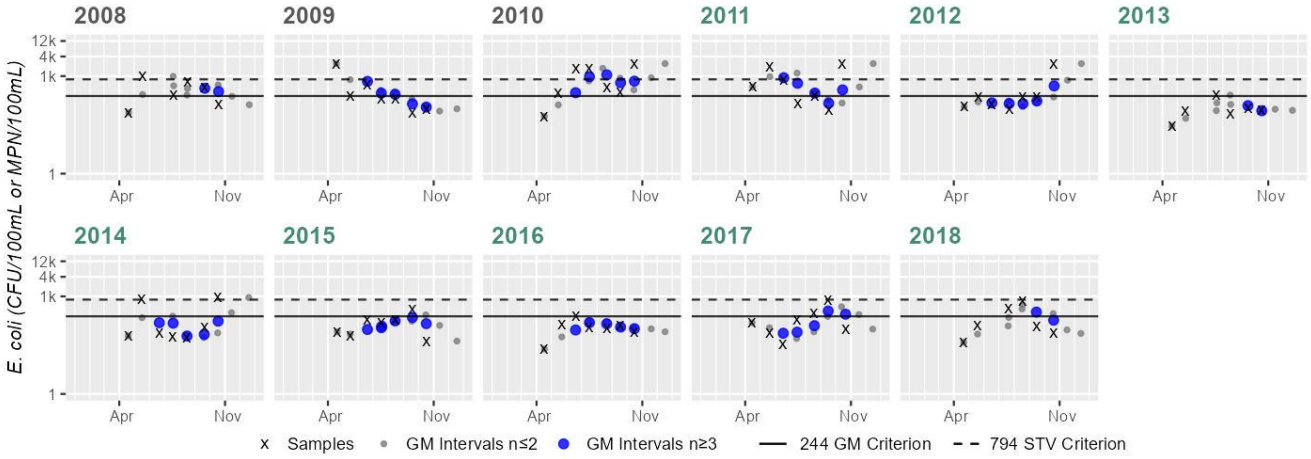
Cumulative %GMI Exceedance Current (Recent 5 Years)

8%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NM5837 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	299
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	7
SeasGM	263
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	560
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	3
%n>STV	42%

Variable*	Result
Samples	7
SeasGM	473
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	236
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	86
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	140
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	123
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	99
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	150
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	0
%n>STV	0%

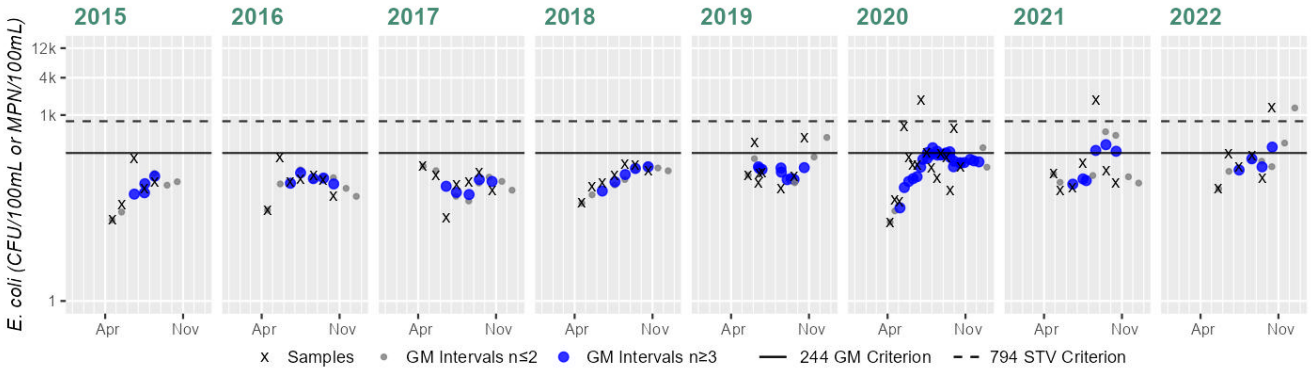
Variable*	Result
Samples	6
SeasGM	152
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
83%	22%	13%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NM6274 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	60
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	80
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	77
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	94
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	8
SeasGM	135
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	16
SeasGM	158
#GMI	27
#GMI Ex	5
%GMI Ex	18%
n>STV	1
%n>STV	6%

Variable*	Result
Samples	7
SeasGM	144
#GMI	6
#GMI Ex	3
%GMI Ex	50%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	198
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	1
%n>STV	16%

Cumulative %GMI Exceedance Current (2011-2022)

13%

Cumulative %GMI Exceedance Current (Recent 5 Years)

17%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Nashua River (MA81-06)

Location:	From confluence of Squannacook River, Shirley/Groton/Ayer to Pepperell Dam (NATID: MA00373), Pepperell (through former 2008 segment: Pepperell Pond MA81167).
AU Type:	RIVER
AU Size:	9.1 MILES
Classification/Qualifier:	B: WWF

Nashua River (MA81-06)

Watershed Area: 434.46 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	418.29	7.71	167.21	2.93
Agriculture	4.3%	8.2%	3.4%	6.6%
Developed	16.1%	12.4%	11.2%	7.2%
Natural	69.9%	65.2%	69.4%	63.8%
Wetland	9.7%	14.2%	16%	22.4%
Impervious	7.2%	5%	5.2%	3.1%

**Land cover analysis only includes watershed area within Massachusetts.*

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Aquatic Plants (Macrophytes)*)	--	Added
5	5	(Curly-leaf Pondweed*)	--	Unchanged
5	5	(Fanwort*)	--	Unchanged
5	5	(Non-Native Aquatic Plants*)	--	Unchanged
5	5	(Water Chestnut*)	--	Unchanged
5	5	Benthic Macroinvertebrates	--	Unchanged
5	5	Mercury in Fish Tissue	--	Unchanged
5	5	Nutrient/Eutrophication Biological Indicators	--	Unchanged
5	5	PFAS in Fish Tissue	--	Added

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Aquatic Plants (Macrophytes)*)	Source Unknown (N)	--	--	X	X	X
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Fanwort*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Water Chestnut*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Benthic Macroinvertebrates	Municipal Point Source Discharges (Y)	X	--	--	--	--
Benthic Macroinvertebrates	Source Unknown (N)	X	--	--	--	--
Mercury in Fish Tissue	Atmospheric Deposition (N)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--
Nutrient/Eutrophication Biological Indicators	Municipal Point Source Discharges (Y)	X	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Source Unknown (N)	X	--	X	X	X
PFAS in Fish Tissue	Source Unknown (N)	--	X	--	--	--

Recommendations

2024/26 Recommendations
2024 IR [HARMFUL ALGAL BLOOMS, MEDIUM] Follow-up monitoring should be conducted in Nashua River AU (MA81-06) to determine if Harmful Algal Blooms may be impairing the Recreational and Aesthetic uses. Monitoring should include observational data and collection of cyanobacteria cell count data, as well as continued reporting of algal blooms to MDPH. This is of medium priority.

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for this Nashua River AU (MA81-06) continues to be assessed as Not Supporting. The prior Mercury in Fish Tissue impairment is being carried forward and a new impairment is being added for PFAS in Fish Tissue. Fish toxics sampling was conducted in this Nashua River AU (MA81-06) at station F0489 (PFAS Study ID 49) [on Nashua River in impoundment (Pepperell Pond) of Pepperell Paper Co. Dam (NAT ID: MA00373) approximately 900 feet northeast/downstream from Route 111/119, Groton/Pepperell] on 07/21/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. MDPH issued a site-specific advisory for PFAS in this Nashua River AU (referred to by MDPH as ''Nashua River'' or ''Pepperell Pond'') in their May 2024 Freshwater Fish Consumption Advisory List and retained this advisory as well as the existing advisory for Mercury in the January 2025 list. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations. No source of PFAS has been identified at this time.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
F0489	MassDEP	Fish Toxics	Nashua River/Pepperell Pond	[on Nashua River in impoundment (Pepperell Pond) of Pepperell Paper Co. Dam (NAT ID: MA00373) approximately 900 feet northeast/downstream from Route 111/119, Groton/Pepperell]	42.628700	-71.593550

Fish Tissue Data

Summary of Fish Tissue Data and Resulting Fish Consumption Advisories (MA DPH 2025) (MassDEP 2023) (MassDEP Undated 5)

Summary
Fish toxics sampling was conducted in this Nashua River AU (MA81-06) at station F0489 (PFAS Study ID 49) [on Nashua River in impoundment (Pepperell Pond) of Pepperell Paper Co. Dam (NAT ID: MA00373) approximately 900 feet northeast/downstream from Route 111/119, Groton/Pepperell] on 07/21/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. Because of elevated PFAS measured in fish filets, MDPH issued site-specific fish consumption advisories for the Nashua River in their May 2024 Freshwater Fish Consumption Advisory List and retained them in the January 2025 list. Additionally, MDPH retained the existing site-specific fish consumption advisories for Mercury associated with the Nashua River (referred to by MDPH as Pepperell Pond) in their January 2025 Freshwater Fish Consumption Advisory List. The site-specific DPH advisories are indicative of Fish Consumption Use impairments for PFAS in Fish Tissue and Mercury in Fish Tissue for this Nashua River AU (MA81-06).

MassDEP 2022 PFAS in Fish Tissue Data for Massachusetts Surface Waters (MassDEP 2023) (MassDEP Undated 5) (MA DPH 2023)

[ng/g = ppb. All PFBA, PFBS, and HFPO-DA (Genx) concentrations <MDL. ND indicates that the PFAS analyte was not detected in any of the composite samples (i.e., it was <MDL). Means weighted by the number of fish in the contributing composites were calculated for any PFAS analyte – waterbody – species combination where an analyte was detected in at least one sample; if a sample did not have the analyte detected, the concentration for that sample was set to ½*MDL for the purposes of calculating a mean. Data are highlighted red per the fish consumption advisory thresholds summarized in Table 4.2 of MDPH's 2023 Technical Support Document for the evaluation of PFAS in recreational waterbodies.]

[Species List: BB = brown bullhead, WS = white sucker]

Station Code	PFAS Study ID	Sample Date	Species	Mean PFHxS ng/g	Mean PFNA ng/g	Mean PFOA ng/g	Mean PFOS ng/g	Analytes with ≥ 1 Sample Qualified
F0489	49	07/21/2022	BB	ND	ND	ND	3.20	
F0489	49	07/21/2022	WS	0.24	0.36	0.15	13.00	PFHxS, PFNA, PFOA

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	YES

2024/26 Use Attainment Summary

The Aesthetics Use for this Nashua River AU (MA81-06) continues to be assessed as Not Supporting with the Nutrient/Eutrophication Biological Indicators impairment being carried forward and an Aquatic Plants (Macrophytes) non-pollutant impairment being added. An Alert is being identified for Harmful Algal Blooms in this waterbody since C-HAB postings (blooms of >15 days in duration) were reported to MDPH for 2020. Since the Non-Native Aquatic Plants impairment was redundantly duplicated across multiple uses for this waterbody, the Non-Native Aquatic Plants impairment is being removed from the Aesthetics Use but will continue to be maintained under the Aquatic Life Use. Since MassDEP field staff noted very dense (75%-100%) areal coverage in the "Pepperell Pond" area of this AU during a 2003 aquatic plant survey (Haque, A. and M. Mattson 2007, MassDEP 2008) (which equates to dense coverage of plants for more than 10% of the total AU river length) and Google Earth images from August 2013, June 2015 and June 2019 (Google Earth Pro Undated) also show the Pepperell Pond area with a dense coverage of emergent and submergent vegetation, an Aquatic Plants (Macrophytes) non-pollutant impairment is being added in the place of the Non-Native Aquatic Plants impairment at this time. MassDEP staff recorded aesthetics observations at one station in the middle of this Nashua River AU at Rt. 111/119, Pepperell/Groton (W0496) in 2011 (n=4), 2012 (n=6) and 2013 (n=4). There were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded at this station during the surveys except for observations of minor trash in 2013 (n=3). During the period 2015 through 2022, C-HAB postings for Nashua River were reported to MDPH based on visual observations for 132 days in 2020 and no blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, an Alert is being identified for Harmful Algal Blooms and a recommendation for follow-up sampling will be made.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0496	MassDEP	Water Quality	Nashua River	[Route 111/119, Pepperell/Groton]	42.626477	-71.593150

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W0496	2011	4	Aesthetic observations were made by MassDEP field sampling crews at Station W0496 on Nashua River (MA81-06) during 4 site visits between Apr 2011 and Oct 2011. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W0496	2012	6	Aesthetic observations were made by MassDEP field sampling crews at Station W0496 on Nashua River (MA81-06) during 6 site visits between Jan 2012 and Nov 2012. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.
W0496	2013	4	Aesthetic observations were made by MassDEP field sampling crews at Station W0496 on Nashua River (MA81-06) during 4 site visits between Mar 2013 and Sep 2013. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, though field staff noted objectionable deposits (n=3).

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

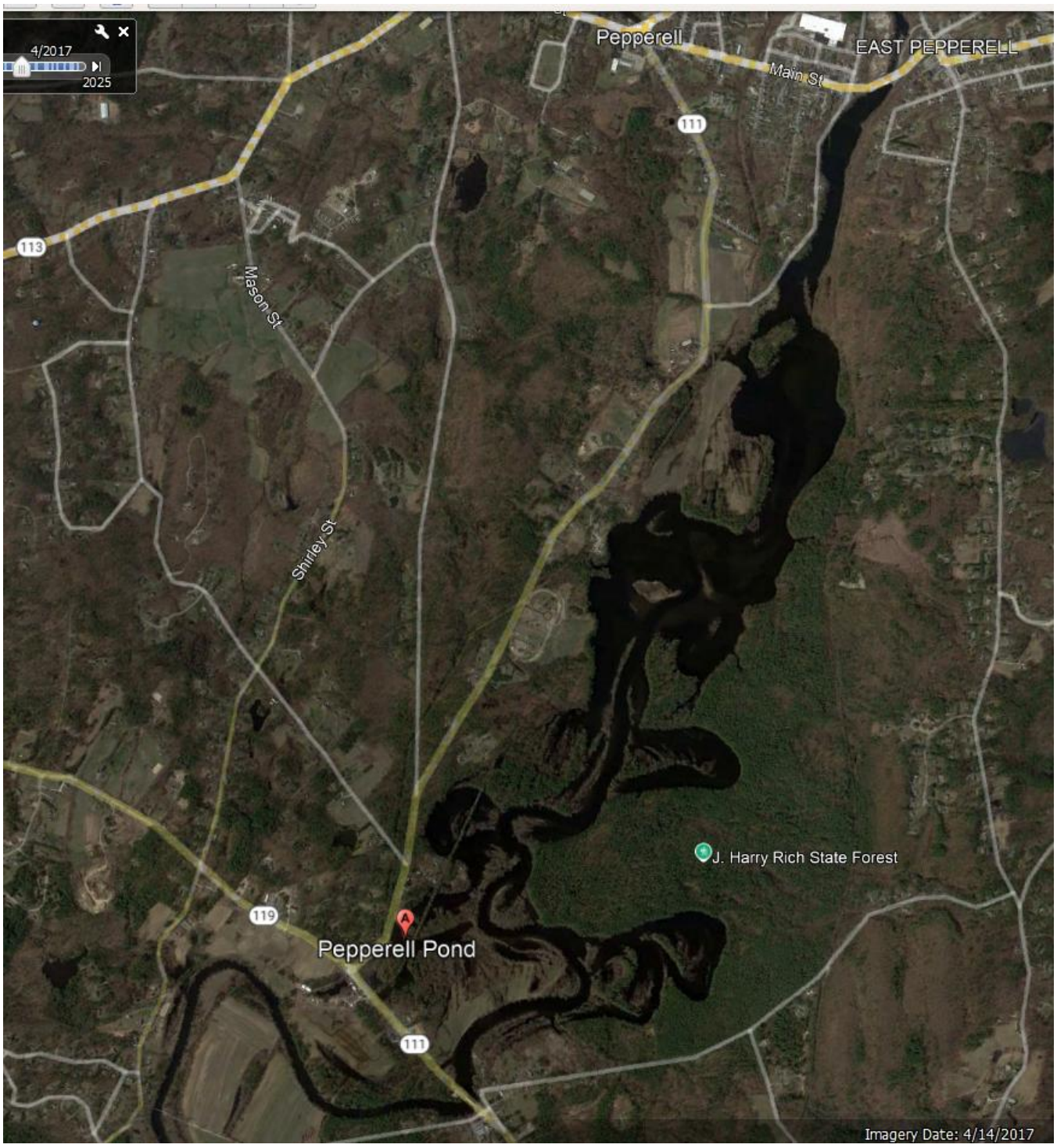
Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W0496	2011	4	4	0
W0496	2012	6	6	0
W0496	2013	4	4	0

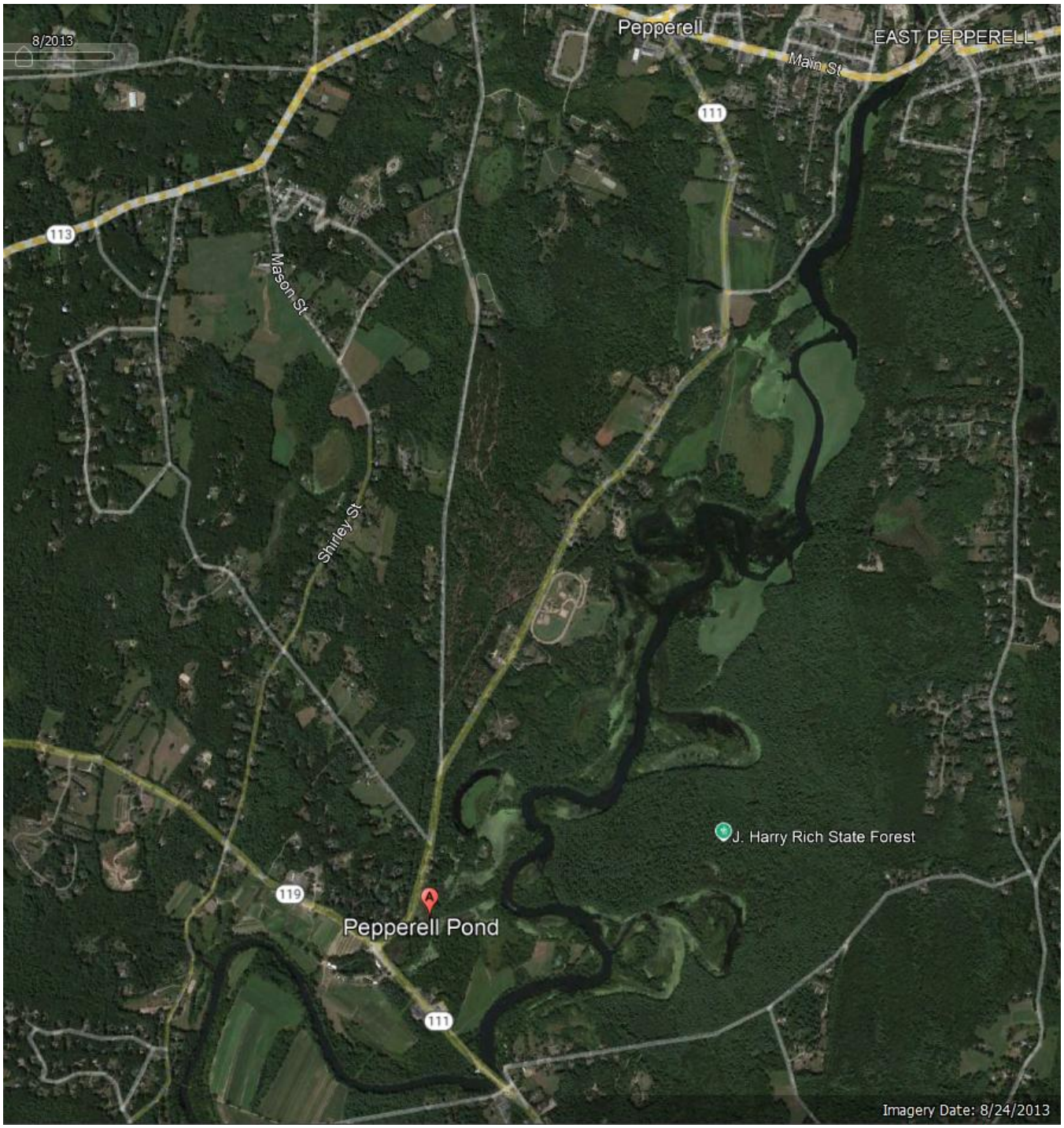
MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

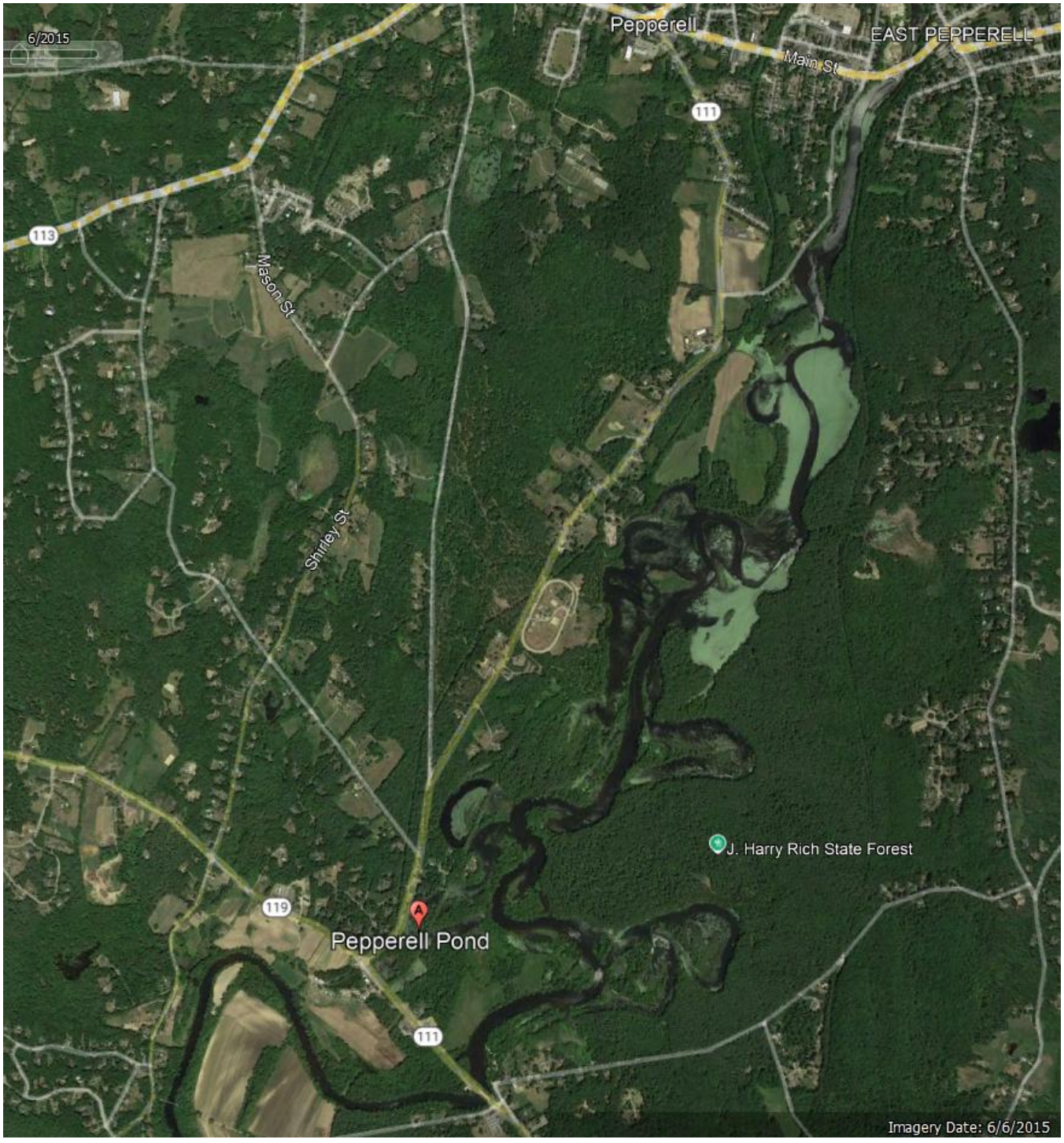
Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W0496	Nashua River	2011	Aquatic Plant Density, Overall	None	2	4
W0496	Nashua River	2011	Aquatic Plant Density, Overall	Sparse	2	4
W0496	Nashua River	2011	Color	Light Yellow/Tan	2	4
W0496	Nashua River	2011	Color	None	1	4
W0496	Nashua River	2011	Color	Reddish	1	4
W0496	Nashua River	2011	Objectionable Deposits	No	3	4
W0496	Nashua River	2011	Objectionable Deposits	Yes	1	4
W0496	Nashua River	2011	Odor	Musty (Basement)	1	4
W0496	Nashua River	2011	Odor	None	1	4
W0496	Nashua River	2011	Odor	Other (Eutrophic)	2	4
W0496	Nashua River	2011	Periphyton Density, Filamentous	None	4	4
W0496	Nashua River	2011	Periphyton Density, Film	None	4	4
W0496	Nashua River	2011	Scum	No	4	4
W0496	Nashua River	2011	Turbidity	None	3	4
W0496	Nashua River	2011	Turbidity	Slightly Turbid	1	4
W0496	Nashua River	2012	Aquatic Plant Density, Overall	None	3	6
W0496	Nashua River	2012	Aquatic Plant Density, Overall	Sparse	3	6

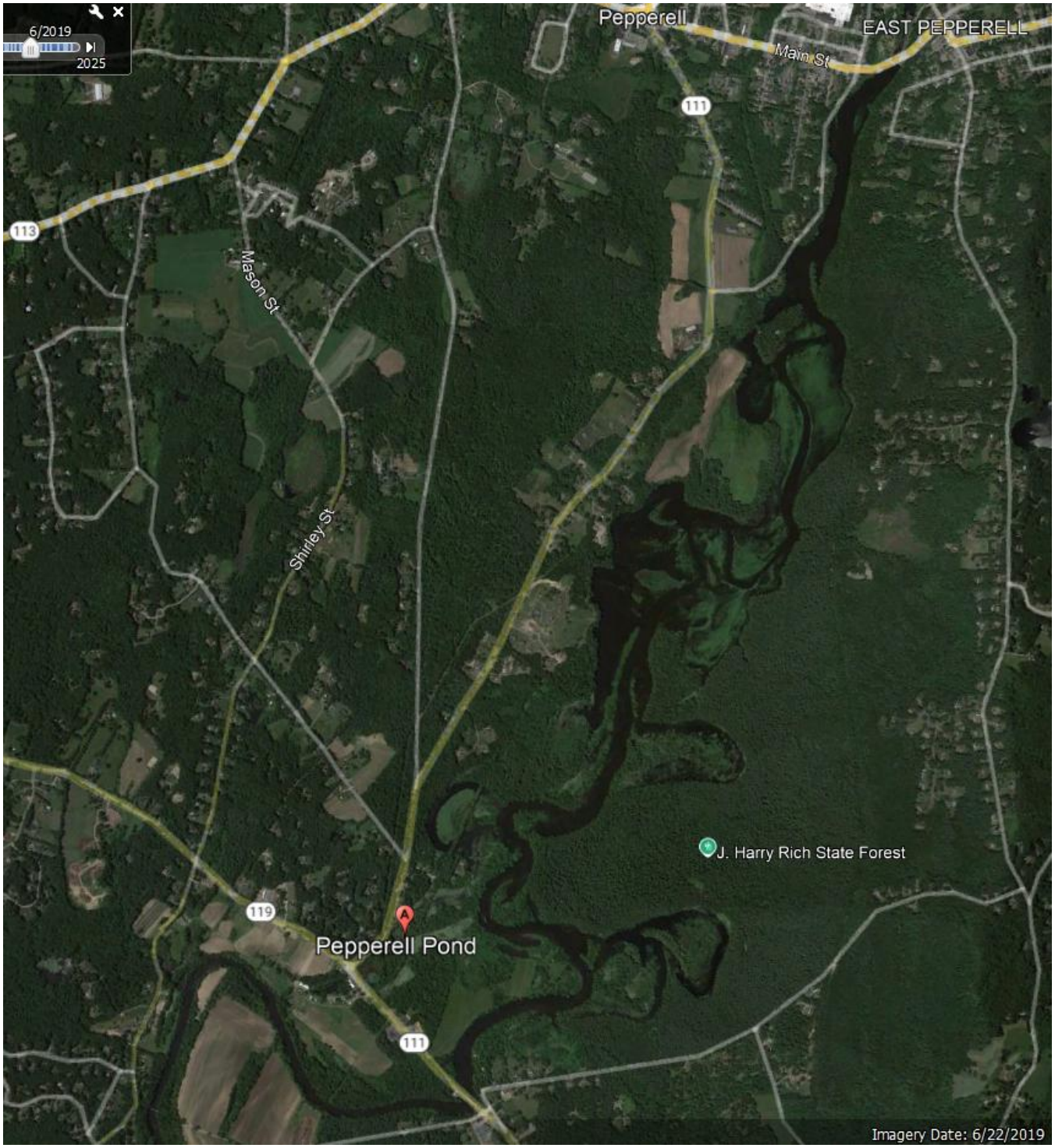
Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W0496	Nashua River	2012	Color	Light Yellow/Tan	2	6
W0496	Nashua River	2012	Color	None	4	6
W0496	Nashua River	2012	Objectionable Deposits	No	5	6
W0496	Nashua River	2012	Objectionable Deposits	Yes	1	6
W0496	Nashua River	2012	Odor	None	5	6
W0496	Nashua River	2012	Odor	Other (Eutrophic)	1	6
W0496	Nashua River	2012	Periphyton Density, Filamentous	None	5	6
W0496	Nashua River	2012	Periphyton Density, Filamentous	Sparse	1	6
W0496	Nashua River	2012	Periphyton Density, Film	None	5	6
W0496	Nashua River	2012	Periphyton Density, Film	Sparse	1	6
W0496	Nashua River	2012	Scum	No	4	6
W0496	Nashua River	2012	Scum	Yes	2	6
W0496	Nashua River	2012	Turbidity	None	5	6
W0496	Nashua River	2012	Turbidity	Slightly Turbid	1	6
W0496	Nashua River	2013	Aesthetics Impaired?	No	2	4
W0496	Nashua River	2013	Aesthetics Impaired?	NR	2	4
W0496	Nashua River	2013	Aquatic Plant Density, Overall	None	2	4
W0496	Nashua River	2013	Aquatic Plant Density, Overall	Sparse	2	4
W0496	Nashua River	2013	Color	None	4	4
W0496	Nashua River	2013	Objectionable Deposits	No	1	4
W0496	Nashua River	2013	Objectionable Deposits	Yes	3	4
W0496	Nashua River	2013	Odor	None	4	4
W0496	Nashua River	2013	Periphyton Density, Filamentous	None	4	4
W0496	Nashua River	2013	Periphyton Density, Film	None	4	4
W0496	Nashua River	2013	Scum	No	4	4
W0496	Nashua River	2013	Turbidity	None	4	4

Nashua River AU (MA81-06) Google Earth Imagery: Pond Outline (April 2017) Followed by Imagery from August 2013, June 2015 and June 2019 Showing Dense/Very Dense Vegetation Covering >25% of the Pond's Surface
(Google Earth Pro Undated)


4/2017
2025
Pepperell
EAST PEPPERELL
Main St
111
113
Mason St
Shirley St
J. Harry Rich State Forest
119
Pepperell Pond
111
Imagery Date: 4/14/2017


8/2013
Pepperell
EAST PEPPERELL
Main St
111
113
Mason St
Shirley St
J. Harry Rich State Forest
119
Pepperell Pond
111
Imagery Date: 8/24/2013


6/2015
Pepperell
EAST PEPPERELL
Main St
111
113
Mason St
Shirley St
J. Harry Rich State Forest
119
Pepperell Pond
111
Imagery Date: 6/6/2015



Algal Bloom Information

Cyanobacteria Harmful Algal Bloom (C-HAB) Summary Statements for 2015-2022 MDPH Data (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

C-HAB Summary Statement
During the period 2015 through 2022, C-HAB postings for Nashua River (MA81-06) were reported to MDPH based on visual observations for 132 days in 2020. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, an Alert is being identified for C-HABs in this waterbody and a recommendation for follow-up sampling will be made.

Cyanobacteria Harmful Algal Bloom (C-HAB) Data (2015-2022) Provided by MDPH (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

[* indicates a C-HAB posting of unknown duration]

DEP Waterbody (DPH Waterbody)	DPH Town	Posting Days 2015	Posting Days 2016	Posting Days 2017	Posting Days 2018	Posting Days 2019	Posting Days 2020	Posting Days 2021	Posting Days 2022
Nashua River	Pepperell						132		

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	YES

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for the Nashua River (MA81-06) continues to be assessed as Not Supporting. The prior Nutrient/Eutrophication Biological Indicators impairment (from the Aesthetics Use) is being carried forward. An Aquatic Plants (Macrophytes) impairment is being added (from the Aesthetics Use). Since the Non-Native Aquatic Plants impairment is being removed from the Aesthetics Use this cycle, this impairment is also being removed from the Primary Contact Recreation Use. An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU. Surface water sampling was conducted in Nashua River at station W3314 (PFAS Study ID 49) on 07/21/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value. During the period 2015 through 2022, C-HAB postings for Nashua River (MA81-06) were reported to MDPH based on visual observations for 132 days in 2020. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, a Harmful Algal Blooms Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in the Nashua River from 2011-2022 at 4 stations. Samples were collected from the following stations/sample years from upstream to downstream: a quarter of the way down at NRWA_NM3386 [Nashoba Paddler, Groton] from Jul-Aug 2022 (n=4), halfway down at NRWA_NM2928 [U.S. side of Rte 119 bridge, Pepperell] from 2011-2022 (n=5-7/yr) and W0496 [Rt. 111/119, Pepperell/Groton] from 2011-2013 (n=3-4/yr), and close to the downstream end at NRWA_NM2443B [Off Rail Trail at Pepperell/Groton town line] from Apr-Aug 2011 (n=4). Analysis of the single year limited frequency *E. coli* dataset from NRWA_NM3386 indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 38 CFU/100ml. Analysis of the recent five years of the multi-year limited frequency *E. coli* dataset from NRWA_NM2928 indicated 3 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2018-2019 and 2021, 25-50%), 0 yrs had ≥2 samples exceed the 410 CFU/100ml STV, and cumulatively across years 18% of intervals had GMs >126 CFU/100ml. Analysis of the single year limited frequency *E. coli* dataset from NRWA_NM2443B indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 62 CFU/100ml. *E. coli* data from W0496 are too limited according to the 2024 CALM to assess the Primary Contact Recreation Use. *E. coli* data from NRWA_NM3386, NRWA_NM2928, and NRWA_NM2443B meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0496	MassDEP	Water Quality	Nashua River	[Route 111/119, Pepperell/Groton]	42.626477	-71.593150

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W3314	MassDEP	Water Quality	Nashua River/Pepperell Pond	[the default location representing co-located water/fish PFAS sampling, on Nashua River in Pepperell Pond impoundment approximately 900 feet northeast/downstream from Route 111/119, Groton/Pepperell]	42.628700	-71.593550
NRWA_NM2443B	Nashua River Watershed Association	Water Quality	Nashua Mainstem	Off Rail Trail at Pepperell/Groton town line	42.656100	-71.579100
NRWA_NM2928	Nashua River Watershed Association	Water Quality	Nashua Mainstem	U.S. side of Rte 119 bridge, Pepperell	42.626500	-71.593600
NRWA_NM3386	Nashua River Watershed Association	Water Quality	Nashua River	Nashoba Paddler, Groton	42.605920	-71.598213

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (30-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 4) (NRWA 2022) (MassDEP Undated 2)

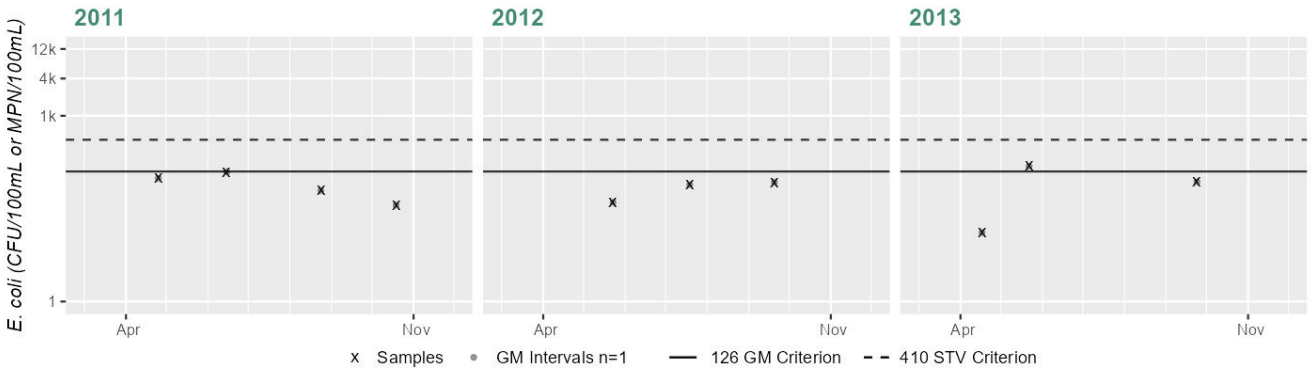
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W0496	MassDEP	E. coli	04/25/11	10/19/11	4	36	124	72
W0496	MassDEP	E. coli	05/22/12	09/19/12	3	40	84	63
W0496	MassDEP	E. coli	04/17/13	09/24/13	3	13	154	55
NRWA_NM2443B	Nashua River Watershed Association	E. coli	04/16/11	08/20/11	4	25	387	62
NRWA_NM2928	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	6	35	1299	121
NRWA_NM2928	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	26	130	50
NRWA_NM2928	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	27	146	65
NRWA_NM2928	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	41	547	124
NRWA_NM2928	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	6	13	72	38
NRWA_NM2928	Nashua River Watershed Association	E. coli	05/21/16	10/15/16	5	9	37	22

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_NM2928	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	23	77	47
NRWA_NM2928	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	6	14	133	59
NRWA_NM2928	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	22	524	53
NRWA_NM2928	Nashua River Watershed Association	E. coli	05/16/20	10/17/20	6	17	79	39
NRWA_NM2928	Nashua River Watershed Association	E. coli	04/20/21	10/16/21	7	48	770	89
NRWA_NM2928	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	11	72	29
NRWA_NM3386	Nashua River Watershed Association	E. coli	07/25/22	08/31/22	4	26	54	38

Station MASSDEP_W0496 - Escherichia coli

Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	4
SeasGM	72
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	3
SeasGM	63
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

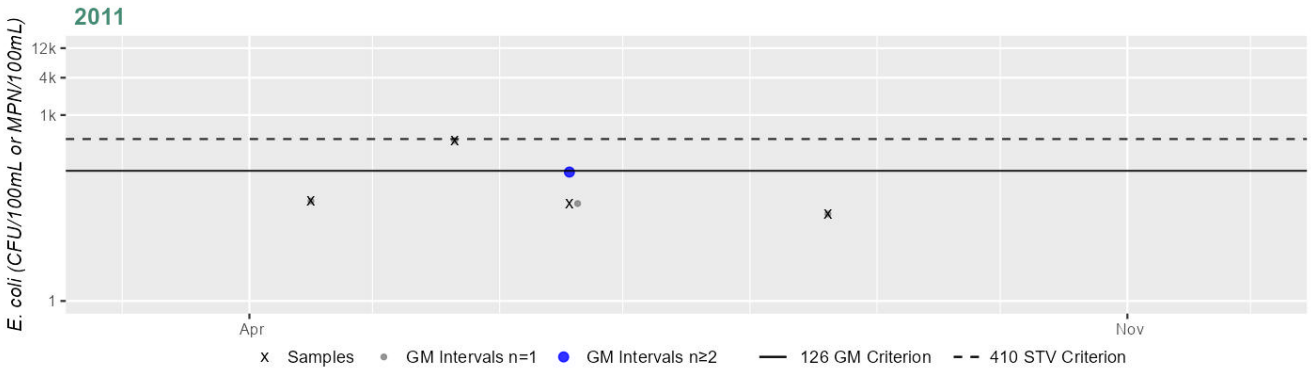
Variable*	Result
Samples	3
SeasGM	55
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NM2443B - Escherichia coli

Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



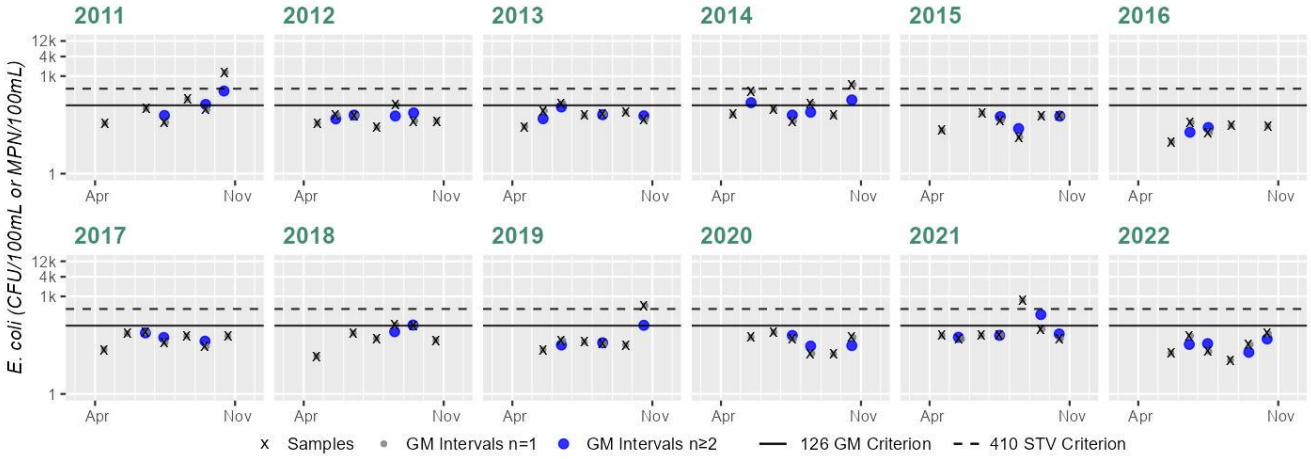
Variable*	Result
Samples	4
SeasGM	62
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NM2928 - Escherichia coli

Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	121
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	7
SeasGM	50
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	65
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	124
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	38
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	22
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	47
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	59
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	53
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	6
SeasGM	39
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	89
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	29
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

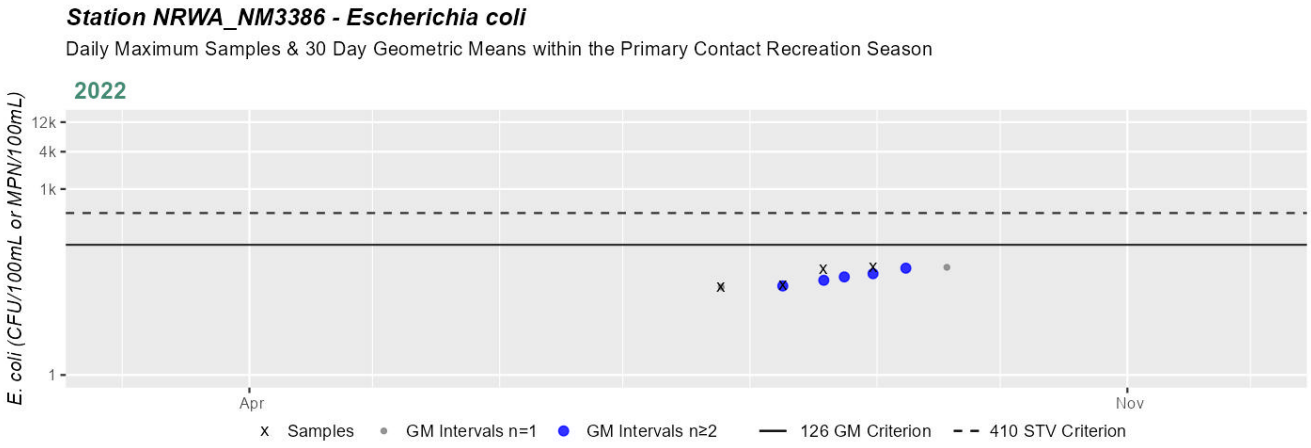
Cumulative %GMI Exceedance Current (2011-2022)

17%

Cumulative %GMI Exceedance Current (Recent 5 Years)

18%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*



Variable*	Result
Samples	4
SeasGM	38
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Other Indicators

Summary Statement(s) for MassDEP 2022 PFAS in Water Column Data (MassDEP 2023) (MassDEP Undated 4)

Summary
Surface water sampling was conducted in Nashua River (MA81-06) at station W3314 (PFAS Study ID 49) on 07/21/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value.

MassDEP 2022 PFAS in Water Column Data for Massachusetts Surface Waters (MassDEP 2023) (MassDEP Undated 4)

[HFPO-DA is also known as GenX; the ∑PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here); * indicates the ∑PFAS6 concentration was qualified since data for one or more individual PFAS6 analytes were qualified; b = blank contamination qualifier, d = qualifier indicating precision of field duplicates did not meet project data quality objectives; j = 'estimated' value qualifier; ## = censored data.]

Station Code	PFAS Study ID	Sample Date	PFOA ng/L	PFOS ng/L	PFNA ng/L	PFHxS ng/L	PFBA ng/L	PFBS ng/L	HFPO-DA ng/L	∑PFAS6 ng/L
W3314	49	07/21/2022	25	9.9	1.7j	4.2	10	15	<2.1	50.8*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	YES

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for the Nashua River (MA81-06) continues to be assessed as Not Supporting. The prior Nutrient/Eutrophication Biological Indicators impairment (from the Aesthetics Use) is being carried forward. An Aquatic Plants (Macrophytes) impairment is being added (from the Aesthetics Use). Since the Non-Native Aquatic Plants impairment is being removed from the Aesthetics Use this cycle, this impairment is also being removed from the Secondary Contact Recreation Use. An Alert is being identified for Harmful Algal Bloom and additional sampling is recommended for this AU. During the period 2015 through 2022, C-HAB postings for Nashua River (MA81-06) were reported to MDPH based on visual observations for 132 days in 2020. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, a Harmful Algal Bloom Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made. MassDEP and NRWA staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in the Nashua River (MA81-06) from 2003-2022 at 4 stations. Samples were collected from the following stations/sample years from upstream to downstream: a quarter of the way down at NRWA_NM3386 [Nashoba Paddler, Groton] from Jul-Aug 2022 (n=4), halfway down at NRWA_NM2928 [U.S. side of Rte 119 bridge, Pepperell] from 2008-2010 (historic n=6-7/yr) & 2011-2022 (current n=5-7/yr) and W0496 [Rt. 111/119, Pepperell/Groton] in 2003, 2007-2010 (historic n=2-8/yr) & 2011-2013 (current n=4-5/yr), and close to the downstream end at NRWA_NM2443B [Off Rail Trail at Pepperell/Groton town line] from 2008-2010 (historic n=4-6/yr) and Apr-Aug 2011 (current n=4). Since bacteria data from the historic IR window are all indicative of good water quality conditions, only the analysis from the current IR window (4 stations) will be summarized here: Analysis of the single year limited frequency *E. coli* dataset from NRWA_NM3386 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 38 CFU/100ml. Analysis of the recent five years of this multi-year limited frequency *E. coli* dataset from NRWA_NM2928 indicated 0 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml, 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. Analysis of the single year limited frequency *E. coli* dataset from W0496 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 40 CFU/100ml. Analysis of the single year limited frequency *E. coli* dataset from NRWA_NM2443B indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 62 CFU/100ml. *E. coli* data from NRWA_NM3386, NRWA_NM2928, W0496, and NRWA_NM2443B meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0496	MassDEP	Water Quality	Nashua River	[Route 111/119, Pepperell/Groton]	42.626477	-71.593150
NRWA_NM2443B	Nashua River Watershed Association	Water Quality	Nashua Mainstem	Off Rail Trail at Pepperell/Groton town line	42.656100	-71.579100
NRWA_NM2928	Nashua River Watershed Association	Water Quality	Nashua Mainstem	U.S. side of Rte 119 bridge, Pepperell	42.626500	-71.593600
NRWA_NM3386	Nashua River Watershed Association	Water Quality	Nashua River	Nashoba Paddler, Groton	42.605920	-71.598213

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

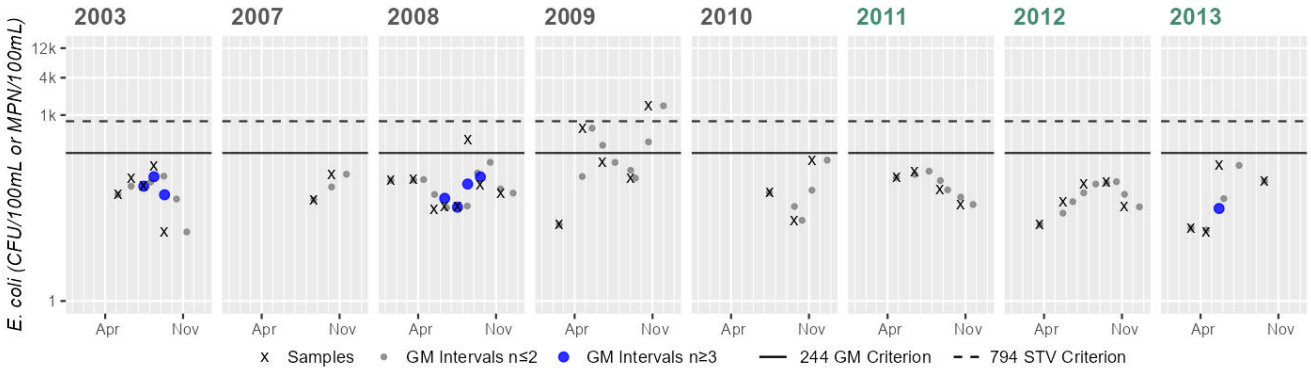
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W0496	MassDEP	E. coli	05/06/03	09/11/03	5	13	150	58
W0496	MassDEP	E. coli	08/22/07	10/10/07	2	43	111	69
W0496	MassDEP	E. coli	01/16/08	11/12/08	8	30	397	67
W0496	MassDEP	E. coli	02/18/09	10/21/09	5	17	1410	189
W0496	MassDEP	E. coli	07/15/10	11/09/10	3	20	187	59
W0496	MassDEP	E. coli	04/25/11	10/19/11	4	36	124	72
W0496	MassDEP	E. coli	03/20/12	11/07/12	5	17	84	42
W0496	MassDEP	E. coli	03/06/13	09/24/13	4	13	154	40
NRWA_NM2443B	Nashua River Watershed Association	E. coli	04/19/08	08/16/08	4	7	131	22
NRWA_NM2443B	Nashua River Watershed Association	E. coli	06/20/09	09/19/09	4	16	133	53
NRWA_NM2443B	Nashua River Watershed Association	E. coli	04/17/10	09/18/10	6	9	23	16
NRWA_NM2443B	Nashua River Watershed Association	E. coli	04/16/11	08/20/11	4	25	387	62
NRWA_NM2928	Nashua River Watershed Association	E. coli	04/19/08	10/18/08	6	14	95	37
NRWA_NM2928	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	30	1299	84

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_NM2928	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	7	17	214	41
NRWA_NM2928	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	6	35	1299	121
NRWA_NM2928	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	26	130	50
NRWA_NM2928	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	27	146	65
NRWA_NM2928	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	41	547	124
NRWA_NM2928	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	6	13	72	38
NRWA_NM2928	Nashua River Watershed Association	E. coli	05/21/16	10/15/16	5	9	37	22
NRWA_NM2928	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	23	77	47
NRWA_NM2928	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	6	14	133	59
NRWA_NM2928	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	22	524	53
NRWA_NM2928	Nashua River Watershed Association	E. coli	05/16/20	10/17/20	6	17	79	39
NRWA_NM2928	Nashua River Watershed Association	E. coli	04/20/21	10/16/21	7	48	770	89
NRWA_NM2928	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	11	72	29
NRWA_NM3386	Nashua River Watershed Association	E. coli	07/25/22	08/31/22	4	26	54	38

Station MASSDEP_W0496 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	58
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	69
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	8
SeasGM	67
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	189
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	20%

Variable*	Result
Samples	3
SeasGM	59
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	72
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	42
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	40
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

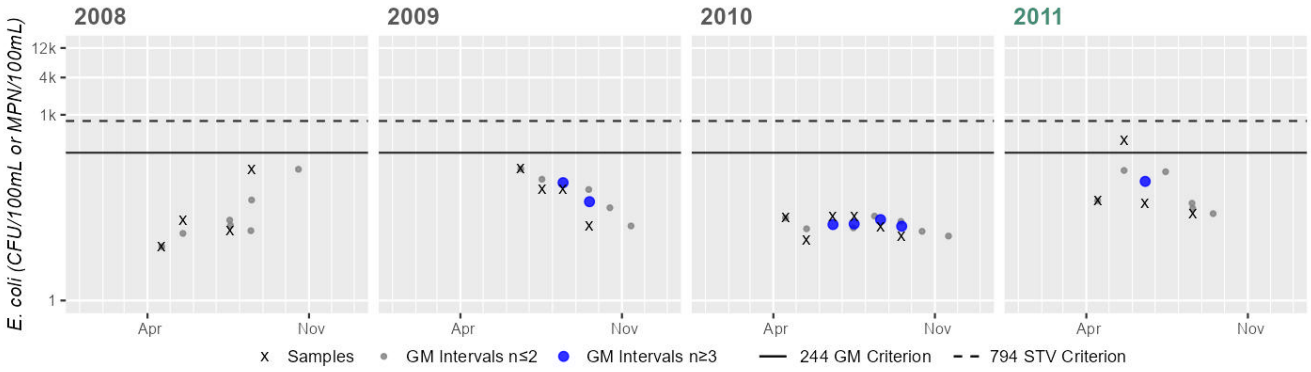
Cumulative %GMI Exceedance Historic (1997-2010)
0%

Cumulative %GMI Exceedance Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NM2443B - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	4
SeasGM	22
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	53
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	16
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	62
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

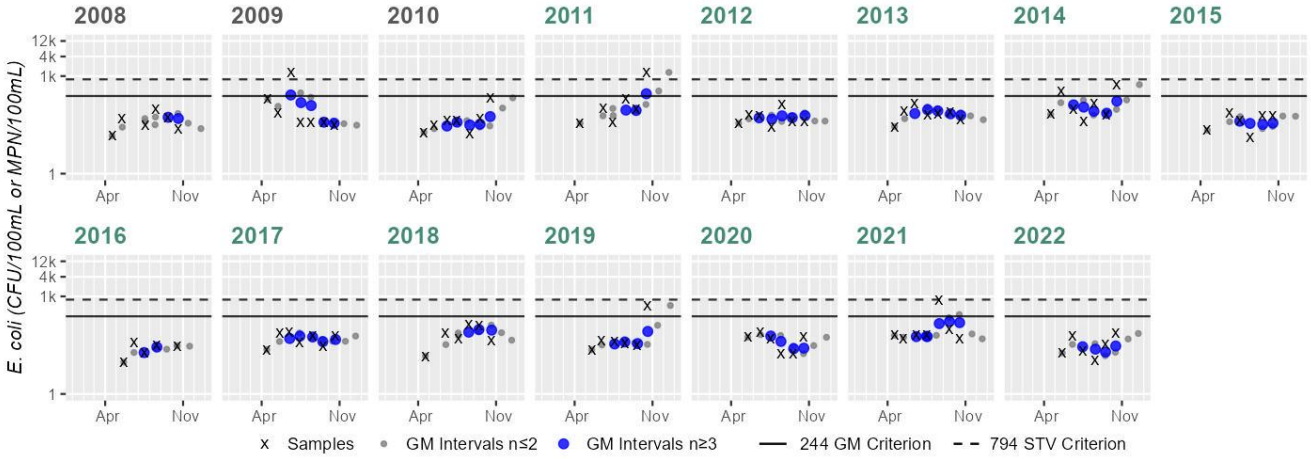
Cumulative %GMI Exceedance Historic (1997-2010)
0%

Cumulative %GMI Exceedance Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NM2928 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	37
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	84
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	41
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	121
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	7
SeasGM	50
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	65
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	124
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	38
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	22
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	47
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	59
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	53
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	39
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	89
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	29
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)
8%

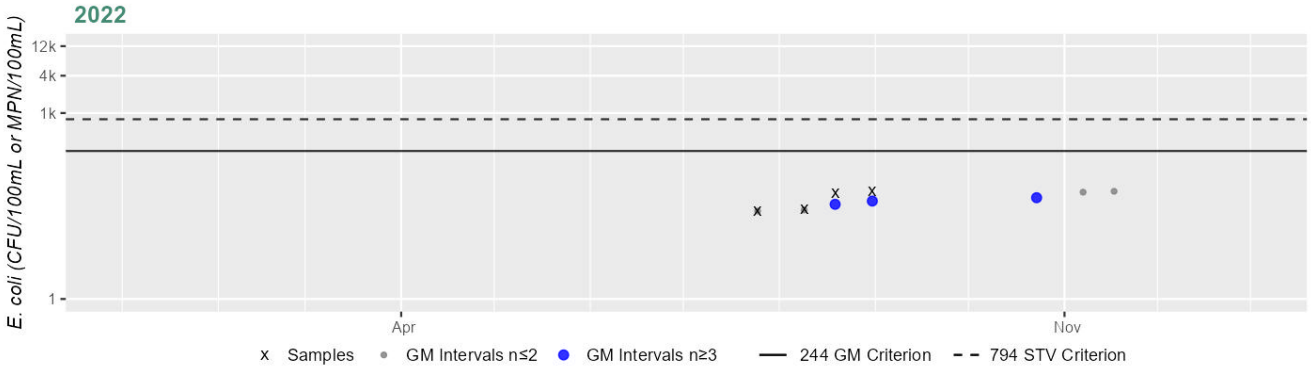
Cumulative %GMI Exceedance Current (2011-2022)
2%

Cumulative %GMI Exceedance Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NM3386 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	4
SeasGM	38
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance

Current (2011-2022)

0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Nashua River (MA81-07)

Location:	From Pepperell Dam (NATID: MA00373), Pepperell to New Hampshire state line, Pepperell/Dunstable.
AU Type:	RIVER
AU Size:	3.7 MILES
Classification/Qualifier:	B: WWF

Nashua River (MA81-07)

Watershed Area: 507.84 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	445.45	9.18	174.18	2.70
Agriculture	4.4%	9%	3.5%	9.5%
Developed	16%	17.1%	11.2%	12.5%
Natural	69.9%	63%	69.2%	60.3%
Wetland	9.8%	10.9%	16.1%	17.8%
Impervious	7.1%	6.9%	5.1%	5.1%

**Land cover analysis only includes watershed area within Massachusetts.*

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Water Chestnut*)	--	Unchanged
5	5	Benthic Macroinvertebrates	--	Unchanged
5	5	PFAS in Fish Tissue	--	Added

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Water Chestnut*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Benthic Macroinvertebrates	Municipal Point Source Discharges (Y)	X	--	--	--	--
PFAS in Fish Tissue	Source Unknown (N)	--	X	--	--	--

Recommendations

2024/26 Recommendations
2024 IR [E. COLI, MEDIUM] Additional monitoring is recommended for Nashua River (MA81-07) at {USGS-01096500} due to elevated bacteria concentrations from a limited frequency dataset in 2021.

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for this Nashua River AU (MA81-07) is assessed as Not Supporting with a new impairment being added for PFAS in Fish Tissue. Fish toxics sampling was conducted in the immediate upstream Nashua River AU (MA81-06) at station F0489 (PFAS Study ID 49) [on Nashua River in impoundment (Pepperell Pond) of Pepperell Paper Co. Dam (NAT ID: MA00373) approximately 900 feet northeast/downstream from Route 111/119, Groton/Pepperell] on 07/21/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. MDPH issued a site-specific advisory for PFAS in the Nashua River in their May 2024 Freshwater Fish Consumption Advisory List and retained it in the January 2025 list. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations. No source of PFAS has been identified at this time.

Fish Tissue Data

Summary of Fish Tissue Data and Resulting Fish Consumption Advisories (MA DPH 2025) (MassDEP 2023) (MassDEP Undated 5)

Summary
Fish toxics sampling was conducted in the immediate upstream Nashua River AU (MA81-06) at station F0489 (PFAS Study ID 49) [on Nashua River in impoundment (Pepperell Pond) of Pepperell Paper Co. Dam (NAT ID: MA00373) approximately 900 feet northeast/downstream from Route 111/119, Groton/Pepperell] on 07/21/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. Because of elevated PFAS measured in fish filets, MDPH issued site-specific fish consumption advisories for the Nashua River in their May 2024 Freshwater Fish Consumption Advisory List and retained them in the January 2025 list. The site-specific DPH advisories are indicative of a Fish Consumption Use impairment for PFAS in Fish Tissue for this Nashua River AU (MA81-07).

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Nashua River (MA81-07) continues to be assessed as Fully Supporting. MassDEP staff recorded aesthetics observations at one station a quarter of the way down this Nashua River AU ~1/2 mile downstream/east from covered bridge at Groton Street near abandoned railroad trestle supports, Pepperell (W0485) as part of the SMART monitoring project in 2011 (n=5), 2012 (n=6) and 2013 (n=4). There were generally no persistent objectionable conditions (i.e., odors, deposits, growths, or turbidity) observed during the surveys, although minor trash deposits were noted 2-3 times every year. The prior Alert for filamentous algae was erroneously carried forward from the 2016 cycle and is being removed.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0485	MassDEP	Water Quality	Nashua River	[approximately 1/2 mile downstream/east from covered bridge at Groton Street near abandoned railroad trestle supports, Pepperell]	42.669687	-71.567765

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W0485	2011	5	Aesthetic observations were made by MassDEP field sampling crews at Station W0485 on Nashua River (MA81-07) during 5 site visits between Mar 2011 and Oct 2011. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, though field staff noted objectionable deposits (n=3).

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W0485	2012	6	Aesthetic observations were made by MassDEP field sampling crews at Station W0485 on Nashua River (MA81-07) during 6 site visits between Jan 2012 and Nov 2012. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, though field staff noted objectionable deposits (n=3).
W0485	2013	4	Aesthetic observations were made by MassDEP field sampling crews at Station W0485 on Nashua River (MA81-07) during 4 site visits between Mar 2013 and Sep 2013. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, though field staff noted objectionable deposits (n=2).

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W0485	2011	5	2	0
W0485	2012	6	4	1
W0485	2013	4	0	0

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W0485	Nashua River	2011	Aquatic Plant Density, Overall	None	1	5
W0485	Nashua River	2011	Aquatic Plant Density, Overall	Sparse	1	5
W0485	Nashua River	2011	Aquatic Plant Density, Overall	Unobservable	3	5
W0485	Nashua River	2011	Color	Light Yellow/Tan	1	5
W0485	Nashua River	2011	Color	None	3	5
W0485	Nashua River	2011	Color	Reddish	1	5
W0485	Nashua River	2011	Objectionable Deposits	Unobservable	2	5
W0485	Nashua River	2011	Objectionable Deposits	Yes	3	5
W0485	Nashua River	2011	Odor	Musty (Basement)	2	5
W0485	Nashua River	2011	Odor	None	2	5
W0485	Nashua River	2011	Odor	Other (Eutrophic)	1	5
W0485	Nashua River	2011	Periphyton Density, Filamentous	None	2	5
W0485	Nashua River	2011	Periphyton Density, Filamentous	Unobservable	3	5

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W0485	Nashua River	2011	Periphyton Density, Film	None	2	5
W0485	Nashua River	2011	Periphyton Density, Film	Unobservable	3	5
W0485	Nashua River	2011	Scum	No	1	5
W0485	Nashua River	2011	Scum	Yes	4	5
W0485	Nashua River	2011	Turbidity	None	2	5
W0485	Nashua River	2011	Turbidity	Slightly Turbid	2	5
W0485	Nashua River	2011	Turbidity	Unobservable	1	5
W0485	Nashua River	2012	Aquatic Plant Density, Overall	None	2	6
W0485	Nashua River	2012	Aquatic Plant Density, Overall	Sparse	2	6
W0485	Nashua River	2012	Aquatic Plant Density, Overall	Unobservable	2	6
W0485	Nashua River	2012	Color	Light Yellow/Tan	1	6
W0485	Nashua River	2012	Color	None	5	6
W0485	Nashua River	2012	Objectionable Deposits	Unobservable	3	6
W0485	Nashua River	2012	Objectionable Deposits	Yes	3	6
W0485	Nashua River	2012	Odor	None	3	6
W0485	Nashua River	2012	Odor	Other (Eutrophic)	3	6
W0485	Nashua River	2012	Periphyton Density, Filamentous	None	4	6
W0485	Nashua River	2012	Periphyton Density, Filamentous	Unobservable	2	6
W0485	Nashua River	2012	Periphyton Density, Film	Dense	1	6
W0485	Nashua River	2012	Periphyton Density, Film	None	2	6
W0485	Nashua River	2012	Periphyton Density, Film	Sparse	1	6
W0485	Nashua River	2012	Periphyton Density, Film	Unobservable	2	6
W0485	Nashua River	2012	Scum	No	3	6
W0485	Nashua River	2012	Scum	Yes	3	6
W0485	Nashua River	2012	Turbidity	None	5	6
W0485	Nashua River	2012	Turbidity	Slightly Turbid	1	6
W0485	Nashua River	2013	Aesthetics Impaired?	No	2	4
W0485	Nashua River	2013	Aesthetics Impaired?	NR	2	4
W0485	Nashua River	2013	Aquatic Plant Density, Overall	None	1	4
W0485	Nashua River	2013	Aquatic Plant Density, Overall	Unobservable	3	4
W0485	Nashua River	2013	Color	None	4	4
W0485	Nashua River	2013	Objectionable Deposits	Unobservable	2	4
W0485	Nashua River	2013	Objectionable Deposits	Yes	2	4
W0485	Nashua River	2013	Odor	None	2	4

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W0485	Nashua River	2013	Odor	Other (Eutrophic)	2	4
W0485	Nashua River	2013	Periphyton Density, Filamentous	Unobservable	4	4
W0485	Nashua River	2013	Periphyton Density, Film	Unobservable	4	4
W0485	Nashua River	2013	Scum	No	1	4
W0485	Nashua River	2013	Scum	Yes	3	4
W0485	Nashua River	2013	Turbidity	None	2	4
W0485	Nashua River	2013	Turbidity	Slightly Turbid	2	4

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	YES

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for the Nashua River (MA81-07) continues to be assessed as Fully Supporting and an Alert for Escherichia Coli (E. Coli) is being added. Surface water sampling was conducted by the USGS upstream of the Pepperell WWTF discharge on the Nashua River at stations USGS_010965042 and USGS_010965043 on three dates between August & October 2020, as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities. The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS) were all less than the 90 ng/L (ppt) recreational screening value (HFPO-DA/GenX was not analyzed in this study). MassDEP, Nashua River Watershed Association (NRWA) and USGS staff/volunteers collected *E. coli* bacteria samples in the Nashua River from 2011-2022 at 3 stations. Samples were collected from the following stations/sample years from upstream to downstream: close to the upstream end at USGS-01096500 [Nashua River at E Pepperell] from 2021-2022 (n=4-6/yr) and NRWA_NM2256 [U.S. covered bridge at abutment, Pepperell] from 2011-2018 (n=6-7/yr), then also a quarter of the way down at W0485 [~1/2 mile downstream/E from covered bridge at Groton St near abandoned railroad trestle supports, Pepperell] from 2011-2013 (n=3-4/yr). Analysis of the multi-year limited frequency *E. coli* dataset from USGS-01096500 indicated 1 out of 2 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2021, 33%), 0 yrs had ≥2 samples exceed the 410 CFU/100ml STV, and cumulatively across years 25% of intervals had GMs >126 CFU/100ml. Analysis of the recent five years of this multi-year limited frequency *E. coli* dataset from NRWA_NM2256 indicated 2 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2014 and 2017, 25 & 33%), 0 yrs had ≥2 samples exceed the 410 CFU/100ml STV, and cumulatively across years 13% of intervals had GMs >126 CFU/100ml. *E. coli* data from W0485 are too limited according to the 2024 CALM to assess the Primary Contact Recreation Use. *E. coli* data from USGS-01096500 and NRWA_NM2256 meet 2024 CALM guidance. However, an Alert is being identified for Escherichia Coli (E. Coli) at USGS-01096500 due to elevated bacteria concentrations.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0485	MassDEP	Water Quality	Nashua River	[approximately 1/2 mile downstream/east from covered bridge at Groton Street near abandoned railroad trestle supports, Pepperell]	42.669687	-71.567765
NRWA_NM2256	Nashua River Watershed Association	Water Quality	Nashua Mainstem	U.S. covered bridge at abutment, Pepperell	42.669810	-71.575360
USGS-01096500	USGS Massachusetts Water Science Center	Water Quality	Nashua River	Nashua River at East Pepperell, MA	42.667589	-71.575068
USGS-010965042	USGS Massachusetts Water Science Center	Water Quality	Nashua River	NASHUA RIVER UPSTREAM, PEPPERELL, MA; upstream of Pepperell WWTF	42.673000	-71.563000

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
USGS-010965043	USGS Massachusetts Water Science Center	Water Quality	Nashua River	NASHUA RIVER DOWNSTREAM, PEPPERELL, MA; downstream of Pepperell WWTF	42.676000	-71.560000

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (30-day Interval Analysis)

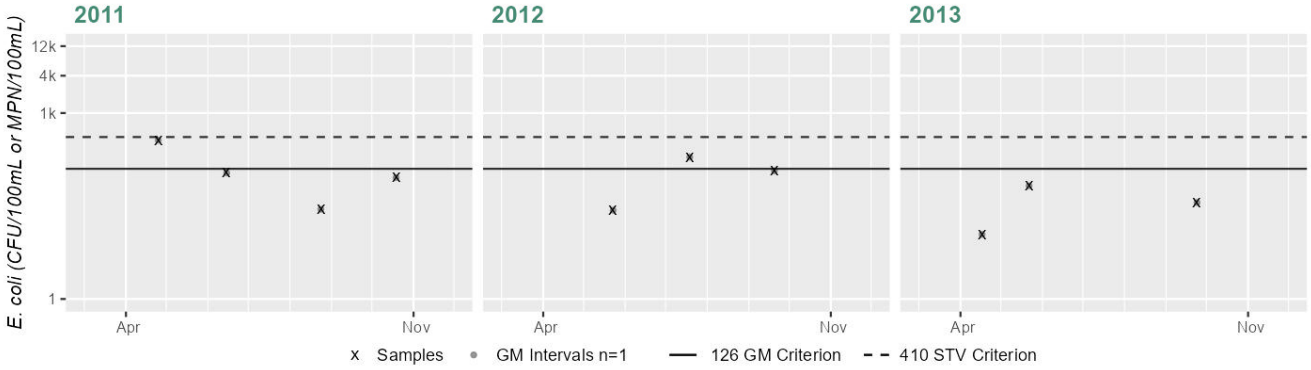
(MassDEP Undated 7) (MassDEP Undated 4) (NRWA 2022) (MassDEP Undated 2) (USGS 2024) (MassDEP Undated 2)

[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
W0485	MassDEP	E. coli	04/25/11	10/19/11	4	28	365	100
W0485	MassDEP	E. coli	05/22/12	09/19/12	3	27	194	84
W0485	MassDEP	E. coli	04/17/13	09/24/13	3	11	67	29
NRWA_NM2256	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	20	1553	91
NRWA_NM2256	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	3	59	22
NRWA_NM2256	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	18	161	41
NRWA_NM2256	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	23	410	77
NRWA_NM2256	Nashua River Watershed Association	E. coli	04/20/15	09/19/15	6	8	524	55
NRWA_NM2256	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	6	3	105	28
NRWA_NM2256	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	15	344	58
NRWA_NM2256	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	6	21	93	43
USGS-01096500	USGS Massachusetts Water Science Center	E. coli	04/12/21	10/04/21	6	11	280	58
USGS-01096500	USGS Massachusetts Water Science Center	E. coli	04/11/22	07/13/22	4	17	32	23

Station MASSDEP_W0485 - Escherichia coli

Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	4
SeasGM	100
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	3
SeasGM	84
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

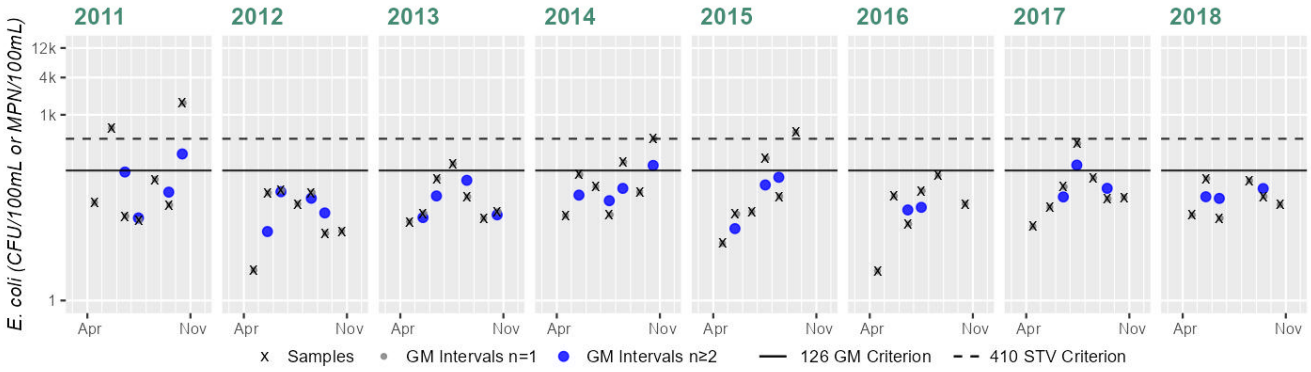
Variable*	Result
Samples	3
SeasGM	29
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NM2256 - Escherichia coli

Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	91
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	22
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	41
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	77
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	55
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	6
SeasGM	28
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

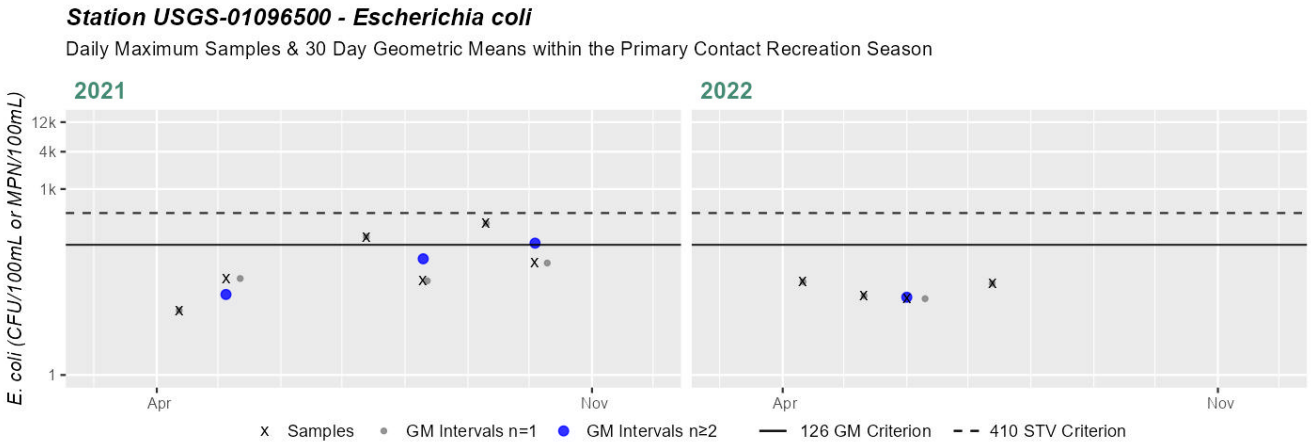
Variable*	Result
Samples	7
SeasGM	58
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	43
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
11%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
13%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*



Variable*	Result
Samples	6
SeasGM	58
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	23
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
25%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Other Indicators

Summary Statement(s) for USGS 2020 PFAS in Water Column Data (Savoie and Argue 2023) (MassDEP Undated 2)

Summary
Surface water sampling was conducted by the USGS upstream of the Pepperell WWTF discharge on the Nashua River (MA81-07) at station USGS_010965042 on three dates during August to October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities. The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS) were all less than the 90 ng/L (ppt) recreational screening value (HFPO-DA/GenX was not analyzed in this study).
Surface water sampling was conducted by the USGS downstream of the Pepperell WWTF discharge on the Nashua River (MA81-07) at station USGS_010965043 on three dates during August to October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities. The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS) were all less than the 90 ng/L (ppt) recreational screening value (HFPO-DA/GenX was not analyzed in this study).

USGS 2020 PFAS in Water Column Data Collected Upstream and Downstream of Wastewater Treatment Facilities (Savoie and Argue 2023) (MassDEP Undated 2)

[The ∑PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here). * indicates the ∑PFAS6 concentration is qualified since data for one or more individual PFAS6 analytes were qualified. A concentration with a "<" was less

than the reporting detection limit (RDL) and the RDL was used to calculate the ΣPFAS6. E = qualifier "value is estimated"; V = qualifier "value affected by field or laboratory contamination"]

Station Code	Sample Date	PFOA ng/L	PFOS ng/L	PFNA ng/L	PFHxS ng/L	PFBA ng/L	PFBS ng/L	ΣPFAS6 ng/L
USGS-010965042	8/20/2020	25.3	14.3	2.04	8.02	13.3	13	63.2*
USGS-010965042	9/14/2020	27.4	E13.2	2.18	6.41	15.4	16.6	62.6*
USGS-010965042	10/23/2020	E17	E9.11	E1.64	4.32	8.4	11.4	41.0*
USGS-010965043	8/20/2020	24.9	12.8	1.96	8.13	13.2	13.2	60.8*
USGS-010965043	9/14/2020	26.8	E14	2.18	6.15	15.1	15.3	61.8*
USGS-010965043	10/23/2020	E17.1	E9.78	E1.65	E4.4	7.84	11	41.9*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for the Nashua River (MA81-07) continues to be assessed as Fully Supporting. MassDEP, Nashua River Watershed Association (NRWA) and USGS staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in the Nashua River from 1998-2022 at 4 stations. Samples were collected from the following stations/sample years from upstream to downstream: close to the upstream end at USGS-01096500 [Nashua River at E Pepperell] from 2021-2022 (n=7-8/yr) and NRWA_NM2256 [U.S. covered bridge at abutment, Pepperell] from 2008-2010 (historic n=5-7/yr) and 2011-2018 (current n=6-7/yr), then also a quarter of the way down at W0485 [~1/2 mile downstream/E from covered bridge at Groton St near abandoned railroad trestle supports, Pepperell] in 1998, 2003, and 2007-2010 (historic n=1-8/yr) and 2011-2013 (current n=4-5/yr), and downstream of the AU at W1806 [Rt. 111, Hollis, New Hampshire] from May-Sep 2008 (n=6). Since bacteria data from the historic IR window are all indicative of good water quality conditions, only the analysis from the current IR window (3 stations) will be summarized here: Analysis of the multi-year moderate frequency *E. coli* dataset from USGS-01096500 indicated 0 out of 2 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml, 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. Analysis of the recent five years of this multi-year limited frequency *E. coli* dataset from NRWA_NM2256 indicated 0 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml, 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. Analysis of the single year limited frequency *E. coli* dataset from W0485 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 28 CFU/100ml. *E. coli* data from USGS-01096500, NRWA_NM2256, and W0485 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0485	MassDEP	Water Quality	Nashua River	[approximately 1/2 mile downstream/east from covered bridge at Groton Street near abandoned railroad trestle supports, Pepperell]	42.669687	-71.567765
W1806	MassDEP	Water Quality	Nashua River	[Route 111, Hollis, New Hampshire]	42.712833	-71.548709
NRWA_NM2256	Nashua River Watershed Association	Water Quality	Nashua Mainstem	U.S. covered bridge at abutment, Pepperell	42.669810	-71.575360
USGS-01096500	USGS Massachusetts Water Science Center	Water Quality	Nashua River	Nashua River at East Pepperell, MA	42.667589	-71.575068

Bacteria Data

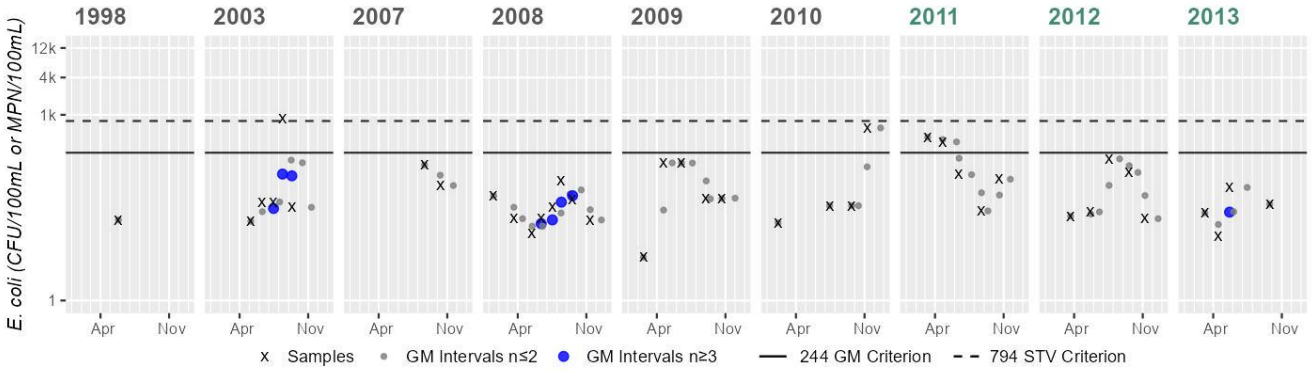
Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)
(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1) (USGS 2024) (MassDEP Undated 1)
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W0485	MassDEP	E. coli	05/27/98	05/27/98	1	20	20	19
W0485	MassDEP	E. coli	05/06/03	09/11/03	5	19	880	60
W0485	MassDEP	E. coli	08/22/07	10/10/07	2	72	155	105
W0485	MassDEP	E. coli	01/16/08	11/12/08	8	12	87	29
W0485	MassDEP	E. coli	02/18/09	10/21/09	5	5	167	48
W0485	MassDEP	E. coli	02/04/10	11/09/10	4	18	613	59
W0485	MassDEP	E. coli	03/09/11	10/19/11	5	28	435	134
W0485	MassDEP	E. coli	03/20/12	11/07/12	5	21	194	49
W0485	MassDEP	E. coli	03/06/13	09/24/13	4	11	67	28
W1806	MassDEP	E. coli	05/13/08	09/16/08	6	23	510	45
NRWA_NM2256	Nashua River Watershed Association	E. coli	04/19/08	10/18/08	5	6	166	47
NRWA_NM2256	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	13	90	37
NRWA_NM2256	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	7	14	161	39
NRWA_NM2256	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	20	1553	91
NRWA_NM2256	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	3	59	22
NRWA_NM2256	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	18	161	41

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_NM2256	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	23	410	77
NRWA_NM2256	Nashua River Watershed Association	E. coli	04/20/15	09/19/15	6	8	524	55
NRWA_NM2256	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	6	3	105	28
NRWA_NM2256	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	15	344	58
NRWA_NM2256	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	6	21	93	43
USGS-01096500	USGS Massachusetts Water Science Center	E. coli	04/12/21	12/01/21	8	11	370	67
USGS-01096500	USGS Massachusetts Water Science Center	E. coli	01/18/22	07/13/22	7	15	32	20

Station MASSDEP_W0485 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	1
SeasGM	20
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	60
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	20%

Variable*	Result
Samples	2
SeasGM	105
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	8
SeasGM	29
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	48
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	59
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	134
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	49
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	28
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

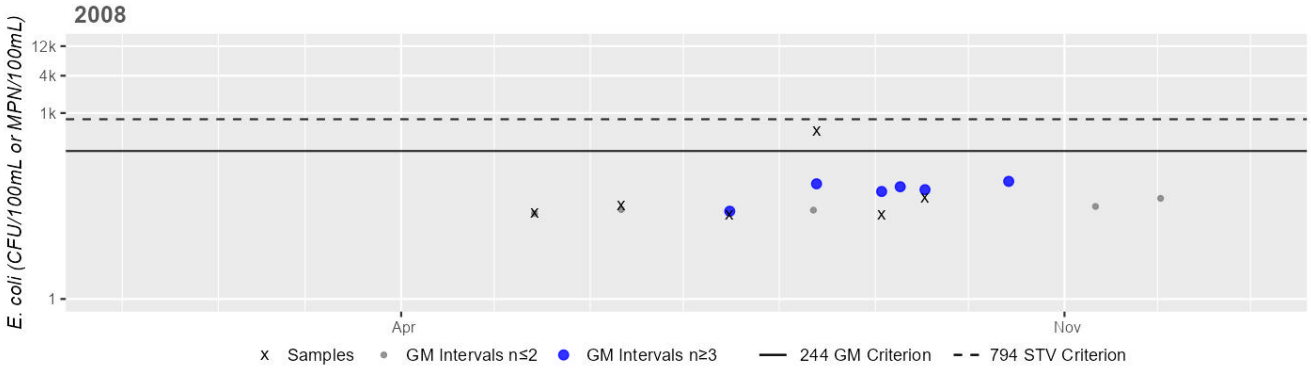
Cumulative %GMI Exceedance Historic (1997-2010)
0%

Cumulative %GMI Exceedance Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W1806 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



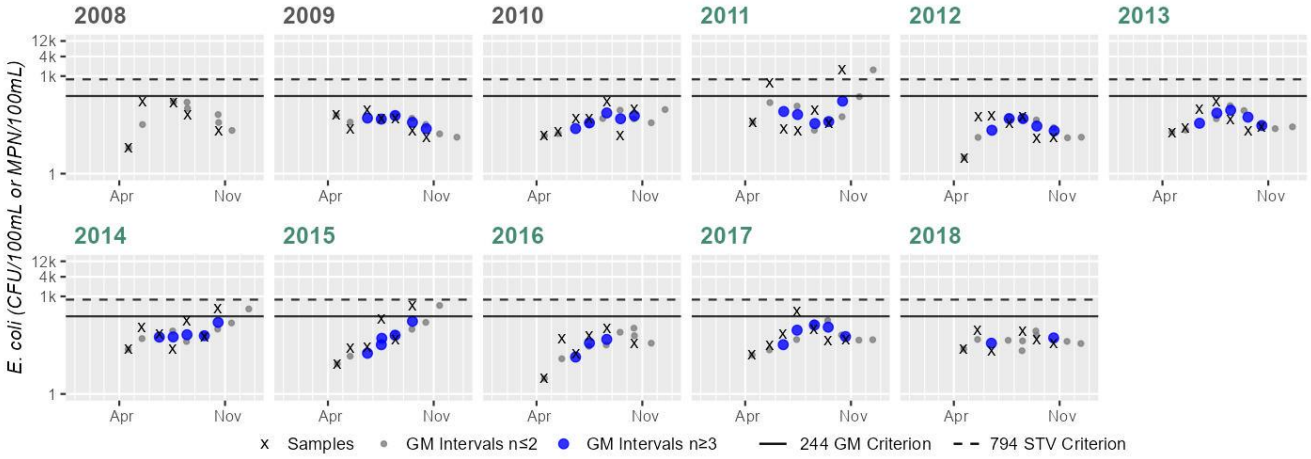
Variable*	Result
Samples	6
SeasGM	45
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NM2256 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	47
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	37
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	39
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	91
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	22
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	41
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	77
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	55
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	28
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	58
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	43
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)
0%

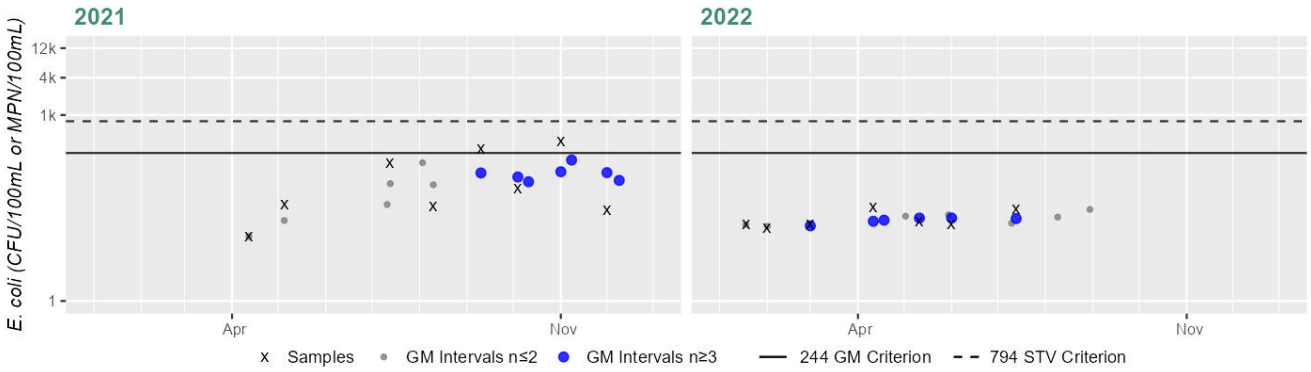
Cumulative %GMI Exceedance Current (2011-2022)
0%

Cumulative %GMI Exceedance Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station USGS-01096500 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	8
SeasGM	67
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	20
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance

Current (2011-2022)

0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Nashua River (MA81-08)

Location:	("South Branch" Nashua River) Headwaters, outlet Lancaster Millpond, Clinton to Clinton WWTP discharge (NPDES: MA0100404), Clinton.
AU Type:	RIVER
AU Size:	2.8 MILES
Classification/Qualifier:	B: WWF

Nashua River (MA81-08)

Watershed Area: 124.91 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	124.91	7.54	76.42	3.79
Agriculture	4.4%	11.3%	3.3%	5.1%
Developed	12.4%	20.6%	10.2%	11.3%
Natural	73.7%	60.7%	72.4%	74.6%
Wetland	9.5%	7.4%	14.1%	9.1%
Impervious	5.3%	9.2%	4.4%	4.7%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	5	(Non-Native Aquatic Plants*)	--	Unchanged
4c	5	PFAS in Fish Tissue	--	Added

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
PFAS in Fish Tissue	Source Unknown (N)	--	X	--	--	--

Recommendations

2024/26 Recommendations
2016 IR [ALGAE, LOW] Follow up monitoring for Nashua River (MA81-08) is recommended based on observations of dense filamentous algae east of Rt. 110, Clinton (upstream of Clinton WWTP outfall) {W0482} in 2008, as well as earlier observations.

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for this Nashua River AU (MA81-08) is assessed as Not Supporting with a new impairment being added for PFAS in Fish Tissue. Fish toxics sampling was conducted in a downstream Nashua River AU (MA81-06) at station F0489 (PFAS Study ID 49) [on Nashua River in impoundment (Pepperell Pond) of Pepperell Paper Co. Dam (NAT ID: MA00373) approximately 900 feet northeast/downstream from Route 111/119, Groton/Pepperell] on 07/21/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. MDPH issued a site-specific advisory for PFAS in the Nashua River in their May 2024 Freshwater Fish Consumption Advisory List and retained it in the January 2025 list. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations. No source of PFAS has been identified at this time.

Fish Tissue Data

Summary of Fish Tissue Data and Resulting Fish Consumption Advisories (MA DPH 2025) (MassDEP 2023) (MassDEP Undated 5)

Summary
Fish toxics sampling was conducted in a downstream Nashua River AU (MA81-06) at station F0489 (PFAS Study ID 49) [on Nashua River in impoundment (Pepperell Pond) of Pepperell Paper Co. Dam (NAT ID: MA00373) approximately 900 feet northeast/downstream from Route 111/119, Groton/Pepperell] on 07/21/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. Because of elevated PFAS measured in fish filets, MDPH issued site-specific fish consumption advisories for the Nashua River in their May 2024 Freshwater Fish Consumption Advisory List and retained them in the January 2025 list. The site-specific DPH advisories are indicative of a Fish Consumption Use impairment for PFAS in Fish Tissue for this Nashua River AU (MA81-08).

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	YES

2024/26 Use Attainment Summary
There are no data available to assess the status of the Aesthetics Use for Nashua River (MA81-08), so it is Not Assessed. The prior Alert for Algae (based on observations of dense filamentous algae east of Rt. 110, Clinton (upstream of Clinton WWTP outfall) W0482 in 2008, as well as earlier observations (MassDEP Undated 6) is being carried forward.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary
No bacteria data are available to assess the Primary Contact Recreation Use for the Nashua River (MA81-08), so it is assessed as having Insufficient Information. The prior Alert for Algae is being removed from the Recreational Uses but continues to be maintained under the Aesthetics Use. Surface water sampling was conducted by the USGS upstream of the Clinton WWTF discharge on the Nashua River at station USGS_01095505 on three dates during August to October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities. The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS) were all less than the 90 ng/L (ppt) recreational screening value (HFPO-DA/GenX was not analyzed in this study).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
USGS-01095505	USGS Massachusetts Water Science Center	Water Quality	Nashua River	NASHUA RIVER 0.4 MI UPSTREAM RT 110 AT CLINTON, MA; upstream of Clinton WWTF	42.429000	-71.680000

Other Indicators

Summary Statement(s) for USGS 2020 PFAS in Water Column Data (Savoie and Argue 2023) (MassDEP Undated 2)

Summary
Surface water sampling was conducted by the USGS upstream of the Clinton WWTF discharge on the Nashua River (MA81-08) at station USGS_01095505 on three dates during August to October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities. The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS) were all less than the 90 ng/L (ppt) recreational screening value (HFPO-DA/GenX was not analyzed in this study).

USGS 2020 PFAS in Water Column Data Collected Upstream and Downstream of Wastewater Treatment Facilities (Savoie and Argue 2023) (MassDEP Undated 2)

[The ∑PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here). * indicates the ∑PFAS6 concentration is qualified since data for one or more individual PFAS6 analytes were qualified. A concentration with a "<" was less than the reporting detection limit (RDL) and the RDL was used to calculate the ΣPFAS6. E = qualifier "value is estimated"; V = qualifier "value affected by field or laboratory contamination"]

Station Code	Sample Date	PFOA ng/L	PFOS ng/L	PFNA ng/L	PFHxS ng/L	PFBA ng/L	PFBS ng/L	ΣPFAS6 ng/L
USGS-01095505	8/24/2020	2.42	2	E0.416	E0.455	E1.19	E0.681	8.2*
USGS-01095505	9/18/2020	2.08	E1.37	<1.79	E0.418	E0.984	E0.612	8.5*
USGS-01095505	10/20/2020	E2.78	1.88	E0.412	E0.552	1.96	E0.794	8.6*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for the Nashua River (MA81-08) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. The prior Alert for Algae is being removed from the Recreational Uses but continues to be maintained under the Aesthetics Use. MassDEP staff collected *E. coli* bacteria samples at the downstream end of Nashua River at W0482 [E of Rt. 110, Clinton (upstream of Clinton WWTP outfall)] in 1998, 2003, and 2008 (n=1-6/yr). Analysis of the historic multi-year limited frequency *E. coli* dataset from W0482 indicated 0 out of 2 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml, 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml, which meets 2024 CALM guidance. However, since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0482	MassDEP	Water Quality	Nashua River	[east of Route 110, Clinton (upstream of Clinton WWTP outfall)]	42.429974	-71.679300

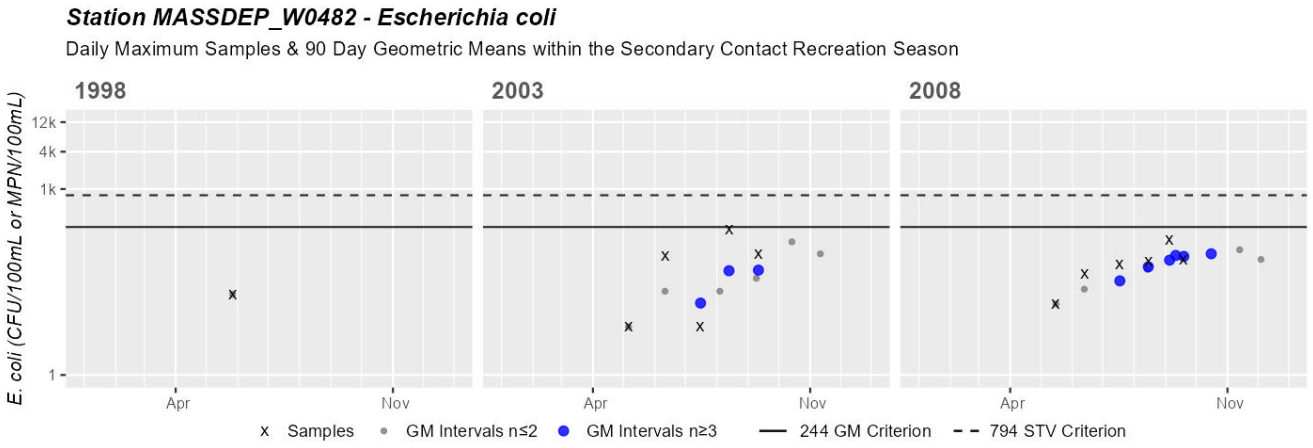
Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3)

[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
W0482	MassDEP	E. coli	05/27/98	05/27/98	1	20	20	19
W0482	MassDEP	E. coli	05/06/03	09/11/03	5	6	220	35
W0482	MassDEP	E. coli	05/15/08	09/18/08	6	14	150	54



Variable*	Result
Samples	1
SeasGM	20
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	35
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	54
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Nashua River (MA81-09)

Location:	("South Branch" Nashua River) From Clinton WWTP discharge (NPDES: MA0100404), Clinton to confluence with North Nashua River, Lancaster.
AU Type:	RIVER
AU Size:	1.8 MILES
Classification/Qualifier:	B: WWF

Nashua River (MA81-09)

Watershed Area: 131.23 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	131.23	9.08	78.03	2.71
Agriculture	4.5%	6.1%	3.3%	4.5%
Developed	13.9%	41.2%	10.5%	25.7%
Natural	72.1%	43.8%	71.8%	49.3%
Wetland	9.6%	8.9%	14.4%	20.6%
Impervious	6%	19.6%	4.5%	10.5%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
5	5	PFAS in Fish Tissue	--	Added
5	5	pH, Low	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
PFAS in Fish Tissue	Source Unknown (N)	--	X	--	--	--
pH, Low	Source Unknown (N)	X	--	--	--	--

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for this Nashua River AU (MA81-09) is assessed as Not Supporting with a new impairment being added for PFAS in Fish Tissue. Fish toxics sampling was conducted in a downstream Nashua River AU (MA81-06) at station F0489 (PFAS Study ID 49) [on Nashua River in impoundment (Pepperell Pond) of Pepperell Paper Co. Dam (NAT ID: MA00373) approximately 900 feet northeast/downstream from Route 111/119, Groton/Pepperell] on 07/21/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. MDPH issued a site-specific advisory for PFAS in the Nashua River in their May 2024 Freshwater Fish Consumption Advisory List and retained it in the January 2025 list. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations. No source of PFAS has been identified at this time.

Fish Tissue Data

Summary of Fish Tissue Data and Resulting Fish Consumption Advisories (MA DPH 2025) (MassDEP 2023) (MassDEP Undated 5)

Summary
Fish toxics sampling was conducted in a downstream Nashua River AU (MA81-06) at station F0489 (PFAS Study ID 49) [on Nashua River in impoundment (Pepperell Pond) of Pepperell Paper Co. Dam (NAT ID: MA00373) approximately 900 feet northeast/downstream from Route 111/119, Groton/Pepperell] on 07/21/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. Because of elevated PFAS measured in fish filets, MDPH issued site-specific fish consumption advisories for the Nashua River in their May 2024 Freshwater Fish Consumption Advisory List and retained them in the January 2025 list. The site-specific DPH advisories are indicative of a Fish Consumption Use impairment for PFAS in Fish Tissue for this Nashua River AU (MA81-09).

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Nashua River (MA81-09) continues to be assessed as Fully Supporting. MassDEP staff recorded aesthetics observations at one station close to the downstream end of this Nashua River AU Bolton Road, Lancaster (upstream of sporadic input on eastern shore just upstream of road) (W0483) as part of the SMART monitoring project in 2011 (n=5), 2012 (n=6) and 2013 (n=4). There were generally no persistent objectionable conditions (i.e., odors, deposits, growths, or turbidity) observed during the surveys, although high turbidity was noted once in 2012 and minor trash deposits were noted on two occasions in 2013.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0483	MassDEP	Water Quality	Nashua River	[Bolton Road, Lancaster (upstream of sporadic input on eastern shore just upstream of road)]	42.444428	-71.671863

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W0483	2011	5	Aesthetic observations were made by MassDEP field sampling crews at Station W0483 on Nashua River (MA81-09) during 5 site visits between Mar 2011 and Oct 2011. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.
W0483	2012	6	Aesthetic observations were made by MassDEP field sampling crews at Station W0483 on Nashua River (MA81-09) during 6 site visits between Jan 2012 and Nov 2012. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, though field staff noted high turbidity (n=1).
W0483	2013	4	Aesthetic observations were made by MassDEP field sampling crews at Station W0483 on Nashua River (MA81-09) during 4 site visits between Mar 2013 and Sep 2013. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, though field staff noted objectionable deposits (n=2).

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W0483	2011	5	3	0
W0483	2012	6	5	0
W0483	2013	4	3	0

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W0483	Nashua River	2011	Aquatic Plant Density, Overall	None	2	5
W0483	Nashua River	2011	Aquatic Plant Density, Overall	Sparse	1	5
W0483	Nashua River	2011	Aquatic Plant Density, Overall	Unobservable	2	5
W0483	Nashua River	2011	Color	Light Yellow/Tan	2	5
W0483	Nashua River	2011	Color	None	3	5
W0483	Nashua River	2011	Objectionable Deposits	No	4	5
W0483	Nashua River	2011	Objectionable Deposits	Yes	1	5
W0483	Nashua River	2011	Odor	None	5	5
W0483	Nashua River	2011	Periphyton Density, Filamentous	None	3	5
W0483	Nashua River	2011	Periphyton Density, Filamentous	Unobservable	2	5
W0483	Nashua River	2011	Periphyton Density, Film	None	3	5
W0483	Nashua River	2011	Periphyton Density, Film	Unobservable	2	5
W0483	Nashua River	2011	Scum	No	4	5
W0483	Nashua River	2011	Scum	Yes	1	5
W0483	Nashua River	2011	Turbidity	Moderately Turbid	1	5
W0483	Nashua River	2011	Turbidity	None	1	5
W0483	Nashua River	2011	Turbidity	Slightly Turbid	2	5
W0483	Nashua River	2011	Turbidity	Unobservable	1	5
W0483	Nashua River	2012	Aquatic Plant Density, Overall	None	5	6
W0483	Nashua River	2012	Aquatic Plant Density, Overall	Unobservable	1	6
W0483	Nashua River	2012	Color	Brownish	1	6
W0483	Nashua River	2012	Color	Dark Tan	1	6
W0483	Nashua River	2012	Color	None	4	6
W0483	Nashua River	2012	Objectionable Deposits	No	4	6

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W0483	Nashua River	2012	Objectionable Deposits	Unobservable	2	6
W0483	Nashua River	2012	Odor	None	6	6
W0483	Nashua River	2012	Periphyton Density, Filamentous	None	5	6
W0483	Nashua River	2012	Periphyton Density, Filamentous	Unobservable	1	6
W0483	Nashua River	2012	Periphyton Density, Film	None	5	6
W0483	Nashua River	2012	Periphyton Density, Film	Unobservable	1	6
W0483	Nashua River	2012	Scum	No	6	6
W0483	Nashua River	2012	Turbidity	Highly Turbid	1	6
W0483	Nashua River	2012	Turbidity	None	4	6
W0483	Nashua River	2012	Turbidity	Slightly Turbid	1	6
W0483	Nashua River	2013	Aesthetics Impaired?	No	2	4
W0483	Nashua River	2013	Aesthetics Impaired?	NR	2	4
W0483	Nashua River	2013	Aquatic Plant Density, Overall	None	3	4
W0483	Nashua River	2013	Aquatic Plant Density, Overall	Unobservable	1	4
W0483	Nashua River	2013	Color	None	4	4
W0483	Nashua River	2013	Objectionable Deposits	No	1	4
W0483	Nashua River	2013	Objectionable Deposits	Unobservable	1	4
W0483	Nashua River	2013	Objectionable Deposits	Yes	2	4
W0483	Nashua River	2013	Odor	Musty (Basement)	1	4
W0483	Nashua River	2013	Odor	None	3	4
W0483	Nashua River	2013	Periphyton Density, Filamentous	None	3	4
W0483	Nashua River	2013	Periphyton Density, Filamentous	Unobservable	1	4
W0483	Nashua River	2013	Periphyton Density, Film	None	3	4
W0483	Nashua River	2013	Periphyton Density, Film	Unobservable	1	4
W0483	Nashua River	2013	Scum	No	4	4
W0483	Nashua River	2013	Turbidity	None	1	4
W0483	Nashua River	2013	Turbidity	Slightly Turbid	3	4

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for the Nashua River (MA81-09) continues to be assessed as Not Supporting. The prior Escherichia Coli (E. Coli) impairment is being carried forward based on bacteria data not meeting the threshold at 1 station in 2014-2018. Surface water sampling was conducted by the USGS downstream of the Clinton WWTF discharge on the Nashua River (MA81-09) at station USGS_01095506 on three dates between August & October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities. The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS) were all less than the 90 ng/L (ppt) recreational screening value (HFPO-DA/GenX was not analyzed in this study). MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in the Nashua River from 2011-2022 at 3 stations. Samples were collected from the following stations/sample years from upstream to downstream: close to the upstream end at NRWA_SN2462 [High St Bridge, Clinton] from May-Oct 2022 (n=6), almost halfway down at NRWA_SN0169 [S. Nashua River at Mill St., Lancaster] from 2011-2018 (n=5-7/yr), and close to the downstream end at W0483 [Bolton Rd, Lancaster (upstream of sporadic input on eastern shore just upstream of Rd)] from 2011-2013 (n=3-4/yr). Analysis of the single year limited frequency *E. coli* dataset from NRWA_SN2462 indicated 50% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 107 CFU/100ml. Analysis of the recent five years of the multi-year moderate frequency *E. coli* dataset from NRWA_SN0169 indicated 4 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2014-2017, 25-100%), 2 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2015 and 2017, n=2 & 2), and cumulatively across years 47% of intervals had GMs >126 CFU/100ml. The available *E. coli* data at W0483 are too limited to assess according to the 2024 CALM, however it should be noted that samples exceeded the 410 CFU/100ml STV in 2013 (n=1, 1730 CFU) and 2012 (n=1, 2419 CFU). While *E. coli* data from NRWA_SN2462 meet 2024 CALM guidance, *E. coli* data from NRWA_SN0169 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0483	MassDEP	Water Quality	Nashua River	[Bolton Road, Lancaster (upstream of sporadic input on eastern shore just upstream of road)]	42.444428	-71.671863
NRWA_SN0169	Nashua River Watershed Association	Water Quality	South Nashua River	S. Nashua River at Mill St., Lancaster	42.438300	-71.681500
NRWA_SN2462	Nashua River Watershed Association	Water Quality	South Nashua River	High Street Bridge, Clinton	42.432518	-71.679793
USGS-01095506	USGS Massachusetts Water Science Center	Water Quality	Nashua River	NASHUA RIVER AT ROUTE 110, CLINTON, MA; downstream of Clinton WWTF	42.433000	-71.680000

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (30-day Interval Analysis)

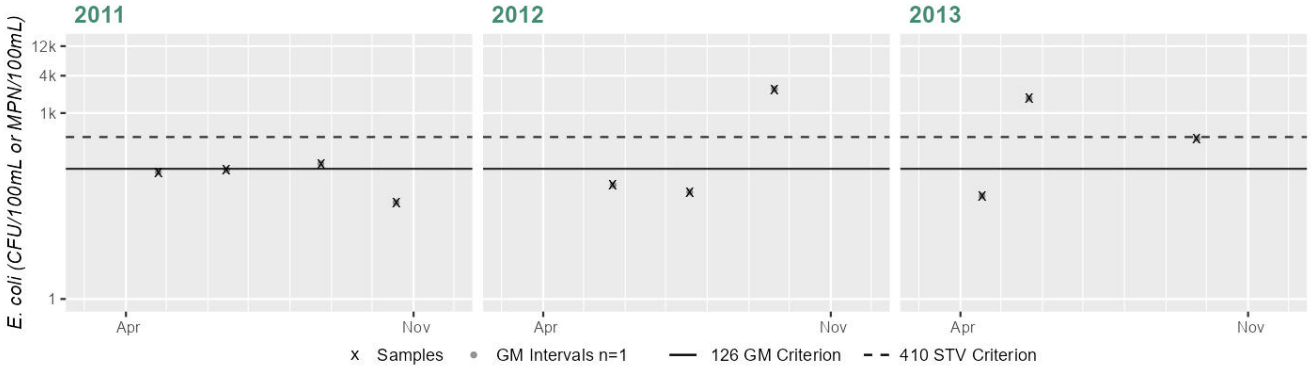
(MassDEP Undated 7) (MassDEP Undated 4) (NRWA 2022) (MassDEP Undated 2)

[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
W0483	MassDEP	E. coli	04/25/11	10/19/11	4	36	152	92
W0483	MassDEP	E. coli	05/22/12	09/19/12	3	53	2419	206
W0483	MassDEP	E. coli	04/17/13	09/24/13	3	46	1730	313
NRWA_SN0169	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	45	488	105
NRWA_SN0169	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	47	2419	281
NRWA_SN0169	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	21	770	135
NRWA_SN0169	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	5	1012	61
NRWA_SN0169	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	7	574	98
NRWA_SN0169	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	70	290	181
NRWA_SN0169	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	17	517	99
NRWA_SN0169	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	5	11	119	53
NRWA_SN2462	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	44	248	107

Station MASSDEP_W0483 - Escherichia coli

Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	4
SeasGM	92
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	3
SeasGM	206
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	33%

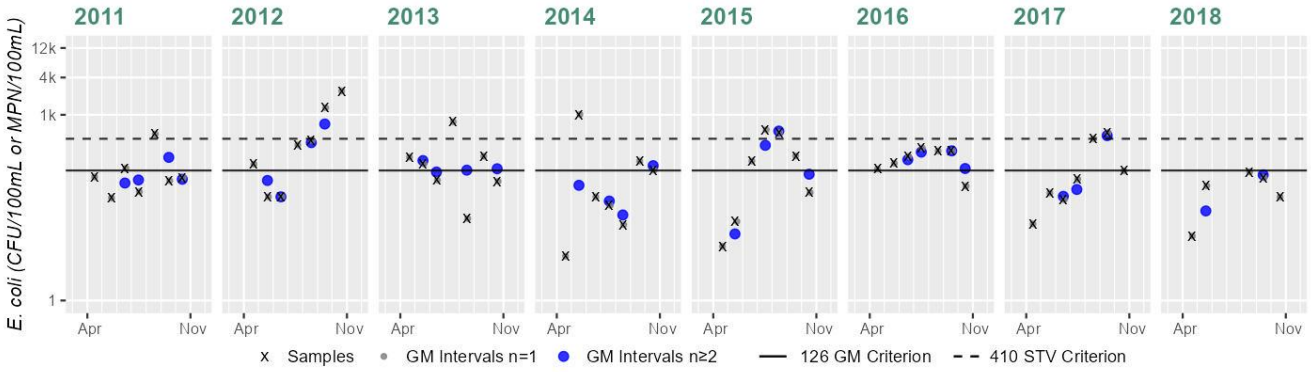
Variable*	Result
Samples	3
SeasGM	313
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	33%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_SN0169 - Escherichia coli

Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	105
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	281
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	135
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	61
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	98
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	181
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	0
%n>STV	0%

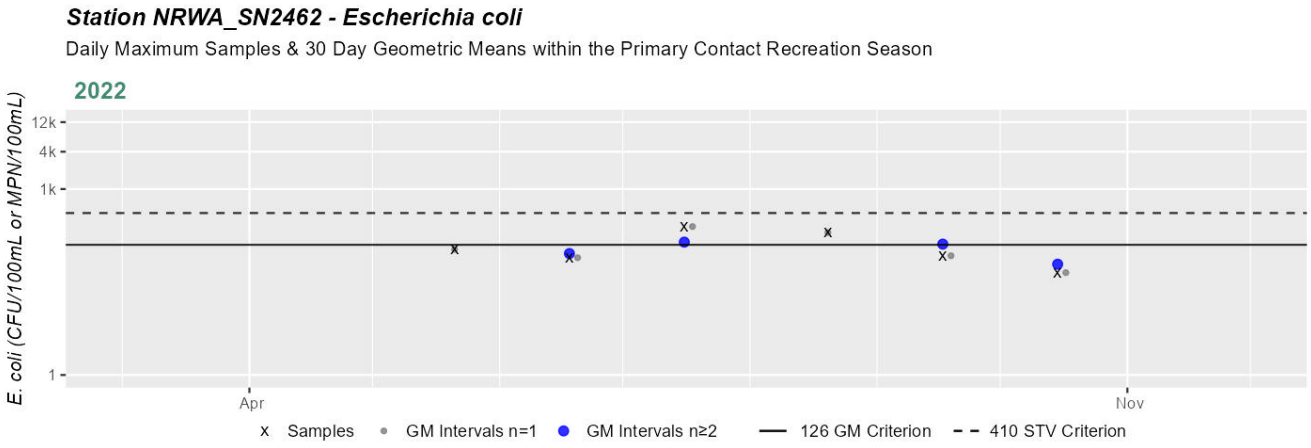
Variable*	Result
Samples	7
SeasGM	99
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	5
SeasGM	53
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
48%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
47%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*



Variable*	Result
Samples	6
SeasGM	107
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
50%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Other Indicators

Summary Statement(s) for USGS 2020 PFAS in Water Column Data (Savoie and Argue 2023) (MassDEP Undated 2)

Summary
Surface water sampling was conducted by the USGS downstream of the Clinton WWTF discharge on the Nashua River (MA81-09) at station USGS_01095506 on three dates during August to October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities. The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS) were all less than the 90 ng/L (ppt) recreational screening value (HFPO-DA/GenX was not analyzed in this study).

USGS 2020 PFAS in Water Column Data Collected Upstream and Downstream of Wastewater Treatment Facilities (Savoie and Argue 2023) (MassDEP Undated 2)

[The ∑PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here). * indicates the ∑PFAS6 concentration is qualified since data for one or more individual PFAS6 analytes were qualified. A concentration with a "<" was less than the reporting detection limit (RDL) and the RDL was used to calculate the ΣPFAS6. E = qualifier "value is estimated"; V = qualifier "value affected by field or laboratory contamination"]

Station Code	Sample Date	PFOA ng/L	PFOS ng/L	PFNA ng/L	PFHxS ng/L	PFBA ng/L	PFBS ng/L	ΣPFAS6 ng/L
USGS-01095506	8/24/2020	3.63	E2.7	E0.472	E0.811	1.92	E1.48	9.5*
USGS-01095506	9/18/2020	3.1	E2.59	E0.343	E0.784	1.96	E1.17	8.5*
USGS-01095506	10/20/2020	E4.14	3.12	E0.688	E1.21	4	1.99	12.7*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for the Nashua River (MA81-09) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added based on a re-evaluation of bacteria data not meeting the threshold at 1 station in 2014-2018. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in the Nashua River from 1998-2022 at 4 stations. Samples were collected from the following stations/sample years from upstream to downstream: close to the upstream end at NRWA_SN2462 [High St Bridge, Clinton] from May-Oct 2022 (n=6), almost halfway down at NRWA_SN0169 [S. Nashua River at Mill St., Lancaster] from 2008-2010 (historic n=6-7/yr) and 2011-2018 (current n=5-7/yr), close to the downstream end at W0483 [Bolton Rd, Lancaster (upstream of sporadic input on eastern shore just upstream of Rd)] from May 1998 (historic n=1) and 2011-2013 (current n=4-5/yr) and W0681 [“abandoned bridge” (Atherton Bridge) near current Bolton Rd bridge, Lancaster] in 2003 and 2007-2010 (n=2-8/yr). Since there are some bacteria data from the current IR window that are indicative of poor water quality conditions (with a mix of good and poor conditions in the historic window), only the analysis from the current IR window will be summarized here as follows: Analysis of the single year limited frequency *E. coli* dataset from NRWA_SN2462 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 107 CFU/100ml. Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from NRWA_SN0169 indicated 3 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2015-2017, 33-40%), and while 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, cumulatively across years 27% of intervals had GMs >244 CFU/100ml. Analysis of the single year limited frequency *E. coli* dataset from W0483 indicated 0% of intervals had GMs >244 CFU/100ml, 1 sample exceeded the 794 CFU/100ml STV, and the overall GM was 194 CFU/100ml. While *E. coli* data from NRWA_SN2462 and W0483 meet 2024 CALM guidance, *E. coli* data from NRWA_SN0169 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0483	MassDEP	Water Quality	Nashua River	[Bolton Road, Lancaster (upstream of sporadic input on eastern shore just upstream of road)]	42.444428	-71.671863
W0681	MassDEP	Water Quality	Nashua River	["abandoned bridge" (Atherton Bridge) near current Bolton Road bridge, Lancaster.]	42.444738	-71.671988

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_SN0169	Nashua River Watershed Association	Water Quality	South Nashua River	S. Nashua River at Mill St., Lancaster	42.438300	-71.681500
NRWA_SN2462	Nashua River Watershed Association	Water Quality	South Nashua River	High Street Bridge, Clinton	42.432518	-71.679793

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

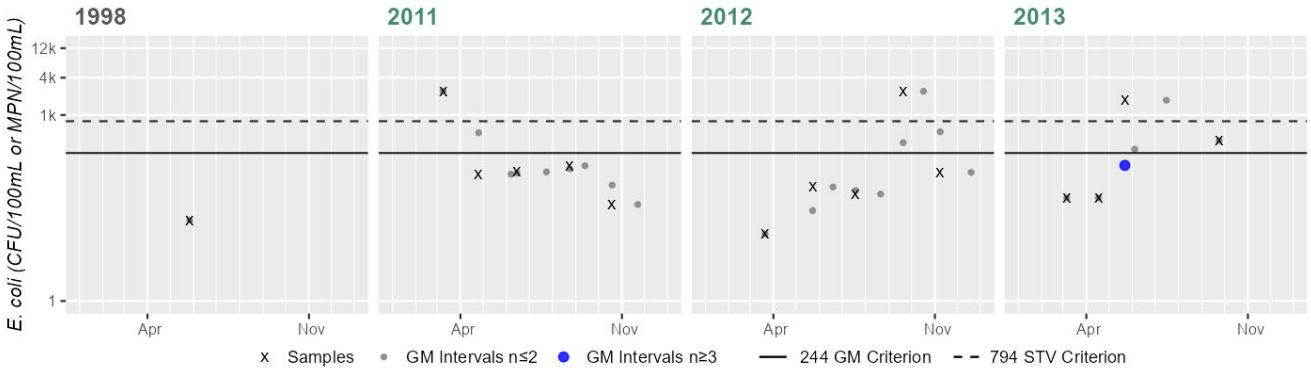
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W0483	MassDEP	E. coli	05/27/98	05/27/98	1	20	20	19
W0483	MassDEP	E. coli	03/09/11	10/19/11	5	36	2419	177
W0483	MassDEP	E. coli	03/20/12	11/07/12	5	12	2419	104
W0483	MassDEP	E. coli	03/06/13	09/24/13	4	46	1730	194
W0681	MassDEP	E. coli	05/06/03	09/11/03	5	120	300	189
W0681	MassDEP	E. coli	08/22/07	10/10/07	2	57	365	144
W0681	MassDEP	E. coli	01/16/08	11/12/08	8	49	260	142
W0681	MassDEP	E. coli	02/18/09	10/21/09	5	14	152	60
W0681	MassDEP	E. coli	02/04/10	11/09/10	4	86	397	249
NRWA_SN0169	Nashua River Watershed Association	E. coli	04/19/08	10/18/08	6	7	2419	235
NRWA_SN0169	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	36	2419	311
NRWA_SN0169	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	7	28	1553	517
NRWA_SN0169	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	45	488	105
NRWA_SN0169	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	47	2419	281
NRWA_SN0169	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	21	770	135
NRWA_SN0169	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	5	1012	61
NRWA_SN0169	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	7	574	98

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_SN0169	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	70	290	181
NRWA_SN0169	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	17	517	99
NRWA_SN0169	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	5	11	119	53
NRWA_SN2462	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	44	248	107

Station MASSDEP_W0483 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	1
SeasGM	20
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	177
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	20%

Variable*	Result
Samples	5
SeasGM	104
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	20%

Variable*	Result
Samples	4
SeasGM	194
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	25%

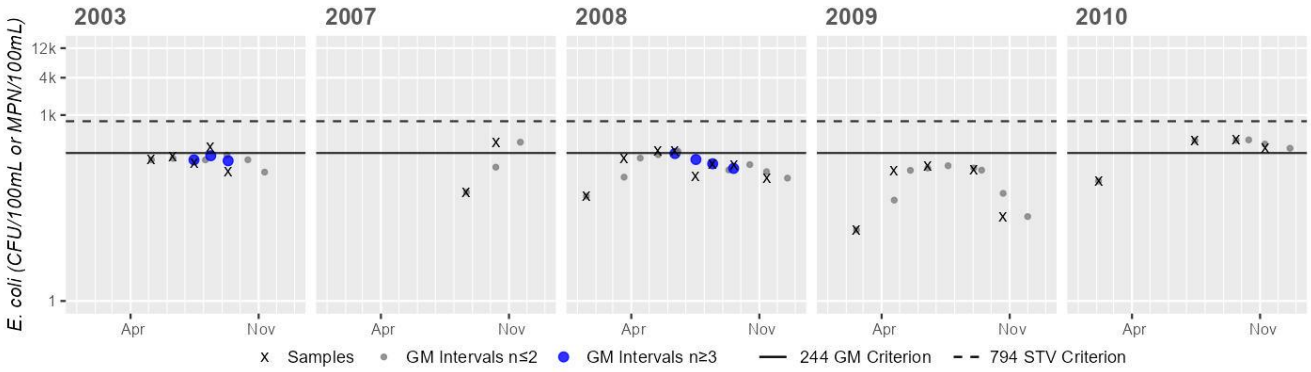
Cumulative %GMI Exceedance Historic (1997-2010)
0%

Cumulative %GMI Exceedance Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W0681 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	189
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	144
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	8
SeasGM	142
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	60
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

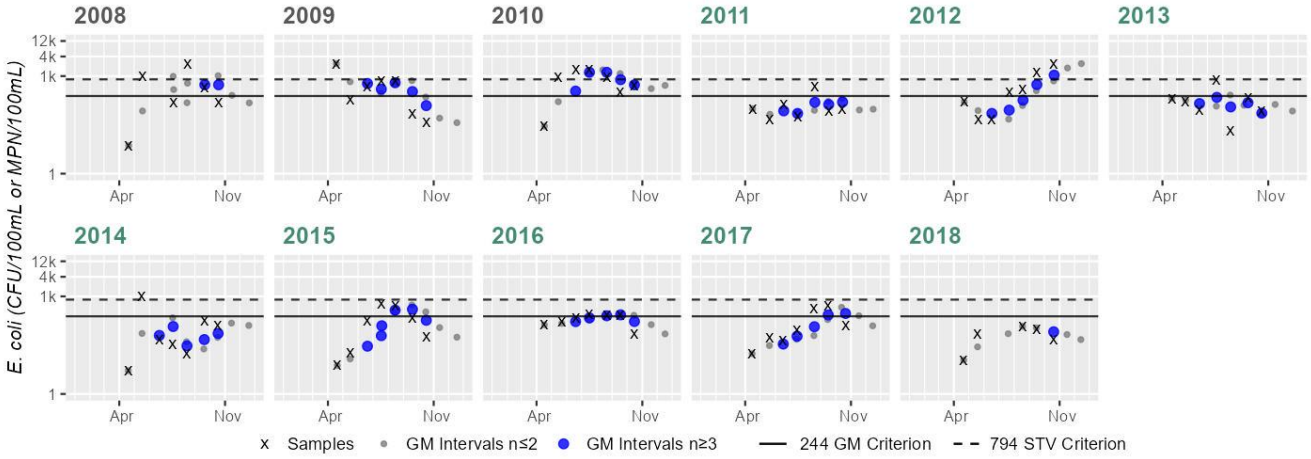
Variable*	Result
Samples	4
SeasGM	249
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_SN0169 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	235
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	7
SeasGM	311
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	517
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	4
%n>STV	57%

Variable*	Result
Samples	7
SeasGM	105
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	281
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	135
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	61
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	98
#GMI	6
#GMI Ex	2
%GMI Ex	33%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	181
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	99
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	53
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)
91%

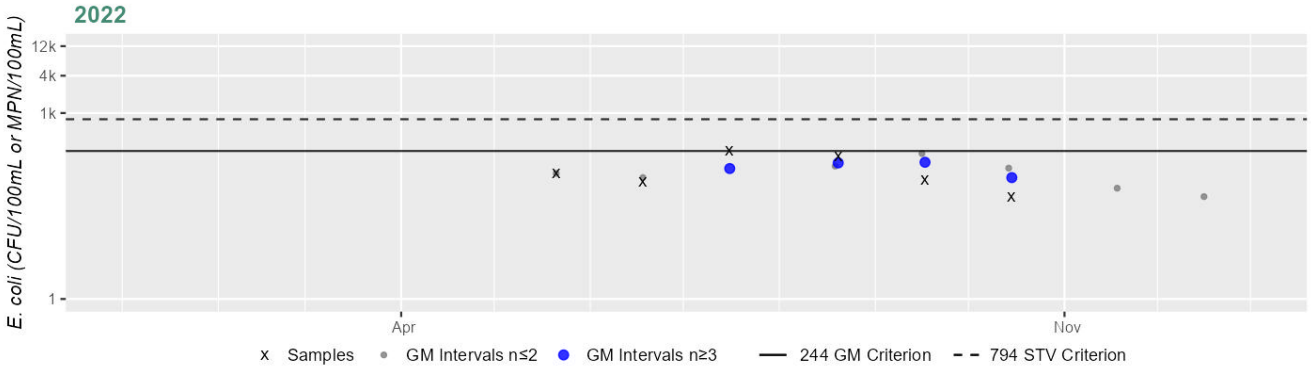
Cumulative %GMI Exceedance Current (2011-2022)
21%

Cumulative %GMI Exceedance Current (Recent 5 Years)
27%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_SN2462 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	107
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

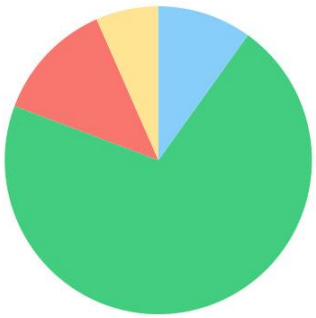
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Nissitissit River (MA81-21)

Location:	New Hampshire state line, Pepperell to mouth at confluence with Nashua River, Pepperell.
AU Type:	RIVER
AU Size:	4.6 MILES
Classification/Qualifier:	B: ORW, CWF

Nissitissit River (MA81-21)

Watershed Area: 60.73 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	14.51	6.85	3.89	2.26
Agriculture	6.6%	10.4%	7%	10.2%
Developed	12.7%	17.2%	9.6%	11.9%
Natural	70.8%	61.3%	66.6%	60.2%
Wetland	9.9%	11.1%	16.8%	17.7%
Impervious	4.6%	6.3%	3.4%	4.1%

**Land cover analysis only includes watershed area within Massachusetts.*

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Escherichia Coli (E. Coli)	--	Added
5	5	Lack of a Coldwater Assemblage	--	Unchanged
5	5	Temperature	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--
Lack of a Coldwater Assemblage	Source Unknown (N)	X	--	--	--	--
Temperature	Dam or Impoundment (Y)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Temperature	Source Unknown (N)	X	--	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Nissitissit River (MA81-21) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Nissitissit River (MA81-21) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for the Nissitissit River (MA81-21) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at 2 stations in 2013, 2014, 2016, 2017, 2018-2022 and the prior Alert is being removed. Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in the Nissitissit River from 2011-2022 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: nearly halfway down at NRWA_NT0418 [U.S. of Prescott St. bridge, Pepperell] from 2011-2017 and 2022 (n=4-7/yr), and close to the downstream end at NRWA_NT0082 [U.S. from mouth, behind Lomar park, Pepperell] from 2011-2022 (n=4-9/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from NRWA_NT0418 indicated 3 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2014, 2017, and 2022, 20-100%), 1 yr had ≥2 samples exceed the 410 CFU/100ml STV (2022, n=2), and cumulatively across years 33% of intervals had GMs >126 CFU/100ml. Analysis of the recent five years of this multi-year limited frequency *E. coli* dataset from NRWA_NT0082 indicated 5 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2018-2022, 66-100%), 0 yrs had ≥2 samples exceed the 410 CFU/100ml STV, and cumulatively across years 74% of intervals had GMs >126 CFU/100ml. *E. coli* data from NRWA_NT0418 and NRWA_NT0082 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_NT0082	Nashua River Watershed Association	Water Quality	Nissitissit River	U.S. from mouth, behind Lomar park, Pepperell	42.672980	-71.566960
NRWA_NT0418	Nashua River Watershed Association	Water Quality	Nissitissit River	U.S. of Prescott St. bridge, Pepperell	42.692500	-71.591100

Bacteria Data

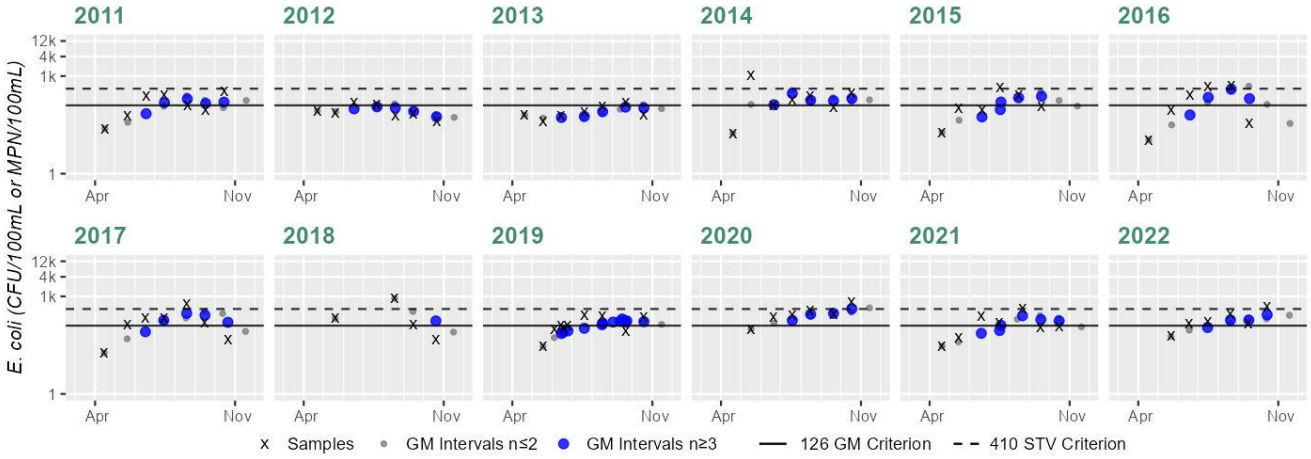
Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)
(NRWA 2022) (MassDEP Undated 2)
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_NT0082	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	24	344	119
NRWA_NT0082	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	41	148	80
NRWA_NT0082	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	41	150	75

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_NT0082	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	17	1046	167
NRWA_NT0082	Nashua River Watershed Association	E. coli	04/20/15	09/19/15	6	18	435	115
NRWA_NT0082	Nashua River Watershed Association	E. coli	04/16/16	09/17/16	6	11	517	113
NRWA_NT0082	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	18	579	124
NRWA_NT0082	Nashua River Watershed Association	E. coli	05/19/18	10/20/18	4	47	866	184
NRWA_NT0082	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	9	29	260	122
NRWA_NT0082	Nashua River Watershed Association	E. coli	05/16/20	10/17/20	6	99	686	275
NRWA_NT0082	Nashua River Watershed Association	E. coli	04/20/21	10/16/21	7	29	410	119
NRWA_NT0082	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	59	488	173
NRWA_NT0418	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	20	285	91
NRWA_NT0418	Nashua River Watershed Association	E. coli	05/19/12	10/20/12	6	48	204	83
NRWA_NT0418	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	6	33	116	73
NRWA_NT0418	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	27	517	100
NRWA_NT0418	Nashua River Watershed Association	E. coli	04/20/15	09/19/15	4	5	248	38
NRWA_NT0418	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	6	145	52
NRWA_NT0418	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	32	307	103
NRWA_NT0418	Nashua River Watershed Association	E. coli	07/25/22	08/31/22	4	34	980	182

Station NRWA_NT0082 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	119
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	80
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	75
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	167
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	115
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	6
SeasGM	113
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	7
SeasGM	124
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	4
SeasGM	184
#GMI	1
#GMI Ex	1
%GMI Ex	100%
n>STV	1
%n>STV	25%

Variable*	Result
Samples	9
SeasGM	122
#GMI	12
#GMI Ex	8
%GMI Ex	66%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	275
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	7
SeasGM	119
#GMI	6
#GMI Ex	4
%GMI Ex	66%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	173
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	1
%n>STV	16%

Cumulative %GMI Exceedance Current (2011-2022)

63%

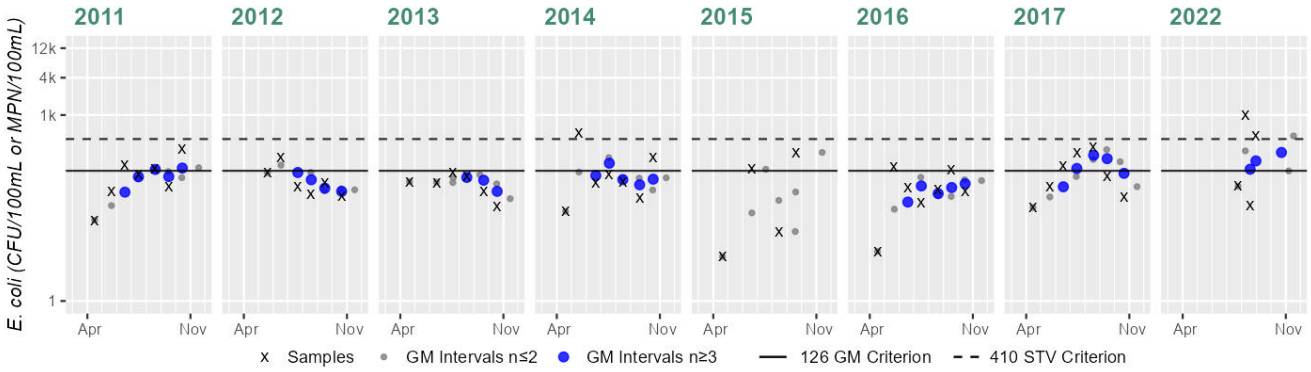
Cumulative %GMI Exceedance Current (Recent 5 Years)

74%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NT0418 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	91
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	83
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	73
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	100
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	4
SeasGM	38
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	52
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	103
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	182
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	2
%n>STV	50%

Cumulative %GMI Exceedance Current (2011-2022)

30%

Cumulative %GMI Exceedance Current (Recent 5 Years)

33%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for the Nissitissit River (MA81-21) continues to be assessed as Fully Supporting. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in the Nissitissit River from 1998-2022 at 4 stations. Samples were collected from the following stations/sample years from upstream to downstream: upstream of the AU at W1815 [W Hollis Rd, Hollis, New Hampshire] from May-Sep 2008 (n=6), nearly halfway down at NRWA_NT0418 [U.S. of Prescott St. bridge, Pepperell] from 2008-2010 (historic n=6-7/yr) and 2011-2017 and 2022 (current n=4-7/yr), just over three-quarters of the way down at W0486 [Mill St, Pepperell] in 1998, 2003, and 2008 (n=1-6/yr), and close to the downstream end at NRWA_NT0082 [U.S. from mouth, behind Lomar park, Pepperell] from 2008-2010 (historic n=6-7/yr) and 2011-2022 (current n=4-9/yr). Since bacteria data from the historic IR window are all indicative of good water quality conditions, only the analysis from the current IR window (2 stations) will be summarized here: Analysis of the recent five years of the multi-year moderate frequency *E. coli* dataset from NRWA_NT0418 indicated 1 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2022, 33%), 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 4% of intervals had GMs >244 CFU/100ml. Analysis of the recent five years of this multi-year limited frequency *E. coli* dataset from NRWA_NT0082 indicated 2 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2020 and 2022, 75 & 25%), 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 18% of intervals had GMs >244 CFU/100ml. *E. coli* data from NRWA_NT0418 and NRWA_NT0082 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0486	MassDEP	Water Quality	Nissitissit River	[Mill Street, Pepperell]	42.671730	-71.577031
W1815	MassDEP	Water Quality	Nissitissit River	[West Hollis Road, Hollis, New Hampshire]	42.705237	-71.620769
NRWA_NT0082	Nashua River Watershed Association	Water Quality	Nissitissit River	U.S. from mouth, behind Lomar park, Pepperell	42.672980	-71.566960
NRWA_NT0418	Nashua River Watershed Association	Water Quality	Nissitissit River	U.S. of Prescott St. bridge, Pepperell	42.692500	-71.591100

Bacteria Data

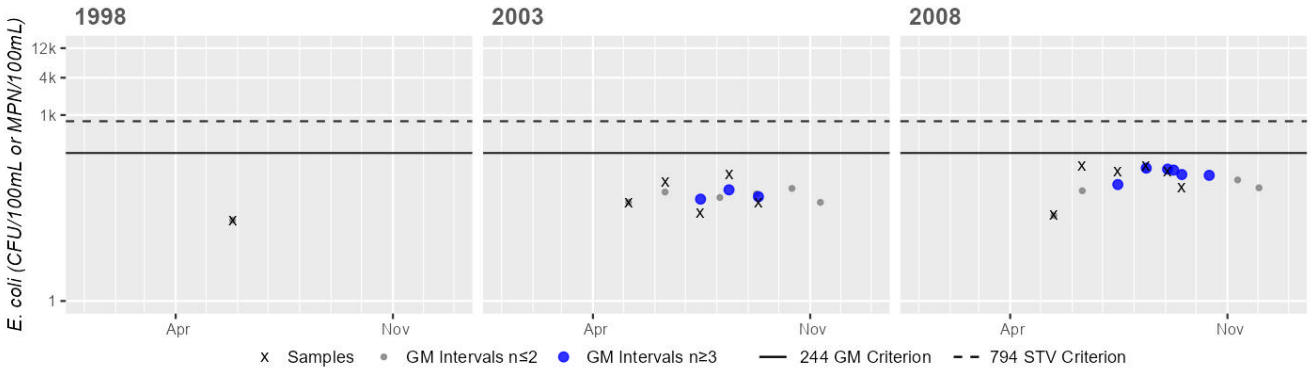
Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)
(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W0486	MassDEP	E. coli	05/27/98	05/27/98	1	20	20	19
W0486	MassDEP	E. coli	05/06/03	09/11/03	5	26	110	51
W0486	MassDEP	E. coli	05/13/08	09/16/08	6	24	150	89
W1815	MassDEP	E. coli	05/13/08	09/16/08	6	33	310	129
NRWA_NT0082	Nashua River Watershed Association	E. coli	04/19/08	10/18/08	6	48	2419	233
NRWA_NT0082	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	32	1553	148
NRWA_NT0082	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	7	74	325	148
NRWA_NT0082	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	24	344	119
NRWA_NT0082	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	41	148	80
NRWA_NT0082	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	41	150	75
NRWA_NT0082	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	17	1046	167
NRWA_NT0082	Nashua River Watershed Association	E. coli	04/20/15	09/19/15	6	18	435	115
NRWA_NT0082	Nashua River Watershed Association	E. coli	04/16/16	09/17/16	6	11	517	113
NRWA_NT0082	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	18	579	124
NRWA_NT0082	Nashua River Watershed Association	E. coli	05/19/18	10/20/18	4	47	866	184
NRWA_NT0082	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	9	29	260	122
NRWA_NT0082	Nashua River Watershed Association	E. coli	05/16/20	10/17/20	6	99	686	275
NRWA_NT0082	Nashua River Watershed Association	E. coli	04/20/21	10/16/21	7	29	410	119
NRWA_NT0082	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	59	488	173
NRWA_NT0418	Nashua River Watershed Association	E. coli	04/19/08	10/18/08	6	13	193	74

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_NT0418	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	37	248	112
NRWA_NT0418	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	7	32	275	85
NRWA_NT0418	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	20	285	91
NRWA_NT0418	Nashua River Watershed Association	E. coli	05/19/12	10/20/12	6	48	204	83
NRWA_NT0418	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	6	33	116	73
NRWA_NT0418	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	27	517	100
NRWA_NT0418	Nashua River Watershed Association	E. coli	04/20/15	09/19/15	4	5	248	38
NRWA_NT0418	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	6	145	52
NRWA_NT0418	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	32	307	103
NRWA_NT0418	Nashua River Watershed Association	E. coli	07/25/22	08/31/22	4	34	980	182

Station MASSDEP_W0486 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	1
SeasGM	20
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	51
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

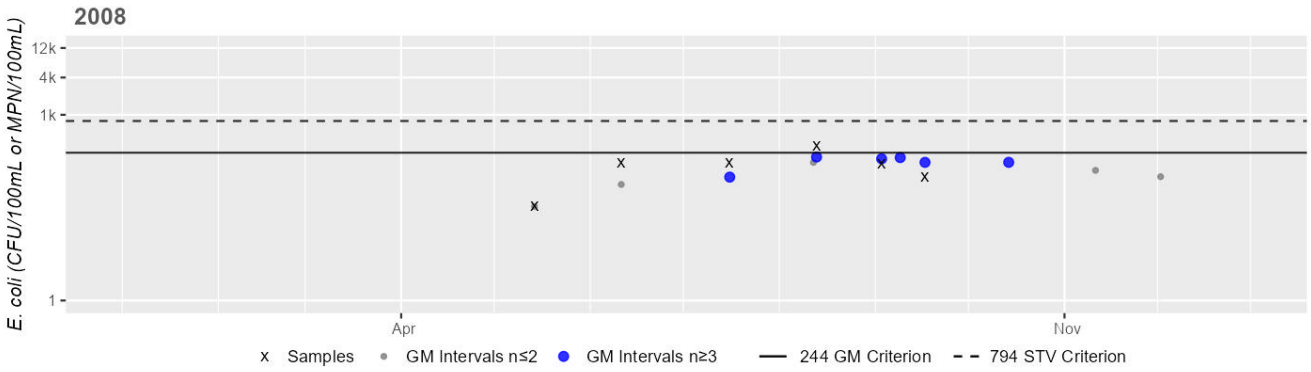
Variable*	Result
Samples	6
SeasGM	89
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W1815 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



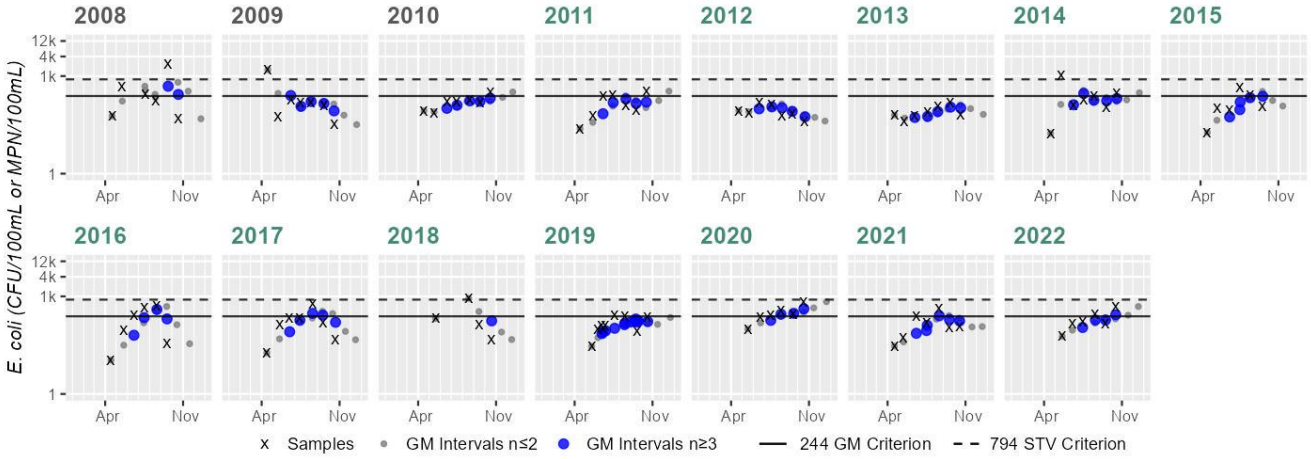
Variable*	Result
Samples	6
SeasGM	129
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NT0082 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	233
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	7
SeasGM	148
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	148
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	119
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	80
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	75
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	167
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	115
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	113
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	124
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	184
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	25%

Variable*	Result
Samples	9
SeasGM	122
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	275
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	119
#GMI	6
#GMI Ex	1
%GMI Ex	16%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	173
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
25%

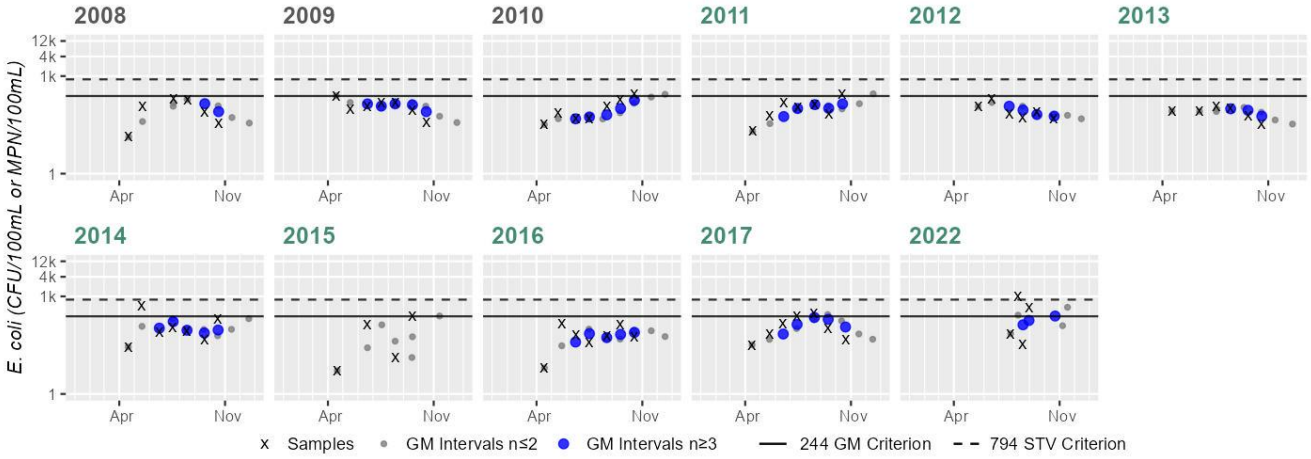
Cumulative %GMI Exceedance
Current (2011-2022)
14%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
18%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NT0418 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	74
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	112
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	85
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	91
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	83
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	73
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	100
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	38
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	52
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	103
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	182
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	1
%n>STV	25%

Cumulative %GMI Exceedance Historic (1997-2010)
0%

Cumulative %GMI Exceedance Current (2011-2022)
3%

Cumulative %GMI Exceedance Current (Recent 5 Years)
4%

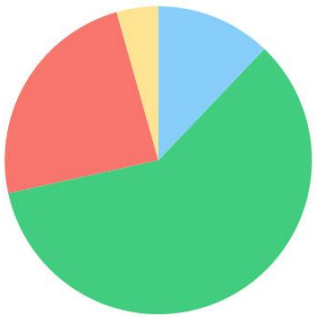
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Nonacoicus Brook (MA81-17)

Location:	Outlet Plow Shop Pond, Ayer to mouth at confluence with Nashua River, Ayer/Shirley.
AU Type:	RIVER
AU Size:	1.4 MILES
Classification/Qualifier:	B

Nonacoicus Brook (MA81-17)

Watershed Area: 18.71 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	18.71	9.46	5.30	2.41
Agriculture	4.4%	3%	2.9%	1.2%
Developed	24.1%	34.8%	14.4%	21.8%
Natural	59.4%	52.9%	60.7%	57.7%
Wetland	12.1%	9.3%	22%	19.4%
Impervious	11.4%	16.8%	6.8%	10.5%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Dissolved Oxygen	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Dissolved Oxygen	Source Unknown (N)	X	--	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Nonacoicus Brook (MA81-17) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Nonacoicus Brook (MA81-17) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Nonacoicus Brook (MA81-17) continues to be assessed as Fully Supporting. Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in Nonacoicus Brook from 2011-2022 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: close to the upstream end at NRWA_NB1947 [Shirley St Bridge, Ayer] from 2017-2022 (n=4-7/yr), and the downstream end of the AU at NRWA_NB0006 [U.S from Bishop Rd. bridge, Devens] from 2011-2016 (n=2-6/yr). Analysis of the recent five years of this multi-year limited frequency *E. coli* dataset from NRWA_NB1947 indicated 0 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml, 0 yrs had ≥2 samples exceed the 410 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >126 CFU/100ml. Analysis of the multi-year limited frequency *E. coli* dataset from NRWA_NB0006 indicated 1 out of 3 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2014, 100%), 0 yrs had ≥2 samples exceed the 410 CFU/100ml STV, and cumulatively across years 12% of intervals had GMs >126 CFU/100ml. *E. coli* data from NRWA_NB1947 and NRWA_NB0006 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_NB0006	Nashua River Watershed Association	Water Quality	Nonacoicus Brook	U.S from Bishop Rd. bridge, Devens	42.561800	-71.610400

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_NB1947	Nashua River Watershed Association	Water Quality	Nonacoicus Brook	Shirley Street Bridge, Ayer	42.559440	-71.596690

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

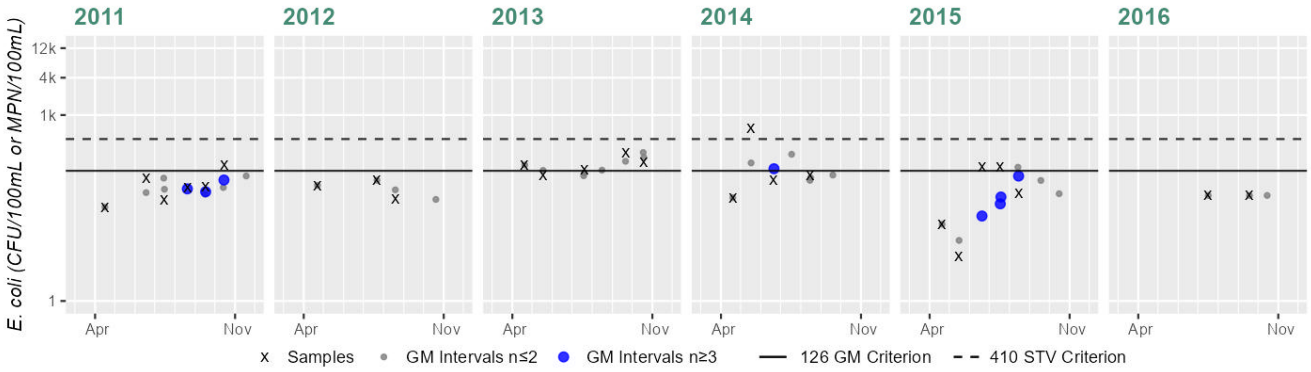
(NRWA 2022) (MassDEP Undated 2)

[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
NRWA_NB0006	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	6	32	156	67
NRWA_NB0006	Nashua River Watershed Association	E. coli	04/21/12	08/18/12	3	43	88	65
NRWA_NB0006	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	5	104	248	155
NRWA_NB0006	Nashua River Watershed Association	E. coli	04/19/14	08/16/14	4	46	613	128
NRWA_NB0006	Nashua River Watershed Association	E. coli	04/20/15	08/15/15	5	5	143	39
NRWA_NB0006	Nashua River Watershed Association	E. coli	07/16/16	09/17/16	2	50	50	50
NRWA_NB1947	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	5	133	17
NRWA_NB1947	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	7	135	30
NRWA_NB1947	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	9	224	25
NRWA_NB1947	Nashua River Watershed Association	E. coli	05/16/20	10/17/20	5	9	410	41
NRWA_NB1947	Nashua River Watershed Association	E. coli	05/15/21	10/16/21	4	6	65	31
NRWA_NB1947	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	5	6	36	19

Station NRWA_NB0006 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	67
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	3
SeasGM	65
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	155
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	128
#GMI	1
#GMI Ex	1
%GMI Ex	100%
n>STV	1
%n>STV	25%

Variable*	Result
Samples	5
SeasGM	39
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

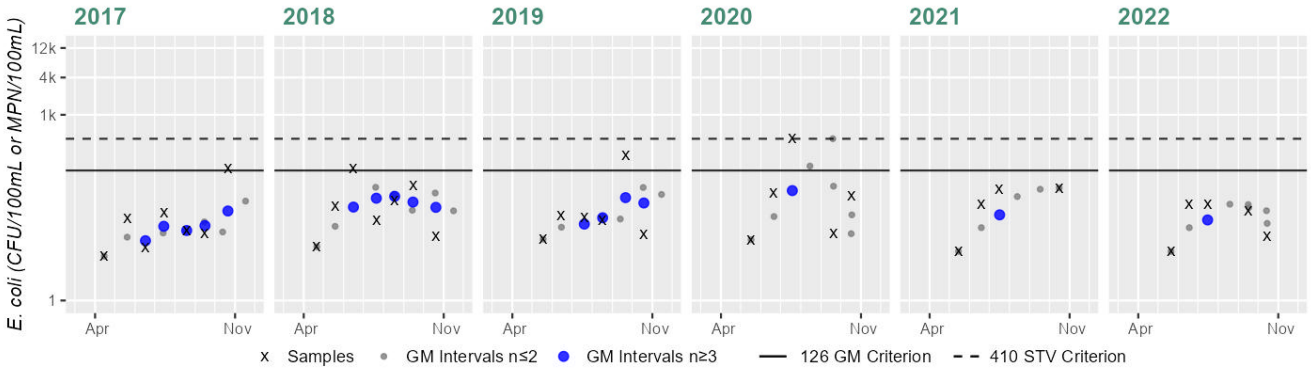
Variable*	Result
Samples	2
SeasGM	50
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
12%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NB1947 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	17
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	30
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	25
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	41
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	20%

Variable*	Result
Samples	4
SeasGM	31
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	19
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Nonacoicus Brook (MA81-17) continues to be assessed as Fully Supporting. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in Nonacoicus Brook from 2003-2022 at 3 stations. Samples were collected from the following stations/sample years from upstream to downstream: close to the upstream end at NRWA_NB1947 [Shirley St Bridge, Ayer] from 2017-2022 (n=4-7/yr), and close to the upstream end at NRWA_NB0006 [U.S from Bishop Rd. bridge, Devens] from 2009-2010 (historic n=2-6/yr) and 2011-2016 (current n=2-6/yr), and W1813 [MacPherson Rd, Ayer] in 2003 and 2008 (n=5-6/yr). Since bacteria data from the historic IR window are indicative of good water quality conditions, only the analysis from the current IR window (2 stations) will be summarized here. Analysis of the recent five years of this multi-year limited frequency *E. coli* dataset from NRWA_NB1947 indicated 0 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml, 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. Analysis of the multi-year limited frequency *E. coli* dataset from NRWA_NB0006 indicated 0 out of 3 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml, 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. *E. coli* data from NRWA_NB1947 and NRWA_NB0006 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1813	MassDEP	Water Quality	Nonacoicus Brook	[MacPherson Road, Ayer]	42.562114	-71.610616
NRWA_NB0006	Nashua River Watershed Association	Water Quality	Nonacoicus Brook	U.S from Bishop Rd. bridge, Devens	42.561800	-71.610400
NRWA_NB1947	Nashua River Watershed Association	Water Quality	Nonacoicus Brook	Shirley Street Bridge, Ayer	42.559440	-71.596690

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

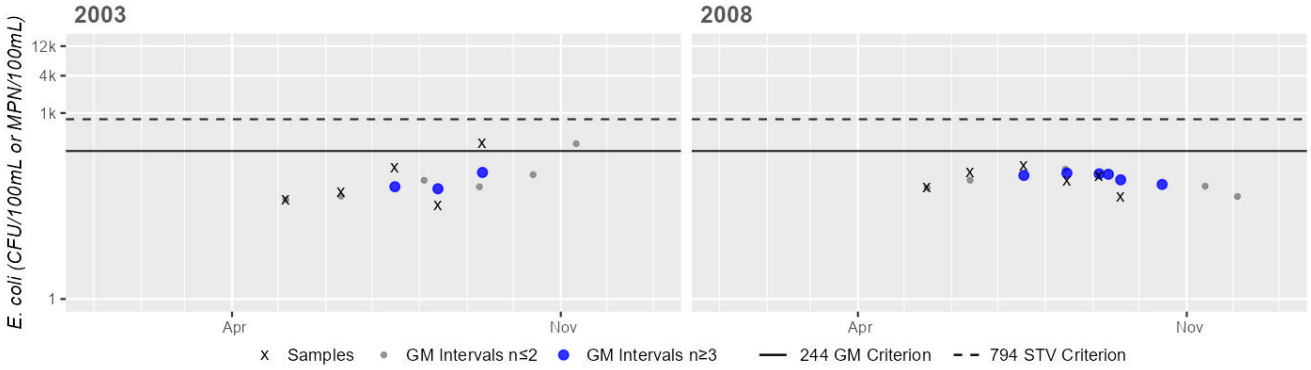
(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

[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
W1813	MassDEP	E. coli	05/06/03	09/11/03	5	32	320	77
W1813	MassDEP	E. coli	05/15/08	09/18/08	6	45	140	83
NRWA_NB0006	Nashua River Watershed Association	E. coli	07/18/09	08/15/09	2	52	52	52
NRWA_NB0006	Nashua River Watershed Association	E. coli	04/17/10	09/18/10	6	34	547	176
NRWA_NB0006	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	6	32	156	67
NRWA_NB0006	Nashua River Watershed Association	E. coli	04/21/12	08/18/12	3	43	88	65
NRWA_NB0006	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	5	104	248	155
NRWA_NB0006	Nashua River Watershed Association	E. coli	04/19/14	08/16/14	4	46	613	128
NRWA_NB0006	Nashua River Watershed Association	E. coli	04/20/15	08/15/15	5	5	143	39
NRWA_NB0006	Nashua River Watershed Association	E. coli	07/16/16	09/17/16	2	50	50	50
NRWA_NB1947	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	5	133	17
NRWA_NB1947	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	7	135	30
NRWA_NB1947	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	9	224	25
NRWA_NB1947	Nashua River Watershed Association	E. coli	05/16/20	10/17/20	5	9	410	41
NRWA_NB1947	Nashua River Watershed Association	E. coli	05/15/21	10/16/21	4	6	65	31
NRWA_NB1947	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	5	6	36	19

Station MASSDEP_W1813 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	77
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

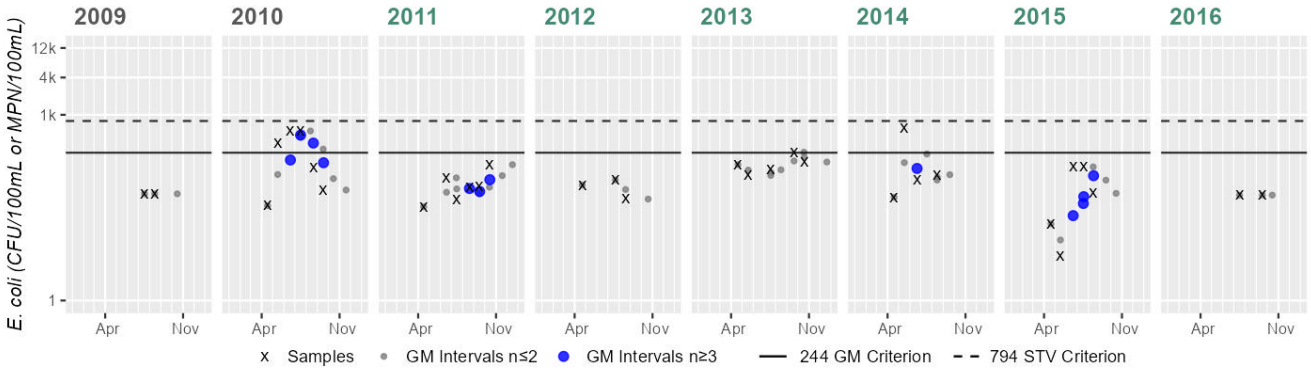
Variable*	Result
Samples	6
SeasGM	83
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NB0006 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	2
SeasGM	52
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	176
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	67
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	3
SeasGM	65
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	155
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	128
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	39
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	50
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

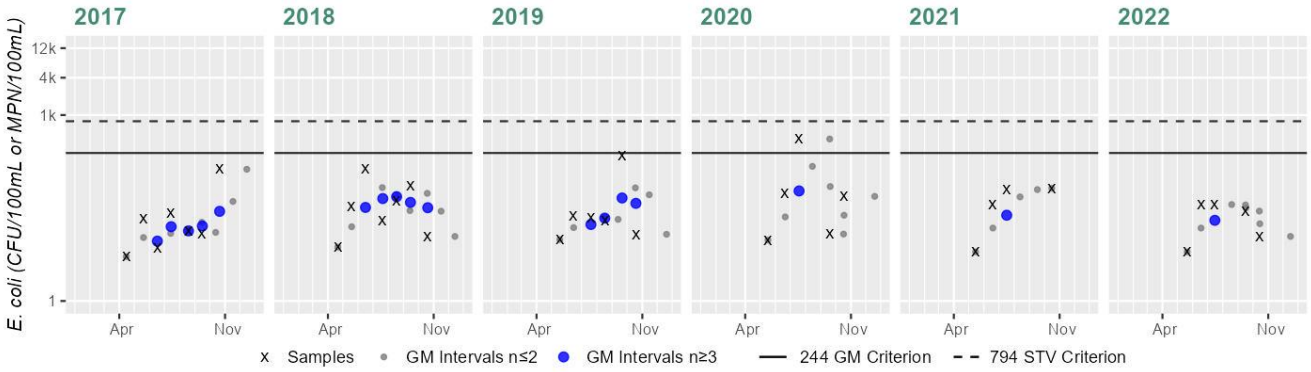
Cumulative %GMI Exceedance
Historic (1997-2010)
50%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NB1947 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	17
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	30
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	25
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	41
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	31
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	19
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Current (2011-2022)

0%

Cumulative %GMI Exceedance Current (Recent 5 Years)

0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

North Nashua River (MA81-01)

Location:	Headwaters, outlet Snows Millpond, Fitchburg to Fitchburg Paper Company Dam #1 (NATID: MA00877), Fitchburg.
AU Type:	RIVER
AU Size:	1.7 MILES
Classification/Qualifier:	B: WWF, CSO

North Nashua River (MA81-01)

Watershed Area: 58.71 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	58.71	13.90	19.28	4.54
Agriculture	2.9%	3.9%	2.2%	4.7%
Developed	11.9%	16.2%	11.2%	15.6%
Natural	78.6%	76.3%	75.9%	72.4%
Wetland	6.6%	3.7%	10.6%	7.3%
Impervious	5.3%	7.8%	5.5%	8.7%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Combined Sewer Overflows (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for North Nashua River (MA81-01) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for North Nashua River (MA81-01) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for the North Nashua River (MA81-01) continues to be assessed as Not Supporting. The prior Escherichia Coli (E. Coli) impairment is being carried forward based on the presence of CSOs and bacteria data not meeting the threshold at 1 station in 2015-2019. There is a presumptive Escherichia Coli (E. Coli) impairment decision in place due to the presence of active CSO outfalls. Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in the North Nashua River at NRWA_NN3071 [Mill # 3 Farm Stand, Fitchburg] from 2011-2019 (n=6-7/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from NRWA_NN3071 indicated 3 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2015-2016 and 2018, 50-75%), 1 yr had ≥2 samples exceed the 410 CFU/100ml STV (2016, n=2), and cumulatively across years 41%. *E. coli* data from NRWA_NN3071 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

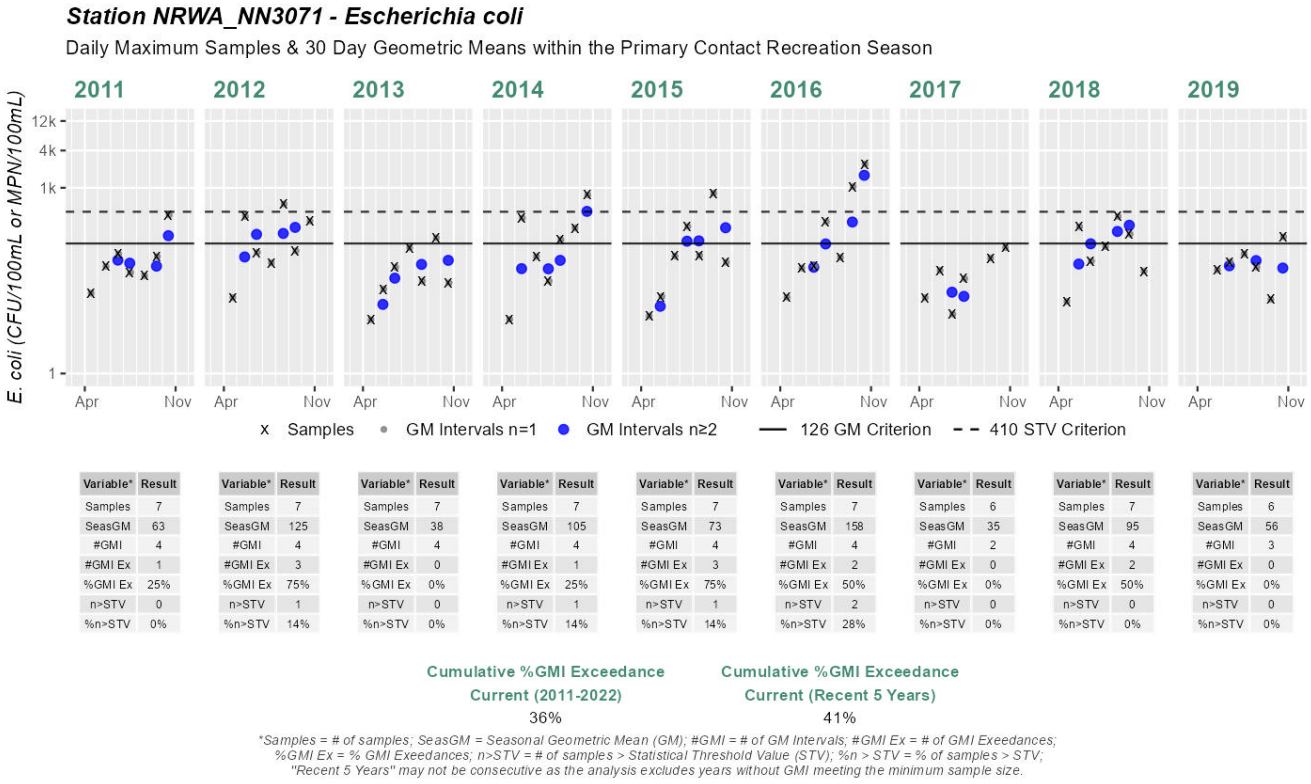
Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_NN3071	Nashua River Watershed Association	Water Quality	North Nashua River	Mill # 3 Farm Stand, Fitchburg	42.575300	-71.834300

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (30-day Interval Analysis)
(NRWA 2022) (MassDEP Undated 2)
[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
NRWA_NN3071	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	19	365	63
NRWA_NN3071	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	16	547	125
NRWA_NN3071	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	7	155	38
NRWA_NN3071	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	7	770	105
NRWA_NN3071	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	8	816	73
NRWA_NN3071	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	17	2419	158

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_NN3071	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	6	9	108	35
NRWA_NN3071	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	14	344	95
NRWA_NN3071	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	15	161	56



Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for the North Nashua River (MA81-01) is assessed as Not Supporting. There is a presumptive Escherichia Coli (E. Coli) impairment decision in place due to the presence of active CSO outfalls and an Escherichia Coli (E. Coli) impairment is being added. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in the North Nashua River from 1998-2019 at 4 stations. Samples were collected from the following stations/sample years from upstream to downstream: close to the upstream end at W0479 [Rt. 31 bridge, Fitchburg. (slightly upstream of impoundment receiving W Fitchburg WWTF (MA0101281) discharge)] in May 1998 (n=1), halfway down at W0990 [Mill #9 bridge, Fitchburg (~0.8 miles downstream from W Fitchburg WWTF (MA0101281) discharge)] from May-Sep 2003 (n=5), and close to the downstream end of the AU at NRWA_NN3071 [Mill # 3 Farm Stand, Fitchburg] from Apr-Oct 2010 (historic n=7) and 2011-2019 (current n=6-7/yr), and W1780 [~340 ft downstream of Depot St, Fitchburg] from May-Sep 2008 (n=6). Since bacteria data from the historic IR window are all indicative of good water quality conditions, only the analysis from the current IR window (1 station) will be summarized here. Analysis of the recent five years of the multi-year moderate frequency *E. coli* dataset from NRWA_NN3071 indicated 1 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2016, 40%), 1 yr had ≥2 samples exceed the 794 CFU/100ml STV (2016, n=2), and cumulatively across years 13% of intervals had GMs >244 CFU/100ml. *E. coli* data from NRWA_NN3071 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0479	MassDEP	Water Quality	North Nashua River	[Route 31 bridge, Fitchburg. (slightly upstream of impoundment receiving West Fitchburg WWTF (MA0101281) discharge)]	42.562937	-71.846393
W0990	MassDEP	Water Quality	North Nashua River	[Mill #9 bridge, Fitchburg (approximately 0.8 miles downstream from West Fitchburg WWTF (MA0101281) discharge)]	42.571549	-71.840307
W1780	MassDEP	Water Quality	North Nashua River	[approximately 340 feet downstream of Depot Street, Fitchburg]	42.575748	-71.833559
NRWA_NN3071	Nashua River Watershed Association	Water Quality	North Nashua River	Mill # 3 Farm Stand, Fitchburg	42.575300	-71.834300

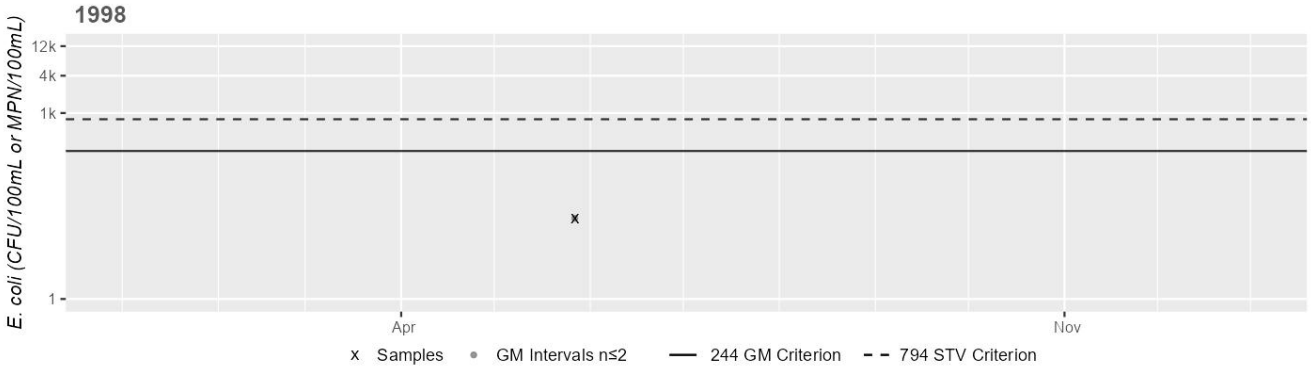
Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)
(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)
[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
W0479	MassDEP	E. coli	05/27/98	05/27/98	1	20	20	19
W0990	MassDEP	E. coli	05/06/03	09/11/03	5	6	1400	39
W1780	MassDEP	E. coli	05/15/08	09/18/08	6	45	11000	173
NRWA_NN3071	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	7	5	1046	106
NRWA_NN3071	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	19	365	63
NRWA_NN3071	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	16	547	125
NRWA_NN3071	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	7	155	38
NRWA_NN3071	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	7	770	105
NRWA_NN3071	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	8	816	73
NRWA_NN3071	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	17	2419	158
NRWA_NN3071	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	6	9	108	35
NRWA_NN3071	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	14	344	95
NRWA_NN3071	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	15	161	56

Station MASSDEP_W0479 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



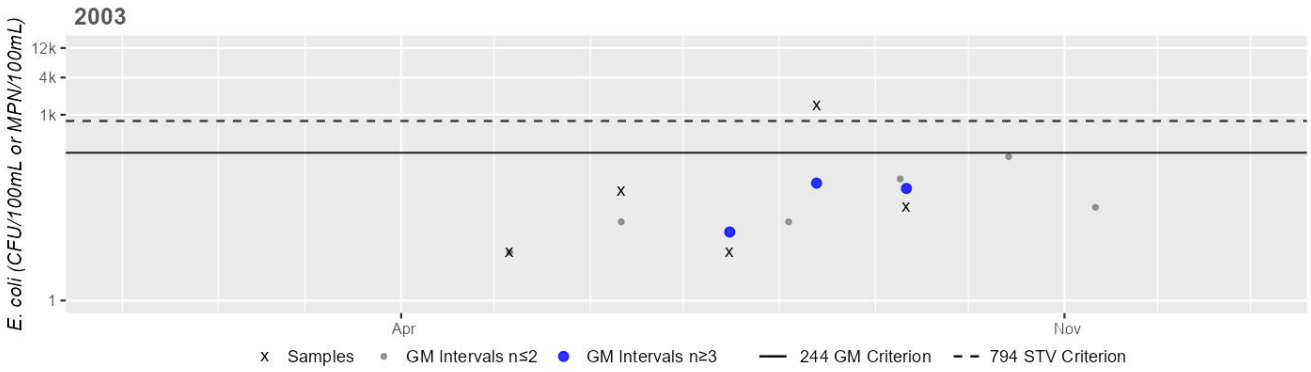
Variable*	Result
Samples	1
SeasGM	20
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W0990 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



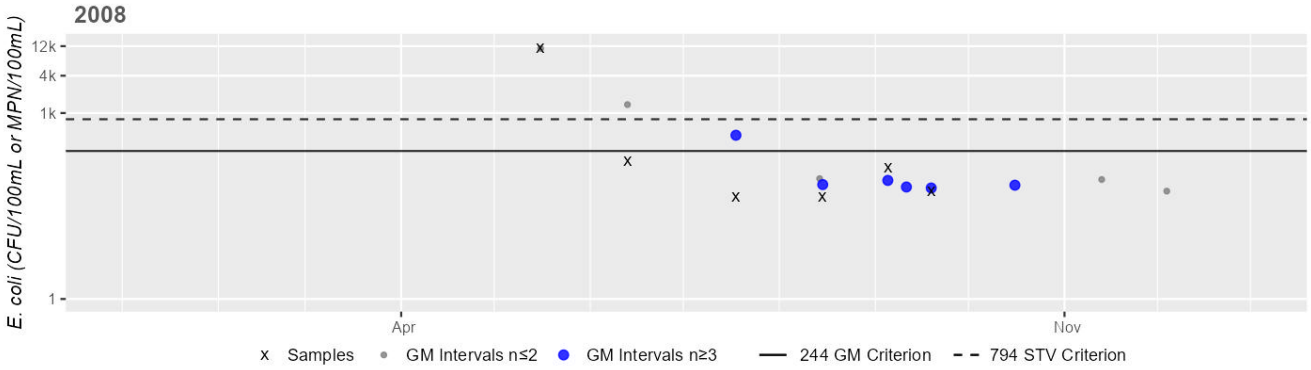
Variable*	Result
Samples	5
SeasGM	39
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	20%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W1780 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



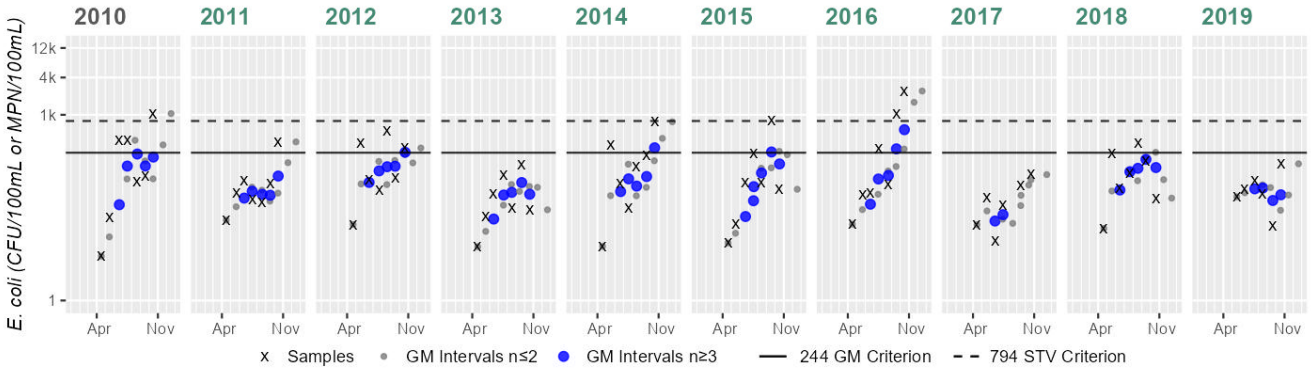
Variable*	Result
Samples	6
SeasGM	173
#GMI	6
#GMI Ex	1
%GMI Ex	16%
n>STV	1
%n>STV	16%

Cumulative %GMI Exceedance
Historic (1997-2010)
16%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NN3071 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	106
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	63
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	125
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	38
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	105
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	73
#GMI	6
#GMI Ex	1
%GMI Ex	16%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	158
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	6
SeasGM	35
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	95
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	56
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

Cumulative %GMI Exceedance
Current (2011-2022)
11%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
13%

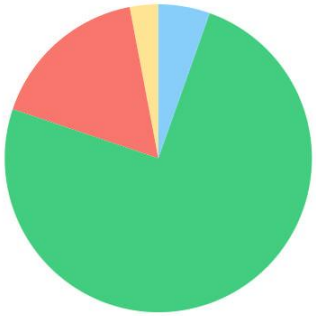
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

North Nashua River (MA81-02)

Location:	From Fitchburg Paper Company Dam #1 (NATID: MA00877), Fitchburg to Fitchburg East WWTP outfall (NPDES: MA0100986), Leominster.
AU Type:	RIVER
AU Size:	6.9 MILES
Classification/Qualifier:	B: WWF, CSO

North Nashua River (MA81-02)

Watershed Area: 86.49 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	86.49	5.99	28.17	1.37
Agriculture	3%	2.2%	2.3%	0.7%
Developed	16.8%	47.5%	13%	35.4%
Natural	74.7%	45%	75.6%	51.9%
Wetland	5.4%	5.3%	9.2%	12%
Impervious	8.5%	27.5%	6.7%	20.6%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Ambient Bioassays - Chronic Aquatic Toxicity	--	Unchanged
5	5	Benthic Macroinvertebrates	--	Unchanged
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
5	5	Fish Bioassessments	--	Unchanged
5	5	Lead	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Ambient Bioassays - Chronic Aquatic Toxicity	Source Unknown (N)	X	--	--	--	--
Benthic Macroinvertebrates	Source Unknown (N)	X	--	--	--	--
Escherichia Coli (E. Coli)	Combined Sewer Overflows (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Illegal Dumps or Other Inappropriate Waste Disposal (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Illicit Connections/Hook-ups to Storm Sewers (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Wet Weather Discharges (Non-Point Source) (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO) (Y)	--	--	--	X	X
Fish Bioassessments	Source Unknown (N)	X	--	--	--	--
Lead	Source Unknown (N)	X	--	--	--	--

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for North Nashua River (MA81-02) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for North Nashua River (MA81-02) continues to be assessed as Fully Supporting. MassDEP staff recorded aesthetics observations at one station for this North Nashua River AU as part of the MAP2 wadeable streams monitoring project during the summer of 2011, at the upstream end of the AU ~200 feet downstream from Mill Pond #1 Dam (MA00877), Fitchburg (W2200, n=6). There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2200	MassDEP	Water Quality	North Nashua River	[approximately 200 feet downstream from Mill Pond #1 Dam (MA00877), Fitchburg]	42.578712	-71.829957

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2200	2011	6	Aesthetic observations were made by MassDEP field sampling crews at Station W2200 on North Nashua River (MA81-02) during 6 site visits between May 2011 and Sep 2011. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2200	2011	6	5	4

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2200	North Nashua River	2011	Aquatic Plant Density, Overall	None	4	6
W2200	North Nashua River	2011	Aquatic Plant Density, Overall	Sparse	1	6
W2200	North Nashua River	2011	Aquatic Plant Density, Overall	Unobservable	1	6
W2200	North Nashua River	2011	Color	Brownish	1	6
W2200	North Nashua River	2011	Color	Light Yellow/Tan	4	6
W2200	North Nashua River	2011	Color	None	1	6
W2200	North Nashua River	2011	Objectionable Deposits	No	4	6
W2200	North Nashua River	2011	Objectionable Deposits	Unobservable	1	6
W2200	North Nashua River	2011	Objectionable Deposits	Yes	1	6
W2200	North Nashua River	2011	Odor	Musty (Basement)	1	6
W2200	North Nashua River	2011	Odor	None	4	6
W2200	North Nashua River	2011	Odor	Unobservable	1	6
W2200	North Nashua River	2011	Periphyton Density, Filamentous	None	4	6
W2200	North Nashua River	2011	Periphyton Density, Filamentous	Sparse	1	6
W2200	North Nashua River	2011	Periphyton Density, Filamentous	Unobservable	1	6
W2200	North Nashua River	2011	Periphyton Density, Film	Dense	3	6
W2200	North Nashua River	2011	Periphyton Density, Film	Moderate	1	6

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2200	North Nashua River	2011	Periphyton Density, Film	Unobservable	1	6
W2200	North Nashua River	2011	Periphyton Density, Film	Very Dense	1	6
W2200	North Nashua River	2011	Scum	No	4	6
W2200	North Nashua River	2011	Scum	Yes	2	6
W2200	North Nashua River	2011	Turbidity	Moderately Turbid	1	6
W2200	North Nashua River	2011	Turbidity	None	5	6

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for the North Nashua River (MA81-02) continues to be assessed as Not Supporting. The prior Escherichia Coli (E. Coli) impairment is being carried forward based on the presence of CSOs and bacteria data not meeting the threshold at 2 stations in 2013-2022. There is a presumptive Escherichia Coli (E. Coli) impairment decision in place due to the presence of active CSO outfalls. Surface water sampling was conducted by the USGS upstream of the East Fitchburg WWTF discharge on the North Nashua River (MA81-02) at station USGS_01094445 on three dates during August to October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities. The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS) were all less than the 90 ng/L (ppt) recreational screening value (HFPO-DA/GenX was not analyzed in this study). MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in the North Nashua River from 2011-2022 at 3 stations. Samples were collected from the following stations/sample years from upstream to downstream: the upstream end of the AU at W2200 [~200 ft downstream from Mill Pond #1 Dam (MA00877), Fitchburg] from May-Sep 2011 (n=6), close to the upstream end at NRWA_NN2888 [Daniel St. W Fitchburg] from 2011-2017 (n=6-7/yr), and a third of the way down at NRWA_NN2657 [Riverfront Park, Commercial St. bridge, Fitchburg] from 2011-2019 and 2021-2022 (n=5-7/yr). Analysis of the single year limited frequency *E. coli* dataset from W2200 indicated 33% of intervals had GMs >126 CFU/100ml, 1 sample exceeded the 410 CFU/100ml STV (800 CFU), and the seasonal GM was 123 CFU/100ml. Analysis of the recent five years of the multi-year moderate frequency *E. coli* dataset from NRWA_NN2888 indicated 5 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2013-2017, 33-75%), 2 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2014 and 2016, n=2 & 2), and cumulatively across years 52% of intervals had GMs >126 CFU/100ml. Analysis of the recent five years of the multi-year limited frequency *E. coli* dataset from NRWA_NN2657 indicated 5 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2016-2017, 2019, and 2021-2022, 33-100%), 2 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2016 and 2022, n=2 & 4), and cumulatively across years 77% of intervals had GMs >126 CFU/100ml. *E. coli* data from W2200 are inconclusive according to the 2024 CALM to assess the Primary Contact Recreation Use because this single year, limited frequency dataset included both GMs below the threshold and STV exceedance of the threshold. *E. coli* data from NRWA_NN2888 and NRWA_NN2657 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2200	MassDEP	Water Quality	North Nashua River	[approximately 200 feet downstream from Mill Pond #1 Dam (MA00877), Fitchburg]	42.578712	-71.829957
NRWA_NN2657	Nashua River Watershed Association	Water Quality	North Nashua River	Riverfront Park, Commercial St. bridge, Fitchburg	42.581500	-71.797700

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_NN2888	Nashua River Watershed Association	Water Quality	North Nashua River	Daniel Street. West Fitchburg	42.581600	-71.818600
USGS-01094445	USGS Massachusetts Water Science Center	Water Quality	North Nashua River	NORTH NASHUA R NR LANIDES LN, E. FITCHBURG, MA; upstream of East Fitchburg WWTF	42.550000	-71.751000

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (30-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 4) (NRWA 2022) (MassDEP Undated 2)

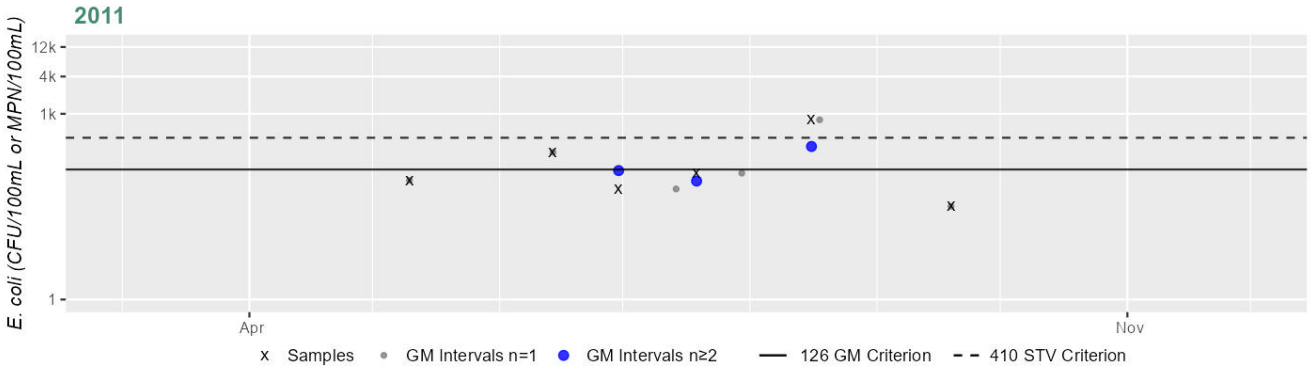
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2200	MassDEP	E. coli	05/10/11	09/19/11	6	32	800	123
NRWA_NN2657	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	178	1203	365
NRWA_NN2657	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	6	81	2419	573
NRWA_NN2657	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	12	129	43
NRWA_NN2657	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	18	2419	121
NRWA_NN2657	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	24	944	115
NRWA_NN2657	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	27	2419	196
NRWA_NN2657	Nashua River Watershed Association	E. coli	05/20/17	10/21/17	6	18	727	130
NRWA_NN2657	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	5	54	218	114
NRWA_NN2657	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	63	298	137
NRWA_NN2657	Nashua River Watershed Association	E. coli	04/27/21	10/16/21	7	46	1299	195
NRWA_NN2657	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	248	2419	736
NRWA_NN2888	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	122	613	301

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_NN2888	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	6	93	2419	390
NRWA_NN2888	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	8	648	91
NRWA_NN2888	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	20	1986	157
NRWA_NN2888	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	26	913	134
NRWA_NN2888	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	30	2419	209
NRWA_NN2888	Nashua River Watershed Association	E. coli	05/20/17	10/21/17	6	21	461	96

Station MASSDEP_W2200 - Escherichia coli

Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



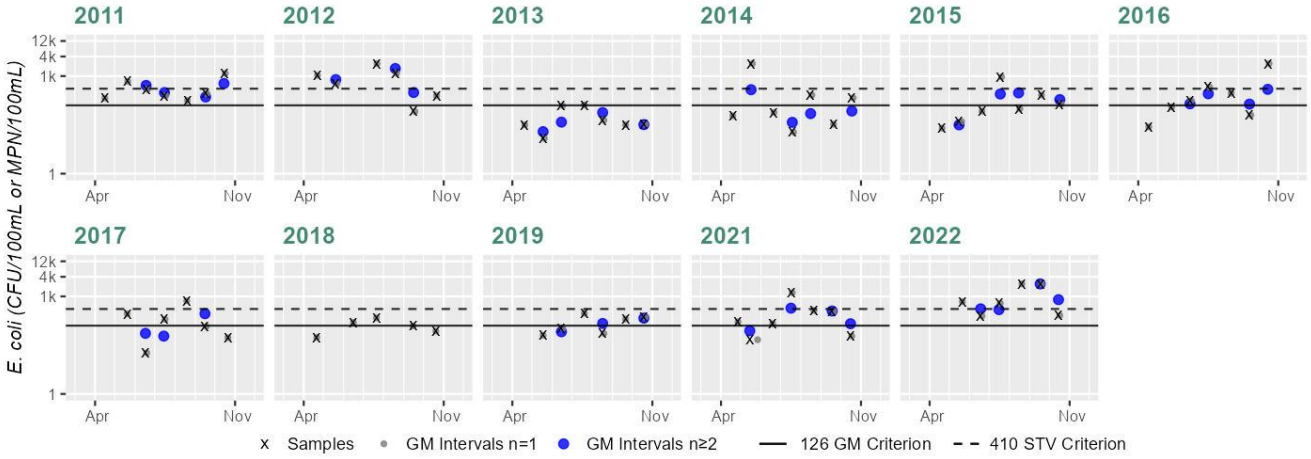
Variable*	Result
Samples	6
SeasGM	123
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	1
%n>STV	16%

Cumulative %GMI Exceedance
Current (2011-2022)
33%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NN2657 - Escherichia coli

Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	365
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	6
SeasGM	573
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	4
%n>STV	66%

Variable*	Result
Samples	7
SeasGM	43
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	121
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	115
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	196
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	6
SeasGM	130
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	5
SeasGM	114
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	137
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	0
%n>STV	0%

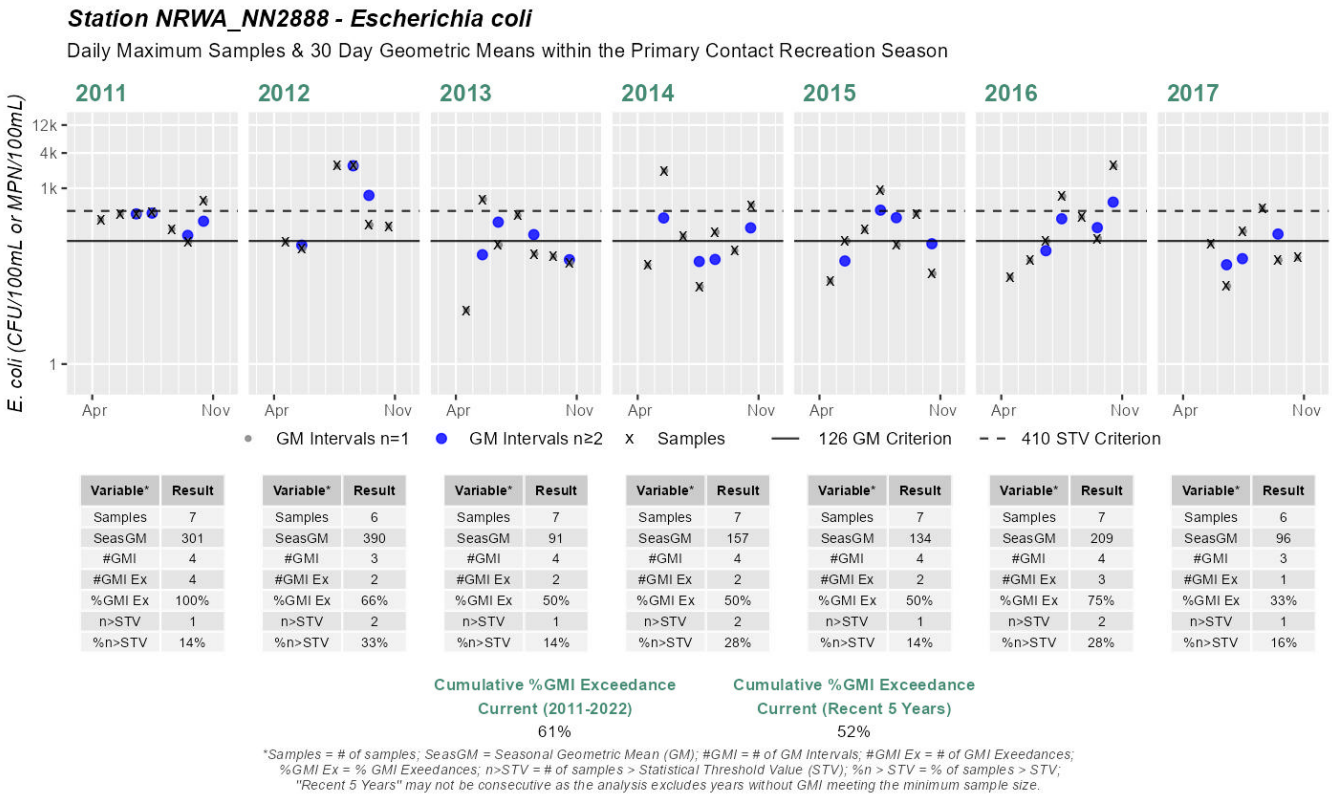
Variable*	Result
Samples	7
SeasGM	195
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	736
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	4
%n>STV	66%

Cumulative %GMI Exceedance Current (2011-2022)
67%

Cumulative %GMI Exceedance Current (Recent 5 Years)
77%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*



Variable*	Result
Samples	7
SeasGM	301
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	390
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	7
SeasGM	91
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	157
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	134
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	209
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	6
SeasGM	96
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	1
%n>STV	16%

Other Indicators

Summary Statement(s) for USGS 2020 PFAS in Water Column Data (Savoie and Argue 2023) (MassDEP Undated 2)

Summary
Surface water sampling was conducted by the USGS upstream of the East Fitchburg WWTF discharge on the North Nashua River (MA81-02) at station USGS_01094445 on three dates during August to October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities. The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS) were all less than the 90 ng/L (ppt) recreational screening value (HFPO-DA/GenX was not analyzed in this study).

USGS 2020 PFAS in Water Column Data Collected Upstream and Downstream of Wastewater Treatment Facilities (Savoie and Argue 2023) (MassDEP Undated 2)

[The ∑PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here). * indicates the ∑PFAS6 concentration is qualified since data for one or more individual PFAS6 analytes were qualified. A concentration with a "<" was less than the reporting detection limit (RDL) and the RDL was used to calculate the ΣPFAS6. E = qualifier "value is estimated"; V = qualifier "value affected by field or laboratory contamination"]

Station Code	Sample Date	PFOA ng/L	PFOS ng/L	PFNA ng/L	PFHxS ng/L	PFBA ng/L	PFBS ng/L	ΣPFAS6 ng/L
USGS-01094445	8/28/2020	17.3	E8.34	E1.67	2.01	5.71	3.32	39.7*
USGS-01094445	9/23/2020	17.3	E9.08	E1.43	E2.65	6.02	3.82	41.2*
USGS-01094445	10/19/2020	E22.8	E7.87	1.88	E1.69	8.71	4.24	48.7*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for the North Nashua River (MA81-02) continues to be assessed as Not Supporting. The prior Escherichia Coli (E. Coli) impairment is being carried forward based on bacteria data not meeting the threshold at 2 stations in 2013-2022 and a presumptive impairment due to the presence of active CSO outfalls. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in the North Nashua River from 1998-2022 at 4 stations. Samples were collected from the following stations/sample years from upstream to downstream: the upstream end of the AU at W2200 [~200 ft downstream from Mill Pond #1 Dam (MA00877), Fitchburg] from May-Sep 2011 (n=6), close to the upstream end at NRWA_NN2888 [Daniel St. W Fitchburg] from 2008-2010 (historic n=6-7/yr) and 2011-2017 (current n=6-7/yr), a third of the way down at NRWA_NN2657 [Riverfront Park, Commercial St. bridge, Fitchburg] from 2008-2010 (historic n=6-7/yr), 2011-2019 and 2021-2022 (current n=5-7/yr), and two-thirds of the way down at W0480 [Airport Rd (Falulah Rd on USGS 1988 Fitchburg quadrangle), Fitchburg. (~2.2 miles upstream of E Fitchburg WWTF (MA0100986) discharge)] in 1998, 2003, and 2008 (n=1-6/yr). Since bacteria data from the historic IR window are all indicative of poor water quality conditions, only the analysis from the current IR window (3 stations) will be summarized here: Analysis of the single year limited frequency *E. coli* dataset from W2200 indicated 0% of intervals had GMs >244 CFU/100ml, 1 sample exceeded the 794 CFU/100ml STV (800 CFU), and the overall GM was 123 CFU/100ml. Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from NRWA_NN2888 indicated 4 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2013-2016, 20-60%), and while 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, cumulatively across years 32% of intervals had GMs >244 CFU/100ml. Analysis of the recent five years of this multi-year limited frequency *E. coli* dataset from NRWA_NN2657 indicated 4 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2016-2017 and 2021-2022, 25-100%), and while only 1 yr had ≥2 samples exceed the 794 CFU/100ml STV (2022, n=2), cumulatively across years 39% of intervals had GMs >244 CFU/100ml. *E. coli* data from W2200 are inconclusive according to the 2024 CALM to assess the Secondary Contact Recreation Use because this single year, limited frequency dataset included both GMs below the threshold and an exceedance of the STV threshold. *E. coli* data from NRWA_NN2888 and NRWA_NN2657 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0480	MassDEP	Water Quality	North Nashua River	[Airport Road (Falulah Road on USGS 1988 Fitchburg quadrangle), Fitchburg. (approximately 2.2 miles upstream of East Fitchburg WWTF (MA0100986) discharge)]	42.563097	-71.768757
W2200	MassDEP	Water Quality	North Nashua River	[approximately 200 feet downstream from Mill Pond #1 Dam (MA00877), Fitchburg]	42.578712	-71.829957
NRWA_NN2657	Nashua River Watershed Association	Water Quality	North Nashua River	Riverfront Park, Commerical St. bridge, Fitchburg	42.581500	-71.797700
NRWA_NN2888	Nashua River Watershed Association	Water Quality	North Nashua River	Daniel Street. West Fitchburg	42.581600	-71.818600

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

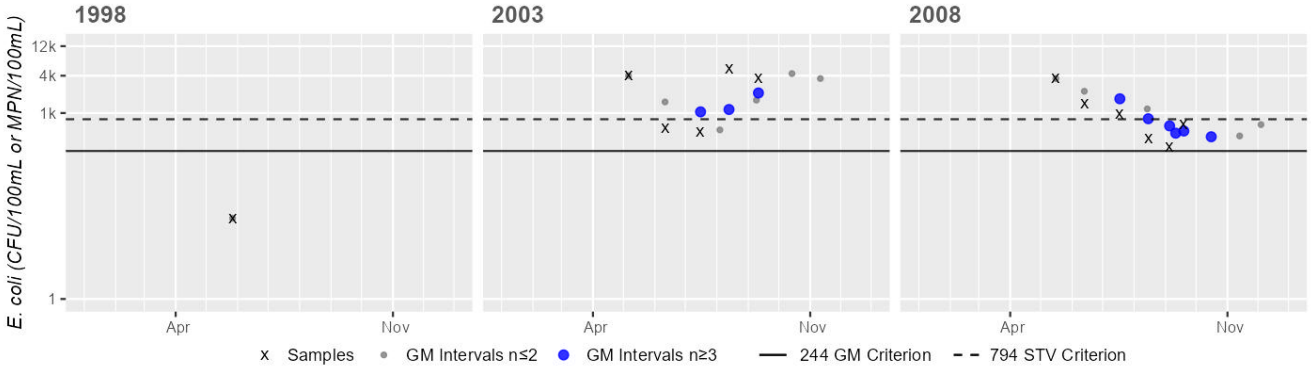
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W0480	MassDEP	E. coli	05/27/98	05/27/98	1	20	20	19
W0480	MassDEP	E. coli	05/06/03	09/11/03	5	500	5200	1844
W0480	MassDEP	E. coli	05/15/08	09/18/08	6	280	3600	838
W2200	MassDEP	E. coli	05/10/11	09/19/11	6	32	800	123
NRWA_NN2657	Nashua River Watershed Association	E. coli	04/19/08	10/18/08	6	172	1553	491
NRWA_NN2657	Nashua River Watershed Association	E. coli	04/18/09	09/01/09	6	263	2419	753
NRWA_NN2657	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	7	172	2419	1365
NRWA_NN2657	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	178	1203	365
NRWA_NN2657	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	6	81	2419	573
NRWA_NN2657	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	12	129	43
NRWA_NN2657	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	18	2419	121

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_NN2657	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	24	944	115
NRWA_NN2657	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	27	2419	196
NRWA_NN2657	Nashua River Watershed Association	E. coli	05/20/17	10/21/17	6	18	727	130
NRWA_NN2657	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	5	54	218	114
NRWA_NN2657	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	63	298	137
NRWA_NN2657	Nashua River Watershed Association	E. coli	04/27/21	10/16/21	7	46	1299	195
NRWA_NN2657	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	248	2419	736
NRWA_NN2888	Nashua River Watershed Association	E. coli	04/19/08	10/18/08	6	727	2419	1873
NRWA_NN2888	Nashua River Watershed Association	E. coli	04/18/09	09/19/09	6	172	1732	508
NRWA_NN2888	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	7	21	2419	1070
NRWA_NN2888	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	122	613	301
NRWA_NN2888	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	6	93	2419	390
NRWA_NN2888	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	8	648	91
NRWA_NN2888	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	20	1986	157
NRWA_NN2888	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	26	913	134
NRWA_NN2888	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	30	2419	209
NRWA_NN2888	Nashua River Watershed Association	E. coli	05/20/17	10/21/17	6	21	461	96

Station MASSDEP_W0480 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	1
SeasGM	20
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	1844
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	3
%n>STV	60%

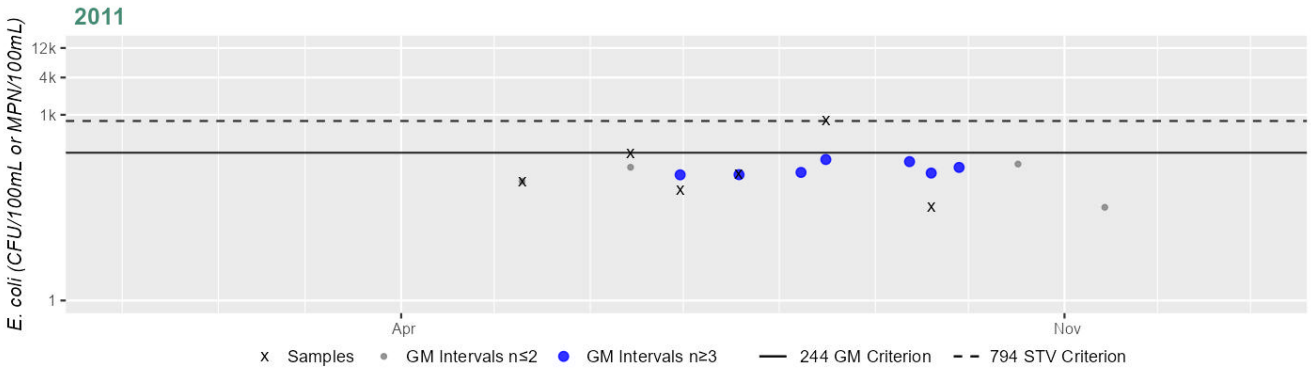
Variable*	Result
Samples	6
SeasGM	838
#GMI	6
#GMI Ex	6
%GMI Ex	100%
n>STV	3
%n>STV	50%

Cumulative %GMI Exceedance
Historic (1997-2010)
100%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W2200 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



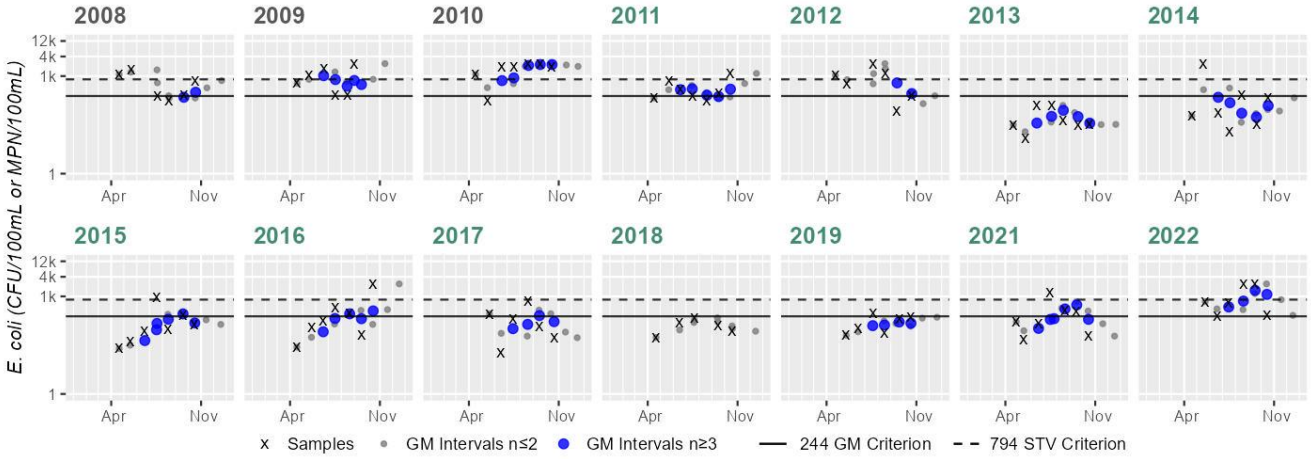
Variable*	Result
Samples	6
SeasGM	123
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	16%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NN2657 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	491
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	6
SeasGM	753
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	3
%n>STV	50%

Variable*	Result
Samples	7
SeasGM	1365
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	6
%n>STV	85%

Variable*	Result
Samples	7
SeasGM	365
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	573
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	3
%n>STV	50%

Variable*	Result
Samples	7
SeasGM	43
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	121
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	115
#GMI	6
#GMI Ex	1
%GMI Ex	16%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	196
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	130
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	114
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	137
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	195
#GMI	6
#GMI Ex	2
%GMI Ex	33%
n>STV	1
%n>STV	14%

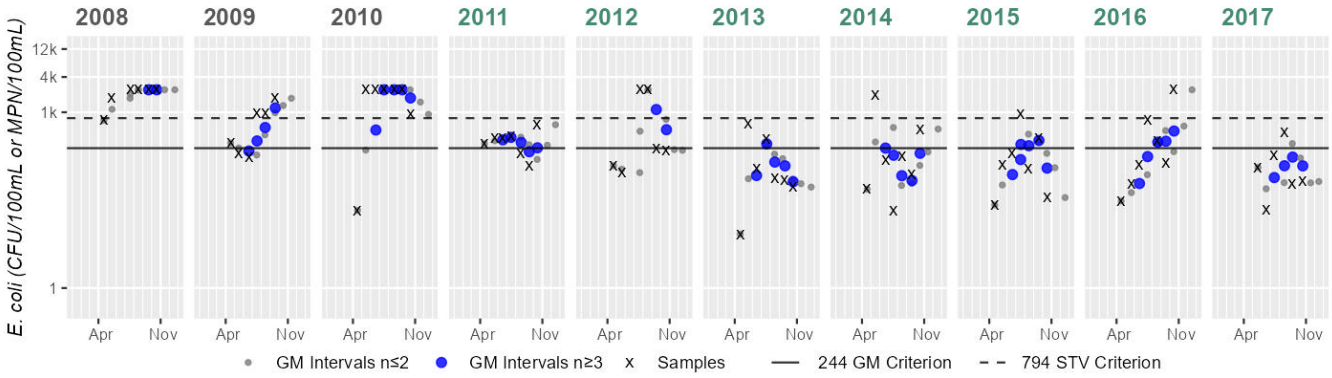
Variable*	Result
Samples	6
SeasGM	736
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	2
%n>STV	33%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
91%	34%	39%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NN2888 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	1873
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	5
%n>STV	83%

Variable*	Result
Samples	6
SeasGM	508
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	3
%n>STV	50%

Variable*	Result
Samples	7
SeasGM	1070
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	6
%n>STV	85%

Variable*	Result
Samples	7
SeasGM	301
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	390
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	7
SeasGM	91
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	157
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	134
#GMI	6
#GMI Ex	3
%GMI Ex	50%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	209
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	96
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)
90%

Cumulative %GMI Exceedance Current (2011-2022)
43%

Cumulative %GMI Exceedance Current (Recent 5 Years)
32%

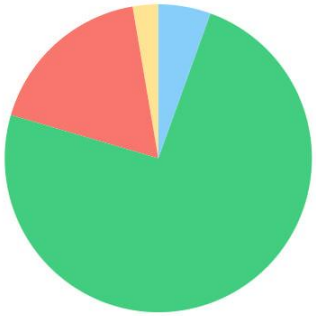
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

North Nashua River (MA81-03)

Location:	From Fitchburg East WWTP outfall (NPDES: MA0100986), Leominster to Leominster WWTP outfall (NPDES: MA0100617), Leominster.
AU Type:	RIVER
AU Size:	1.6 MILES
Classification/Qualifier:	B: WWF, CSO

North Nashua River (MA81-03)

Watershed Area: 99.89 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	99.89	8.07	33.14	2.08
Agriculture	2.7%	1.4%	2%	0%
Developed	17.8%	48.1%	12.9%	33.2%
Natural	74%	45.3%	75.6%	57.2%
Wetland	5.5%	5.2%	9.5%	9.5%
Impervious	9.3%	29.5%	7%	22.4%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Combined Sewer Overflows (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO) (Y)	--	--	--	X	X

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

Recommendations

2024/26 Recommendations
2016 IR [ALGAE, LOW] Follow up monitoring is recommended for North Nashua River (MA81-03) at {W0993} where moderate filamentous algae cover was recorded in May and June 2003. This is of low priority; 2024/26 IR [PFAS, MEDIUM] Follow-up sampling should be conducted for North Nashua River (MA81-03) at {USGS_01094450} due to an elevated PFBS measurement (109 ng/L) in September 2020. This is of medium priority.

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for North Nashua River (MA81-03) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	YES

2024/26 Use Attainment Summary

There are no data available to assess the status of the Aesthetics Use for North Nashua River (MA81-03), so it is Not Assessed. The prior Alert identified due to observations of moderate filamentous algae cover in 2003 approximately 600 feet downstream of Route 2, Leominster during the summer of 2008 (W0993) is being carried forward. The prior Alert identified for Total Phosphorus concentrations based on data collected (W0993) is being removed from the Aesthetics Use (due to redundant duplication across multiple Uses); a discussion pertaining to the high phosphorus concentrations for this AU in 2008 is included in the Aquatic Life Use summary in the 2018/20IR (MassDEP 2021).

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for the North Nashua River (MA81-03) continues to be assessed as Not Supporting. The prior Escherichia Coli (E. Coli) impairment is being carried forward based on a presumptive impairment due to the presence of active CSO outfalls and bacteria data not meeting the threshold at 2 stations in 2015-2019 & 2020-2022. The prior Alerts for Algae and Total Phosphorus are being removed from the Recreational Uses but continue to be maintained under the Aesthetics and Aquatic Life Uses. Surface water sampling was conducted by the USGS downstream of the East Fitchburg WWTF discharge on the North Nashua River (MA81-03) at stations USGS_01094450 and USGS_01094455 on three dates during August to October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities. The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS; HFPO-DA/GenX was not analyzed in this study) were generally less than the 90 ng/L (ppt) recreational screening value, with the exception of the September PFBS measurement (109 ng/L) at USGS_01094450. Follow-up sampling should be conducted at this USGS_01094450 location on the North Nashua River. Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in the North Nashua River from 2011-2022 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: the upstream end of the AU at NRWA_NN1905 [Behind 120 Hamilton St, Fitchburg] from 2011-2019 (n=6-7/yr), close to the upstream end of the AU at NRWA_NN1864 [480 Main St bridge, Leominster] from 2020-2022 (n=6/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from NRWA_NN1905 indicated 4 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2015-2016 and 2018-2019, 75-100%), 1 yr had ≥2 samples exceed the 410 CFU/100ml STV (2016, n=3), and cumulatively across years 76% of intervals had GMs >126 CFU/100ml. Analysis of the multi-year limited frequency *E. coli* dataset from NRWA_NN1864 indicated 3 out of 3 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2020-2022, 100%), 3 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2020-2022, n=3), and cumulatively across years 100% of intervals had GMs >126 CFU/100ml. *E. coli* data from NRWA_NN1905 and NRWA_NN1864 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_NN1864	Nashua River Watershed Association	Water Quality	North Nashua River	480 Main St bridge, Leominster	42.539650	-71.742440
NRWA_NN1905	Nashua River Watershed Association	Water Quality	North Nashua River	Behind 120 Hamilton St, Fitchburg	42.541640	-71.746030
USGS-01094450	USGS Massachusetts Water Science Center	Water Quality	North Nashua River	NORTH NASHUA RIVER AT NORTH LEOMINSTER, MA; downstream of East Fitchburg WWTF	42.542000	-71.746000
USGS-01094455	USGS Massachusetts Water Science Center	Water Quality	North Nashua River	NORTH NASHUA RIVER AT LEOMINSTER, MA; upstream of Leominster WWTF	42.526000	-71.737000

Bacteria Data

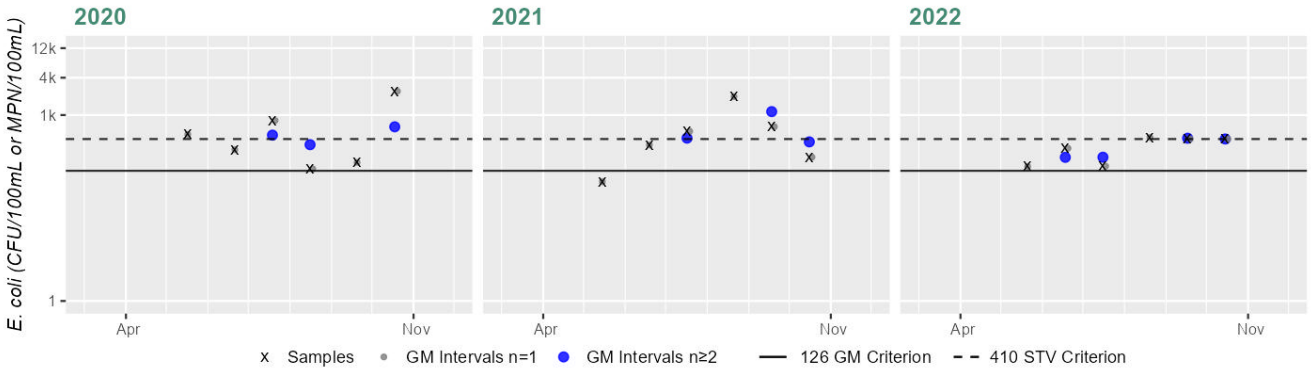
Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (30-day Interval Analysis)
(NRWA 2022) (MassDEP Undated 2)
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_NN1864	Nashua River Watershed Association	E. coli	05/16/20	10/17/20	6	135	2419	428
NRWA_NN1864	Nashua River Watershed Association	E. coli	05/15/21	10/16/21	6	83	1986	399
NRWA_NN1864	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	148	435	279
NRWA_NN1905	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	159	2419	1147
NRWA_NN1905	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	162	2419	645
NRWA_NN1905	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	51	325	106
NRWA_NN1905	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	50	2419	274
NRWA_NN1905	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	8	524	136

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_NN1905	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	84	2419	317
NRWA_NN1905	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	6	22	249	94
NRWA_NN1905	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	24	435	155
NRWA_NN1905	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	71	435	168

Station NRWA_NN1864 - Escherichia coli

Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



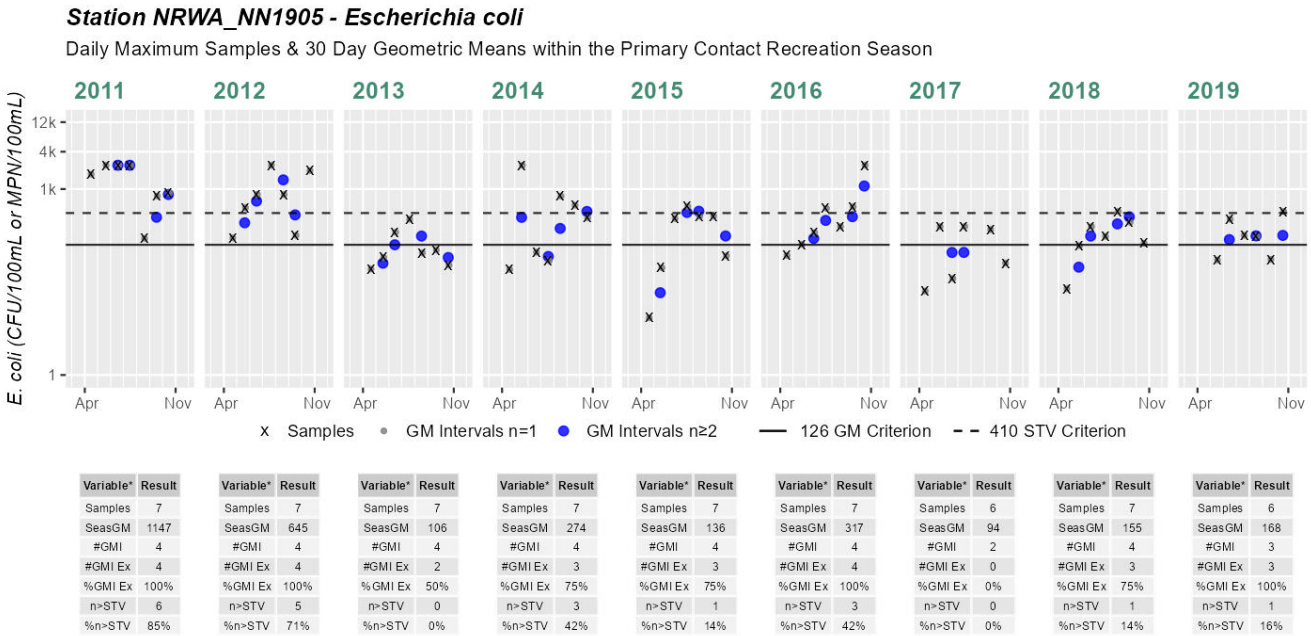
Variable*	Result
Samples	6
SeasGM	428
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	3
%n>STV	50%

Variable*	Result
Samples	6
SeasGM	399
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	3
%n>STV	50%

Variable*	Result
Samples	6
SeasGM	279
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	3
%n>STV	50%

Cumulative %GMI Exceedance
Current (2011-2022)
100%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*



Variable*	Result
Samples	7
SeasGM	1147
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	6
%n>STV	85%

Variable*	Result
Samples	7
SeasGM	645
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	5
%n>STV	71%

Variable*	Result
Samples	7
SeasGM	106
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	274
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	3
%n>STV	42%

Variable*	Result
Samples	7
SeasGM	136
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	317
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	3
%n>STV	42%

Variable*	Result
Samples	6
SeasGM	94
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	155
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	168
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	1
%n>STV	16%

Cumulative %GMI Exceedance Current (2011-2022)
78%

Cumulative %GMI Exceedance Current (Recent 5 Years)
76%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Other Indicators

Summary Statement(s) for USGS 2020 PFAS in Water Column Data (Savoie and Argue 2023) (MassDEP Undated 2)

Summary
Surface water sampling was conducted by the USGS downstream of the East Fitchburg WWTF discharge on the North Nashua River (MA81-03) at station USGS_01094450 on three dates during August to October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities. The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS; HFPO-DA/GenX was not analyzed in this study) were generally less than the 90 ng/L (ppt) recreational screening value, with the exception of the Sept PFBS measurement (109 ng/L). Follow-up sampling should be conducted at this USGS_01094450 location on the North Nashua River (MA81-03).
Surface water sampling was conducted by the USGS upstream of the Leominster WWTF discharge on the North Nashua River (MA81-03) at station USGS_01094455 on three dates during August to October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities. The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS) were all less than the 90 ng/L (ppt) recreational screening value (HFPO-DA/GenX was not analyzed in this study).

USGS 2020 PFAS in Water Column Data Collected Upstream and Downstream of Wastewater Treatment Facilities (Savoie and Argue 2023) (MassDEP Undated 2)

[The ∑PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here). * indicates the ∑PFAS6 concentration is qualified since data for one or more individual PFAS6 analytes were qualified. A concentration with a "<" was less

than the reporting detection limit (RDL) and the RDL was used to calculate the ΣPFAS6. E = qualifier "value is estimated"; V = qualifier "value affected by field or laboratory contamination"]

Station Code	Sample Date	PFOA ng/L	PFOS ng/L	PFNA ng/L	PFHxS ng/L	PFBA ng/L	PFBS ng/L	ΣPFAS6 ng/L
USGS-01094450	8/28/2020	26.9	9.4	2.65	4.44	31	59.7	60.9
USGS-01094450	9/23/2020	41.8	E12.9	3.1	6.48	53.7	109	88.1*
USGS-01094450	10/19/2020	E33.2	E8.04	2.62	3.52	27.6	46.9	66.1*
USGS-01094455	8/28/2020	26.5	10.1	2.57	4.15	28.4	49.6	60.8
USGS-01094455	9/23/2020	35.4	E14.3	2.66	5.06	33.3	65.7	76.0*
USGS-01094455	10/19/2020	E28.9	E7.71	2.26	2.66	18.6	29	58.1*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for the North Nashua River (MA81-03) continues to be assessed as Not Supporting. The prior Escherichia Coli (E. Coli) impairment is being carried forward based on a presumptive impairment due to the presence of active CSO outfalls and bacteria data not meeting the threshold at 2 stations in 2015-2019 & 2020-2022. The prior Alerts for Algae and Total Phosphorus are being removed from the Recreational Uses but continue to be maintained under the Aesthetics and Aquatic Life Uses. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in the North Nashua River from 2003-2022 at 3 stations. Samples were collected from the following stations/sample years from upstream to downstream: the upstream end of the AU at NRWA_NN1905 [Behind 120 Hamilton St, Fitchburg] from 2008-2010 (historic n=5-7/yr) and 2011-2019 (current n=6-7/yr), close to the upstream end at NRWA_NN1864 [480 Main St bridge, Leominster] from 2020-2022 (n=6/yr), and halfway down the AU at W0993 [~600 ft downstream of Rt. 2, Leominster (~0.9 miles downstream of E Fitchburg WWTF (MA0100986) discharge and 0.7 miles upstream of Leominster WWTP (MA0100617) discharge)] in 2003 and 2008 (n=5-6/yr). Since bacteria data from the historic IR window are all indicative of poor water quality conditions, only the analysis from the current IR window (2 stations) will be summarized here: Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from NRWA_NN1905 indicated 3 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2015-2016 and 2018, 33-60%), and while 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, cumulatively across years 36% of intervals had GMs >244 CFU/100ml. Analysis of the multi-year limited frequency *E. coli* dataset from NRWA_NN1864 indicated 3 out of 3 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2020-2022, 75-100%), and while only 1 yr had ≥2 samples exceed the 794 CFU/100ml STV (2020, n=2), cumulatively across years 91% of intervals had GMs >244 CFU/100ml. *E. coli* data from NRWA_NN1905 and NRWA_NN1864 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0993	MassDEP	Water Quality	North Nashua River	[approximately 600 feet downstream of Route 2, Leominster (approximately 0.9 miles downstream of East Fitchburg WWTF (MA0100986) discharge and 0.7 miles upstream of Leominster WWTP (MA0100617) discharge)]	42.532590	-71.740288
NRWA_NN1864	Nashua River Watershed Association	Water Quality	North Nashua River	480 Main St bridge, Leominster	42.539650	-71.742440
NRWA_NN1905	Nashua River Watershed Association	Water Quality	North Nashua River	Behind 120 Hamilton St, Fitchburg	42.541640	-71.746030

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

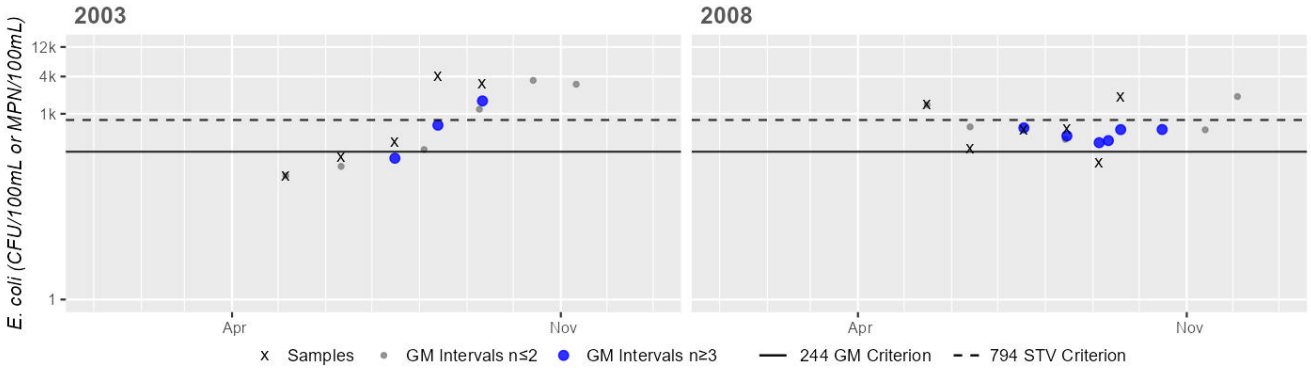
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W0993	MassDEP	E. coli	05/06/03	09/11/03	5	100	4000	609
W0993	MassDEP	E. coli	05/15/08	09/18/08	6	160	1900	574
NRWA_NN1864	Nashua River Watershed Association	E. coli	05/16/20	10/17/20	6	135	2419	428
NRWA_NN1864	Nashua River Watershed Association	E. coli	05/15/21	10/16/21	6	83	1986	399
NRWA_NN1864	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	148	435	279
NRWA_NN1905	Nashua River Watershed Association	E. coli	04/19/08	09/20/08	5	184	2419	781
NRWA_NN1905	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	410	2419	1265
NRWA_NN1905	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	7	167	2419	832
NRWA_NN1905	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	159	2419	1147

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_NN1905	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	162	2419	645
NRWA_NN1905	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	51	325	106
NRWA_NN1905	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	50	2419	274
NRWA_NN1905	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	8	524	136
NRWA_NN1905	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	84	2419	317
NRWA_NN1905	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	6	22	249	94
NRWA_NN1905	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	24	435	155
NRWA_NN1905	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	71	435	168

Station MASSDEP_W0993 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	609
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	2
%n>STV	40%

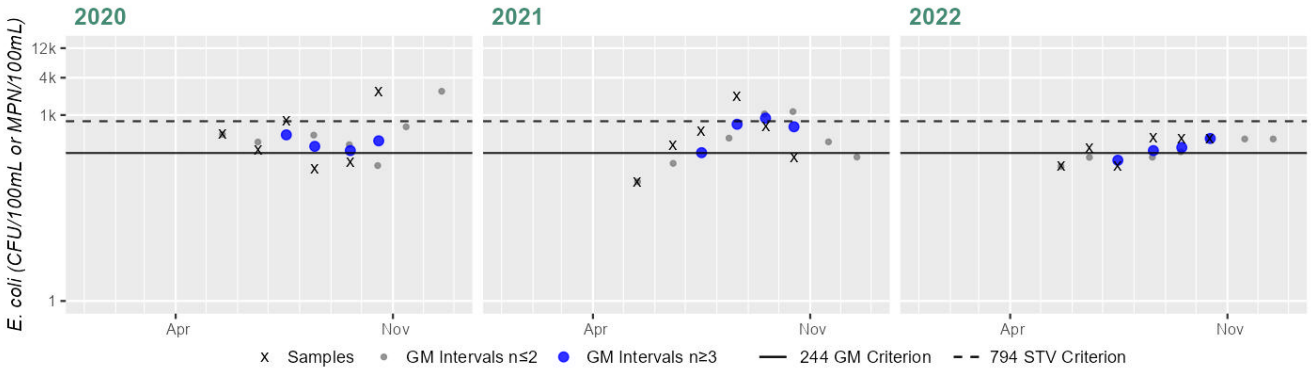
Variable*	Result
Samples	6
SeasGM	574
#GMI	6
#GMI Ex	6
%GMI Ex	100%
n>STV	2
%n>STV	33%

Cumulative %GMI Exceedance
Historic (1997-2010)
88%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NN1864 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	428
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	6
SeasGM	399
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	1
%n>STV	16%

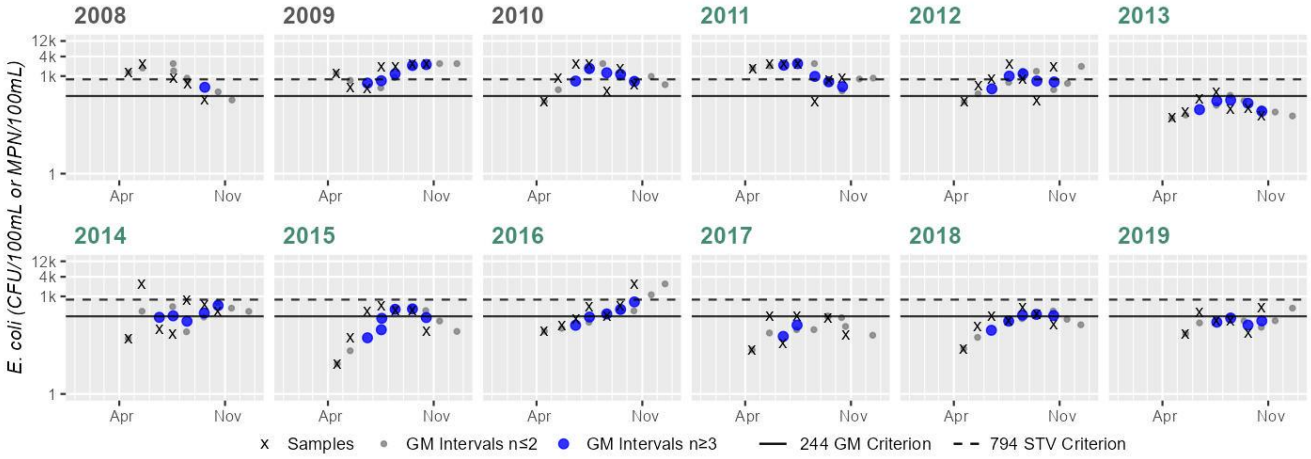
Variable*	Result
Samples	6
SeasGM	279
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
91%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NN1905 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	781
#GMI	1
#GMI Ex	1
%GMI Ex	100%
n>STV	3
%n>STV	60%

Variable*	Result
Samples	7
SeasGM	1265
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	5
%n>STV	71%

Variable*	Result
Samples	7
SeasGM	832
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	4
%n>STV	57%

Variable*	Result
Samples	7
SeasGM	1147
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	5
%n>STV	71%

Variable*	Result
Samples	7
SeasGM	645
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	4
%n>STV	57%

Variable*	Result
Samples	7
SeasGM	106
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	274
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	136
#GMI	6
#GMI Ex	2
%GMI Ex	33%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	317
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	94
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	155
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	168
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
100%	50%	36%

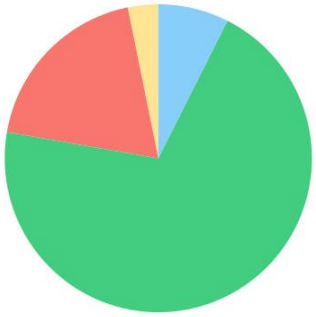
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

North Nashua River (MA81-04)

Location:	From Leominster WWTP outfall (NPDES: MA0100617), Leominster to mouth at confluence with Nashua River ("South Branch" Nashua River), Lancaster.
AU Type:	RIVER
AU Size:	10.4 MILES
Classification/Qualifier:	B: WWF

North Nashua River (MA81-04)

Watershed Area: 134.11 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	134.11	8.33	44.85	2.90
Agriculture	3.2%	8.1%	2.8%	11.6%
Developed	19.1%	14.2%	13.5%	8.9%
Natural	70.3%	59.5%	70.6%	50.5%
Wetland	7.4%	18.2%	13.1%	28.9%
Impervious	9.6%	5%	6.9%	2.9%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
5	5	Odor	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO) (Y)	--	--	--	X	X

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Odor	Municipal Point Source Discharges (Y)	--	--	X	X	X

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for North Nashua River (MA81-04) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Aesthetics Use for North Nashua River (MA81-04) continues to be assessed as Not Supporting, with the Odor impairment being carried forward. Since the prior Alert identified for Total Phosphorus concentrations was redundantly duplicated across multiple uses for this waterbody, it is being removed from the Aesthetics Use but will continue to be maintained under the Aquatic Life Use. The prior Alert for Algae (based on observations of dense filamentous algae ~200 feet downstream of Route 190 bridge, Lancaster (W0481) once in October 2009 and once in September 2010 (MassDEP Undated 6) is also being removed, since no dense filamentous algae was observed at this same location in 2011, 2012 or 2013. MassDEP staff recorded aesthetics observations at one station a quarter of the way down this North Nashua River AU ~200 feet downstream of Route 190 bridge, Lancaster (W0481) as part of the SMART monitoring project in 2011 (n=5), 2012 (n=6) and 2013 (n=4). There were generally no persistent objectionable conditions (i.e., odors, deposits, growths, or turbidity) observed during the surveys, although high turbidity was noted once every year (on one occasion in 2012 being associated with a grey water color) and effluent odor was noted twice in 2011.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0481	MassDEP	Water Quality	North Nashua River	[approximately 200 feet downstream of Route 190 bridge, Lancaster]	42.495169	-71.721925

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W0481	2011	5	Aesthetic observations were made by MassDEP field sampling crews at Station W0481 on North Nashua River (MA81-04) during 5 site visits between Mar 2011 and Oct 2011. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, though field staff noted effluent odor (n=2) and high turbidity (n=1).
W0481	2012	6	Aesthetic observations were made by MassDEP field sampling crews at Station W0481 on North Nashua River (MA81-04) during 6 site visits between Jan 2012 and Nov 2012. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, though field staff noted grey water color (n=1) and high turbidity (n=1).
W0481	2013	4	Aesthetic observations were made by MassDEP field sampling crews at Station W0481 on North Nashua River (MA81-04) during 4 site visits between Mar 2013 and Sep 2013. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, though field staff noted an aesthetics impairment flag (n=1) and high turbidity (n=1).

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W0481	2011	5	4	0
W0481	2012	6	5	2
W0481	2013	4	3	0

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W0481	North Nashua River	2011	Aquatic Plant Density, Overall	None	2	5
W0481	North Nashua River	2011	Aquatic Plant Density, Overall	Sparse	1	5
W0481	North Nashua River	2011	Aquatic Plant Density, Overall	Unobservable	2	5
W0481	North Nashua River	2011	Color	Dark Tan	1	5
W0481	North Nashua River	2011	Color	Light Yellow/Tan	2	5
W0481	North Nashua River	2011	Color	None	2	5
W0481	North Nashua River	2011	Objectionable Deposits	No	2	5
W0481	North Nashua River	2011	Objectionable Deposits	Unobservable	2	5
W0481	North Nashua River	2011	Objectionable Deposits	Yes	1	5
W0481	North Nashua River	2011	Odor	Effluent (Treated)	2	5
W0481	North Nashua River	2011	Odor	Musty (Basement)	1	5
W0481	North Nashua River	2011	Odor	None	2	5
W0481	North Nashua River	2011	Periphyton Density, Filamentous	Moderate	1	5
W0481	North Nashua River	2011	Periphyton Density, Filamentous	None	3	5
W0481	North Nashua River	2011	Periphyton Density, Filamentous	Unobservable	1	5

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W0481	North Nashua River	2011	Periphyton Density, Film	None	3	5
W0481	North Nashua River	2011	Periphyton Density, Film	Sparse	1	5
W0481	North Nashua River	2011	Periphyton Density, Film	Unobservable	1	5
W0481	North Nashua River	2011	Scum	No	1	5
W0481	North Nashua River	2011	Scum	Yes	4	5
W0481	North Nashua River	2011	Turbidity	Highly Turbid	1	5
W0481	North Nashua River	2011	Turbidity	Slightly Turbid	4	5
W0481	North Nashua River	2012	Aquatic Plant Density, Overall	None	5	6
W0481	North Nashua River	2012	Aquatic Plant Density, Overall	Unobservable	1	6
W0481	North Nashua River	2012	Color	Brownish	2	6
W0481	North Nashua River	2012	Color	Dark Tan	1	6
W0481	North Nashua River	2012	Color	Greyish	1	6
W0481	North Nashua River	2012	Color	Light Yellow/Tan	1	6
W0481	North Nashua River	2012	Color	None	1	6
W0481	North Nashua River	2012	Objectionable Deposits	No	5	6
W0481	North Nashua River	2012	Objectionable Deposits	Unobservable	1	6
W0481	North Nashua River	2012	Odor	Musty (Basement)	1	6
W0481	North Nashua River	2012	Odor	None	5	6
W0481	North Nashua River	2012	Periphyton Density, Filamentous	None	4	6
W0481	North Nashua River	2012	Periphyton Density, Filamentous	Sparse	1	6

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W0481	North Nashua River	2012	Periphyton Density, Filamentous	Unobservable	1	6
W0481	North Nashua River	2012	Periphyton Density, Film	Dense	2	6
W0481	North Nashua River	2012	Periphyton Density, Film	None	3	6
W0481	North Nashua River	2012	Periphyton Density, Film	Unobservable	1	6
W0481	North Nashua River	2012	Scum	No	4	6
W0481	North Nashua River	2012	Scum	Yes	2	6
W0481	North Nashua River	2012	Turbidity	Highly Turbid	1	6
W0481	North Nashua River	2012	Turbidity	None	1	6
W0481	North Nashua River	2012	Turbidity	Slightly Turbid	4	6
W0481	North Nashua River	2013	Aesthetics Impaired?	No	1	4
W0481	North Nashua River	2013	Aesthetics Impaired?	NR	2	4
W0481	North Nashua River	2013	Aesthetics Impaired?	Yes	1	4
W0481	North Nashua River	2013	Aquatic Plant Density, Overall	None	3	4
W0481	North Nashua River	2013	Aquatic Plant Density, Overall	Unobservable	1	4
W0481	North Nashua River	2013	Color	Brownish	1	4
W0481	North Nashua River	2013	Color	None	3	4
W0481	North Nashua River	2013	Objectionable Deposits	No	2	4
W0481	North Nashua River	2013	Objectionable Deposits	Unobservable	1	4
W0481	North Nashua River	2013	Objectionable Deposits	Yes	1	4
W0481	North Nashua River	2013	Odor	Effluent (Treated)	1	4

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W0481	North Nashua River	2013	Odor	None	3	4
W0481	North Nashua River	2013	Periphyton Density, Filamentous	None	2	4
W0481	North Nashua River	2013	Periphyton Density, Filamentous	Sparse	1	4
W0481	North Nashua River	2013	Periphyton Density, Filamentous	Unobservable	1	4
W0481	North Nashua River	2013	Periphyton Density, Film	Moderate	1	4
W0481	North Nashua River	2013	Periphyton Density, Film	None	2	4
W0481	North Nashua River	2013	Periphyton Density, Film	Unobservable	1	4
W0481	North Nashua River	2013	Scum	No	1	4
W0481	North Nashua River	2013	Scum	Yes	3	4
W0481	North Nashua River	2013	Turbidity	Highly Turbid	1	4
W0481	North Nashua River	2013	Turbidity	None	2	4
W0481	North Nashua River	2013	Turbidity	Slightly Turbid	1	4

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for the North Nashua River (MA81-04) continues to be assessed as Not Supporting. The prior Escherichia Coli (E. Coli) impairment is being carried forward based on bacteria data not meeting the threshold at 4 stations/combined stations in 2013-2017, 2015-2019 & 2020-2022. The prior Odor impairment (from the Aesthetics Use) is being carried forward. The prior Total Phosphorus and Algae Alerts (from the Aesthetics Use) are being removed. Surface water sampling was conducted by the USGS downstream of the Leominster WWTF discharge on the North Nashua River (MA81-04) at station USGS_01094465 on three dates during August to October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities. The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS) were all less than the 90 ng/L (ppt) recreational screening value (HFPO-DA/GenX was not analyzed in this study). MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in the North Nashua River from 2011-2022 at 4 stations/combined stations. Samples were collected from the following stations/sample years from upstream to downstream: a quarter of the way down the AU at W0481 & NRWA_NN1194 [~200 ft downstream of Rt. 190 bridge, Lancaster & D.S. Rt. 190 on N Nashua, Lancaster] from 2011-2019 (n=6-11/yr), over halfway down at NRWA_NN0547 [Pellachia at Rt. 70, Lancaster] from 2020-2022 (n=5-16/yr), three-quarters of the way down at NRWA_NN0426 [Across from Langen Rd., Lancaster] from 2011-2017 (n=6-7/yr), and close to the downstream end of the AU at NRWA_NN0049 [N.Nashua Main St RR Bridge, Lancaster] from 2011-2017 (n=6-7/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from W0481 & NRWA_NN1194 indicated 5 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2015-2019, 66-100%), 3 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2016-2018, n=2-4), and cumulatively across years 87% of intervals had GMs >126 CFU/100ml. Analysis of the multi-year high frequency *E. coli* dataset from NRWA_NN0547 indicated 3 out of 3 sufficient data yrs had intervals where >10% of the GMs were >126 CFU/100ml (2020-2022, 33-50%), 3 yrs had >10% of samples exceed the 410 CFU/100ml STV (2020-2022, 14-25%), and cumulatively across years 48% of intervals had GMs >126 CFU/100ml. Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from NRWA_NN0426 indicated 3 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2013-2015, 25-50%), and while only 1 yr had ≥2 samples exceed the 410 CFU/100ml STV (2014, n=2), cumulatively across years 22% of intervals had GMs >126 CFU/100ml. Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from NRWA_NN0049 indicated 4 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2014-2017, 33-75%), and while only 1 yr had ≥2 samples exceed the 410 CFU/100ml STV (2014, n=2), cumulatively across years 44% of intervals had GMs >126 CFU/100ml. *E. coli* data from W0481 & NRWA_NN1194, NRWA_NN0547, NRWA_NN0426, and NRWA_NN0049 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0481	MassDEP	Water Quality	North Nashua River	[approximately 200 feet downstream of Route 190 bridge, Lancaster]	42.495169	-71.721925
NRWA_NN0049	Nashua River Watershed Association	Water Quality	North Nashua River	N.Nashua Main Street RR Bridge, Lancaster	42.450200	-71.673100
NRWA_NN0426	Nashua River Watershed Association	Water Quality	North Nashua River	Across from Langen Rd., Lancaster	42.473700	-71.682200
NRWA_NN0547	Nashua River Watershed Association	Water Quality	North Nashua River	Pellachia @ Rt. 70, Lancaster	42.481320	-71.685054
NRWA_NN1194	Nashua River Watershed Association	Water Quality	North Nashua River	D.S. Rt. 190 on North Nashua, Lancaster	42.495110	-71.721660
USGS-01094465	USGS Massachusetts Water Science Center	Water Quality	North Nashua River	NORTH NASHUA RIVER AT MECHANIC ST, LEOMINSTER, MA; downstream of Leominster WWTF	42.520000	-71.727000

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (30-day Interval Analysis)

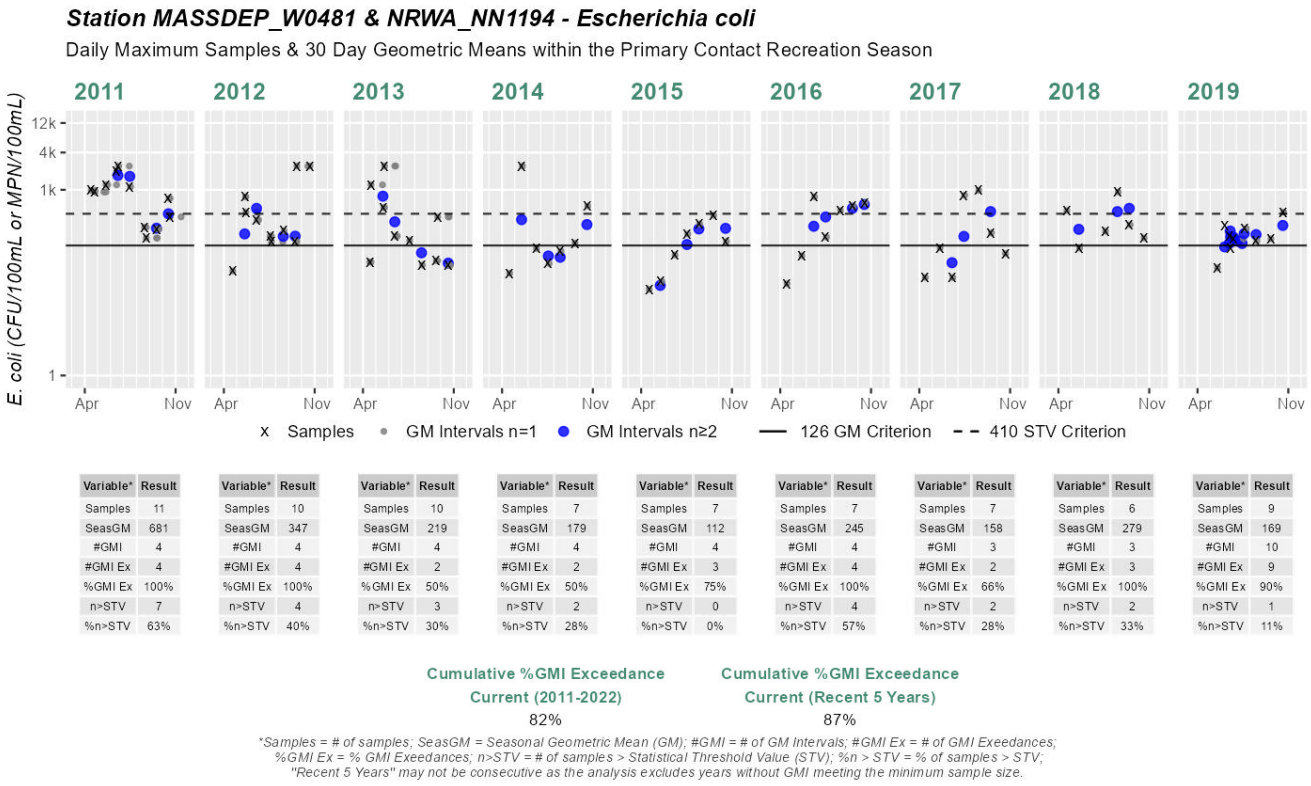
(MassDEP Undated 7) (MassDEP Undated 4) (NRWA 2022) (MassDEP Undated 2)

[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
W0481	MassDEP	E. coli	04/25/11	10/19/11	4	166	1990	577
W0481	MassDEP	E. coli	05/22/12	09/19/12	3	179	2419	573
W0481	MassDEP	E. coli	04/17/13	09/24/13	3	68	2419	391
NRWA_NN0049	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	83	2419	630
NRWA_NN0049	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	58	2419	220
NRWA_NN0049	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	6	35	114	69
NRWA_NN0049	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	64	1413	225
NRWA_NN0049	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	35	325	97
NRWA_NN0049	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	24	186	86
NRWA_NN0049	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	41	231	121

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_NN0426	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	119	2419	712
NRWA_NN0426	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	30	2419	191
NRWA_NN0426	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	38	579	107
NRWA_NN0426	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	16	1046	100
NRWA_NN0426	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	21	193	87
NRWA_NN0426	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	23	151	78
NRWA_NN0426	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	6	45	1299	161
NRWA_NN0547	Nashua River Watershed Association	E. coli	04/07/20	10/17/20	16	44	2419	156
NRWA_NN0547	Nashua River Watershed Association	E. coli	04/27/21	10/16/21	7	54	2419	164
NRWA_NN0547	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	5	53	579	108
NRWA_NN1194	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	231	2419	749
NRWA_NN1194	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	48	2419	280
NRWA_NN1194	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	59	1203	171
NRWA_NN1194	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	44	2419	179
NRWA_NN1194	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	24	387	112
NRWA_NN1194	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	30	770	245
NRWA_NN1194	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	38	980	158

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_NN1194	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	6	114	920	279
NRWA_NN1194	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	9	54	435	169



Variable*	Result
Samples	11
SeasGM	681
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	7
%n>STV	63%

Variable*	Result
Samples	10
SeasGM	347
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	4
%n>STV	40%

Variable*	Result
Samples	10
SeasGM	219
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	3
%n>STV	30%

Variable*	Result
Samples	7
SeasGM	179
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	112
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	245
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	4
%n>STV	57%

Variable*	Result
Samples	7
SeasGM	158
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	6
SeasGM	279
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	9
SeasGM	169
#GMI	10
#GMI Ex	9
%GMI Ex	90%
n>STV	1
%n>STV	11%

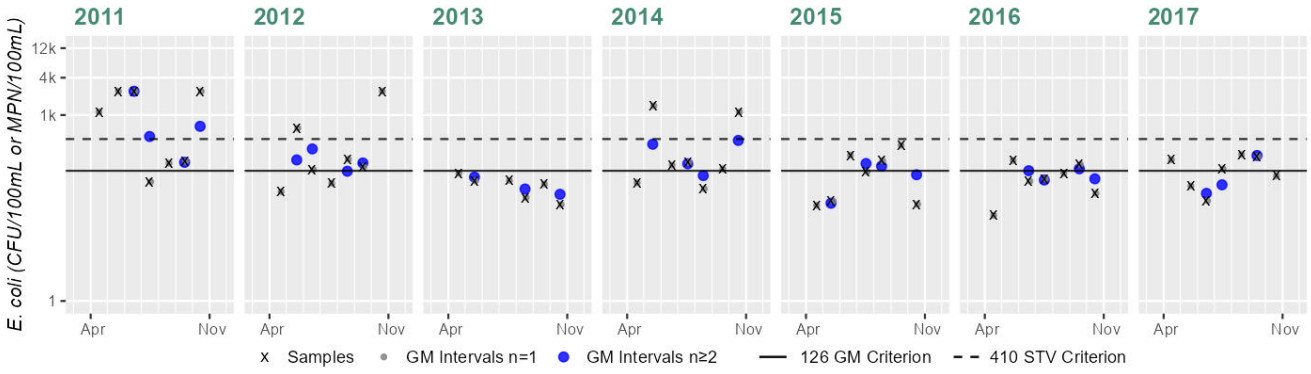
Cumulative %GMI Exceedance Current (2011-2022)
82%

Cumulative %GMI Exceedance Current (Recent 5 Years)
87%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NN0049 - Escherichia coli

Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	630
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	4
%n>STV	57%

Variable*	Result
Samples	7
SeasGM	220
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	6
SeasGM	69
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	225
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	97
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	86
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	121
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	0
%n>STV	0%

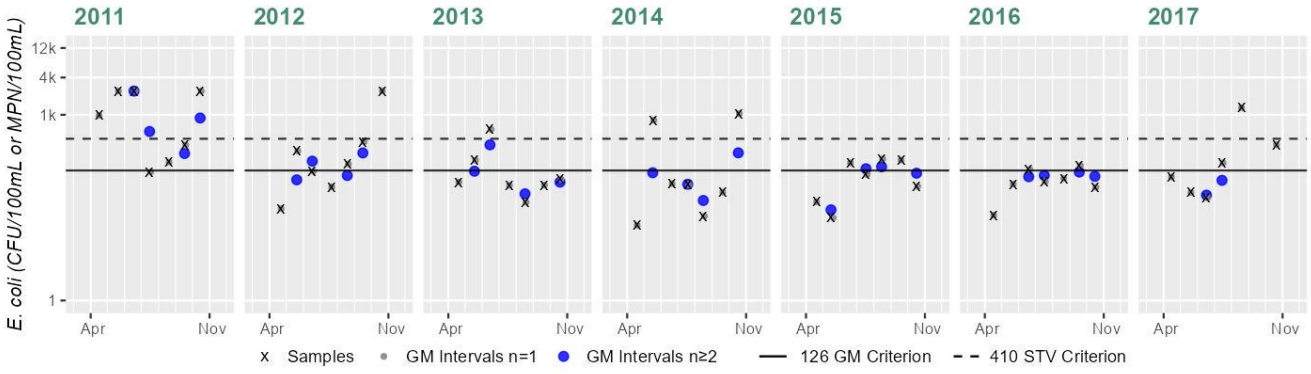
Cumulative %GMI Exceedance Current (2011-2022)
57%

Cumulative %GMI Exceedance Current (Recent 5 Years)
44%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NN0426 - Escherichia coli

Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	712
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	4
%n>STV	57%

Variable*	Result
Samples	7
SeasGM	191
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	107
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	100
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	87
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	0
%n>STV	0%

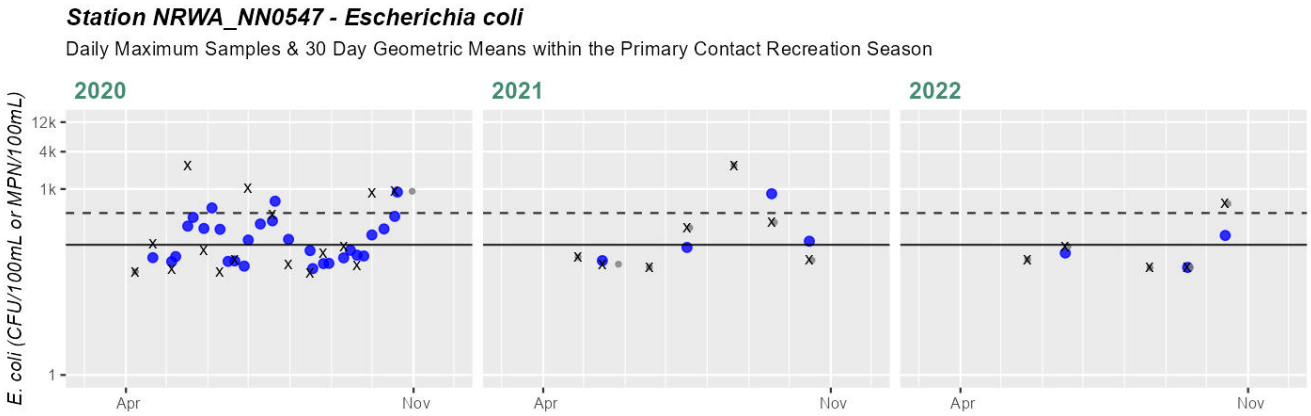
Variable*	Result
Samples	7
SeasGM	78
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	161
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	16%

Cumulative %GMI Exceedance Current (2011-2022)
38%

Cumulative %GMI Exceedance Current (Recent 5 Years)
22%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*



Variable*	Result
Samples	16
SeasGM	156
#GMI	28
#GMI Ex	14
%GMI Ex	50%
n>STV	4
%n>STV	25%

Variable*	Result
Samples	7
SeasGM	164
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	5
SeasGM	108
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	1
%n>STV	20%

Cumulative %GMI Exceedance
Current (2011-2022)
48%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Other Indicators

Summary Statement(s) for USGS 2020 PFAS in Water Column Data (Savoie and Argue 2023) (MassDEP Undated 2)

Summary
Surface water sampling was conducted by the USGS downstream of the Leominster WWTF discharge on the North Nashua River (MA81-04) at station USGS_01094465 on three dates during August to October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities. The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS) were all less than the 90 ng/L (ppt) recreational screening value (HFPO-DA/GenX was not analyzed in this study).

USGS 2020 PFAS in Water Column Data Collected Upstream and Downstream of Wastewater Treatment Facilities (Savoie and Argue 2023) (MassDEP Undated 2)

[The ∑PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here). * indicates the ∑PFAS6 concentration is qualified since data for one or more individual PFAS6 analytes were qualified. A concentration with a "<" was less than the reporting detection limit (RDL) and the RDL was used to calculate the ΣPFAS6. E = qualifier "value is estimated"; V = qualifier "value affected by field or laboratory contamination"]

Station Code	Sample Date	PFOA ng/L	PFOS ng/L	PFNA ng/L	PFHxS ng/L	PFBA ng/L	PFBS ng/L	ΣPFAS6 ng/L
USGS-01094465	8/28/2020	21.6	9.04	2.33	3.43	24.7	37.4	49.8
USGS-01094465	9/23/2020	25.3	10.3	2.21	3.86	26.8	48.4	56
USGS-01094465	10/19/2020	E24.1	E7.59	1.95	2.33	14.5	20.7	49.8*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for the North Nashua River (MA81-04) continues to be assessed as Not Supporting. The prior Escherichia Coli (E. Coli) impairment is being carried forward based on bacteria data not meeting the threshold at 1 combined station in 2015-2019. The prior Odor impairment (from the Aesthetics Use) is being carried forward. The prior Total Phosphorus and Algae Alerts (from the Aesthetics Use) are being removed. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in the North Nashua River from 1998-2022 at 5 stations. Samples were collected from the following stations/sample years from upstream to downstream: a quarter of the way down the AU at W0481 & NRWA_NN1194 [~200 ft downstream of Rt. 190 bridge, Lancaster & D.S. Rt. 190 on N Nashua, Lancaster] in 1998, 2003, and 2007-2010 (historic n=1-14/yr) and 2011-2019 (current n=4-9/yr), over halfway down at NRWA_NN0547 [Pellachia at Rt. 70, Lancaster] from 2020-2022 (n=5-16/yr), three-quarters of the way down at NRWA_NN0426 [Across from Langen Rd., Lancaster] from 2008-2010 (historic n=6-7/yr) and 2011-2017 (current n=6-7/yr), W1781 [Rt. 70, Lancaster] from May-Sep 2008 (n=6), and close to the downstream end of the AU at NRWA_NN0049 [N. Nashua Main St RR Bridge, Lancaster] from 2008-2010 (historic n=6-7/yr) and 2011-2017 (current n=6-7/yr). Since there are some bacteria data from the current IR window that are indicative of poor water quality conditions (with a mix of good and poor conditions in the historic window), only the analysis from the current IR window (4 stations) will be summarized here as follows: Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from W0481 & NRWA_NN1194 indicated 4 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2015-2018, 33-100%), and while only 1 yr had ≥2 samples exceed the 794 CFU/100ml STV (2017, n=2) cumulatively across years 33% of intervals had GMs >244 CFU/100ml. Analysis of the multi-year high frequency *E. coli* dataset from NRWA_NN0547 indicated 1 out of 3 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml (2021, 50%), 2 yrs had >10% of samples exceed the 794 CFU/100ml STV (2020 and 2021, 25 & 14%), and cumulatively across years 14% of intervals had GMs >244 CFU/100ml. Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from NRWA_NN0426 indicated 0 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml, 1 yr had ≥2 samples exceed the 794 CFU/100ml STV (2014, n=2), and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from NRWA_NN0049 indicated 1 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2014, 40%), 1 yr had ≥2 samples exceed the 794 CFU/100ml STV (2014, n=2), and cumulatively across years 8% of intervals had GMs >244 CFU/100ml. While *E. coli* data from NRWA_NN0547, NRWA_NN0426, and NRWA_NN0049 meet 2024 CALM guidance, *E. coli* data from W0481 & NRWA_NN1194 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0481	MassDEP	Water Quality	North Nashua River	[approximately 200 feet downstream of Route 190 bridge, Lancaster]	42.495169	-71.721925
W1781	MassDEP	Water Quality	North Nashua River	[Route 70, Lancaster]	42.451384	-71.673877
NRWA_NN0049	Nashua River Watershed Association	Water Quality	North Nashua River	N.Nashua Main Street RR Bridge, Lancaster	42.450200	-71.673100
NRWA_NN0426	Nashua River Watershed Association	Water Quality	North Nashua River	Across from Langen Rd., Lancaster	42.473700	-71.682200
NRWA_NN0547	Nashua River Watershed Association	Water Quality	North Nashua River	Pellachia @ Rt. 70, Lancaster	42.481320	-71.685054
NRWA_NN1194	Nashua River Watershed Association	Water Quality	North Nashua River	D.S. Rt. 190 on North Nashua, Lancaster	42.495110	-71.721660

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

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

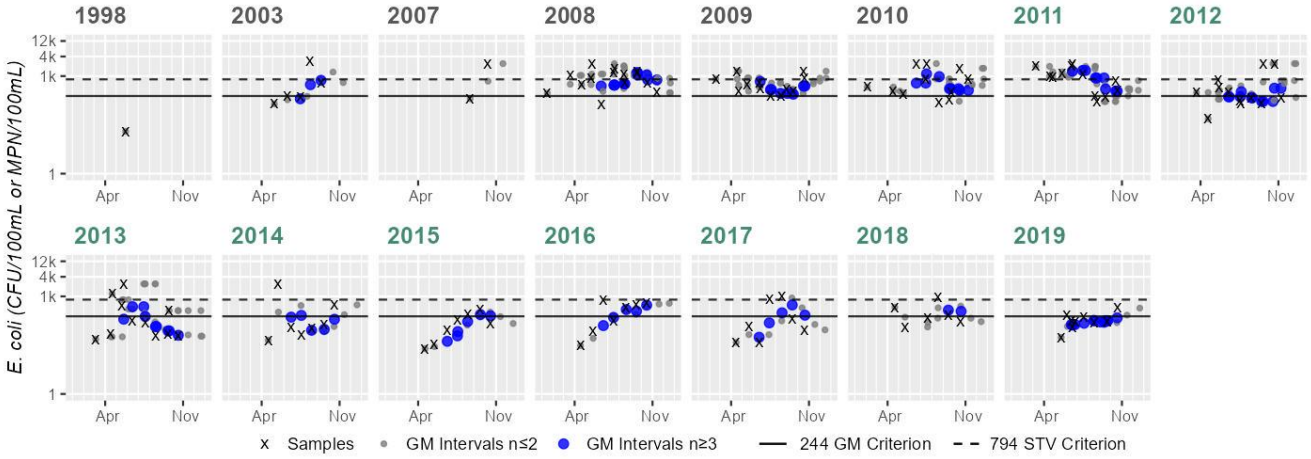
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W0481	MassDEP	E. coli	05/27/98	05/27/98	1	20	20	19
W0481	MassDEP	E. coli	05/06/03	09/11/03	5	140	2800	427
W0481	MassDEP	E. coli	08/22/07	10/10/07	2	201	2420	697
W0481	MassDEP	E. coli	01/16/08	11/12/08	8	132	1410	622
W0481	MassDEP	E. coli	02/18/09	10/21/09	5	345	866	565
W0481	MassDEP	E. coli	02/04/10	11/09/10	4	326	816	562
W0481	MassDEP	E. coli	03/09/11	10/19/11	5	166	1990	739
W0481	MassDEP	E. coli	03/20/12	11/07/12	5	179	2419	419
W0481	MassDEP	E. coli	03/06/13	09/24/13	4	48	2419	231
W1781	MassDEP	E. coli	05/15/08	09/18/08	6	45	470	152
NRWA_NN0049	Nashua River Watershed Association	E. coli	04/19/08	10/18/08	6	49	2419	268
NRWA_NN0049	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	67	2419	324

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_NN0049	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	7	118	2419	491
NRWA_NN0049	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	83	2419	630
NRWA_NN0049	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	58	2419	220
NRWA_NN0049	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	6	35	114	69
NRWA_NN0049	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	64	1413	225
NRWA_NN0049	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	35	325	97
NRWA_NN0049	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	24	186	86
NRWA_NN0049	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	41	231	121
NRWA_NN0426	Nashua River Watershed Association	E. coli	04/19/08	10/18/08	6	80	2419	437
NRWA_NN0426	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	1	2419	149
NRWA_NN0426	Nashua River Watershed Association	E. coli	05/15/10	10/16/10	6	126	2419	639
NRWA_NN0426	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	119	2419	712
NRWA_NN0426	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	30	2419	191
NRWA_NN0426	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	38	579	107
NRWA_NN0426	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	16	1046	100
NRWA_NN0426	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	21	193	87
NRWA_NN0426	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	23	151	78

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_NN0426	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	6	45	1299	161
NRWA_NN0547	Nashua River Watershed Association	E. coli	04/07/20	10/17/20	16	44	2419	156
NRWA_NN0547	Nashua River Watershed Association	E. coli	04/27/21	10/16/21	7	54	2419	164
NRWA_NN0547	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	5	53	579	108
NRWA_NN1194	Nashua River Watershed Association	E. coli	04/19/08	10/18/08	6	547	2419	1006
NRWA_NN1194	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	248	1413	514
NRWA_NN1194	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	7	152	2419	596
NRWA_NN1194	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	231	2419	749
NRWA_NN1194	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	48	2419	280
NRWA_NN1194	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	59	1203	171
NRWA_NN1194	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	44	2419	179
NRWA_NN1194	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	24	387	112
NRWA_NN1194	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	7	30	770	245
NRWA_NN1194	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	38	980	158
NRWA_NN1194	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	6	114	920	279
NRWA_NN1194	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	9	54	435	169

Station MASSDEP_W0481 & NRWA_NN1194 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	1
SeasGM	20
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	427
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	1
%n>STV	20%

Variable*	Result
Samples	2
SeasGM	697
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Variable*	Result
Samples	14
SeasGM	765
#GMI	13
#GMI Ex	13
%GMI Ex	100%
n>STV	8
%n>STV	57%

Variable*	Result
Samples	12
SeasGM	535
#GMI	9
#GMI Ex	9
%GMI Ex	100%
n>STV	4
%n>STV	33%

Variable*	Result
Samples	11
SeasGM	584
#GMI	9
#GMI Ex	9
%GMI Ex	100%
n>STV	5
%n>STV	45%

Variable*	Result
Samples	12
SeasGM	745
#GMI	9
#GMI Ex	9
%GMI Ex	100%
n>STV	7
%n>STV	58%

Variable*	Result
Samples	12
SeasGM	331
#GMI	11
#GMI Ex	3
%GMI Ex	27%
n>STV	2
%n>STV	16%

Variable*	Result
Samples	11
SeasGM	191
#GMI	9
#GMI Ex	2
%GMI Ex	22%
n>STV	2
%n>STV	18%

Variable*	Result
Samples	7
SeasGM	179
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	112
#GMI	6
#GMI Ex	2
%GMI Ex	33%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	245
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	158
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	6
SeasGM	279
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	1
%n>STV	16%

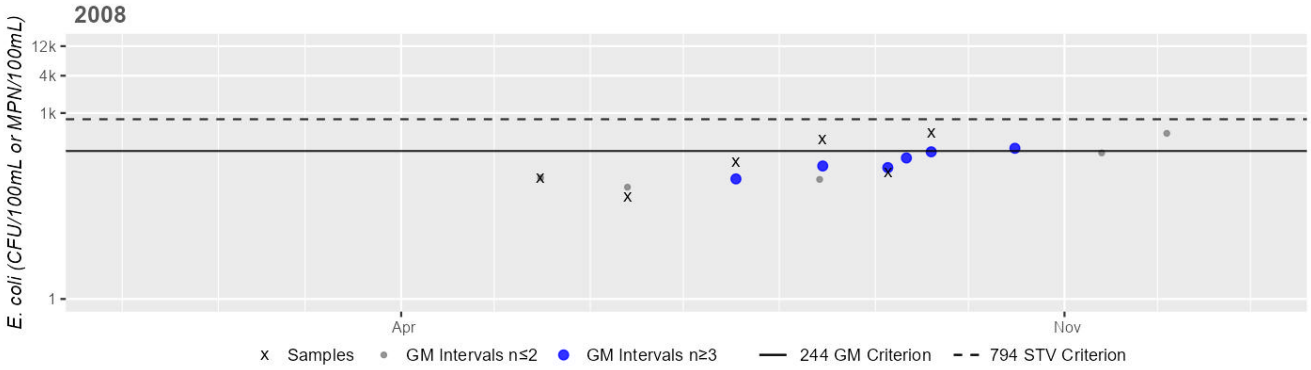
Variable*	Result
Samples	9
SeasGM	169
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
97%	39%	33%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W1781 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



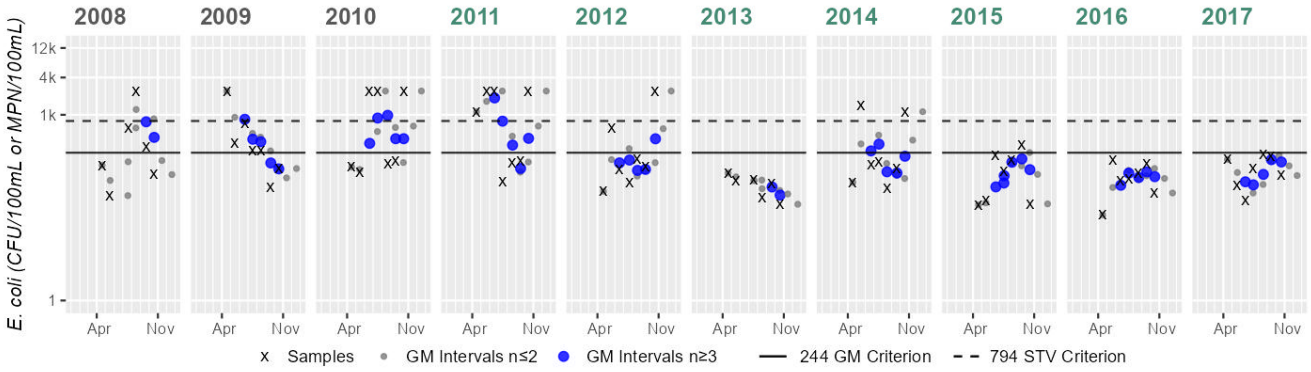
Variable*	Result
Samples	6
SeasGM	152
#GMI	6
#GMI Ex	1
%GMI Ex	16%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
16%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NN0049 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	268
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	7
SeasGM	324
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	491
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	3
%n>STV	42%

Variable*	Result
Samples	7
SeasGM	630
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	4
%n>STV	57%

Variable*	Result
Samples	7
SeasGM	220
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	69
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	225
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	97
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	86
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	121
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
83%

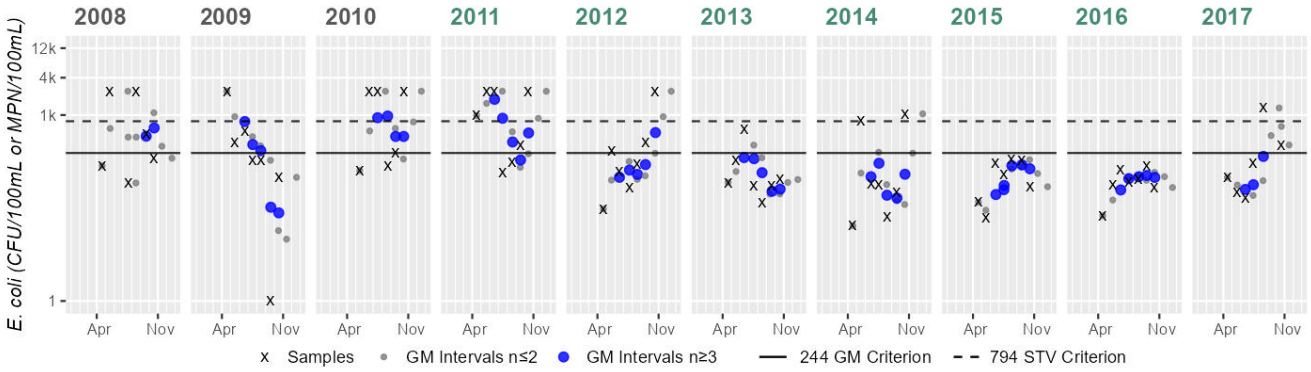
Cumulative %GMI Exceedance
Current (2011-2022)
21%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
8%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NN0426 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	437
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	7
SeasGM	149
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	639
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	3
%n>STV	50%

Variable*	Result
Samples	7
SeasGM	712
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	4
%n>STV	57%

Variable*	Result
Samples	7
SeasGM	191
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	107
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	100
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	87
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	78
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	161
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	16%

Cumulative %GMI Exceedance
Historic (1997-2010)
81%

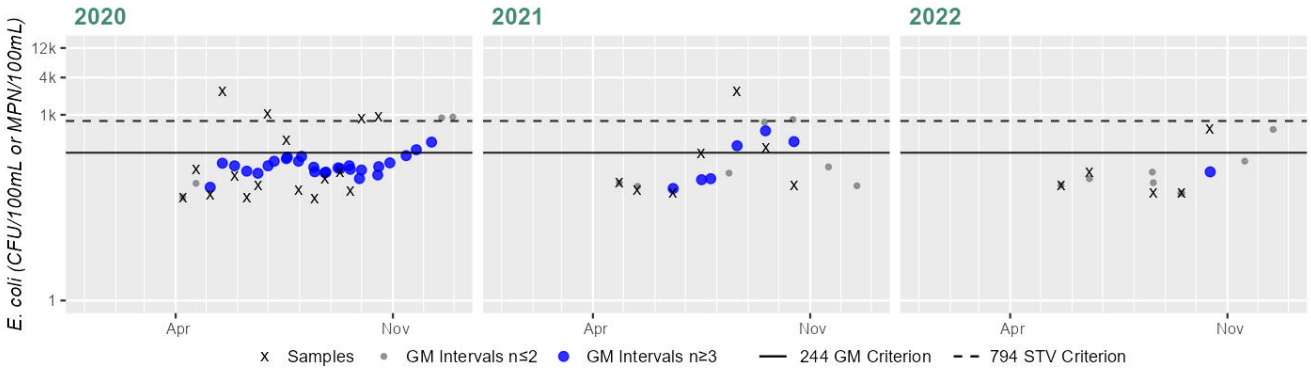
Cumulative %GMI Exceedance
Current (2011-2022)
14%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_NN0547 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	16
SeasGM	156
#GMI	27
#GMI Ex	2
%GMI Ex	7%
n>STV	4
%n>STV	25%

Variable*	Result
Samples	7
SeasGM	164
#GMI	6
#GMI Ex	3
%GMI Ex	50%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	5
SeasGM	108
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
14%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Notown Reservoir (MA81092)

Location:	Leominster.
AU Type:	FRESHWATER LAKE
AU Size:	241 ACRES
Classification/Qualifier:	A: PWS, ORW (PWS and Tributary to PWS)

No usable data were available for Notown Reservoir (MA81092) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Paradise Pond (MA81097)

Location:	Princeton.
AU Type:	FRESHWATER LAKE
AU Size:	61 ACRES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for Paradise Pond (MA81097) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Partridge Pond (MA81098)

Location:	Westminster.
AU Type:	FRESHWATER LAKE
AU Size:	25 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Aquatic Plants (Macrophytes)*)	--	Changed
5	5	(Non-Native Aquatic Plants*)	--	Unchanged
5	5	Nutrient/Eutrophication Biological Indicators	--	Added
5	5	Turbidity	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Aquatic Plants (Macrophytes)*)	Source Unknown (N)	--	--	X	X	X
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Nutrient/Eutrophication Biological Indicators	Source Unknown (N)	--	--	X	X	X
Turbidity	Source Unknown (N)	--	--	X	X	X

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Aquatic Plants (Macrophytes)	Not caused by a pollutant (4c)	As described in detail in the 2024 CALM guidance document the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Partridge Pond (MA81098) was first listed as impaired for Noxious Aquatic Plants in 2002 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2010 IR cycle (MassDEP 2024). The original impairment was based on an August 1998 synoptic survey conducted by MassDEP staff in which it was noted that the southern end of the pond (particularly coves) was covered with dense/very dense aquatic plants, including the non-rooted, floating species, *Utricularia purpurea* and *Utricularia* sp. (MassDEP 1998, MassDEP 2002). Google Earth images from August 2016, September 2017, and September 2019 show high amounts of plant coverage in the southern 1/4 to 1/3 of the pond (Google Earth Pro Undated). The Aquatic Plants (Macrophytes) impairment is being delisted as a pollutant and added again as a non-pollutant since more than 25% of the pond was covered in aquatic macrophytes in recent years.

Aquatic Plants (Macrophytes)

2002 WBS Coding Sheet (MassDEP 2002):

OK RSM 5/21/02 (Printed 07/27/00)

WBID: **MA81098** WATERSHED: **Nashua (81)**
NAME: **Partridge Pond** TYPE: **Lake/Pond**
CODE: **81098** SIZE: **24.70**(acres) CLASS: **B**

LATITUDE:
LONGITUDE: (423215/715625)
Lake/Pond Name: Partridge Pond(Ellis Pond, Smith P, Westminster
Ecoregion Name: ()
Description:

Assessment Date: ~~9112~~ 0008 **Begin Sampling:** 9808
Cycle: ~~99~~ 00 02 **End Sampling:** 9809

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

Uses	Support	Threat	Partial	Non-Sup	Not-Asses	Not-Attain
OVERALL USE SUPPORT			16.7	8.0	~~24.70~~	
ALUS					24.70	
FISH CONSUMPTION					24.70	
PRIMARY CONTACT			16.7	8.0	~~24.70~~	
SECONDARY CONTACT			16.7	8.0	~~24.70~~	
Aesthetics			16.7	8.0	~~24.70~~	

P 24.7

Nonattainment Causes

Code	Size	Magnitude
2200 - Noxious aquatic plants	8.0	M
2500 - Turbidity	24.7	M

"New"

Code	Size	Magnitude
2200	8.0	M
2500	24.7	M

Nonattainment Sources

Code	Size	Magnitude
-		

"New"

Code	Size	Magnitude
9000	24.7	H

Assessment Type
(Assessment Category = > Not-assessed)
-

"New" Assessment Category = > (M) E NA

R20, R35

Media/Pollutants Assessed (Toxics Monitoring = >)
-

"New" Toxics Monitoring = > YES or (NO)

Comments:

1998 Synoptic Survey Field Sheet (MassDEP 1998):

LAKE/POND: Partridge Pond SIZE (acres): 24.7 acres in WBS 33 PALIS NO. 81098

TOWN/CITY: Westminster USGS TOPO. SHEET: Gardner

DATE: 8/24/98 WATERSHED: Nashua OBSERVERS: DeCesare / McVoy

ACCESS – Location [describe each observation site and assign sequential numbers (1, 2, 3, etc.) to use in subsequent records; be specific in descriptions (e.g., public boat ramp at west cove area off Simpson St., etc.)]

Site (1) North end Ellis Road

Site (2) Viewed southend of lake from W. Lakeside Drive.

Site (3)

ACCESS – Type (for multiple observation sites use numbers in boxes that apply)

Formal Boat Ramp ☐☐☐ and/or Beach ☐☐☐ Informal Boat Ramp ☐☐☐ and/or Beach ☐☐☐

Park ☐☐☐ Conservation Area ☐☐☐ Right-of-Way: Road ☑☐☐ Other ☐☐☐

Other (describe): ☐

☐

☐

ACCESS – Ownership (for multiple observation sites use numbers in boxes that apply)

Public ☐☐☐ Private ☐☐☐ Uncertain ☑☐☐

Names of Owners ☐ No. & Street Name ☐

☐ No. & Street Name ☐

☐ No. & Street Name ☐

SIGN POSTINGS –

☐☐☐ Warning: Stop Aquatic Plant Spread ☐☐☐ Fishing Advisory or Ban

☐☐☐ Public Access without Restrictions ☐☐☐ Public Access with Restrictions

Describe any restrictions (or other notes) ☐

☐

☐

WATER/LAKE QUALITY OBSERVATIONS –

Turbidity: ☐☐☐ Slight ☑☐☐ Moderate ☑☐☐ Excessive

Diss. Organics: ☐☐☐ Slight ☑☐☐ Moderate ☐☐☐ Dark

Algal Bloom: ☑☐☐ Slight ☐☐☐ Moderate ☐☐☐ Dense

Transparency: ☑☐☐ < 1.2 m.(4 ft.) ☐☐☐ > 1.2 m. (4 ft.)

☑☐☐ Estimated visually

☐☐☐ Measured w/ Secchi Disk ☐ ____ meters

☐ ____ meters

☐ ____ meters

Bottom Type: ☑☐☐ Undecomposed matter ☑☐☐ Muck/silt ☐☐☐ Sand ☐☐☐ Gravel ☑☐☐ Cobble ☐☐☐ Boulders

☑☐☐ Vegetation Other ☐ ☐ ☐

Other Observations: ☑ Heavy development on east & west shores, 3-4 ducks

☐

☐

AESTHETICALLY OBJECTIONABLE – Substances attributable to wastewater or other discharges (point or nonpoint) that:

☐☐☐ Settle to form objectionable deposits

Describe:

☐☐☐ Float as debris, scum or other matter to form a nuisance

Describe:

☑☐☐ Produce objectionable odor, color, taste, or turbidity

Describe: Brown turbidity

☐☐☐ Produce undesirable nuisance species of aquatic life

Describe:

RECORD OF AQUATIC PLANT "SPECIES" OBSERVED –

NON-NATIVE WETLANDS SPECIES PRESENT: ☐☐☐ *Lythrum Salicaria* ☐☐☐ *Phragmites* sp.

NON-NATIVE AQUATIC SPECIES PRESENT: ☐☐☐ *Butomus umbellatus* ☐☐☐ *Cabomba caroliniana* ☐☐☐ *Egeria densa*

☐☐☐ *Eichornia crassipes* ☐☐☐ *Hydrilla verticillata* ☐☐☐ *Hydrocharis morsus-ranae* ☐☐☐ *Marsilea quadrifolia*

☐☐☐ *Myriophyllum aquaticum* ☐☐☐ *Myriophyllum heterophyllum* ☐☐☐ *Myriophyllum spicatum*

☐☐☐ *M.* sp. (*M. heterophyllum* requiring further confirmation when flowering heads are evident) _____

☐☐☐ *Najas minor* ☐☐☐ *Nelumbo lutea* ☐☐☐ *Nymphoides peltata* ☐☐☐ *Potamogeton crispus* ☐☐☐ *Trapa natans*

NATIVE SPECIES POPULATIONS:

Emergent Plants	Floating Leaf Plants	Submergent Plants
☑☐☐ Iris	☑☐☐ Brasenia	☑☐☐ M. humile
☑☐☐ Sparganium	☑☐☐ Nymphaea	☑☐☐ Nitella
☐☐☐	☐☐☐	☑☐☐ Utricularia sp.
☐☐☐	☐☐☐	☑☐☐ Isoetes
☐☐☐	☐☐☐	☑☐☐ Najas flexilis
☐☐☐	☐☐☐	☑☐☐ P. sp. (thin leaf)
☐☐☐	☐☐☐	☑☐☐ V. purpurea
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐

AQUATIC PLANT DENSITY –

Percent of suface area (at observation site) with dense (50 - 75 %) aquatic plant cover ☑ <5 % ☐ _____ % ☐ _____ %

Forms [(E)mergent, (F)loating, or (S)ubmerent] present ☐ _____ ☐ _____ ☐ _____

Percent of surface area (observation site) with very dense (75 - 100 %) plant cover ☑ <5 % ☐ _____ % ☐ _____ %

Forms [(E)mergent, (F)loating, or (S)ubmerent) present ☐ _____ ☐ _____ ☐ _____

Percent of entire lake surface covered with dense or very dense aquatic plants _____ % Forms _____

Describe locations of dense and/or very dense plant beds occasional floating leaf beds along shoreline - south end (particularly cove) dense → v. dense floating except in center (see map)

Loss of open water habitat over entire lake (estimated): ☐ >90 - 100 % ☐ >60 - 90 % ☐ >25 - 60 % ☑ ≤ 25 %

ASSESSMENTS –

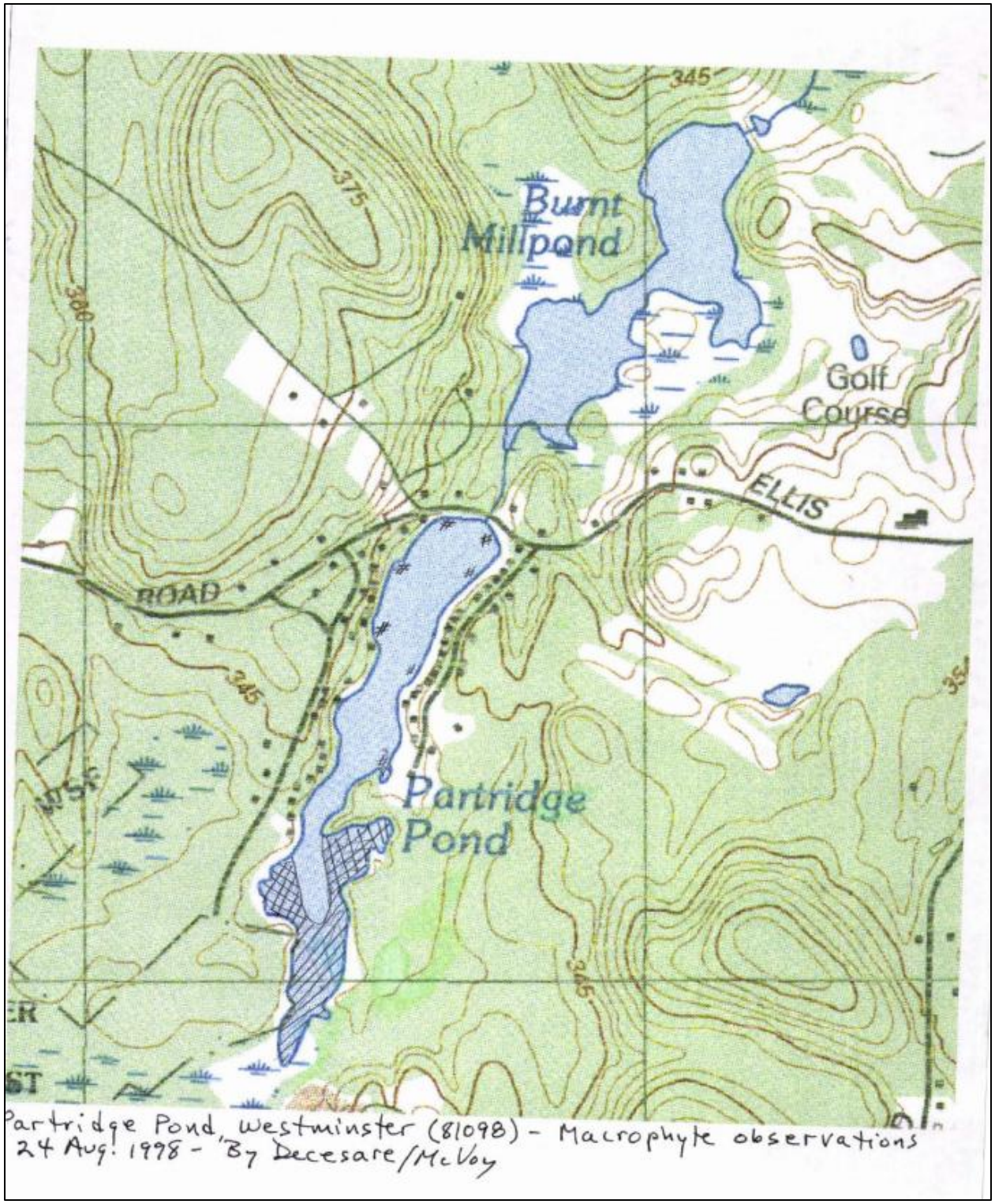
TROPHIC STATUS ESTIMATE: ☐ Oligotrophic ☐ Mesotrophic ☑ Eutrophic ☐ Hypereutrophic ☐ Dystrophic ☐ Undetermined

305(b) USE IMPAIRMENT ASSESSMENTS (Acres):

USES	Full Support	Threatened	Partial Support	Non-support	Not Assessed	Not Attainable
Aquatic Life					24.7	
Fish Consumption					24.7	
Primary Contact			16.7	8.0		
Secondary Contact			16.7	8.0		
Aesthetics			16.7	8.0		

CAUSES: ☒ Noxious plants (2200) -- Size 8.0 acres / Magnitude M ☐ Exotic plants (2600) -- Size _____ acres / Magnitude _____
☒ Turbidity (2500) -- Size 24.7 acres / Magnitude M ☐ Flow alteration (1500) -- Size _____ acres / Magnitude _____
☐ Metals (0500) ☐ Hg (0501) -- Size _____ acres / Magnitude _____ ☐ Siltation (1100) -- Size _____ acres / Magnitude _____
☐ _____ ( ) -- Size _____ acres / Magnitude _____ ☐ _____ ( ) -- Size _____ acres / Magnitude _____

SOURCES: Describe any obvious sources of impairment _____



Google Earth image of Partridge Pond while clear, 12/31/2000 (Google Earth Pro Undated):

Google Earth image of Partridge Pond, 8/23/2016 (Google Earth Pro Undated):

Google Earth image of Partridge Pond, 9/12/2017 (Google Earth Pro Undated):

Google Earth image of Partridge Pond, 9/20/2019 (Google Earth Pro Undated):

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Partridge Pond (MA81098) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Aesthetics Use for Partridge Pond (MA81098) continues to be assessed as Not Supporting. The prior pollutant Aquatic Plants (Macrophytes) impairment is being removed and replaced with a non-pollutant Aquatic Plants (Macrophytes) impairment. The Turbidity impairment is being carried forward and a Nutrient/Eutrophication Biological Indicators impairment is being added. As described in detail in the 2024 CALM guidance document the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Partridge Pond was first listed as impaired for Noxious Aquatic Plants in 2002 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2010 IR cycle (MassDEP 2024). The original impairment was based on an August 1998 synoptic survey conducted by MassDEP staff in which it was noted that the southern end of the pond (particularly coves) was covered with dense/very dense aquatic plants, including the non-rooted, floating species, *Utricularia purpurea* and *Utricularia sp.* (MassDEP 1998, MassDEP 2002). Google Earth images from August 2016, September 2017, and September 2019 show high amounts of plant coverage in the southern 1/4 to 1/3 of the pond (Google Earth Pro Undated). Nutrient/Eutrophication Biological Indicators is being added as an impairment based on the presence of non-rooted, floating, aquatic macrophyte species. Additionally, Aquatic Plants (Macrophytes) is being delisted as a pollutant and added again as a non-pollutant since more than 25% of the pond was covered in aquatic macrophytes in recent years. No new data are available to evaluate the Aesthetics Use for Partridge Pond.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Partridge Pond (MA81098) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior Turbidity impairment (from the Aesthetics Use) is being carried forward and a Nutrient/Eutrophication Biological Indicators impairment is being added (from the Aesthetics Use). The prior pollutant Aquatic Plants (Macrophytes) impairment is being removed and replaced with a non-pollutant Aquatic Plants (Macrophytes) impairment (from Aesthetics Use).

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

No bacteria or other indicator data for Partridge Pond (MA81098) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use continues to be assessed as Not Supporting. The prior Turbidity impairment (from the Aesthetics Use) is being carried forward and a Nutrient/Eutrophication Biological Indicators impairment is being added (from the Aesthetics Use). The prior pollutant Aquatic Plants (Macrophytes) impairment is being removed and replaced with a non-pollutant Aquatic Plants (Macrophytes) impairment (from Aesthetics Use).

Pearl Hill Brook (MA81-103)

Location:	Headwaters east of Pearl Hill Road, Fitchburg to mouth at confluence with Falulah Brook, forming headwaters Baker Brook, Fitchburg.
AU Type:	RIVER
AU Size:	3.2 MILES
Classification/Qualifier:	B

Pearl Hill Brook (MA81-103)

Watershed Area: 3.93 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	3.93	3.92	0.88	0.88
Agriculture	3.3%	3.3%	1.6%	1.6%
Developed	18%	18%	13.2%	13.2%
Natural	71.7%	71.7%	68.7%	68.7%
Wetland	7%	7%	16.5%	16.5%
Impervious	7.9%	7.9%	6.4%	6.4%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
--	3	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Pearl Hill Brook (MA81-103) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Pearl Hill Brook (MA81-103) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Pearl Hill Brook (MA81-103) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Pearl Hill Brook (MA81-103) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MassDEP staff collected *E. coli* bacteria samples at the downstream end of Pearl Hill Brook at W1846 [Pleasant St, Lunenburg] from May-Sep 2008 (n=6). Analysis of the historic single year limited frequency *E. coli* dataset from W1846 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 39 CFU/100ml. Historic *E. coli* data from W1846 meet 2024 CALM guidance. However, since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

Monitoring Stations

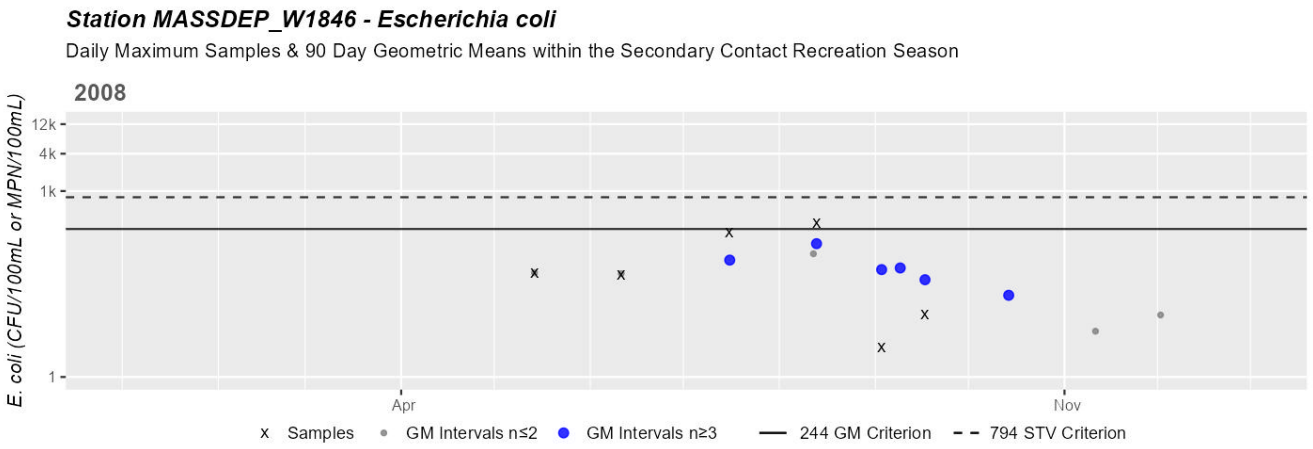
Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1846	MassDEP	Water Quality	Pearl Hill Brook	[Pleasant Street, Lunenburg]	42.585104	-71.770851

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W1846	MassDEP	E. coli	05/13/08	09/16/08	6	3	300	39



Variable*	Result
Samples	6
SeasGM	39
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

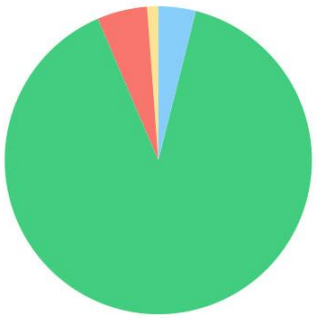
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Pearl Hill Brook (MA81-80)

Location:	Headwaters, outlet Wright Ponds, Ashby to mouth at confluence with Squannacook River, Townsend.
AU Type:	RIVER
AU Size:	6.7 MILES
Classification/Qualifier:	B: ORW

Pearl Hill Brook (MA81-80)

Watershed Area: 7.26 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	7.26	4.35	2.09	1.16
Agriculture	1.2%	1%	1%	0.8%
Developed	5.3%	4.6%	5.3%	5.3%
Natural	89.6%	91.1%	84.8%	87.2%
Wetland	3.9%	3.3%	8.8%	6.7%
Impervious	2%	1.7%	2.4%	2.5%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Enterococcus	R1_MA_2024_04	Changed

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Enterococcus	Source Unknown (N)	--	--	--	X	--

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Enterococcus	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Pearl Hill Brook (MA81-80) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Pearl Hill Brook (MA81-80) continues to be assessed as Fully Supporting. MassDEP staff recorded aesthetics observations as part of the Reference Site Network monitoring project during the summers of 2013-2016 & 2019, at one station three-quarters of the way down this Pearl Hill Brook AU ~2775 feet downstream/north from Vinton Pond Road, Townsend (W2410, n=4-5/yr). No persistent objectionable conditions (i.e., odors, deposits, growths, or turbidity) were observed during any of the surveys.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2410	MassDEP	Water Quality	Pearl Hill Brook	[approximately 2775 feet downstream/north from Vinton Pond Road, Townsend]	42.664623	-71.753811

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2410	2013	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2410 on Pearl Hill Brook (MA81-80) during 5 site visits between May 2013 and Oct 2013. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.
W2410	2014	4	Aesthetic observations were made by MassDEP field sampling crews at Station W2410 on Pearl Hill Brook (MA81-80) during 4 site visits between Jun 2014 and Aug 2014. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.
W2410	2015	4	Aesthetic observations were made by MassDEP field sampling crews at Station W2410 on Pearl Hill Brook (MA81-80) during 4 site visits between May 2015 and Aug 2015. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.
W2410	2016	4	Aesthetic observations were made by MassDEP field sampling crews at Station W2410 on Pearl Hill Brook (MA81-80) during 4 site visits between May 2016 and Aug 2016. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.
W2410	2019	4	Aesthetic observations were made by MassDEP field sampling crews at Station W2410 on Pearl Hill Brook (MA81-80) during 4 site visits between Jun 2019 and Sep 2019. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2410	2013	5	2	0
W2410	2014	4	4	0
W2410	2015	4	4	0
W2410	2016	4	4	0
W2410	2019	4	4	0

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2410	Pearl Hill Brook	2013	Aesthetics Impaired?	No	5	5

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2410	Pearl Hill Brook	2013	Aquatic Plant Density, Overall	Moderate	1	5
W2410	Pearl Hill Brook	2013	Aquatic Plant Density, Overall	None	1	5
W2410	Pearl Hill Brook	2013	Aquatic Plant Density, Overall	NR	1	5
W2410	Pearl Hill Brook	2013	Aquatic Plant Density, Overall	Sparse	2	5
W2410	Pearl Hill Brook	2013	Color	Brownish	1	5
W2410	Pearl Hill Brook	2013	Color	Light Yellow/Tan	1	5
W2410	Pearl Hill Brook	2013	Color	None	3	5
W2410	Pearl Hill Brook	2013	Objectionable Deposits	No	5	5
W2410	Pearl Hill Brook	2013	Odor	None	5	5
W2410	Pearl Hill Brook	2013	Periphyton Density, Filamentous	None	1	5
W2410	Pearl Hill Brook	2013	Periphyton Density, Filamentous	NR	4	5
W2410	Pearl Hill Brook	2013	Periphyton Density, Film	None	1	5
W2410	Pearl Hill Brook	2013	Periphyton Density, Film	NR	3	5
W2410	Pearl Hill Brook	2013	Periphyton Density, Film	Sparse	1	5
W2410	Pearl Hill Brook	2013	Scum	No	5	5
W2410	Pearl Hill Brook	2013	Turbidity	None	5	5
W2410	Pearl Hill Brook	2014	Aesthetics Impaired?	No	4	4
W2410	Pearl Hill Brook	2014	Aquatic Plant Density, Overall	Moderate	3	4
W2410	Pearl Hill Brook	2014	Aquatic Plant Density, Overall	Sparse	1	4
W2410	Pearl Hill Brook	2014	Color	Light Yellow/Tan	3	4
W2410	Pearl Hill Brook	2014	Color	None	1	4
W2410	Pearl Hill Brook	2014	Objectionable Deposits	No	4	4
W2410	Pearl Hill Brook	2014	Odor	None	4	4
W2410	Pearl Hill Brook	2014	Periphyton Density, Filamentous	None	4	4
W2410	Pearl Hill Brook	2014	Periphyton Density, Film	None	4	4
W2410	Pearl Hill Brook	2014	Scum	No	4	4
W2410	Pearl Hill Brook	2014	Turbidity	None	4	4
W2410	Pearl Hill Brook	2015	Aesthetics Impaired?	No	4	4
W2410	Pearl Hill Brook	2015	Aquatic Plant Density, Overall	Dense	1	4
W2410	Pearl Hill Brook	2015	Aquatic Plant Density, Overall	Moderate	3	4
W2410	Pearl Hill Brook	2015	Color	Light Yellow/Tan	1	4
W2410	Pearl Hill Brook	2015	Color	None	3	4
W2410	Pearl Hill Brook	2015	Objectionable Deposits	No	3	4
W2410	Pearl Hill Brook	2015	Objectionable Deposits	Yes	1	4
W2410	Pearl Hill Brook	2015	Odor	None	4	4
W2410	Pearl Hill Brook	2015	Periphyton Density, Filamentous	None	3	4

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2410	Pearl Hill Brook	2015	Periphyton Density, Filamentous	Sparse	1	4
W2410	Pearl Hill Brook	2015	Periphyton Density, Film	None	3	4
W2410	Pearl Hill Brook	2015	Periphyton Density, Film	Sparse	1	4
W2410	Pearl Hill Brook	2015	Scum	No	3	4
W2410	Pearl Hill Brook	2015	Scum	NR	1	4
W2410	Pearl Hill Brook	2015	Turbidity	None	4	4
W2410	Pearl Hill Brook	2016	Aesthetics Impaired?	No	4	4
W2410	Pearl Hill Brook	2016	Aquatic Plant Density, Overall	Moderate	3	4
W2410	Pearl Hill Brook	2016	Aquatic Plant Density, Overall	Sparse	1	4
W2410	Pearl Hill Brook	2016	Color	Light Yellow/Tan	1	4
W2410	Pearl Hill Brook	2016	Color	None	2	4
W2410	Pearl Hill Brook	2016	Color	Reddish	1	4
W2410	Pearl Hill Brook	2016	Objectionable Deposits	No	4	4
W2410	Pearl Hill Brook	2016	Odor	None	4	4
W2410	Pearl Hill Brook	2016	Periphyton Density, Filamentous	None	3	4
W2410	Pearl Hill Brook	2016	Periphyton Density, Filamentous	Sparse	1	4
W2410	Pearl Hill Brook	2016	Periphyton Density, Film	None	3	4
W2410	Pearl Hill Brook	2016	Periphyton Density, Film	Sparse	1	4
W2410	Pearl Hill Brook	2016	Scum	No	4	4
W2410	Pearl Hill Brook	2016	Turbidity	None	4	4
W2410	Pearl Hill Brook	2019	Aesthetics Impaired?	No	4	4
W2410	Pearl Hill Brook	2019	Aquatic Plant Density, Overall	Dense	1	4
W2410	Pearl Hill Brook	2019	Aquatic Plant Density, Overall	Sparse	3	4
W2410	Pearl Hill Brook	2019	Color	None	4	4
W2410	Pearl Hill Brook	2019	Objectionable Deposits	No	4	4
W2410	Pearl Hill Brook	2019	Odor	None	4	4
W2410	Pearl Hill Brook	2019	Periphyton Density, Filamentous	None	3	4
W2410	Pearl Hill Brook	2019	Periphyton Density, Filamentous	Sparse	1	4
W2410	Pearl Hill Brook	2019	Periphyton Density, Film	None	4	4
W2410	Pearl Hill Brook	2019	Scum	No	4	4
W2410	Pearl Hill Brook	2019	Turbidity	None	4	4

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Pearl Hill Brook (MA81-80) continues to be assessed as Not Supporting. The prior Enterococcus impairment is being carried forward based on DPH Beach Closures data not meeting the threshold at Pearl Hill Pond Beach (DCR) [Beach ID: 4966]. Pearl Hill Brook has a beach with DPH Beach Closure data: Pearl Hill Pond (DCR) [Beach ID: 4966] beach in Townsend. Beaches were posted for >10% of the swimming season at Pearl Hill Pond Beach (DCR) in 2018 (77%), 2019 (70%), 2020 (25%), and 2021 (69%) indicating an *Enterococcus* impairment.

Beach Postings

MDPH Beach Posting Data Summary (% Bathing Season Posted 2014-2022) (Bailey, Logan Feb. 2, 2021) (Bailey Sept. 10, 2023) (MassDEP Undated 2)

Beach ID	Beach Name/ Town	Left Border (Lat., Long.)	Right Border (Lat., Long.)	2014	2015	2016	2017	2018	2019	2020	2021	2022	# years >10%
4966	Pearl Hill Pond Beach (DCR)/ Townsend	42.65628, -71.75810	42.65699, -71.75800	2%	34%	7%	24%	77%	70%	25%	69%	8%	6

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary

No bacteria data are available to assess the Secondary Contact Recreation Use for Pearl Hill Brook (MA81-80) and available aesthetics observations for this AU did not result in any impairment, so it is assessed as having Insufficient Information. Pearl Hill Brook has a beach with DPH Beach Closure data: Pearl Hill Pond (DCR) [Beach ID: 4966] beach in Townsend. Available DPH Beach Closure data cannot be used to positively assess the Secondary Contact Recreation Use since beaches were posted for >10% of the swimming season: Pearl Hill Pond Beach (DCR) in 2018, 2019, 2020, and 2021. MassDEP staff collected *E. coli* bacteria samples close to the downstream end of Pearl Hill Brook at W1835 [S off end of Pearl Brook Rd, Townsend] from May-Sep 2008 (n=6). Analysis of the historic single year limited frequency *E. coli* dataset from W1835 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 13 CFU/100ml. Historic *E. coli* data from W1835 meet 2024 CALM guidance. However, since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1835	MassDEP	Water Quality	Pearl Hill Brook	[south off end of Pearl Brook Road, Townsend]	42.671401	-71.756890

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

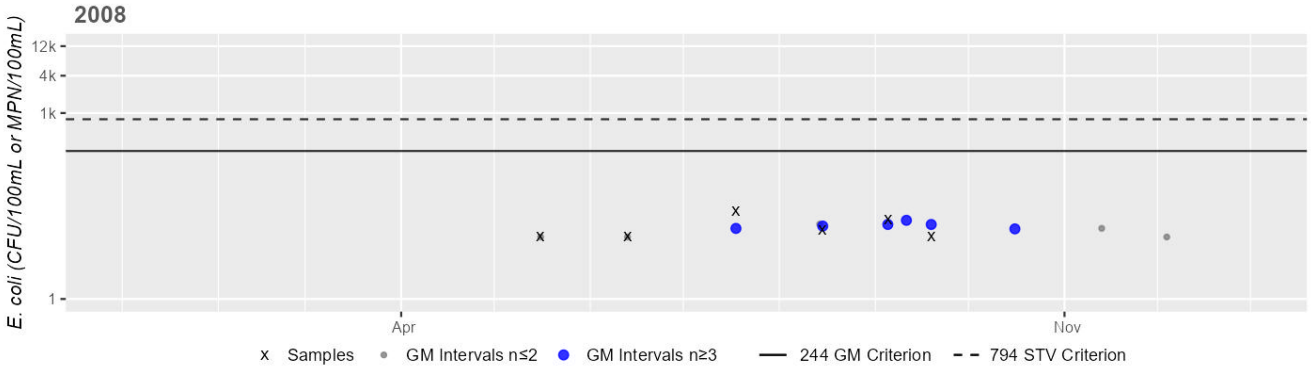
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W1835	MassDEP	E. coli	05/15/08	09/18/08	6	10	26	13

Station MASSDEP_W1835 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	13
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

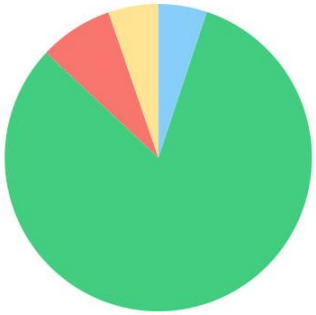
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Phillips Brook (MA81-12)

Location:	Headwaters, outlet Winnekeag Lake, Ashburnham to confluence with North Nashua River, Fitchburg (SARIS note: segment includes McTaggarts Pond and Unnamed Tributary to North Nashua River) ('WWF' applies to Fitchburg 0.0 to 1.0 mile of river per 2022 SWQS).
AU Type:	RIVER
AU Size:	8.4 MILES
Classification/Qualifier:	B: WWF ('WWF' applies to Fitchburg portion, 0.0 to 1.0 miles)

Phillips Brook (MA81-12)

Watershed Area: 15.80 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	15.80	5.85	5.04	2.14
Agriculture	5.3%	8%	5.6%	8.7%
Developed	7.8%	7.7%	8.7%	7.6%
Natural	81.9%	80.3%	77.5%	76.3%
Wetland	5.1%	3.9%	8.3%	7.4%
Impervious	3.5%	3.2%	4.5%	3.9%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Temperature	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Temperature	Dam or Impoundment (Y)	X	--	--	--	--
Temperature	Source Unknown (N)	X	--	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Phillips Brook (MA81-12) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Phillips Brook (MA81-12) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Phillips Brook (MA81-12) continues to be assessed as Fully Supporting. Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples over a third of the way down Phillips Brook at NRWA_PB0840 [Whitney Hill Rd (an old cart path/right-way connecting Willard Rd to the W with Rt 12 to the east. Just across the St from Jewell Hill Rd), Ashburnham] from 2011-2012 (n=6-7/yr). Analysis of the multi-year moderate frequency *E. coli* dataset from NRWA_PB0840 indicated 0 out of 2 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml, 0 yrs had ≥2 samples exceed the 410 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >126 CFU/100ml. *E. coli* data from NRWA_PB0840 meet 2024 CALM guidance.

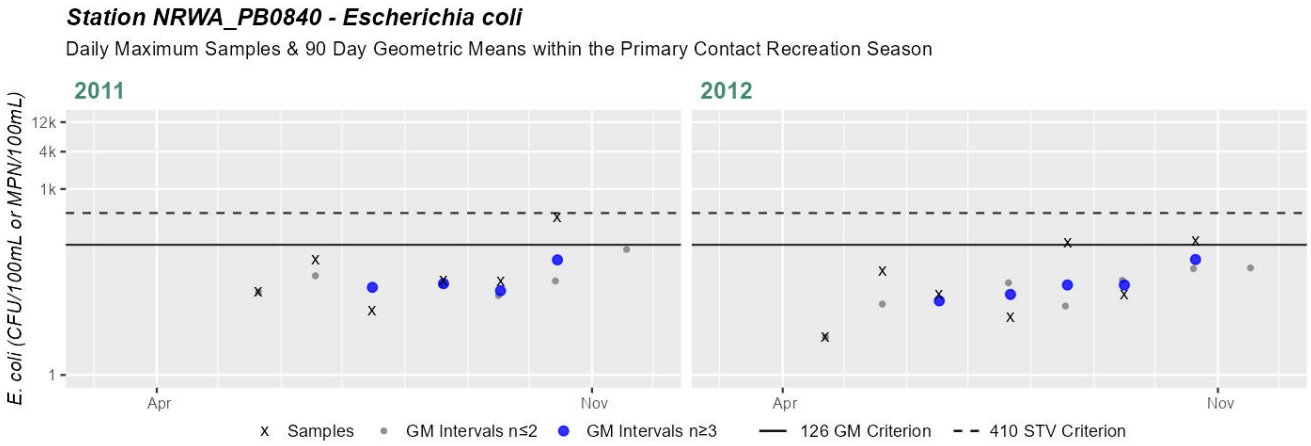
Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_PB0840	Nashua River Watershed Association	Water Quality	Phillips Brook	Whitney Hill Rd (an old cart path/right-way connecting Willard Rd to the west with Rt 12 to the east. Just across the street from Jewell Hill Rd), Ashburnham	42.625430	-71.882479

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)
(NRWA 2022) (MassDEP Undated 2)
[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
NRWA_PB0840	Nashua River Watershed Association	E. coli	05/21/11	10/15/11	6	11	344	43
NRWA_PB0840	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	4	143	27



Variable*	Result
Samples	6
SeasGM	43
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	27
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Phillips Brook (MA81-12) continues to be assessed as Fully Supporting. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in Phillips Brook from 2003-2012 at 3 stations. Samples were collected from the following stations/sample years from upstream to downstream: over a third of the way down the AU at NRWA_PB0840 [Whitney Hill Rd (an old cart path/right-way connecting Willard Rd to the W with Rt 12 to the east. Just across the St from Jewell Hill Rd), Ashburnham] from 2011-2012 (n=6-7/yr), halfway down at W1809 [the Rt. 12 crossing nearest to and N of the Fred Smith Rd/Bean Porridge Hill Rd intersection, Westminster] from May-Sep 2008 (n=6), and close to the downstream end at W0991 [~1000 ft downstream from Westminster Hill Rd, Fitchburg] in 2003 and 2008 (n=5-6/yr). Since bacteria data from the historic IR window are all indicative of good water quality conditions, only the analysis from the current IR window (1 station) will be summarized here: Analysis of the multi-year moderate frequency *E. coli* dataset from NRWA_PB0840 indicated 0 out of 2 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml, 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. *E. coli* data in the current IR window from NRWA_PB0840 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0991	MassDEP	Water Quality	Phillips Brook	[approximately 1000 feet downstream from Westminster Hill Road, Fitchburg]	42.575787	-71.839431
W1809	MassDEP	Water Quality	Phillips Brook	[the Route 12 crossing nearest to and north of the Fred Smith Road/Bean Porridge Hill Road intersection, Westminster]	42.608192	-71.870680
NRWA_PB0840	Nashua River Watershed Association	Water Quality	Phillips Brook	Whitney Hill Rd (an old cart path/right-way connecting Willard Rd to the west with Rt 12 to the east. Just across the street from Jewell Hill Rd), Ashburnham	42.625430	-71.882479

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

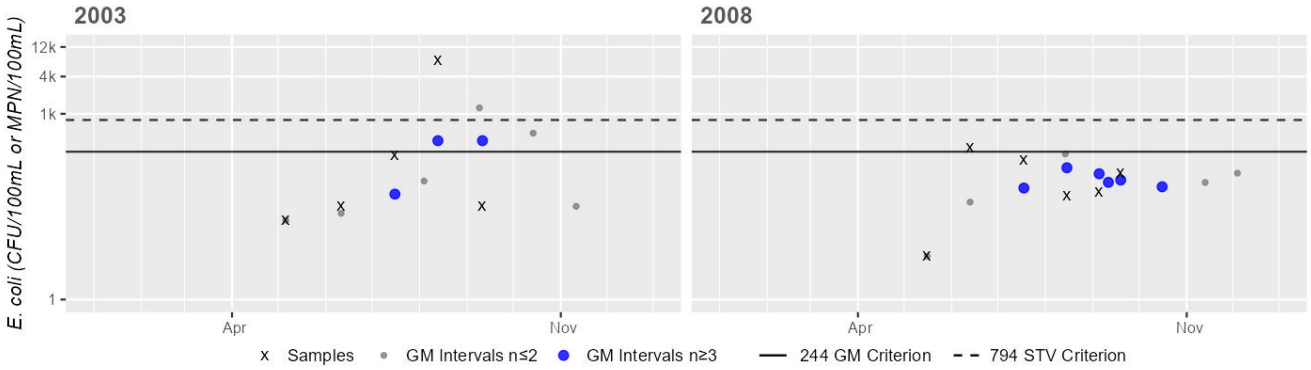
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W0991	MassDEP	E. coli	05/06/03	09/11/03	5	19	7400	124
W0991	MassDEP	E. coli	05/15/08	09/18/08	6	5	280	64
W1809	MassDEP	E. coli	05/15/08	09/18/08	6	10	67	24
NRWA_PB0840	Nashua River Watershed Association	E. coli	05/21/11	10/15/11	6	11	344	43

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_PB0840	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	4	143	27

Station MASSDEP_W0991 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	124
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	1
%n>STV	20%

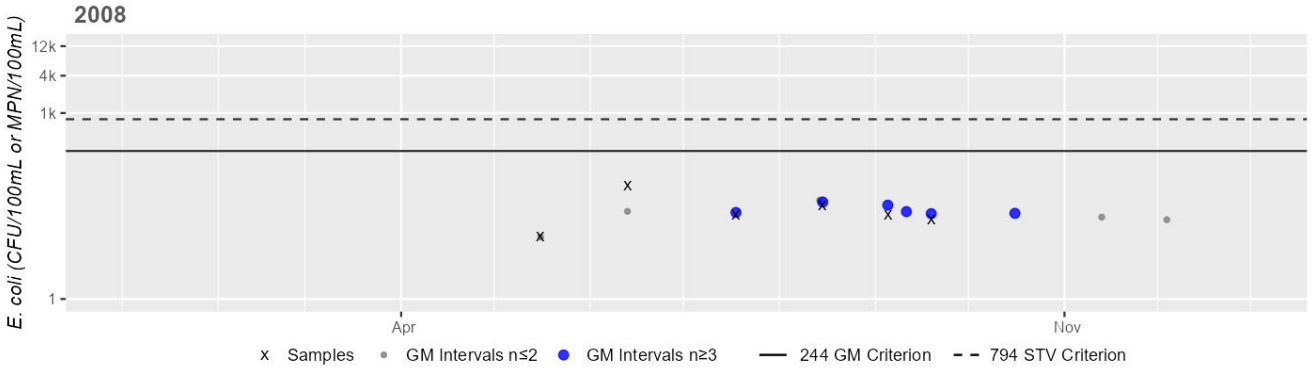
Variable*	Result
Samples	6
SeasGM	64
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
22%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W1809 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



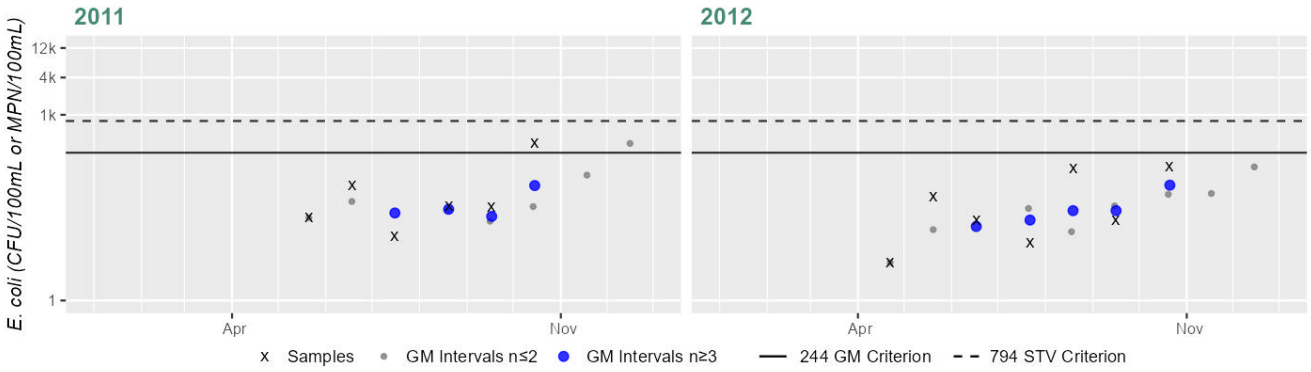
Variable*	Result
Samples	6
SeasGM	24
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_PB0840 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	43
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	27
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Pine Hill Reservoir (MA81102)

Location:	Paxton/Holden/Rutland.
AU Type:	FRESHWATER LAKE
AU Size:	336 ACRES
Classification/Qualifier:	A: PWS, ORW (PWS and Tributary to PWS)

No usable data were available for Pine Hill Reservoir (MA81102) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Plow Shop Pond (MA81103)

Location:	Ayer.
AU Type:	FRESHWATER LAKE
AU Size:	29 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Aquatic Plants (Macrophytes)*)	--	Changed
5	5	(Fanwort*)	--	Unchanged
5	5	(Non-Native Aquatic Plants*)	--	Removed
5	5	Arsenic	--	Unchanged
5	5	Chromium, Total	--	Unchanged
5	5	Mercury in Fish Tissue	--	Unchanged
5	5	Nutrient/Eutrophication Biological Indicators	--	Added
5	5	Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	--	Unchanged
5	5	Sediment Bioassay [Chronic Toxicity Freshwater]	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Aquatic Plants (Macrophytes)*)	Source Unknown (N)	--	--	X	X	X

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Fanwort*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Arsenic	Contaminated Groundwater (Y)	--	--	--	X	X
Arsenic	Contaminated Sediments (Y)	--	--	--	X	X
Arsenic	Source Unknown (N)	--	--	--	X	X
Chromium, Total	Contaminated Groundwater (Y)	--	--	--	X	X
Chromium, Total	Contaminated Sediments (Y)	--	--	--	X	X
Chromium, Total	Source Unknown (N)	--	--	--	X	X
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--
Nutrient/Eutrophication Biological Indicators	Source Unknown (N)	--	--	X	X	X
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Contaminated Groundwater (Y)	X	--	--	X	X
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Contaminated Sediments (Y)	X	--	--	X	X
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Source Unknown (N)	X	--	--	X	X
Sediment Bioassay [Chronic Toxicity Freshwater]	Contaminated Groundwater (Y)	X	--	--	--	--
Sediment Bioassay [Chronic Toxicity Freshwater]	Contaminated Sediments (Y)	X	--	--	--	--
Sediment Bioassay [Chronic Toxicity Freshwater]	Source Unknown (N)	X	--	--	--	--

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Aquatic Plants (Macrophytes)	Not caused by a pollutant (4c)	As described in detail in the 2024 CALM guidance document the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Plow Shop Pond (MA81103) was first listed as impaired for Noxious Aquatic Plants in 2002 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2010 IR cycle (MassDEP 2024). The original impairment was based on a July 1998 synoptic survey conducted by MassDEP staff in which it was noted that roughly 75% of the pond was covered with dense/very dense aquatic plants, including the non-rooted, floating species, *Utricularia sp*. (MassDEP 1998, MassDEP 2002). Google Earth images from October 2020 and October 2021 show high amounts of plant coverage in roughly 1/4 to 1/3 of the pond (Google Earth Pro Undated). The Aquatic Plants (Macrophytes) impairment is being delisted as a pollutant and added again as a non-pollutant since more than 25% of the pond was covered in aquatic macrophytes in recent years.
Non-Native Aquatic Plants	Clarification of listing cause	The Non-Native Aquatic Plants impairment will be removed from the Aesthetics Use to be consistent with a "Clarification of Listing Cause" under the Aquatic Life Use submitted for the 2018/20IR, where it was identified that the generic "Non-Native Aquatic Plants" cause could be replaced with the specific "Fanwort" code, since MassDEP staff identified an infestation of the Fanwort *(Cabomba caroliniana)* during a 1998 synoptic survey (MassDEP 1998). The Fanwort impairment for Plow Shop Pond (MA81103) will not be duplicated under the Aesthetics Use since it will continue to be maintained under the Aquatic Life Use.

Aquatic Plants (Macrophytes)

2002 WBS Coding Sheet (MassDEP 2002):

WBID: MA81103 WATERSHED: Nashua (81)
NAME: Plow Shop Pond TYPE: Lake/Pond
CODE: 81103 SIZE: 29.00(acres)

(Printed 07/27/00)

CLASS: B

LATITUDE:
LONGITUDE: (423320/713535)
Lake/Pond Name: Plow Shop Pond, Ayer
Ecoregion Name: ()
Description: Ayer

Assessment Date: ~~9912~~ 0008 **Begin Sampling:** 9807
Cycle: ~~99~~ 00 02 **End Sampling:** 9807

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

Uses	Support	Threat	Partial	Non-Sup	Not-Asses	Not-Attain
OVERALL USE SUPPORT				29.0	~~29.00~~	
ALUS			29.0		~~29.00~~	
FISH CONSUMPTION				29.0	~~29.00~~	
PRIMARY CONTACT				22.0	~~29.00~~ 7.0	
SECONDARY CONTACT	7.0			22.0	~~29.00~~	
Aesthetics	7.0			22.0	~~29.00~~	

Nonattainment Causes

Code	Size	Magnitude
0501 - Hg	29.0	M
2200 - Noxious aquatic plants	22.0	M
2600 - Exotic plants	29.0	M
0500 - Metals	29.0	M

"New"

Code	Size	Magnitude
0501	29.0	M
0500	29.0	M
2200	22.0	M
~~2600~~	29.0	M

Nonattainment Sources

Code	Size	Magnitude
-		

"New"

Code	Size	Magnitude
9000	29.0	M

Assessment Type
(Assessment Category = > Not-assessed)
-

"New" Assessment Category = > M E NA
B05, B25, R20, R35, P05

Media/Pollutants Assessed (Toxics Monitoring = >)
-

"New" Toxics Monitoring = > YES or NO
03, 07, 11

Comments:

1998 Synoptic Survey Field Sheet (MassDEP 1998):

weed - Eval 12/28/98

LAKE/POND: Plow Shop Pond SIZE (acres): 29 PALIS NO. 81103

TOWN/CITY: Ayer USGS TOPO. SHEET: Ayer

DATE: 7/30/98 WATERSHED: Nashua OBSERVERS: Celenna Romano / McVoy

ACCESS – Location (describe each observation site and assign sequential numbers (1, 2, 3, etc.) to use in subsequent records; be specific in descriptions (e.g., public boat ramp at west cove area off Simpson St., etc.)]

Site (1) viewed from above by railroad tracks – binoculars from northeast corner

Site (2)

Site (3)

ACCESS – Type (for multiple observation sites use numbers in boxes that apply)

Formal Boat Ramp ☐☐☐ and/or Beach ☐☐☐ Informal Boat Ramp ☐☐☐ and/or Beach ☐☐☐

Park ☐☐☐ Conservation Area ☐☐☐ Right-of-Way: Road ☐☐☐ Other ☐☐☐

Other (describe): [1] Railroad tracks

☐

☐

ACCESS – Ownership (for multiple observation sites use numbers in boxes that apply)

Public ☐☐☐ Private ☐☐☐ Uncertain [1] ☐☐

Names of Owners ☐ No. & Street Name ☐

☐ No. & Street Name ☐

☐ No. & Street Name ☐

SIGN POSTINGS –

☐☐☐ Warning: Stop Aquatic Plant Spread ☐☐☐ Fishing Advisory or Ban

☐☐☐ Public Access without Restrictions ☐☐☐ Public Access with Restrictions

Describe any restrictions (or other notes) ☐ catch & release fishing only no swimming

☐

☐

WATER /LAKE QUALITY OBSERVATIONS – Too far away to determine

Turbidity: ☐☐☐ Slight ☐☐☐ Moderate ☐☐☐ Excessive

Diss. Organics: ☐☐☐ Slight ☐☐☐ Moderate ☐☐☐ Dark

Algal Bloom: ☐☐☐ Slight ☐☐☐ Moderate ☐☐☐ Dense

Transparency: ☐☐☐ < 1.2 m.(4 ft.) ☐☐☐ > 1.2 m. (4 ft.)
☐☐☐ Estimated visually
☐☐☐ Measured w/ Secchi Disk ☐ _____ meters
☐ _____ meters
☐ _____ meters

Bottom Type: ☐☐☐ Undecomposed matter ☐☐☐ Muck/silt ☐☐☐ Sand ☐☐☐ Gravel ☐☐☐ Cobble ☐☐☐ Boulders

☐☐☐ Vegetation Other ☐ ☐ ☐

Other Observations: [1] Mat pyramids possibly plastic deployed in pond

☐

☐

AESTHETICALLY OBJECTIONABLE – Substances attributable to wastewater or other discharges (point or nonpoint) that:

☐☐☐ Settle to form objectionable deposits

Describe:

☐☐☐ Float as debris, scum or other matter to form a nuisance

Describe:

☐☐☐ Produce objectionable odor, color, taste, or turbidity

Describe:

☐☐☐ Produce undesirable nuisance species of aquatic life

Describe:

RECORD OF AQUATIC PLANT "SPECIES" OBSERVED –

NON-NATIVE WETLANDS SPECIES PRESENT: ☒☐☐ *Lythrum Salicaria* ☐☐☐ *Phragmites* sp.

NON-NATIVE AQUATIC SPECIES PRESENT: ☐☐☐ *Butomus umbellatus* ☒☐☐ [redacted] ☐☐☐ *Egeria densa*

☐☐☐ *Eichornia crassipes* ☐☐☐ *Hydrilla verticillata* ☐☐☐ *Hydrocharis morsus-ranae* ☐☐☐ *Marsilea quadrifolia*

☐☐☐ *Myriophyllum aquaticum* ☐☐☐ *Myriophyllum heterophyllum* ☐☐☐ *Myriophyllum spicatum*

☐☐☐ *M.* sp. (*M. heterophyllum* requiring further confirmation when flowering heads are evident) _____

☐☐☐ *Najas minor* ☐☐☐ *Nelumbo lutea* ☐☐☐ *Nymphoides peltata* ☐☐☐ *Potamogeton crispus* ☐☐☐ *Trapa natans*

NATIVE SPECIES POPULATIONS:

Emergent Plants	Floating Leaf Plants	Submergent Plants
☒☐☐ Peltandra	☒☐☐ Nymphaea	☒☐☐ Utricularia sp.
☒☐☐ Cephalanthus	☒☐☐ Nuphar	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
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☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐

AQUATIC PLANT DENSITY –

Percent of suface area (at observation site) with dense (50 - 75 %) aquatic plant cover ☐ ____ % ☐ ____ % ☐ ____ %

Forms [(E)mergent, (F)loating, or (S)ubmerent] present ☐ _____ ☐ _____ ☐ _____

Percent of surface area (observation site) with very dense (75 - 100 %) plant cover ☐ ____ % ☐ ____ % ☐ ____ %

Forms [(E)mergent, (F)loating, or (S)ubmerent) present ☐ _____ ☐ _____ ☐ _____

Percent of entire lake surface covered with dense or very dense aquatic plants ~75 % Forms _____

Describe locations of dense and/or very dense plant beds South end full of cabomba; Nymphaea= perimeter edge Nymphaea - Cabomba comes into pond center

Loss of open water habitat over entire lake (estimated): ☐ >90 - 100 % ☐ >60 - 90 % ☐ >25 - 60 % ☒ ≤ 25 %

ASSESSMENTS –

TROPHIC STATUS ESTIMATE: ☐ Oligotrophic ☐ Mesotrophic ☑ Eutrophic ☐ Hypereutrophic ☐ Dystrophic ☐ Undetermined

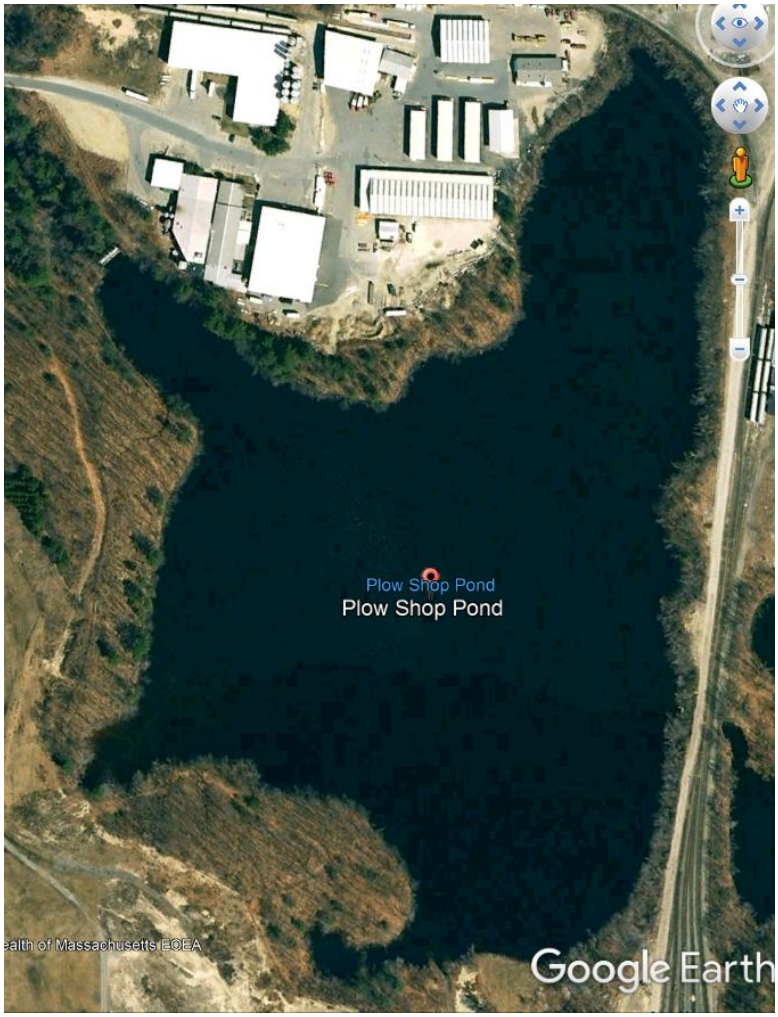
305(b) USE IMPAIRMENT ASSESSMENTS (Acres):

USES	Full Support	Threatened	Partial Support	Non-support	Not Assessed	Not Attainable
Aquatic Life			29.0			
Fish Consumption				29.0		
Primary Contact				22.0	7.0	
Secondary Contact	7.0			22.0		
Aesthetics	7.0			22.0		

CAUSES: ☒ Noxious plants (2200) – Size 22.0 acres / Magnitude M ☒ Exotic plants (2600) – Size 29.0 acres / Magnitude M
☐ Turbidity (2500) – Size _____ acres / Magnitude _____ ☐ Flow alteration (1500) – Size _____ acres / Magnitude _____
☒ Metals (0500) ☒ Hg (0501) – Size 29.0 acres / Magnitude M ☐ Siltation (1100) – Size _____ acres / Magnitude _____
☐ _____ ( ) – Size _____ acres / Magnitude _____ ☐ _____ ( ) – Size _____ acres / Magnitude _____

SOURCES: Describe any obvious sources of impairment _____

while clear, 3/31/2005 (Google Earth Pro Undated):



Google Earth image of Plow Shop Pond, 10/17/2020 (Google Earth Pro Undated):

Google Earth image of Plow Shop Pond, 10/12/2021 (Google Earth Pro Undated):

Non-Native Aquatic Plants

Please see the removal comment above.

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for Plow Shop Pond (MA81103) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. DPH included a site-specific advisory for Plow Shop Pond (referred to by MDPH as "Plowshop Pond") in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Plow Shop Pond (MA81103) continues to be assessed as Not Supporting. The prior pollutant Aquatic Plants (Macrophytes) impairment is being removed and replaced with a non-pollutant Aquatic Plants (Macrophytes) impairment. Additionally, a Nutrient/ Eutrophication Biological Indicators being added. The Non-Native Aquatic Plants impairment will be removed from the Aesthetics Use to be consistent with a "Clarification of Listing Cause" under the Aquatic Life Use submitted for the 2018/20IR, where it was identified that the generic "Non-Native Aquatic Plants" cause could be replaced with the specific "Fanwort" code, since MassDEP staff identified an infestation of the Fanwort *(Cabomba caroliniana)* during a 1998 synoptic survey (MassDEP 1998). The Fanwort impairment for Plow Shop Pond (MA81103) will not be duplicated here under the Aesthetics Use since it will continue to be maintained under the Aquatic Life Use. As described in detail in the 2024 CALM guidance document the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Plow Shop Pond (MA81103) was first listed as impaired for Noxious Aquatic Plants in 2002 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2010 IR cycle (MassDEP 2024). The original impairment was based on a July 1998 synoptic survey conducted by MassDEP staff in which it was noted that roughly 75% of the pond was covered with dense/very dense aquatic plants, including the non-rooted, floating species, *Utricularia sp*. (MassDEP 1998, MassDEP 2002). Google Earth images from October 2020 and October 2021 show high amounts of plant coverage in roughly 1/4 to 1/3 of the pond (Google Earth Pro Undated). Nutrient/Eutrophication Biological Indicators is being added as an impairment based on the presence of a non-rooted, floating, aquatic macrophyte species *(Utricularia sp.)*. Additionally, Aquatic Plants (Macrophytes) is being delisted as a pollutant and added again as a non-pollutant since more than 25% of the pond was covered in aquatic macrophytes in recent years. No new data are available to evaluate the Aesthetics Use for Plow Shop Pond.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Plow Shop Pond (MA81103) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior Arsenic, Total Chromium, and Polycyclic Aromatic Hydrocarbons (PAHS) (Aquatic Ecosystems) impairments are being carried forward. The prior pollutant Aquatic Plants (Macrophytes) impairment is being removed and replaced with a non-pollutant Aquatic Plants (Macrophytes) impairment (from Aesthetics Use). A Nutrient/Eutrophication Biological Indicators impairment is being added (from the Aesthetics Use). The Non-Native Aquatic Plants impairment is being removed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Plow Shop Pond (MA81103) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use continues to be assessed as Not Supporting. The prior Arsenic, Total Chromium, and Polycyclic Aromatic Hydrocarbons (PAHS) (Aquatic Ecosystems) impairments are being carried forward. The prior pollutant Aquatic Plants (Macrophytes) impairment is being removed and replaced with a non-pollutant Aquatic Plants (Macrophytes) impairment (from Aesthetics Use). A Nutrient/Eutrophication Biological Indicators impairment is being added (from the Aesthetics Use). The Non-Native Aquatic Plants impairment is being removed.

Ponakin Brook (MA81-87)

Location:	Headwaters north of Shoefelt Road, Lancaster to mouth at confluence with the North Nashua River, Lancaster.
AU Type:	RIVER
AU Size:	1.9 MILES
Classification/Qualifier:	B: CWF

No usable data were available for Ponakin Brook (MA81-87) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Poor Farm Brook (MA81-52)

Location:	Headwaters, perennial portion, east of Salisbury Street, Holden to mouth at inlet Chaffin Pond, Holden.
AU Type:	RIVER
AU Size:	1.5 MILES
Classification/Qualifier:	A: PWS, ORW, CWF (Tributary)

Poor Farm Brook (MA81-52)

Watershed Area: 1.19 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	1.19	1.19	0.64	0.64
Agriculture	1.5%	1.5%	2.3%	2.3%
Developed	29%	29%	20.4%	20.4%
Natural	60.4%	60.4%	60.8%	60.8%
Wetland	9.1%	9.1%	16.4%	16.4%
Impervious	12.6%	12.6%	9%	9%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Poor Farm Brook (MA81-52) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Poor Farm Brook (MA81-52) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Poor Farm Brook (MA81-52) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary
Too limited bacteria data are available to assess the Secondary Contact Recreation Use for Poor Farm Brook (MA81-52), so it is assessed as having Insufficient Information. MA DCR (DCRWS) staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) three-quarters of the way down Poor Farm Brook at DCRWS_M106 [downstream Newell Rd (Poor Farm Brook), Holden] from 2008-2010 (historic n=49-51/yr) and Jan 2011 (current n=1). Analysis of the historic multi-year high frequency *E. coli* dataset from DCRWS_M106 indicated 0 out of 3 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml, 0 yrs had >10% of samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. While the historic bacteria concentrations at DCRWS_M106 meet 2024 CALM guidance, too limited bacteria data from the current IR window (2011-2022) at DCRWS_M106 are available to assess the Secondary Contact Recreation Use.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_M106	MA DCR Division of Water Supply Protection	Water Quality	POOR FARM BROOK	DOWNSTREAM NEWELL RD (POOR FARM BROOK), HOLDEN	42.320761	-71.836260

Bacteria Data

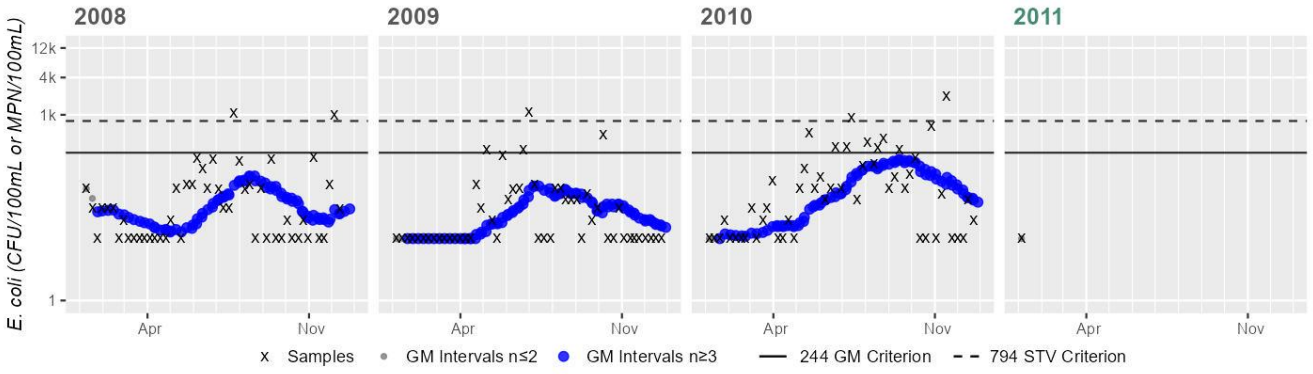
Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

[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
DCRWS_M106	MA DCR Division of Water Supply Protection	E. coli	01/10/08	12/11/08	49	10	1050	31
DCRWS_M106	MA DCR Division of Water Supply Protection	E. coli	01/06/09	12/23/09	51	10	1090	22
DCRWS_M106	MA DCR Division of Water Supply Protection	E. coli	01/06/10	12/22/10	51	10	2005	49
DCRWS_M106	MA DCR Division of Water Supply Protection	E. coli	01/05/11	01/05/11	1	10	10	10

Station DCRWS_M106 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	49
SeasGM	31
#GMI	85
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	51
SeasGM	22
#GMI	93
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	1%

Variable*	Result
Samples	51
SeasGM	49
#GMI	92
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	3%

Variable*	Result
Samples	1
SeasGM	10
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)
0%

Cumulative %GMI Exceedance Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Quinapoxet Reservoir (MA81108)

Location:	Holden/Princeton.
AU Type:	FRESHWATER LAKE
AU Size:	266 ACRES
Classification/Qualifier:	A: PWS, ORW (PWS and Tributary to PWS)

No usable data were available for Quinapoxet Reservoir (MA81108) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Quinapoxet River (MA81-32)

Location:	Headwaters, outlet Quinapoxet Reservoir, Holden to mouth at inlet Wachusett Reservoir (Thomas Basin), West Boylston.
AU Type:	RIVER
AU Size:	7.9 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Quinapoxet River (MA81-32)

Watershed Area: 57.05 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	57.05	10.04	35.27	5.52
Agriculture	4.5%	2.5%	3.8%	2.9%
Developed	12%	11.1%	9.8%	9.3%
Natural	73.2%	76.2%	70.8%	69.9%
Wetland	10.3%	10.2%	15.6%	17.9%
Impervious	5.1%	4.6%	4.3%	4.4%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Dewatering*)	--	Unchanged
5	5	Escherichia Coli (E. Coli)	--	Added
5	5	Temperature	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Dewatering*)	Water Diversions (Y)	X	--	--	--	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--
Temperature	Dam or Impoundment (Y)	X	--	--	--	--
Temperature	Source Unknown (N)	X	--	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Quinapoxet River (MA81-32) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Quinapoxet River (MA81-32) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for the Quinapoxet River (MA81-32) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at 1 station in 2018-2022. MA DCR (DCRWS) staff collected *E. coli* bacteria samples in the Quinapoxet River from 2011-2022 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: just over halfway down the AU at DCRWS_MD69 [upstream of River St Bridge (Canada Mills), Holden] from 2011-2022 (n=11-36/yr), and close to the downstream end at DCRWS_MD08 [Above Circular Dam Off River St, W Boylston] from Apr-Nov 2011 (n=30). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from DCRWS_MD69 indicated 5 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2018-2022, 43-64%), 2 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2020 and 2022, n=2 & 3), and cumulatively across years 54% of intervals had GMs >126 CFU/100ml. Analysis of the single year high frequency *E. coli* dataset from DCRWS_MD08 indicated 0% of intervals had GMs >126 CFU/100ml and 3% of samples exceeded the 410 CFU/100ml STV. While *E. coli* data from DCRWS_MD08 meet 2024 CALM guidance, *E. coli* data from DCRWS_MD69 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD08	MA DCR Division of Water Supply Protection	Water Quality	QUINAPOXET RIVER	ABOVE CIRCULAR DAM OFF RIVER ST, WEST BOYLSTON	42.387133	-71.802688
DCRWS_MD69	MA DCR Division of Water Supply Protection	Water Quality	QUINAPOXET RIVER	UPSTREAM OF RIVER ST BRIDGE (CANADA MILLS) , HOLDEN	42.373412	-71.828215

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 2)

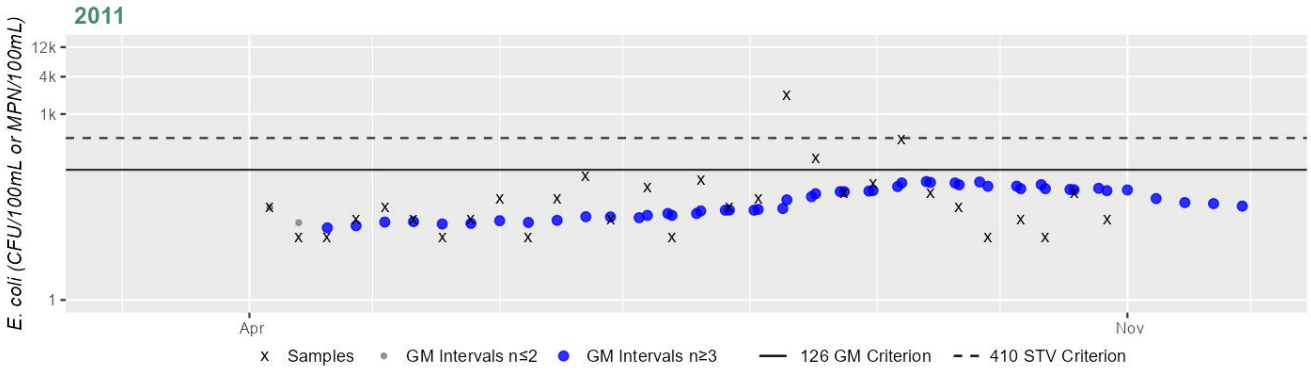
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD08	MA DCR Division of Water Supply Protection	E. coli	04/06/11	11/22/11	30	10	2000	35
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	04/06/11	11/22/11	36	10	9800	129
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	04/04/12	12/05/12	32	10	4610	98
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	04/02/13	12/04/13	31	10	408	47
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	04/02/14	12/17/14	31	10	1790	59
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	04/09/15	11/04/15	30	10	1220	80
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	04/06/16	11/30/16	30	10	857	85
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	04/04/17	12/19/17	30	10	749	78
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	04/02/18	10/24/18	14	10	2490	83
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	04/01/19	09/18/19	11	10	2480	55
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	05/21/20	12/15/20	11	20	1110	111

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	04/08/21	10/18/21	14	10	2480	79
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	04/04/22	10/31/22	15	10	5480	119

Station DCRWS_MD08 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



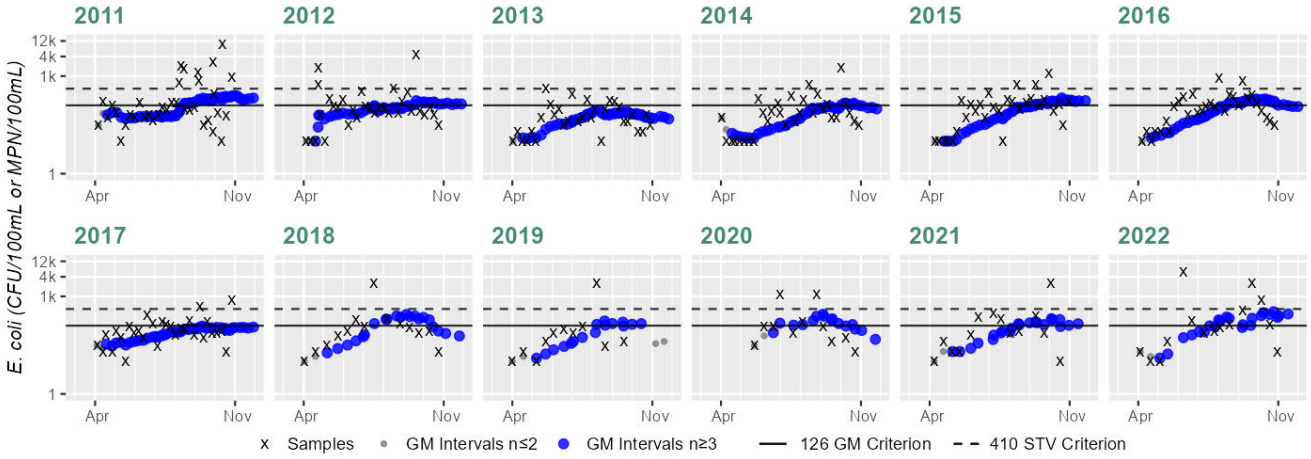
Variable*	Result
Samples	30
SeasGM	35
#GMI	55
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	3%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station DCRWS_MD69 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	36
SeasGM	129
#GMI	66
#GMI Ex	42
%GMI Ex	63%
n>STV	8
%n>STV	22%

Variable*	Result
Samples	32
SeasGM	98
#GMI	54
#GMI Ex	16
%GMI Ex	29%
n>STV	4
%n>STV	12%

Variable*	Result
Samples	31
SeasGM	47
#GMI	55
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	31
SeasGM	59
#GMI	51
#GMI Ex	6
%GMI Ex	11%
n>STV	2
%n>STV	6%

Variable*	Result
Samples	30
SeasGM	80
#GMI	53
#GMI Ex	22
%GMI Ex	41%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	30
SeasGM	85
#GMI	54
#GMI Ex	23
%GMI Ex	42%
n>STV	2
%n>STV	6%

Variable*	Result
Samples	30
SeasGM	78
#GMI	52
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	6%

Variable*	Result
Samples	14
SeasGM	83
#GMI	22
#GMI Ex	11
%GMI Ex	50%
n>STV	1
%n>STV	7%

Variable*	Result
Samples	11
SeasGM	55
#GMI	16
#GMI Ex	7
%GMI Ex	43%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	11
SeasGM	111
#GMI	17
#GMI Ex	11
%GMI Ex	64%
n>STV	2
%n>STV	18%

Variable*	Result
Samples	14
SeasGM	79
#GMI	23
#GMI Ex	11
%GMI Ex	47%
n>STV	1
%n>STV	7%

Variable*	Result
Samples	15
SeasGM	119
#GMI	25
#GMI Ex	16
%GMI Ex	64%
n>STV	3
%n>STV	20%

Cumulative %GMI Exceedance Current (2011-2022)
33%

Cumulative %GMI Exceedance Current (Recent 5 Years)
54%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for the Quinapoxet River (MA81-32) continues to be assessed as Fully Supporting. MA DCR (DCRWS) and MassDEP staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in the Quinapoxet River from 2008-2022 at 4 stations. Samples were collected from the following stations/sample years from upstream to downstream: a quarter of the way down the AU at DCRWS_M108 [Mill St., Holden] from Jan-Dec 2008 (n=49), just over halfway down the AU at DCRWS_MD69 [upstream of River St Bridge (Canada Mills) , Holden] from 2008-2010 (historic n=51-98/yr) and 2011-2022 (current n=17-59/yr), close to the downstream end at W1821 [N off River Rd, ~2200 ft E of Rt. 190, W Boylston] from May-Sep 2008 (n=6), and DCRWS_MD08 [Above Circular Dam Off River St, W Boylston] from 2008-2010 (historic n=49-51/yr) and Jan-Dec 2011 (current n=51). Since bacteria data from the historic IR window are all indicative of good water quality conditions, only the analysis from the current IR window (2 stations) will be summarized here: Analysis of the recent five years of the multi-year high frequency *E. coli* dataset from DCRWS_MD69 indicated 2 out of 5 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml (2020 and 2022, 10 & 14%), 1 yr had >10% of samples exceed the 794 CFU/100ml STV (2020, 10%), and cumulatively across years 6% of intervals had GMs >244 CFU/100ml. Analysis of the single year high frequency *E. coli* dataset from DCRWS_MD08 indicated 0% of intervals had GMs >244 CFU/100ml and 1% of samples exceeded the 794 CFU/100ml STV. *E. coli* data from DCRWS_MD69 and DCRWS_MD08 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_M108	MA DCR Division of Water Supply Protection	Water Quality	QUINAPOXET RIVER	Mill St., Holden	42.380754	-71.856308
DCRWS_MD08	MA DCR Division of Water Supply Protection	Water Quality	QUINAPOXET RIVER	ABOVE CIRCULAR DAM OFF RIVER ST, WEST BOYLSTON	42.387133	-71.802688
DCRWS_MD69	MA DCR Division of Water Supply Protection	Water Quality	QUINAPOXET RIVER	UPSTREAM OF RIVER ST BRIDGE (CANADA MILLS) , HOLDEN	42.373412	-71.828215
W1821	MassDEP	Water Quality	Quinapoxet River	[north off River Road, approximately 2200 feet east of Route 190, West Boylston]	42.385480	-71.809744

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1) (MassDEP Undated 7) (MassDEP Undated 3)

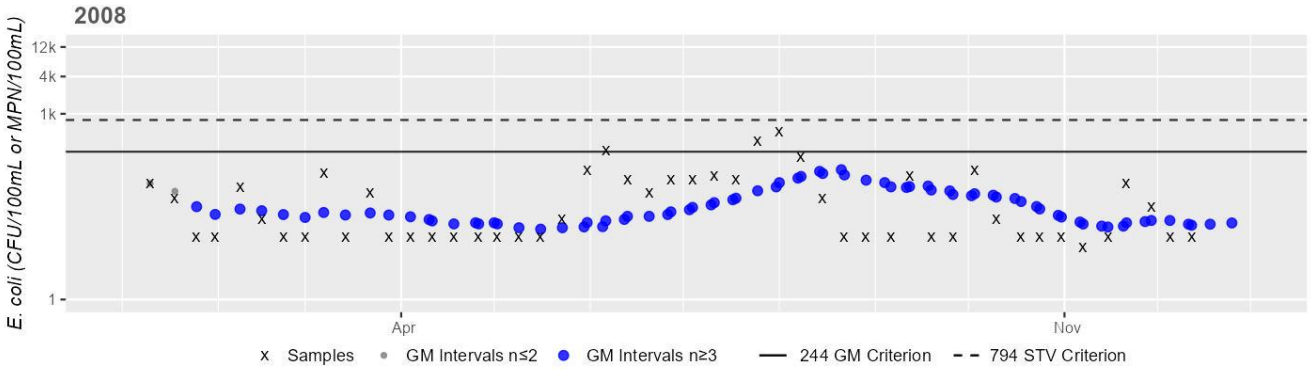
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_M108	MA DCR Division of Water Supply Protection	E. coli	01/10/08	12/11/08	49	6	504	27
DCRWS_MD08	MA DCR Division of Water Supply Protection	E. coli	01/10/08	12/11/08	49	10	439	26
DCRWS_MD08	MA DCR Division of Water Supply Protection	E. coli	01/05/09	12/22/09	51	10	364	27
DCRWS_MD08	MA DCR Division of Water Supply Protection	E. coli	01/04/10	12/20/10	51	10	504	24
DCRWS_MD08	MA DCR Division of Water Supply Protection	E. coli	01/03/11	12/22/11	51	10	2000	23
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	01/07/08	12/11/08	98	10	1500	56
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	01/05/09	12/22/09	51	10	344	37
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	01/04/10	12/20/10	51	10	1300	53
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	01/03/11	12/22/11	59	10	9800	64
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	01/04/12	12/19/12	54	10	4610	46
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	01/08/13	12/19/13	50	10	408	31
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	01/09/14	12/17/14	50	10	1790	40
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	01/06/15	12/17/15	42	10	1220	57
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	01/07/16	12/14/16	49	10	857	51
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	01/05/17	12/19/17	50	10	1660	58
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	01/10/18	12/17/18	24	10	2490	59

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	01/03/19	09/18/19	17	10	2480	33
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	01/09/20	12/15/20	20	10	1110	55
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	01/07/21	12/20/21	24	10	2480	44
DCRWS_MD69	MA DCR Division of Water Supply Protection	E. coli	01/03/22	12/22/22	24	10	5480	65
W1821	MassDEP	E. coli	05/13/08	09/16/08	6	10	65	28

Station DCRWS_M108 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



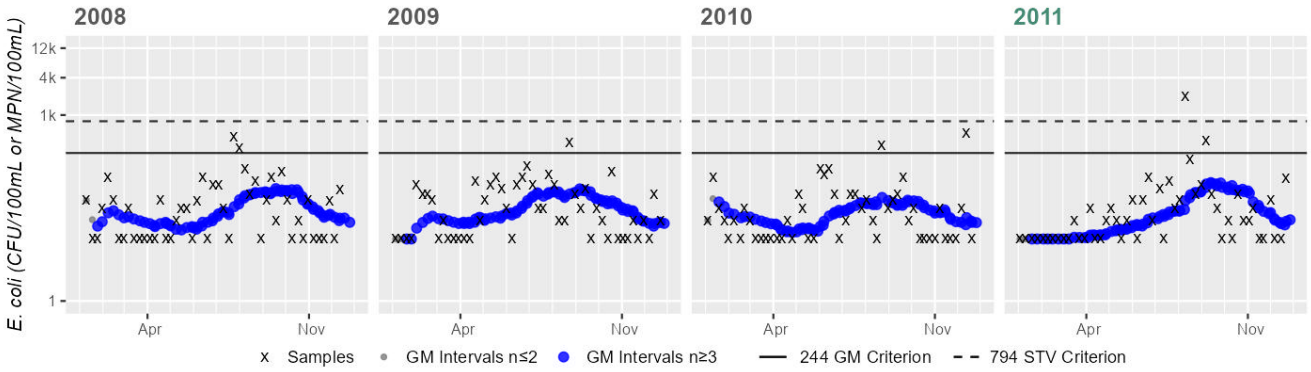
Variable*	Result
Samples	49
SeasGM	27
#GMI	85
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station DCRWS_MD08 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	49
SeasGM	26
#GMI	85
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	51
SeasGM	27
#GMI	91
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	51
SeasGM	24
#GMI	88
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	51
SeasGM	23
#GMI	93
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	1%

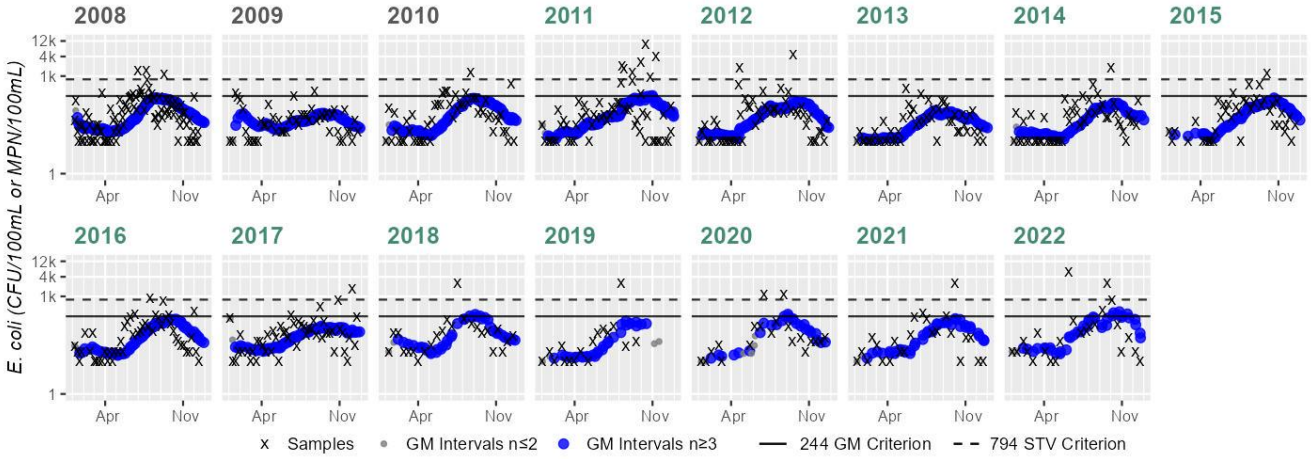
Cumulative %GMI Exceedance
Historic (1997-2010)
0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station DCRWS_MD69 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	98
SeasGM	56
#GMI	177
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	3%

Variable*	Result
Samples	51
SeasGM	37
#GMI	91
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	51
SeasGM	53
#GMI	88
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	1%

Variable*	Result
Samples	59
SeasGM	64
#GMI	108
#GMI Ex	2
%GMI Ex	1%
n>STV	7
%n>STV	11%

Variable*	Result
Samples	54
SeasGM	46
#GMI	92
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	3%

Variable*	Result
Samples	50
SeasGM	31
#GMI	88
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	50
SeasGM	40
#GMI	80
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	42
SeasGM	57
#GMI	75
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	49
SeasGM	51
#GMI	83
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	50
SeasGM	58
#GMI	87
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	24
SeasGM	59
#GMI	42
#GMI Ex	3
%GMI Ex	7%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	17
SeasGM	33
#GMI	28
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	20
SeasGM	55
#GMI	29
#GMI Ex	3
%GMI Ex	10%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	24
SeasGM	44
#GMI	43
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	24
SeasGM	65
#GMI	42
#GMI Ex	6
%GMI Ex	14%
n>STV	2
%n>STV	8%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

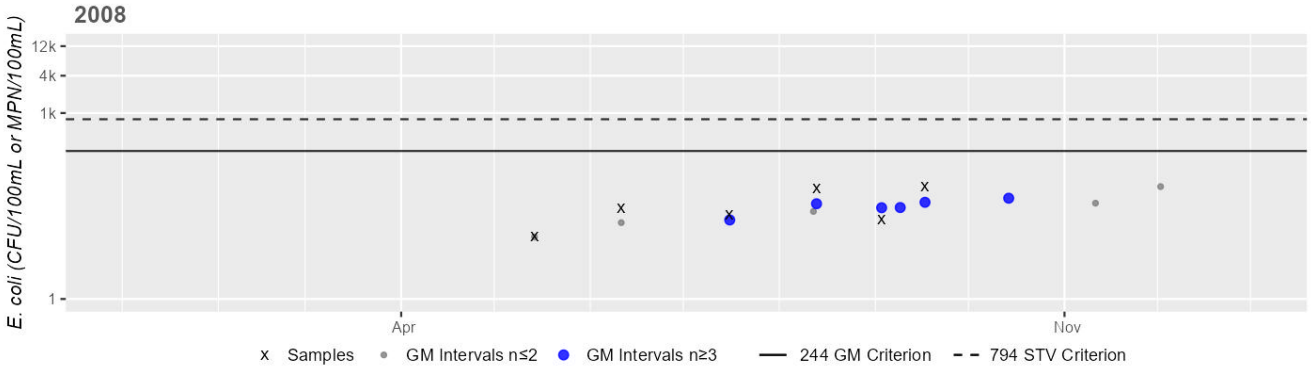
Cumulative %GMI Exceedance
Current (2011-2022)
1%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
6%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W1821 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	28
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

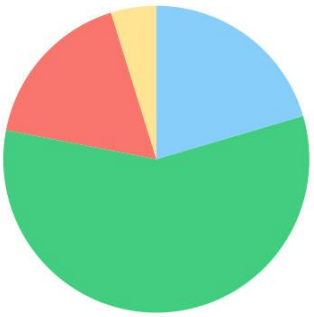
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Reedy Meadow Brook (MA81-64)

Location:	Headwaters, Reedy Meadow, Groton to mouth at confluence with Nashua River, Pepperell.
AU Type:	RIVER
AU Size:	2.3 MILES
Classification/Qualifier:	B: CWF

Reedy Meadow Brook (MA81-64)

Watershed Area: 2.06 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	2.06	2.06	0.47	0.47
Agriculture	4.8%	4.8%	8.1%	8.1%
Developed	17.2%	17.2%	14.2%	14.2%
Natural	57.6%	57.6%	58.1%	58.1%
Wetland	20.4%	20.4%	19.6%	19.6%
Impervious	7.4%	7.4%	5.8%	5.8%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	5	Escherichia Coli (E. Coli)	--	Added

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Reedy Meadow Brook (MA81-64) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Reedy Meadow Brook (MA81-64) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Reedy Meadow Brook (MA81-64) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at 1 station in 2019-2022. Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples close to the downstream end of Reedy Meadow Brook at NRWA_RM0240 [Shawnee Rd., Pepperell] from 2019-2022 (n=6-16/yr). Analysis of the multi-year moderate frequency *E. coli* dataset from NRWA_RM0240 indicated 4 out of 4 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2019-2022, 77-100%), 2 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2020 and 2021, n=5 & 3), and cumulatively across years 83% of intervals had GMs >126 CFU/100ml. *E. coli* data from NRWA_RM0240 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_RM0240	Nashua River Watershed Association	Water Quality	Reedy Meadow Brook	Shawnee Rd., Pepperell	42.670780	-71.562580

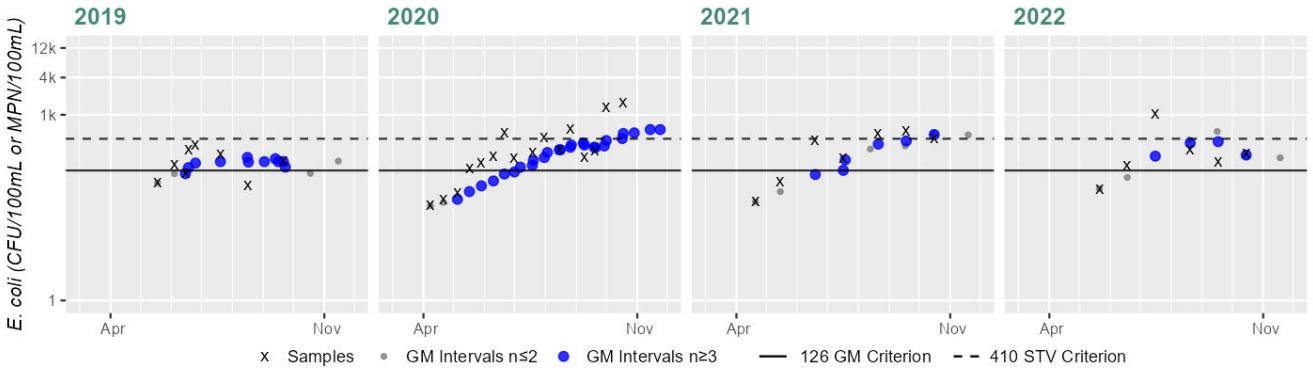
Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)
(NRWA 2022) (MassDEP Undated 2)
[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
NRWA_RM0240	Nashua River Watershed Association	E. coli	05/18/19	09/21/19	8	71	325	156
NRWA_RM0240	Nashua River Watershed Association	E. coli	04/07/20	10/17/20	16	34	1553	233
NRWA_RM0240	Nashua River Watershed Association	E. coli	04/20/21	10/16/21	7	39	547	223
NRWA_RM0240	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	63	1046	219

Station NRWA_RM0240 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	8
SeasGM	156
#GMI	11
#GMI Ex	10
%GMI Ex	90%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	16
SeasGM	233
#GMI	27
#GMI Ex	21
%GMI Ex	77%
n>STV	5
%n>STV	31%

Variable*	Result
Samples	7
SeasGM	223
#GMI	6
#GMI Ex	5
%GMI Ex	83%
n>STV	3
%n>STV	42%

Variable*	Result
Samples	6
SeasGM	219
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	1
%n>STV	16%

Cumulative %GMI Exceedance
Current (2011-2022)
83%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Reedy Meadow Brook (MA81-64) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at 1 station in 2019-2022. Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples close to the downstream end of Reedy Meadow Brook at NRWA_RM0240 [Shawnee Rd., Pepperell] from 2019-2022 (n=6-16/yr). Analysis of the multi-year moderate frequency *E. coli* dataset from NRWA_RM0240 indicated 3 out of 4 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2020-2022, 50-62%), 1 yr had ≥2 samples exceed the 794 CFU/100ml STV (2020, n=2), and cumulatively across years 45% of intervals had GMs >244 CFU/100ml. *E. coli* data from NRWA_RM0240 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_RM0240	Nashua River Watershed Association	Water Quality	Reedy Meadow Brook	Shawnee Rd., Pepperell	42.670780	-71.562580

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

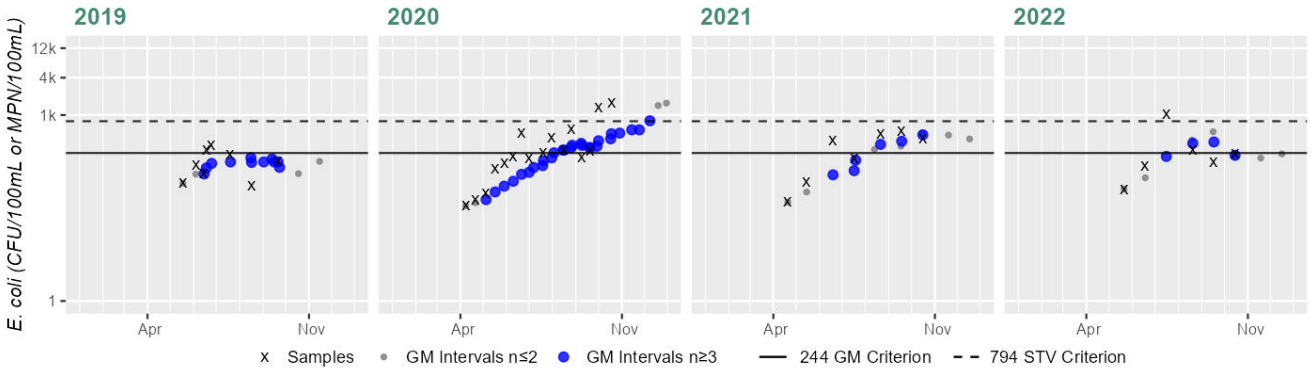
(NRWA 2022) (MassDEP Undated 1)

[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
NRWA_RM0240	Nashua River Watershed Association	E. coli	05/18/19	09/21/19	8	71	325	156
NRWA_RM0240	Nashua River Watershed Association	E. coli	04/07/20	10/17/20	16	34	1553	233
NRWA_RM0240	Nashua River Watershed Association	E. coli	04/20/21	10/16/21	7	39	547	223
NRWA_RM0240	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	63	1046	219

Station NRWA_RM0240 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	8
SeasGM	156
#GMI	11
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	16
SeasGM	233
#GMI	27
#GMI Ex	17
%GMI Ex	62%
n>STV	2
%n>STV	12%

Variable*	Result
Samples	7
SeasGM	223
#GMI	6
#GMI Ex	3
%GMI Ex	50%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	219
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	1
%n>STV	16%

Cumulative %GMI Exceedance

Current (2011-2022)

45%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Robbins Pond (MA81111)

Location:	Harvard.
AU Type:	FRESHWATER LAKE
AU Size:	11 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Aquatic Plants (Macrophytes)*)	--	Added
4c	4c	(Curly-leaf Pondweed*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Aquatic Plants (Macrophytes)*)	Source Unknown (N)	--	--	X	X	X
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary

Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Robbins Pond (MA81111) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Robbins Pond (MA81111) is assessed as Not Supporting based on the observations made during a 2017 macrophyte mapping survey, with an Aquatic Plants (Macrophytes) non-pollutant impairment being added. MassDEP staff recorded aesthetics observations as part of the MAP2 lake monitoring project in summer 2017 at two stations in Harvard, for Robbins Pond; at the northern edge of pond, west of the Willow Brook outlet, south of Barnum Road (W2689/MAP2L-145S, n=5) and at the deep hole index site (W2688/MAP2L-145, n=3). There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, or littoral zone duckweed recorded in ten shoreline plots (n=1), although shoreline algal blooms were noted on Jul 19 and green water color was noted on one occasion the day before at the index station. During the MAP2 macrophyte mapping survey in Aug 2017 (n=1), greater than 25% (28.9%) of the waterbody was determined to have an aquatic macrophyte biovolume >50% and the survey also noted an aesthetics impairment flag due to aquatic plants (macrophytes) and turbidity.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2688	MassDEP	Water Quality	Robbins Pond	[index site, Harvard]	42.537564	-71.604617
W2689	MassDEP	Water Quality	Robbins Pond	[northern edge of pond, west of the Willow Brook outlet, south of Barnum Road, Harvard]	42.538594	-71.605081

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2688	2017	3	Aesthetic observations were made by MassDEP field sampling crews at Station W2688 (MAP2L-145) on Robbins Pond (MA81111) during 3 site visits between Jun 2017 and Aug 2017. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, though field staff noted green water color (n=1) and dense/very dense plant cover on the waterbody surface (n=1). During the MAP2 macrophyte mapping survey (n=1) in Aug 2017, greater than 25% (28.9%) of the waterbody was determined to have an aquatic macrophyte biovolume >50% and the survey also noted an aesthetics impairment flag due to aquatic plants (macrophytes) and turbidity. The observations from the MAP2 survey are indicative of an Aesthetics Use impairment.
W2689	2017	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2689 (MAP2L-145S) on Robbins Pond (MA81111) during 5 site visits between May 2017 and Sep 2017. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded. During the MAP2 littoral survey (n=1), duckweed was not noted in any of the 10 shoreline plots. Shoreline algal blooms were noted by DEP field crews on Jul 19, 2017.

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2688	Robbins Pond	2017	Aesthetics Impaired?	No	3	3
W2688	Robbins Pond	2017	Aquatic Plant Density, Overall	NR	1	3
W2688	Robbins Pond	2017	Aquatic Plant Density, Overall	Sparse	1	3
W2688	Robbins Pond	2017	Aquatic Plant Density, Overall	Unobservable	1	3
W2688	Robbins Pond	2017	Aquatic Plant Density, Whole Lake	Unobservable	1	2
W2688	Robbins Pond	2017	Aquatic Plant Density, Whole Lake	Very Dense	1	2
W2688	Robbins Pond	2017	Color	Greenish	1	3
W2688	Robbins Pond	2017	Color	Light Yellow/Tan	2	3
W2688	Robbins Pond	2017	Duckweed Density, Whole Lake	None	1	2
W2688	Robbins Pond	2017	Duckweed Density, Whole Lake	Unobservable	1	2
W2688	Robbins Pond	2017	Objectionable Deposits	No	3	3
W2688	Robbins Pond	2017	Odor	None	3	3
W2688	Robbins Pond	2017	Scum	No	2	3

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2688	Robbins Pond	2017	Scum	Yes	1	3
W2688	Robbins Pond	2017	Turbidity	Slightly Turbid	3	3
W2689	Robbins Pond	2017	Aesthetics Impaired?	No	5	5
W2689	Robbins Pond	2017	Color	Light Yellow/Tan	2	5
W2689	Robbins Pond	2017	Color	None	3	5
W2689	Robbins Pond	2017	Objectionable Deposits	No	5	5
W2689	Robbins Pond	2017	Odor	Musty (Basement)	1	5
W2689	Robbins Pond	2017	Odor	None	4	5
W2689	Robbins Pond	2017	Scum	No	4	5
W2689	Robbins Pond	2017	Scum	Yes	1	5
W2689	Robbins Pond	2017	Turbidity	None	2	5
W2689	Robbins Pond	2017	Turbidity	Slightly Turbid	3	5

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Robbins Pond (MA81111) is assessed as Not Supporting. An Aquatic Plants (Macrophytes) impairment is being added (from the Aesthetics Use). In Robbins Pond MassDEP staff collected Secchi depth and cyanobacteria cell count data at W2688 [MAP2L-145, Index-deep hole] (2017) and cyanobacteria cell count and cyanotoxin data at W2689 [MAP2L-145S, Shoreline at northern edge of pond, W of the Willow Brook outlet, S of Barnum Rd, Harvard] (2017). Secchi depth data are generally indicative of water clarity meeting the 1.2m (4ft) threshold at W2688 in 2017 (n=3, 1-1.9m). The cyanobacteria cell count did not exceed 70,000 cells/ml in any of the water samples in 2017 (n=6). Analysis of microcystins and cylindrospermopsin samples from W2689 in 2017 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L. In addition, MassDEP staff collected *E. coli* bacteria samples in Robbins Pond at shoreline station W2689 from May-Sep 2017 (n=5). Analysis of the single year limited frequency *E. coli* dataset from W2689 indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 34 CFU/100ml. *E. coli* data from W2689 meet 2024 CALM guidance.

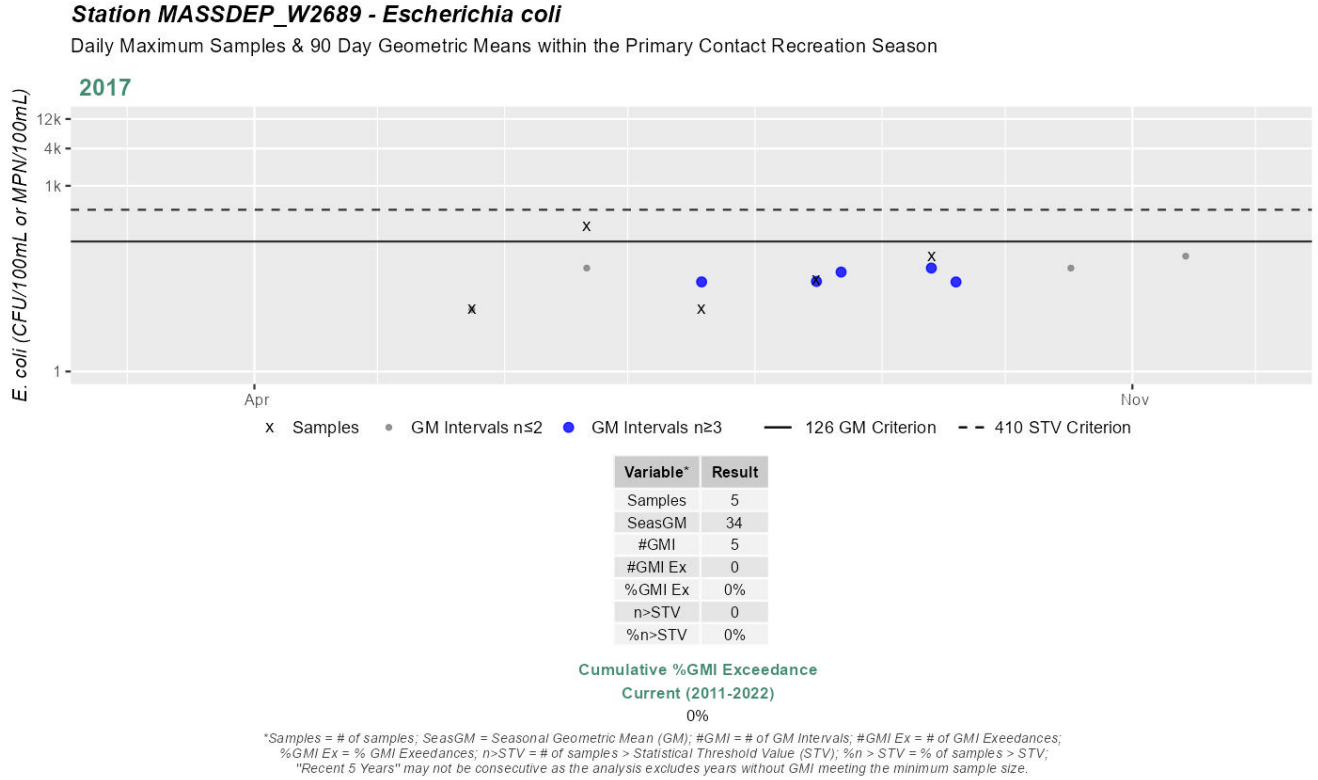
Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2688	MassDEP	Water Quality	Robbins Pond	[index site, Harvard]	42.537564	-71.604617
W2689	MassDEP	Water Quality	Robbins Pond	[northern edge of pond, west of the Willow Brook outlet, south of Barnum Road, Harvard]	42.538594	-71.605081

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)
(MassDEP Undated 7) (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
W2689	MassDEP	E. coli	05/24/17	09/13/17	5	10	220	34



Variable*	Result
Samples	5
SeasGM	34
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Other Indicators

Summary Statement for 2011-2022 Cyanobacteria Cell Count and Cyanotoxin Data, and Secchi Depth Data
(MassDEP Undated 7) (MassDEP Undated 4)

Data Year(s)	Summary
2017	In Robbins Pond (MA81111), MassDEP collected Secchi and cyanobacteria cell count data at W2688 [MAP2L-145, Index-deep hole] (2017) and cyanobacteria cell count and cyanotoxin data at W2689 [MAP2L-145S, Shoreline] (2017). In 2017 at station W2688 (station depth=3 m) the Secchi depth measurements ranged from 1-1.9 m (n=3) with 1 measurement taken on Aug 22, 2017 that was less than the 1.2 m (4 ft) threshold. The cyanobacteria cell count did not exceed 70,000 cells/ml in any of the water samples in 2017 (n=6). Analysis of microcystins and cylindrospermopsin samples from W2689 in 2017 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L.

MassDEP Cyanobacteria Cell Count Data Collected at Lakes and Impoundments (2016-2018) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Waterbody	Station Type	Data Year	Sample Count	Count >70,000 cells/mL	Exceedance Date(s)
W2688	Robbins Pond	Index	2017	3	0	NA
W2689	Robbins Pond	Shoreline	2017	3	0	NA

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Robbins Pond (MA81111) is assessed as Not Supporting. An Aquatic Plants (Macrophytes) impairment is being added (from the Aesthetics Use). In Robbins Pond MassDEP staff collected cyanobacteria cell count data at W2688 [MAP2L-145, Index-deep hole] (2017) and cyanobacteria cell count and cyanotoxin data at W2689 [MAP2L-145S, Shoreline at northern edge of pond, W of the Willow Brook outlet, S of Barnum Rd, Harvard] (2017). The cyanobacteria cell count did not exceed 70,000 cells/ml in any of the water samples in 2017 (n=6). Analysis of microcystins and cylindrospermopsin samples from W2689 in 2017 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L. MassDEP staff collected *E. coli* bacteria samples in Robbins Pond at W2689 from May-Sep 2017 (n=5). Analysis of the single year limited frequency *E. coli* dataset from W2689 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 34 CFU/100ml. *E. coli* data from W2689 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2689	MassDEP	Water Quality	Robbins Pond	[northern edge of pond, west of the Willow Brook outlet, south of Barnum Road, Harvard]	42.538594	-71.605081

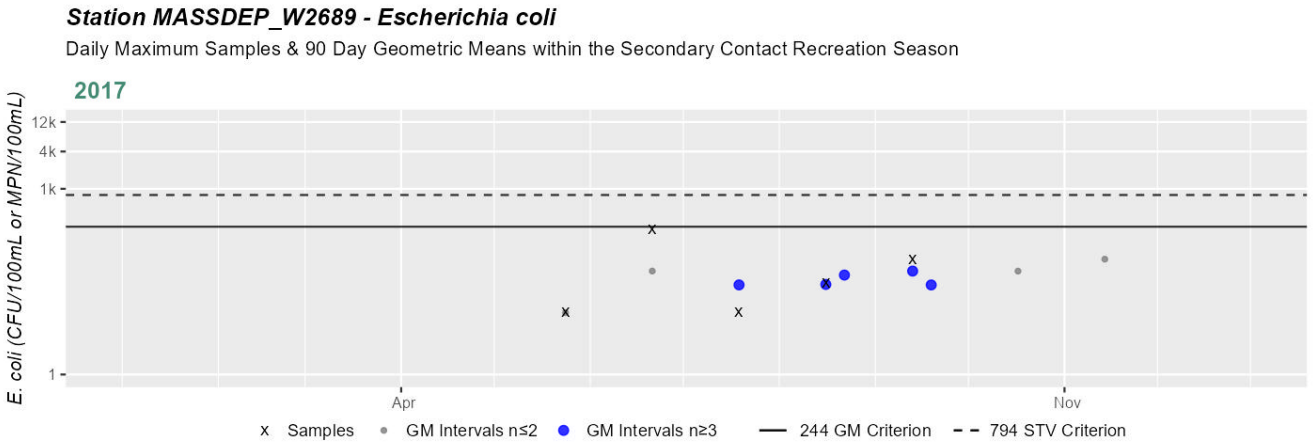
Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3)

[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
W2689	MassDEP	E. coli	05/24/17	09/13/17	5	10	220	34



Variable*	Result
Samples	5
SeasGM	34
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance

Current (2011-2022)

0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Rocky Brook (MA81-42)

Location:	Headwaters, outlet Hy-Crest Pond, Sterling to mouth at confluence with Stillwater River, Sterling.
AU Type:	RIVER
AU Size:	3 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Rocky Brook (MA81-42)

Watershed Area: 2.41 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	2.41	2.37	1.29	1.29
Agriculture	8.4%	8.6%	7.1%	7.1%
Developed	4.8%	4.9%	3.4%	3.4%
Natural	78.3%	78.1%	77.2%	77.2%
Wetland	8.5%	8.4%	12.3%	12.3%
Impervious	2.1%	2.2%	1.7%	1.7%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Rocky Brook (MA81-42) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Rocky Brook (MA81-42) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Rocky Brook (MA81-42) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Rocky Brook (MA81-42) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MA DCR (DCRWS) staff collected *E. coli* bacteria samples two-thirds of the way down Rocky Brook at DCRWS_MD97 [Beaman Rd, Sterling] from Jan-Dec 2008 (n=49). Historic *E. coli* data from DCRWS_MD97 meet 2024 CALM guidance. However, since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD97	MA DCR Division of Water Supply Protection	Water Quality	ROCKY BROOK	Beaman Rd, Sterling	42.449691	-71.802053

Bacteria Data

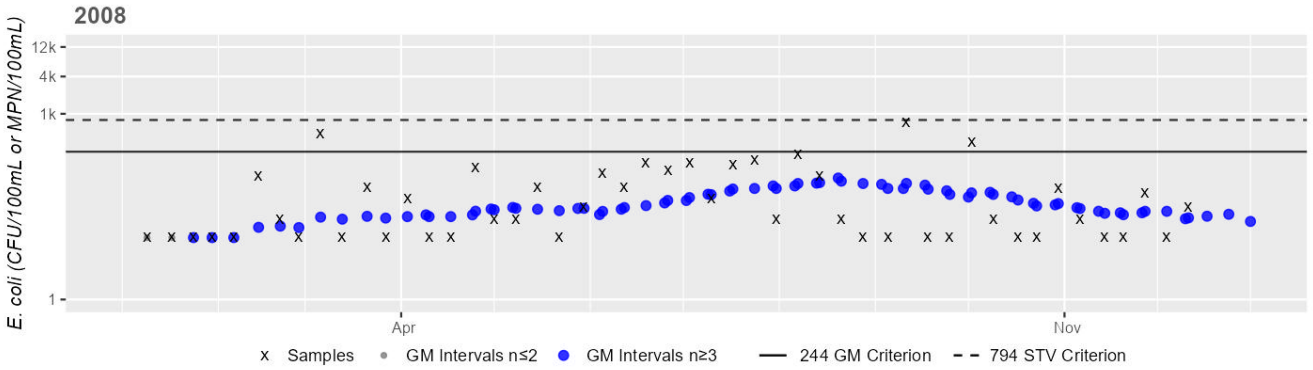
Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

[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
DCRWS_MD97	MA DCR Division of Water Supply Protection	E. coli	01/09/08	12/10/08	49	10	738	32

Station DCRWS_MD97 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	49
SeasGM	32
#GMI	86
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Round Meadow Pond (MA81114)

Location:	Westminster.
AU Type:	FRESHWATER LAKE
AU Size:	54 ACRES
Classification/Qualifier:	B

No usable data were available for Round Meadow Pond (MA81114) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Sandy Pond (MA81117)

Location:	Ayer.
AU Type:	FRESHWATER LAKE
AU Size:	69 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	5	(Fanwort*)	--	Unchanged
4c	5	(Non-Native Aquatic Plants*)	--	Unchanged
4c	5	PFAS in Fish Tissue	--	Added

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Fanwort*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
PFAS in Fish Tissue	Source Unknown (N)	--	X	--	--	--

Recommendations

2024/26 Recommendations
2024 IR [HARMFUL ALGAL BLOOMS, MEDIUM] Follow-up monitoring should be conducted in Sandy Pond (MA81117) to determine if Harmful Algal Blooms may be impairing the Recreational and Aesthetic uses. Monitoring should include collection of cyanobacteria cell count data, as well as continued reporting of algal blooms to MDPH. This is of medium priority.

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for Sandy Pond (MA81117) is assessed as Not Supporting with a new impairment being added for PFAS in Fish Tissue. Fish toxics sampling was conducted in Sandy Pond (MA81117) at station F0187 (PFAS Study ID 34) on 10/13/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. DPH issued a site-specific advisory for PFAS in Sandy Pond in their May 2024 Freshwater Fish Consumption Advisory List and retained it in the January 2025 list. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations. No source of PFAS has been identified at this time.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
F0187	MassDEP	Fish Toxics	Sandy Pond	[Ayer]	42.562071	-71.555701

Fish Tissue Data

Summary of Fish Tissue Data and Resulting Fish Consumption Advisories (MA DPH 2025) (MassDEP 2023) (MassDEP Undated 5)

Summary
Fish toxics sampling was conducted in Sandy Pond (MA81117) at station F0187 (PFAS Study ID 34) on 10/13/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. Because of elevated PFAS measured in fish filets, MDPH issued site-specific fish consumption advisories for Sandy Pond in their May 2024 Freshwater Fish Consumption Advisory List and retained them in the January 2025 list. The site-specific DPH advisories are indicative of a Fish Consumption Use impairment for PFAS in Fish Tissue for Sandy Pond (MA81117).

MassDEP 2022 PFAS in Fish Tissue Data for Massachusetts Surface Waters (MassDEP 2023) (MassDEP Undated 5) (MA DPH 2023)

[ng/g = ppb. All PFBA, PFBS, and HFPO-DA (Genx) concentrations <MDL. ND indicates that the PFAS analyte was not detected in any of the composite samples (i.e., it was <MDL). Means weighted by the number of fish in the contributing composites were calculated for any PFAS analyte – waterbody – species combination where an analyte was detected in at least one sample; if a sample did not have the analyte detected, the concentration for that sample was set to ½*MDL for the purposes of calculating a

mean. Data are highlighted red per the fish consumption advisory thresholds summarized in Table 4.2 of MDPH's 2023 Technical Support Document for the evaluation of PFAS in recreational waterbodies.]

[Species List: B = bluegill, YB = yellow bullhead, YP = yellow perch]

Station Code	PFAS Study ID	Sample Date	Species	Mean PFHxS ng/g	Mean PFNA ng/g	Mean PFOA ng/g	Mean PFOS ng/g	Analytes with ≥ 1 Sample Qualified
F0187	34	10/13/2022	B	ND	ND	ND	3.85	
F0187	34	10/13/2022	YB	ND	ND	ND	0.67	
F0187	34	10/13/2022	YP	ND	0.11	ND	3.55	PFNA

Aesthetic

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary
Too limited data are available to assess the Aesthetics Use for Sandy Pond (MA81117), so it is assessed as having Insufficient Information. However, an Alert is being identified for Harmful Algal Blooms in this waterbody since C-HAB postings (blooms of >15 days in duration) were reported to MDPH for 2022. During the period 2015 through 2022, C-HAB postings for Sandy Pond were reported to MDPH based on visual observations for 120 days in 2022. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, an Alert is being identified for Harmful Algal Blooms waterbody and a recommendation for follow-up sampling will be made.

Algal Bloom Information

Cyanobacteria Harmful Algal Bloom (C-HAB) Summary Statements for 2015-2022 MDPH Data (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

C-HAB Summary Statement
During the period 2015 through 2022, C-HAB postings for Sandy Pond (MA81117) were reported to MDPH based on visual observations for 120 days in 2022. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, an Alert is being identified for C-HABs in this waterbody and a recommendation for follow-up sampling will be made.

Cyanobacteria Harmful Algal Bloom (C-HAB) Data (2015-2022) Provided by MDPH (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

[* indicates a C-HAB posting of unknown duration]

DEP Waterbody (DPH Waterbody)	DPH Town	Posting Days 2015	Posting Days 2016	Posting Days 2017	Posting Days 2018	Posting Days 2019	Posting Days 2020	Posting Days 2021	Posting Days 2022
Sandy Pond	Ayer								120

Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary

No bacteria data are available to assess the Primary Contact Recreation Use for Sandy Pond (MA81117) and available other indicators for this AU did not result in any impairment, so it is assessed as having Insufficient Information. An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU. Surface water sampling was conducted in Sandy Pond at station W3297 (PFAS Study ID 34) and at station W3298 (PFAS Study ID 34B), the beach on the southwestern edge of the pond, on 10/13/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value at both sites. During the period 2015 through 2022, C-HAB postings for Sandy Pond were reported to MDPH based on visual observations for 120 days in 2022. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, a Harmful Algal Blooms Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W3297	MassDEP	Water Quality	Sandy Pond	[the default location representing co-located water/fish PFAS sampling, Ayer]	42.562071	-71.555701
W3298	MassDEP	Water Quality	Sandy Pond	[beach on southwestern edge of pond, Ayer]	42.560115	-71.558178

Other Indicators

Summary Statement(s) for MassDEP 2022 PFAS in Water Column Data (MassDEP 2023) (MassDEP Undated 4)

Summary
Surface water sampling was conducted in Sandy Pond (MA81117) at station W3297 (PFAS Study ID 34) on 10/13/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value.
Surface water sampling was conducted in Sandy Pond (MA81117) at station W3298 (PFAS Study ID 34B), the beach on the southwestern edge of the pond, on 10/13/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value.

MassDEP 2022 PFAS in Water Column Data for Massachusetts Surface Waters (MassDEP 2023) (MassDEP Undated 4)

[HFPO-DA is also known as GenX; the ∑PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here); * indicates the ∑PFAS6 concentration was qualified since data for one or more individual PFAS6 analytes were qualified; b = blank contamination qualifier, d = qualifier indicating precision of field duplicates did not meet project data quality objectives; j = 'estimated' value qualifier; ## = censored data.]

Station Code	PFAS Study ID	Sample Date	PFOA ng/L	PFOS ng/L	PFNA ng/L	PFHxS ng/L	PFBA ng/L	PFBS ng/L	HFPO-DA ng/L	∑PFAS6 ng/L
W3297	34	10/13/2022	5.1	2.3d	<0.5	<0.57	2.1j	1.4j	<2	10.7*
W3298	34B	10/13/2022	5.4	3.1d	<0.53	0.7j	2.3j	1j	<2.1	12.4*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary
No bacteria data are available to assess the Secondary Contact Recreation Use for Sandy Pond (MA81117) and available other indicators for this AU did not result in any impairment, so it is assessed as having Insufficient Information. An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU. During the period 2015 through 2022, C-HAB postings for Sandy Pond were reported to MDPH based on visual observations for 120 days in 2022. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, a Harmful Algal Blooms Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made.

Sawmill Pond (MA81118)

Location:	Fitchburg/Westminster.
AU Type:	FRESHWATER LAKE
AU Size:	65 ACRES
Classification/Qualifier:	B

No usable data were available for Sawmill Pond (MA81118) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

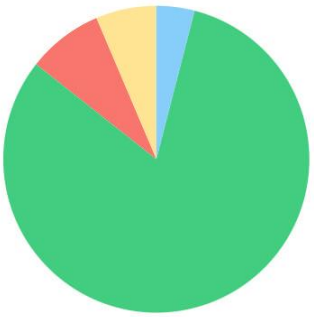
Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Scanlon Brook (MA81-44)

Location:	Headwaters, west of Birch Drive, Sterling to mouth at confluence with Stillwater River, Sterling.
AU Type:	RIVER
AU Size:	1.5 MILES
Classification/Qualifier:	A: PWS, ORW, CWF (Tributary)

Scanlon Brook (MA81-44)

Watershed Area: 1.05 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	1.05	1.05	0.46	0.46
Agriculture	6.4%	6.4%	10.4%	10.4%
Developed	8%	8%	3.5%	3.5%
Natural	81.6%	81.6%	77.5%	77.5%
Wetland	4%	4%	8.6%	8.6%
Impervious	3.7%	3.7%	1.7%	1.7%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Scanlon Brook (MA81-44) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Scanlon Brook (MA81-44) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Scanlon Brook (MA81-44) is assessed as Fully Supporting. MA DCR (DCRWS) staff collected *E. coli* bacteria samples close to the downstream end of Scanlon Brook at DCRWS_MD98 [upstream of Crowley Rd Near Rt. 140, Sterling] from Apr-Nov 2011 (n=31). Analysis of the single year high frequency *E. coli* dataset from DCRWS_MD98 indicated 0% of intervals had GMs >126 CFU/100ml and 3% of samples exceeded the 410 CFU/100ml STV. *E. coli* data from DCRWS_MD98 meet 2024 CALM guidance.

Monitoring Stations

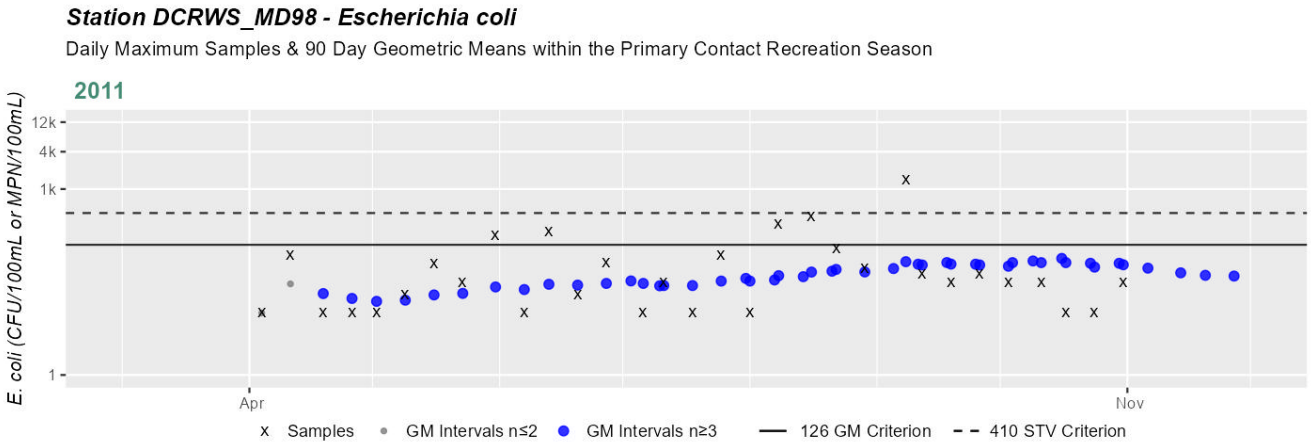
Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD98	MA DCR Division of Water Supply Protection	Water Quality	SCANLON BROOK	UPSTREAM OF CROWLEY RD NEAR RT. 140, STERLING	42.421725	-71.805506

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 2)

[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
DCRWS_MD98	MA DCR Division of Water Supply Protection	E. coli	04/04/11	11/14/11	31	10	1420	37



Variable*	Result
Samples	31
SeasGM	37
#GMI	54
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	3%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Scanlon Brook (MA81-44) is assessed as Fully Supporting. MA DCR (DCRWS) staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) close to the downstream end of Scanlon Brook at DCRWS_MD98 [upstream of Crowley Rd Near Rt. 140, Sterling] from 2008-2010 (historic n=43-51/yr) and Jan-Dec 2011 (current n=51). Since bacteria data from the historic IR window are all indicative of good water quality conditions, only the analysis from the current IR window will be summarized here: Analysis of the single year high frequency *E. coli* dataset from DCRWS_MD98 indicated 0% of intervals had GMs >244 CFU/100ml and 1% of samples exceeded the 794 CFU/100ml STV. *E. coli* data from DCRWS_MD98 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD98	MA DCR Division of Water Supply Protection	Water Quality	SCANLON BROOK	UPSTREAM OF CROWLEY RD NEAR RT. 140, STERLING	42.421725	-71.805506

Bacteria Data

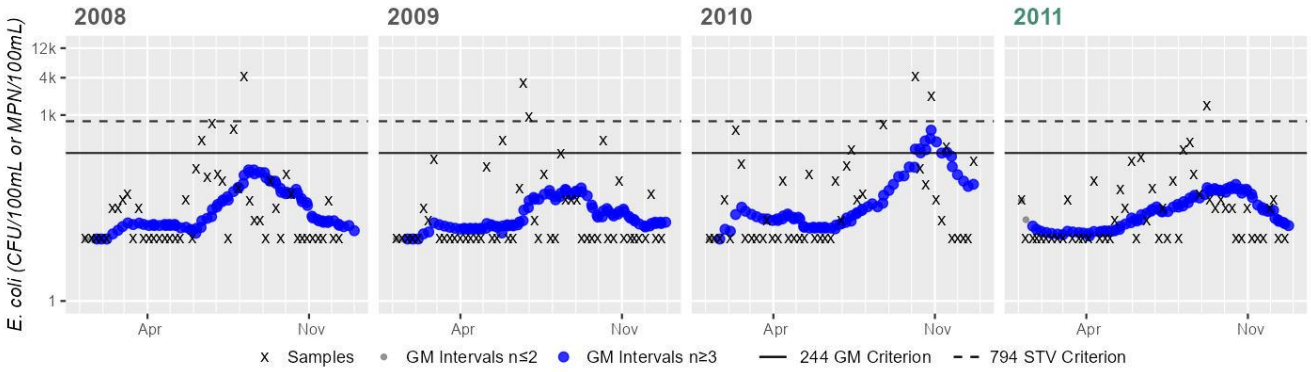
Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

[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
DCRWS_MD98	MA DCR Division of Water Supply Protection	E. coli	01/09/08	12/10/08	49	10	4110	27
DCRWS_MD98	MA DCR Division of Water Supply Protection	E. coli	01/06/09	12/23/09	51	10	3260	22
DCRWS_MD98	MA DCR Division of Water Supply Protection	E. coli	01/06/10	12/22/10	43	10	4110	35
DCRWS_MD98	MA DCR Division of Water Supply Protection	E. coli	01/05/11	12/20/11	51	10	1420	24

Station DCRWS_MD98 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	49
SeasGM	27
#GMI	86
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	51
SeasGM	22
#GMI	93
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	3%

Variable*	Result
Samples	43
SeasGM	35
#GMI	79
#GMI Ex	9
%GMI Ex	11%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	51
SeasGM	24
#GMI	90
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	1%

Cumulative %GMI Exceedance Historic (1997-2010)
3%

Cumulative %GMI Exceedance Current (2011-2022)
0%

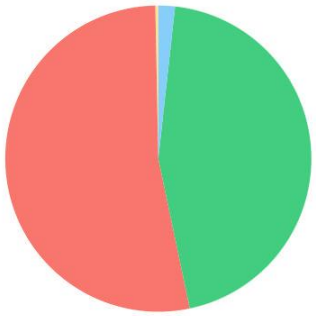
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Scarletts Brook (MA81-25)

Location:	Headwaters west of West Boylston Street (Route 12), West Boylston to mouth at confluence with Gates Brook, West Boylston (stream entirely intermittent; per SARIS and the 1983 Worcester North USGS topographic quadrangle).
AU Type:	RIVER
AU Size:	0.5 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Scarletts Brook (MA81-25)

Watershed Area: 0.36 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	0.36	0.36	0.24	0.24
Agriculture	0.3%	0.3%	0%	0%
Developed	53%	53%	57.1%	57.1%
Natural	44.9%	44.9%	40.3%	40.3%
Wetland	1.7%	1.7%	2.6%	2.6%
Impervious	18.7%	18.7%	21.1%	21.1%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Chloride	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Chloride	Highway/Road/Bridge Runoff (Non-construction Related) (Y)	X	--	--	--	--
Chloride	Impervious Surface/Parking Lot Runoff (Y)	X	--	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Scarletts Brook (MA81-25) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Scarletts Brook (MA81-25) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Scarletts Brook (MA81-25) is assessed as Fully Supporting. MA DCR (DCRWS) staff collected *E. coli* bacteria samples just over halfway down Scarletts Brook at DCRWS_MD81 [Behind Walmart Above Confluence With Gates Brook, W Boylston] from 2011-2022 (n=11-31/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from DCRWS_MD81 indicated 1 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2021, 60%), 2 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2021 and 2022, n=2 & 2), and cumulatively across years 13% of intervals had GMs >126 CFU/100ml. *E. coli* data from DCRWS_MD81 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD81	MA DCR Division of Water Supply Protection	Water Quality	SCARLETTS BROOK	BEHIND WALMART ABOVE CONFLUENCE WITH GATES BROOK, WEST BOYLSTON	42.356034	-71.781660

Bacteria Data

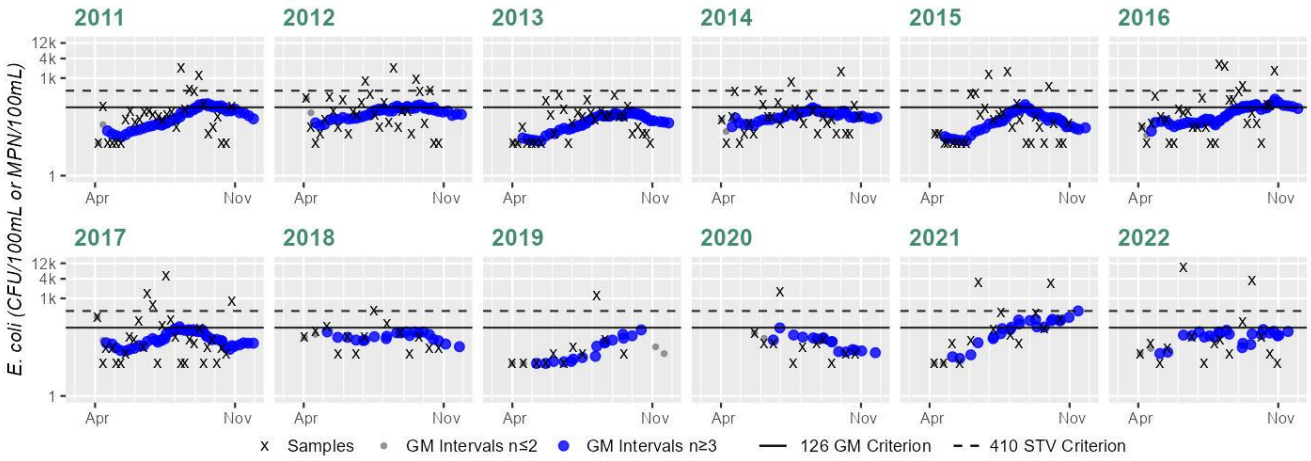
Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 2)

[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
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	04/06/11	11/22/11	30	10	2000	60
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	04/04/12	12/05/12	30	10	2005	85
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	04/02/13	12/04/13	31	10	301	41
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	04/02/14	12/17/14	31	10	1580	68
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	04/09/15	11/04/15	30	10	1540	43
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	04/06/16	11/30/16	30	10	2760	82
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	04/04/17	12/19/17	30	10	4880	54
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	04/02/18	10/24/18	14	20	410	60
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	04/01/19	09/18/19	11	10	1190	24
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	05/21/20	12/15/20	11	10	1610	41
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	04/08/21	10/18/21	14	10	3080	106
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	04/04/22	10/31/22	15	10	9210	60

Station DCRWS_MD81 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	30
SeasGM	60
#GMI	55
#GMI Ex	11
%GMI Ex	20%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	30
SeasGM	85
#GMI	50
#GMI Ex	7
%GMI Ex	14%
n>STV	4
%n>STV	13%

Variable*	Result
Samples	31
SeasGM	41
#GMI	55
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	31
SeasGM	68
#GMI	51
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	9%

Variable*	Result
Samples	30
SeasGM	43
#GMI	53
#GMI Ex	1
%GMI Ex	1%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	30
SeasGM	82
#GMI	54
#GMI Ex	16
%GMI Ex	29%
n>STV	4
%n>STV	13%

Variable*	Result
Samples	30
SeasGM	54
#GMI	52
#GMI Ex	1
%GMI Ex	1%
n>STV	4
%n>STV	13%

Variable*	Result
Samples	14
SeasGM	60
#GMI	22
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	24
#GMI	16
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	11
SeasGM	41
#GMI	17
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	14
SeasGM	106
#GMI	23
#GMI Ex	14
%GMI Ex	60%
n>STV	2
%n>STV	14%

Variable*	Result
Samples	15
SeasGM	60
#GMI	25
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	13%

Cumulative %GMI Exceedance Current (2011-2022)
10%

Cumulative %GMI Exceedance Current (Recent 5 Years)
13%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Scarletts Brook (MA81-25) is assessed as Fully Supporting. MA DCR (DCRWS) staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in Scarletts Brook (MA81-25) from 2008-2022 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: just over halfway down the AU at DCRWS_MD82 [Rt. 12 upstream of Walmart, W Boylston] from Jan-Dec 2008 (n=47), the downstream end at DCRWS_MD81 [Behind Walmart Above Confluence With Gates Brook, W Boylston] from 2008-2010 (historic n=45-51/yr) and 2011-2022 (current n=17-51/yr). Since bacteria data from the historic IR window are all indicative of good water quality conditions, only the analysis from the current IR window (1 station) will be summarized here: Analysis of the recent five years of this multi-year high frequency *E. coli* dataset from DCRWS_MD81 indicated 0 out of 5 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml, 0 yrs had >10% of samples exceed the 794 CFU/100ml STV, and cumulatively across years 1% of intervals had GMs >244 CFU/100ml. *E. coli* data from DCRWS_MD81 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD81	MA DCR Division of Water Supply Protection	Water Quality	SCARLETTS BROOK	BEHIND WALMART ABOVE CONFLUENCE WITH GATES BROOK , WEST BOYLSTON	42.356034	-71.781660
DCRWS_MD82	MA DCR Division of Water Supply Protection	Water Quality	SCARLETTS BROOK	Rt. 12 upstream of Walmart, West Boylston	42.355895	-71.784989

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

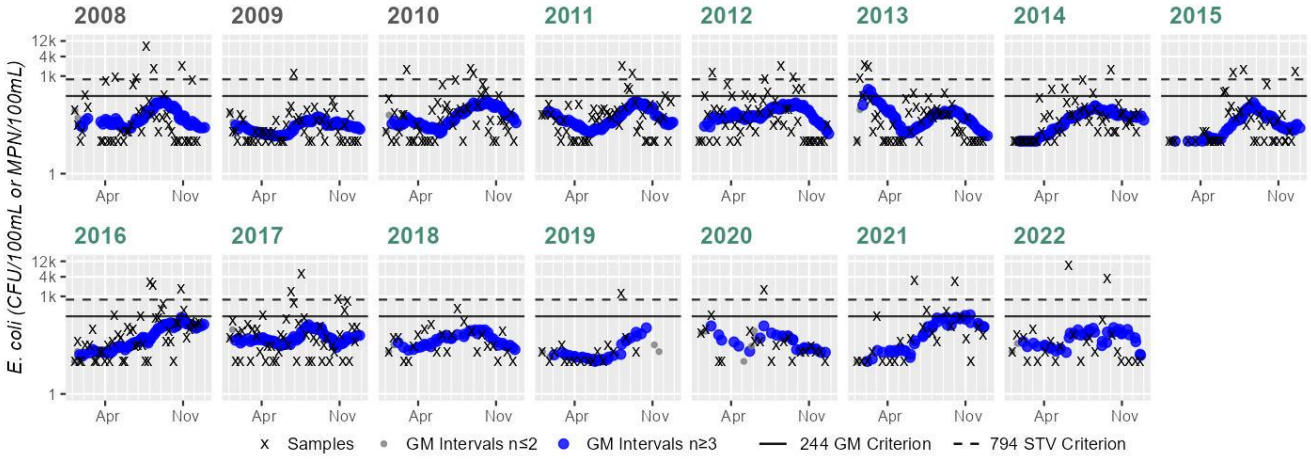
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	01/08/08	12/09/08	45	10	8300	49
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	01/05/09	12/22/09	51	10	1170	25
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	01/04/10	12/20/10	51	10	1650	52

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	01/03/11	12/22/11	50	10	2000	49
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	01/04/12	12/19/12	51	10	2005	55
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	01/08/13	12/19/13	50	10	2250	42
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	01/09/14	12/17/14	50	10	1580	43
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	01/06/15	12/17/15	42	10	1540	33
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	01/07/16	12/14/16	49	10	2760	61
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	01/05/17	12/19/17	50	10	4880	55
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	01/10/18	12/17/18	24	10	410	39
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	01/03/19	09/18/19	17	10	1190	20
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	01/09/20	12/15/20	20	10	1610	36
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	01/07/21	12/20/21	24	10	3080	59
DCRWS_MD81	MA DCR Division of Water Supply Protection	E. coli	01/03/22	12/22/22	24	10	9210	40
DCRWS_MD82	MA DCR Division of Water Supply Protection	E. coli	01/08/08	12/09/08	47	10	5170	49

Station DCRWS_MD81 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	45
SeasGM	49
#GMI	80
#GMI Ex	0
%GMI Ex	0%
n>STV	5
%n>STV	11%

Variable*	Result
Samples	51
SeasGM	25
#GMI	91
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	1%

Variable*	Result
Samples	51
SeasGM	52
#GMI	88
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	5%

Variable*	Result
Samples	50
SeasGM	49
#GMI	92
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	51
SeasGM	55
#GMI	87
#GMI Ex	0
%GMI Ex	0%
n>STV	4
%n>STV	7%

Variable*	Result
Samples	50
SeasGM	42
#GMI	88
#GMI Ex	3
%GMI Ex	3%
n>STV	3
%n>STV	6%

Variable*	Result
Samples	50
SeasGM	43
#GMI	80
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	42
SeasGM	33
#GMI	75
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	7%

Variable*	Result
Samples	49
SeasGM	61
#GMI	83
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	6%

Variable*	Result
Samples	50
SeasGM	55
#GMI	87
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	6%

Variable*	Result
Samples	24
SeasGM	39
#GMI	42
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	17
SeasGM	20
#GMI	28
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	20
SeasGM	36
#GMI	29
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	24
SeasGM	59
#GMI	43
#GMI Ex	2
%GMI Ex	4%
n>STV	2
%n>STV	8%

Variable*	Result
Samples	24
SeasGM	40
#GMI	42
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	8%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

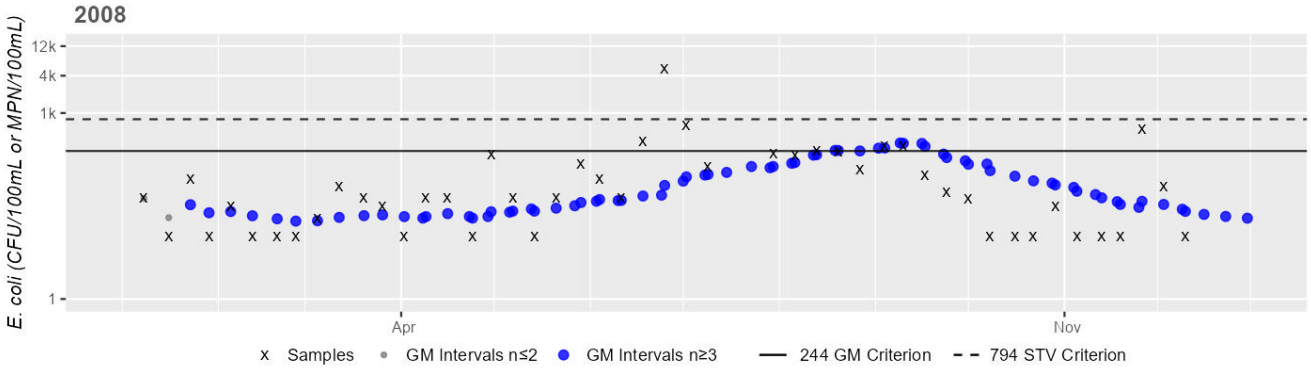
Cumulative %GMI Exceedance
Current (2011-2022)
0%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
1%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station DCRWS_MD82 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	47
SeasGM	49
#GMI	84
#GMI Ex	9
%GMI Ex	10%
n>STV	1
%n>STV	2%

Cumulative %GMI Exceedance
Historic (1997-2010)
10%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Scott Reservoir (MA81119)

Location:	Fitchburg.
AU Type:	FRESHWATER LAKE
AU Size:	33 ACRES
Classification/Qualifier:	A: PWS, ORW

No usable data were available for Scott Reservoir (MA81119) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Smith Brook (MA81-90)

Location:	Headwaters, outlet Meetinghouse Pond, Westminster to mouth at inlet Wyman Pond, Westminster.
AU Type:	RIVER
AU Size:	1.6 MILES
Classification/Qualifier:	B

Smith Brook (MA81-90)

Watershed Area: 2.23 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	2.23	2.23	1.50	1.50
Agriculture	2.5%	2.5%	1.2%	1.2%
Developed	10.8%	10.8%	8%	8%
Natural	79%	79%	80.7%	80.7%
Wetland	7.6%	7.6%	10.1%	10.1%
Impervious	4.1%	4.1%	3.4%	3.4%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Temperature	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Temperature	Dam or Impoundment (Y)	X	--	--	--	--

Recommendations

2024/26 Recommendations
2024/26 IR [FIELD OBSERVATIONS, LOW] Dense and very dense algae was reported for Smith Brook (MA81-90) at station {W2216} at 2/2 visits in 2011. Additional monitoring is recommended. This is of low priority;

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Smith Brook (MA81-90) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary
Too limited data are available to assess the Aesthetics Use for Smith Brook (MA81-90), so it is assessed as having Insufficient Information. However, an Alert is being identified for dense Algae. MassDEP staff recorded aesthetics observations in 2011 as part of the MAP2 wadeable streams monitoring project, at one station at the upstream end of this Smith Brook AU ~575 feet downstream from West Princeton Road, Westminster (W2216, n=2). No persistent objectionable conditions (i.e., odors, deposits, growths, or turbidity) were observed during any of the surveys, though field staff noted dense and very dense filamentous algae on one occasion each.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2216	MassDEP	Water Quality	Smith Brook	[approximately 575 feet downstream from West Princeton Road, Westminster]	42.533495	-71.902779

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2216	2011	2	Aesthetic observations were made by MassDEP field sampling crews at Station W2216 on Smith Brook (MA81-90) during 2 site visits between May 2011 and Jun 2011. There were some objectionable conditions recorded, including dense/very dense filamentous algae (n=2). These conditions are indicative of an Alert status. However, aesthetic observations are limited (n<3).

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2216	2011	2	2	2

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2216	Smith Brook	2011	Aquatic Plant Density, Overall	None	2	2
W2216	Smith Brook	2011	Color	None	2	2
W2216	Smith Brook	2011	Objectionable Deposits	No	2	2
W2216	Smith Brook	2011	Odor	None	2	2
W2216	Smith Brook	2011	Periphyton Density, Filamentous	Dense	1	2
W2216	Smith Brook	2011	Periphyton Density, Filamentous	Very Dense	1	2
W2216	Smith Brook	2011	Periphyton Density, Film	None	2	2
W2216	Smith Brook	2011	Scum	No	2	2
W2216	Smith Brook	2011	Turbidity	None	2	2

Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary

Too limited bacteria data are available to assess the Primary Contact Recreation Use for Smith Brook (MA81-90) and available aesthetics observations for this AU did not result in any impairment, so it is assessed as having Insufficient Information. MassDEP staff collected *E. coli* bacteria samples close to the upstream end of Smith Brook at W2216 [~575 ft downstream from W Princeton Rd, Westminster] from May-Jun 2011 (n=2). *E. coli* data from W2216 are too limited according to the 2024 CALM to assess the Primary Contact Recreation Use.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2216	MassDEP	Water Quality	Smith Brook	[approximately 575 feet downstream from West Princeton Road, Westminster]	42.533495	-71.902779

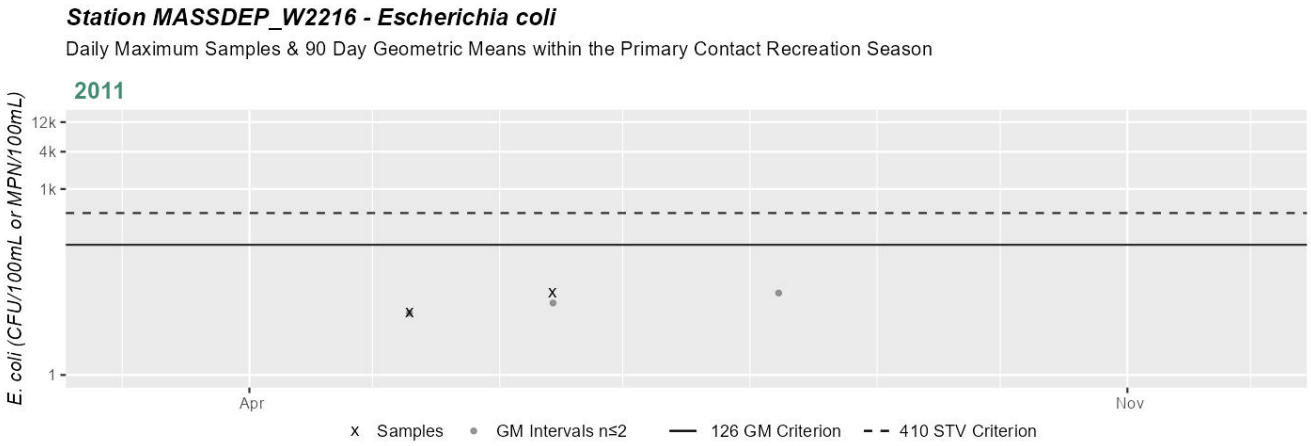
Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (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
W2216	MassDEP	E. coli	05/10/11	06/14/11	2	10	21	14



Variable*	Result
Samples	2
SeasGM	14
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary
Too limited bacteria data are available to assess the Secondary Contact Recreation Use for Smith Brook (MA81-90) and available aesthetics observations for this AU did not result in any impairment, so it is assessed as having Insufficient Information. MassDEP staff collected *E. coli* bacteria samples close to the upstream end of Smith Brook at W2216 [~575 ft downstream from W Princeton Rd, Westminster] from May-Jun 2011 (n=2). *E. coli* data from W2216 are too limited according to the 2024 CALM to assess the Secondary Contact Recreation Use.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2216	MassDEP	Water Quality	Smith Brook	[approximately 575 feet downstream from West Princeton Road, Westminster]	42.533495	-71.902779

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

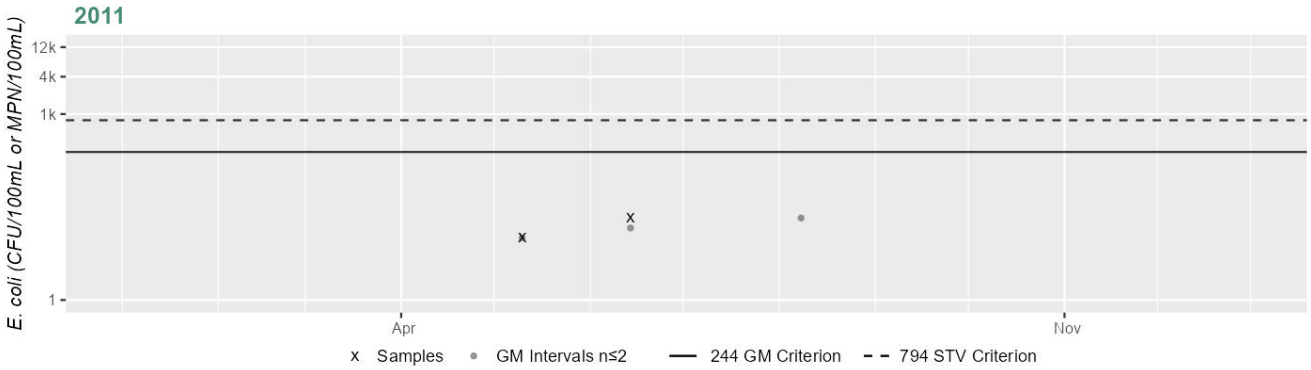
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W2216	MassDEP	E. coli	05/10/11	06/14/11	2	10	21	14

Station MASSDEP_W2216 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	2
SeasGM	14
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Snows Millpond (MA81127)

Location:	Fitchburg/Westminster.
AU Type:	FRESHWATER LAKE
AU Size:	38 ACRES
Classification/Qualifier:	B

No usable data were available for Snows Millpond (MA81127) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

South Meadow Brook (MA81-67)

Location:	Headwaters, outlet Fitch Pond, Sterling to mouth at inlet South Meadow Pond, Clinton.
AU Type:	RIVER
AU Size:	1.8 MILES
Classification/Qualifier:	B: CWF

No usable data were available for South Meadow Brook (MA81-67) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

South Meadow Pond (MA81129)

Location:	[East Basin] Clinton.
AU Type:	FRESHWATER LAKE
AU Size:	37 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Curly-leaf Pondweed*)	--	Unchanged
4c	4c	(Hydrilla*)	--	Unchanged
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Hydrilla*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Recommendations

2024/26 Recommendations
2024/26 IR [HARMFUL ALGAL BLOOMS, MEDIUM] Follow-up monitoring should be conducted in South Meadow Pond (MA81129) [East Basin] to determine if Harmful Algal Blooms may be impairing the Recreational and Aesthetic uses. Monitoring should include observational data and collection of cyanobacteria cell count data, as well as continued reporting of algal blooms to MDPH. This is of medium priority;

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for South Meadow Pond (MA81129) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary
Too limited data are available to assess the Aesthetics Use for South Meadow Pond (MA81129) [East Basin], so it is assessed as having Insufficient Information. However, an Alert is being identified for Harmful Algal Blooms in this waterbody since C-HAB postings (blooms of >15 days in duration) were reported to MDPH for 2022. During the period 2015 through 2022, C-HAB postings for South Meadow Pond were reported to MDPH based on visual observations for 29 days in 2022 and no blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, an Alert is being identified for Harmful Algal Blooms and a recommendation for follow-up sampling will be made.

Algal Bloom Information

Cyanobacteria Harmful Algal Bloom (C-HAB) Summary Statements for 2015-2022 MDPH Data (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

C-HAB Summary Statement
During the period 2015 through 2022, C-HAB postings for South Meadow Pond (MA81129) were reported to MDPH based on visual observations for 29 days in 2022. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, an Alert is being identified for C-HABs in this waterbody and a recommendation for follow-up sampling will be made.

Cyanobacteria Harmful Algal Bloom (C-HAB) Data (2015-2022) Provided by MDPH (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

[* indicates a C-HAB posting of unknown duration]

DEP Waterbody (DPH Waterbody)	DPH Town	Posting Days 2015	Posting Days 2016	Posting Days 2017	Posting Days 2018	Posting Days 2019	Posting Days 2020	Posting Days 2021	Posting Days 2022
South Meadow Pond	Clinton								29

Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary
No bacteria data are available to assess the Primary Contact Recreation Use for South Meadow Pond [East Basin] (MA81129) and available other indicators for this AU did not result in any impairment, so it is assessed as having Insufficient Information. Surface water sampling was conducted in South Meadow Pond (MA81129) at station W3290 (PFAS Study ID 27) on 10/05/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value. An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU. During the period 2015 through 2022, C-HAB postings for South Meadow Pond were reported to MDPH based on visual observations for 29 days in 2022. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, a Harmful Algal Blooms Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W3290	MassDEP	Water Quality	South Meadow Pond	[the default location representing co-located water/fish PFAS sampling, (East Basin) Clinton]	42.415147	-71.706389

Other Indicators

Summary Statement(s) for MassDEP 2022 PFAS in Water Column Data (MassDEP 2023) (MassDEP Undated 4)

Summary
Surface water sampling was conducted in South Meadow Pond (MA81129) at station W3290 (PFAS Study ID 27) on 10/05/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value.

MassDEP 2022 PFAS in Water Column Data for Massachusetts Surface Waters (MassDEP 2023) (MassDEP Undated 4)

[HFPO-DA is also known as GenX; the ∑PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here); * indicates the ∑PFAS6 concentration was qualified since data for one or more individual PFAS6 analytes were qualified; b = blank contamination qualifier, d = qualifier indicating precision of field duplicates did not meet project data quality objectives; j = 'estimated' value qualifier; ## = censored data.]

Station Code	PFAS Study ID	Sample Date	PFOA ng/L	PFOS ng/L	PFNA ng/L	PFHxS ng/L	PFBA ng/L	PFBS ng/L	HFPO-DA ng/L	∑PFAS6 ng/L
W3290	27	10/05/2022	13	2dj	0.76j	0.76j	5.5j	3.8	<2.1	22.9*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary
No bacteria data are available to assess the Secondary Contact Recreation Use for South Meadow Pond [East Basin] (MA81129) and available other indicators for this AU did not result in any impairment, so it is assessed as having Insufficient Information. An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU. During the period 2015 through 2022, C-HAB postings for South Meadow Pond were reported to MDPH based on visual observations for 29 days in 2022. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, a Harmful Algal Blooms Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made.

South Meadow Pond (MA81165)

Location:	[West Basin] Clinton/Lancaster.
AU Type:	FRESHWATER LAKE
AU Size:	34 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Curly-leaf Pondweed*)	--	Unchanged
4c	4c	(Hydrilla*)	--	Unchanged
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Hydrilla*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Recommendations

2024/26 Recommendations
2024 IR [HARMFUL ALGAL BLOOMS, MEDIUM] Follow-up monitoring should be conducted in South Meadow Pond (MA81165) to determine if Harmful Algal Blooms may be impairing the Recreational and Aesthetic uses. Monitoring should include collection of cyanobacteria cell count data, as well as continued reporting of algal blooms to MDPH. This is of medium priority;

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for South Meadow Pond (MA81165) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary
Too limited data are available to assess the Aesthetics Use for South Meadow Pond (MA81165), so it is assessed as having Insufficient Information. However, an Alert is being identified for Harmful Algal Blooms in this waterbody since C-HAB postings (blooms of >15 days in duration) were reported to MDPH for 2022. During the period 2015 through 2022, C-HAB postings for South Meadow Pond were reported to MDPH based on visual observations for 29 days in 2022 and no blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, an Alert is being identified for Harmful Algal Blooms and a recommendation for follow-up sampling will be made.

Algal Bloom Information

Cyanobacteria Harmful Algal Bloom (C-HAB) Summary Statements for 2015-2022 MDPH Data (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

C-HAB Summary Statement
During the period 2015 through 2022, C-HAB postings for South Meadow Pond (MA81165) were reported to MDPH based on visual observations for 29 days in 2022. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, an Alert is being identified for C-HABs in this waterbody and a recommendation for follow-up sampling will be made.

Cyanobacteria Harmful Algal Bloom (C-HAB) Data (2015-2022) Provided by MDPH (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

[* indicates a C-HAB posting of unknown duration]

DEP Waterbody (DPH Waterbody)	DPH Town	Posting Days 2015	Posting Days 2016	Posting Days 2017	Posting Days 2018	Posting Days 2019	Posting Days 2020	Posting Days 2021	Posting Days 2022
South Meadow Pond	Clinton								29

Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary
No bacteria data are available to assess the Primary Contact Recreation Use for South Meadow Pond (MA81165) and available other indicators for this AU did not result in any impairment, so it is assessed as having Insufficient Information. An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU. During the period 2015 through 2022, C-HAB postings for South Meadow Pond were reported to MDPH based on visual observations for 29 days in 2022. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, a Harmful Algal Blooms Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary

No bacteria data are available to assess the Secondary Contact Recreation Use for South Meadow Pond (MA81165) and available other indicators for this AU did not result in any impairment, so it is assessed as having Insufficient Information. An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU. During the period 2015 through 2022, C-HAB postings for South Meadow Pond were reported to MDPH based on visual observations for 29 days in 2022. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, a Harmful Algal Blooms Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made.

Spectacle Brook (MA81-101)

Location:	Headwaters, outlet Spectacle Pond, Lancaster to mouth at confluence with North Nashua River, Lancaster.
AU Type:	RIVER
AU Size:	2.1 MILES
Classification/Qualifier:	B

Spectacle Brook (MA81-101)

Watershed Area: 1.69 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	1.69	1.69	0.67	0.67
Agriculture	2.4%	2.4%	2%	2%
Developed	11.1%	11.1%	6.6%	6.6%
Natural	77.6%	77.6%	76.3%	76.3%
Wetland	8.9%	8.9%	15.1%	15.1%
Impervious	6%	6%	3.6%	3.6%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
--	3	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Spectacle Brook (MA81-101) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary
Too limited data are available to assess the Aesthetics Use for Spectacle Brook (MA81-101), so it is assessed as having Insufficient Information. MassDEP staff recorded a limited number of aesthetics observations at one station close to the upstream end of Spectacle Brook ~700 feet downstream from Fire Road Twelve, Lancaster (W2196) as part of the MAP2 wadeable streams monitoring project during summer 2011 (n=1). There were generally no persistent objectionable conditions (i.e., odors, deposits, growths, or turbidity) observed.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2196	MassDEP	Water Quality	Spectacle Brook	[approximately 700 feet downstream from Fire Road Twelve, Lancaster]	42.510520	-71.689413

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2196	2011	1	Aesthetic observations were made by MassDEP field sampling crews at Station W2196 on Spectacle Brook (MA81-101) during 1 site visit on May 10, 2011. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded. However, aesthetic observations are limited (n<3).

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2196	2011	1	1	0

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2196	Spectacle Brook	2011	Aquatic Plant Density, Overall	None	1	1
W2196	Spectacle Brook	2011	Color	NR	1	1
W2196	Spectacle Brook	2011	Objectionable Deposits	No	1	1
W2196	Spectacle Brook	2011	Odor	None	1	1
W2196	Spectacle Brook	2011	Periphyton Density, Filamentous	None	1	1
W2196	Spectacle Brook	2011	Periphyton Density, Film	None	1	1
W2196	Spectacle Brook	2011	Scum	No	1	1
W2196	Spectacle Brook	2011	Turbidity	None	1	1

Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary

Too limited bacteria data are available to assess the Primary Contact Recreation Use for Spectacle Brook (MA81-101) and available aesthetics observations for this AU did not result in any impairment, so it is assessed as having Insufficient Information. MassDEP staff collected *E. coli* bacteria samples close to the upstream end of Spectacle Brook at W2196 [~700 ft downstream from Fire Rd Twelve, Lancaster] from May 2011 (n=1). *E. coli* data from W2196 are too limited according to the 2024 CALM to assess the Primary Contact Recreation Use.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2196	MassDEP	Water Quality	Spectacle Brook	[approximately 700 feet downstream from Fire Road Twelve, Lancaster]	42.510520	-71.689413

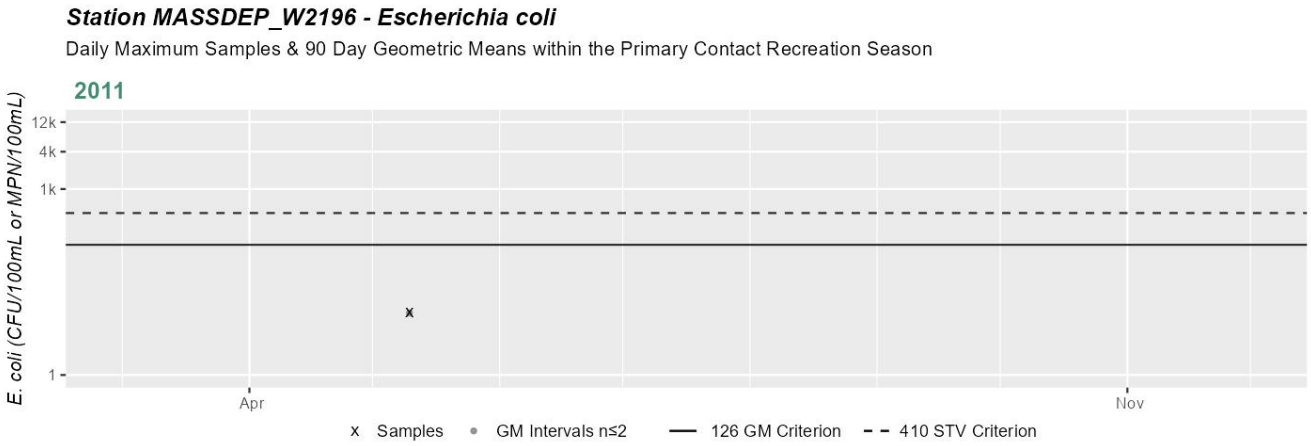
Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (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
W2196	MassDEP	E. coli	05/10/11	05/10/11	1	10	10	10



Variable*	Result
Samples	1
SeasGM	10
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary
Too limited bacteria data are available to assess the Secondary Contact Recreation Use for Spectacle Brook (MA81-101) and available aesthetics observations for this AU did not result in any impairment, so it is assessed as having Insufficient Information. MassDEP staff collected *E. coli* bacteria samples close to the upstream end of Spectacle Brook at W2196 [~700 ft downstream from Fire Rd Twelve, Lancaster] from May 2011 (n=1). *E. coli* data from W2196 are too limited according to the 2024 CALM to assess the Secondary Contact Recreation Use.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2196	MassDEP	Water Quality	Spectacle Brook	[approximately 700 feet downstream from Fire Road Twelve, Lancaster]	42.510520	-71.689413

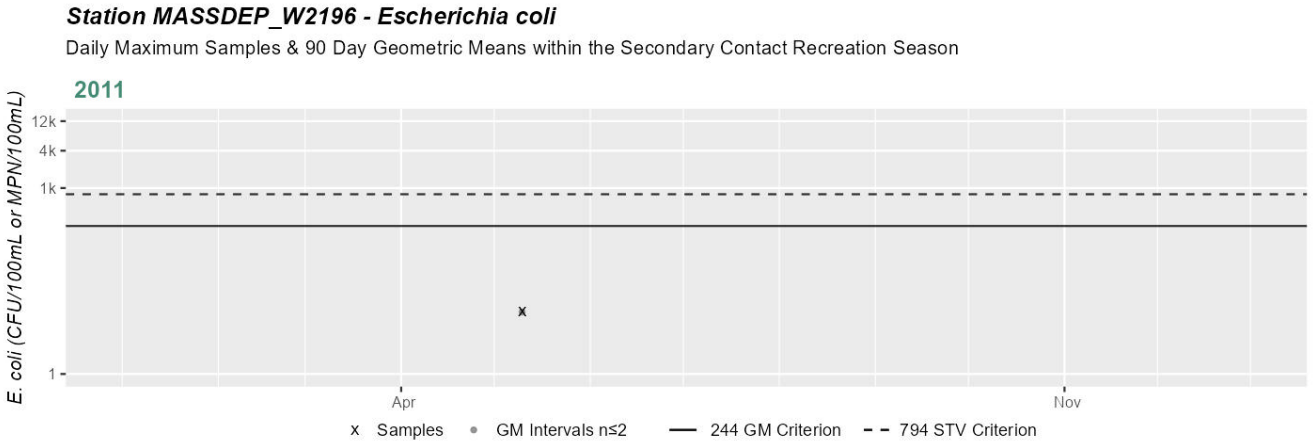
Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3)

[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
W2196	MassDEP	E. coli	05/10/11	05/10/11	1	10	10	10



Variable*	Result
Samples	1
SeasGM	10
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Spectacle Pond (MA81132)

Location:	Lancaster.
AU Type:	FRESHWATER LAKE
AU Size:	61 ACRES
Classification/Qualifier:	B

No usable data were available for Spectacle Pond (MA81132) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Dissolved Oxygen	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Dissolved Oxygen	Source Unknown (N)	X	--	--	--	--

Squannacook River (MA81-18)

Location:	Headwaters, confluence Mason and Willard brooks, Townsend to Hollingsworth and Vose Dam (NATID: MA00443), Groton/Shirley (through former 2008 segment: Harbor Pond MA81054).
AU Type:	RIVER
AU Size:	12.6 MILES
Classification/Qualifier:	B: ORW, CWF

Squannacook River (MA81-18)

Watershed Area: 68.33 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	52.15	7.44	14.64	1.98
Agriculture	3%	1%	2.8%	0.1%
Developed	10.1%	12.5%	8.2%	7.2%
Natural	80.2%	76.9%	76%	72.8%
Wetland	6.7%	9.6%	13%	19.8%
Impervious	4.1%	5.8%	3.6%	3.7%

**Land cover analysis only includes watershed area within Massachusetts.*

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Escherichia Coli (E. Coli)	--	Added
5	5	Lack of a Coldwater Assemblage	--	Unchanged
5	5	pH, Low	--	Unchanged
5	5	Temperature	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Golf Courses (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
Lack of a Coldwater Assemblage	Dam or Impoundment (Y)	X	--	--	--	--
Lack of a Coldwater Assemblage	Source Unknown (N)	X	--	--	--	--
pH, Low	Source Unknown (N)	X	--	--	--	--
Temperature	Dam or Impoundment (Y)	X	--	--	--	--
Temperature	Source Unknown (N)	X	--	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Squannacook River (MA81-18) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Aesthetics Use for Squannacook River (MA81-18) continues to be assessed as Fully Supporting. MassDEP staff recorded aesthetics observations in 2011, 2012 and 2013 as part of the SMART monitoring program close to the downstream end of this Squannacook River AU, west of Townsend Road (directly across from Candice Lane), Groton (W0487, n=4-6/yr). No persistent objectionable conditions (i.e., odors, deposits, growths, or turbidity) were observed during any of the surveys.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0487	MassDEP	Water Quality	Squannacook River	[west of Townsend Road (directly across from Candice Lane), Groton]	42.620942	-71.643810

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W0487	2011	5	Aesthetic observations were made by MassDEP field sampling crews at Station W0487 on Squannacook River (MA81-18) during 5 site visits between Mar 2011 and Oct 2011. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.
W0487	2012	6	Aesthetic observations were made by MassDEP field sampling crews at Station W0487 on Squannacook River (MA81-18) during 6 site visits between Jan 2012 and Nov 2012. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.
W0487	2013	4	Aesthetic observations were made by MassDEP field sampling crews at Station W0487 on Squannacook River (MA81-18) during 4 site visits between Mar 2013 and Sep 2013. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W0487	2011	5	4	0
W0487	2012	6	6	0
W0487	2013	4	4	0

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W0487	Squannacook River	2011	Aquatic Plant Density, Overall	None	4	5
W0487	Squannacook River	2011	Aquatic Plant Density, Overall	Unobservable	1	5
W0487	Squannacook River	2011	Color	Light Yellow/Tan	1	5
W0487	Squannacook River	2011	Color	None	2	5
W0487	Squannacook River	2011	Color	Reddish	2	5
W0487	Squannacook River	2011	Objectionable Deposits	No	5	5
W0487	Squannacook River	2011	Odor	None	5	5
W0487	Squannacook River	2011	Periphyton Density, Filamentous	None	4	5
W0487	Squannacook River	2011	Periphyton Density, Filamentous	Unobservable	1	5
W0487	Squannacook River	2011	Periphyton Density, Film	None	4	5
W0487	Squannacook River	2011	Periphyton Density, Film	Unobservable	1	5
W0487	Squannacook River	2011	Scum	No	5	5
W0487	Squannacook River	2011	Turbidity	None	4	5
W0487	Squannacook River	2011	Turbidity	Unobservable	1	5
W0487	Squannacook River	2012	Aquatic Plant Density, Overall	None	5	6
W0487	Squannacook River	2012	Aquatic Plant Density, Overall	Sparse	1	6
W0487	Squannacook River	2012	Color	Light Yellow/Tan	1	6
W0487	Squannacook River	2012	Color	None	4	6
W0487	Squannacook River	2012	Color	Reddish	1	6
W0487	Squannacook River	2012	Objectionable Deposits	No	6	6

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W0487	Squannacook River	2012	Odor	None	6	6
W0487	Squannacook River	2012	Periphyton Density, Filamentous	None	6	6
W0487	Squannacook River	2012	Periphyton Density, Film	None	6	6
W0487	Squannacook River	2012	Scum	No	5	6
W0487	Squannacook River	2012	Scum	Yes	1	6
W0487	Squannacook River	2012	Turbidity	None	6	6
W0487	Squannacook River	2013	Aesthetics Impaired?	No	2	4
W0487	Squannacook River	2013	Aesthetics Impaired?	NR	2	4
W0487	Squannacook River	2013	Aquatic Plant Density, Overall	None	4	4
W0487	Squannacook River	2013	Color	None	3	4
W0487	Squannacook River	2013	Color	Reddish	1	4
W0487	Squannacook River	2013	Objectionable Deposits	No	4	4
W0487	Squannacook River	2013	Odor	None	4	4
W0487	Squannacook River	2013	Periphyton Density, Filamentous	None	4	4
W0487	Squannacook River	2013	Periphyton Density, Film	None	4	4
W0487	Squannacook River	2013	Scum	No	4	4
W0487	Squannacook River	2013	Turbidity	None	4	4

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for the Squannacook River (MA81-18) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at 1 station in 2018-2022. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in the Squannacook River from 2011-2022 at 7 stations. Samples were collected from the following stations/sample years from upstream to downstream: close to the upstream end of the AU at NRWA_SQ2400 [At Mason Rd, at Stone bridge, Townsend] from 2011-2017 (n=5-7/yr), a quarter of the way down at NRWA_SQBlckRk [Black Rock, Townsend] in Jul 2022 (n=1), a little further down at NRWA_SQ1895 [Adams Dam, Townsend] in Aug 2022 (n=3), a third of the way down at NRWA_SQ1788 [Squannacook River off of Elm Circle, W side of Rte. 13. Path leading from dead end parking lot to river, Townsend] from 2011-2022 (n=5-7/yr), halfway down at NRWA_SQ1329 [DS from Shepards Auto body, Townsend] from 2011-2022 (n=6-7/yr), three-quarters of the way down at NRWA_SQ1012 [Bertozzi WMA, Groton] from Jul-Aug 2022 (n=4), close to the downstream end at W0487 [W of Townsend Rd (directly across from Candice Lane), Groton] from 2011-2013 (n=3-4/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from NRWA_SQ2400 indicated 2 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2012 and 2014, 20 & 20%), 0 yrs had ≥2 samples exceed the 410 CFU/100ml STV, and cumulatively across years 8% of intervals had GMs >126 CFU/100ml. Analysis of the single year limited frequency *E. coli* dataset from NRWA_SQ1895 indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 124 CFU/100ml. Analysis of the recent five years of this multi-year limited frequency *E. coli* dataset from NRWA_SQ1788 indicated 3 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2018-2019 and 2021, 50-100%), and while only 1 yr had ≥2 samples exceed the 410 CFU/100ml STV (2018, n=3), cumulatively across years 55% of intervals had GMs >126 CFU/100ml. Analysis of the recent five years of this multi-year limited frequency *E. coli* dataset from NRWA_SQ1329 indicated 2 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2018 and 2021, 20 & 50%), 0 yrs had ≥2 samples exceed the 410 CFU/100ml STV, and cumulatively across years 14% of intervals had GMs >126 CFU/100ml. Analysis of the single year limited frequency *E. coli* dataset from NRWA_SQ1012 indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 68 CFU/100ml. *E. coli* data from NRWA_SQBlckRk and W0487 are too limited according to the 2024 CALM to assess the Primary Contact Recreation Use. While *E. coli* data from NRWA_SQ2400, NRWA_SQ1895, NRWA_SQ1329, and NRWA_SQ1012 meet 2024 CALM guidance, *E. coli* data from NRWA_SQ1788 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0487	MassDEP	Water Quality	Squannacook River	[west of Townsend Road (directly across from Candice Lane), Groton]	42.620942	-71.643810

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_SQ1012	Nashua River Watershed Association	Water Quality	Squannacook River	Bertozzi WMA, Groton	42.634350	-71.657931
NRWA_SQ1329	Nashua River Watershed Association	Water Quality	Squannacook River	DS from Shepards Auto body, Townsend	42.652000	-71.670700
NRWA_SQ1788	Nashua River Watershed Association	Water Quality	Squannacook River	Squannacook River off of Elm Circle, west side of Rte. 13. Path leading from dead end parking lot to river, Townsend	42.663000	-71.708600
NRWA_SQ1895	Nashua River Watershed Association	Water Quality	Squannacook River	Adams Dam, Townsend	42.666070	-71.709731
NRWA_SQ2400	Nashua River Watershed Association	Water Quality	Squannacook River	At Mason Rd, at Stone bridge, Townsend	42.678900	-71.740100
NRWA_SQBlckRk	Nashua River Watershed Association	Water Quality	Squannacook River	Black Rock, Townsend	42.674110	-71.708160

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 4) (NRWA 2022) (MassDEP Undated 2)

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

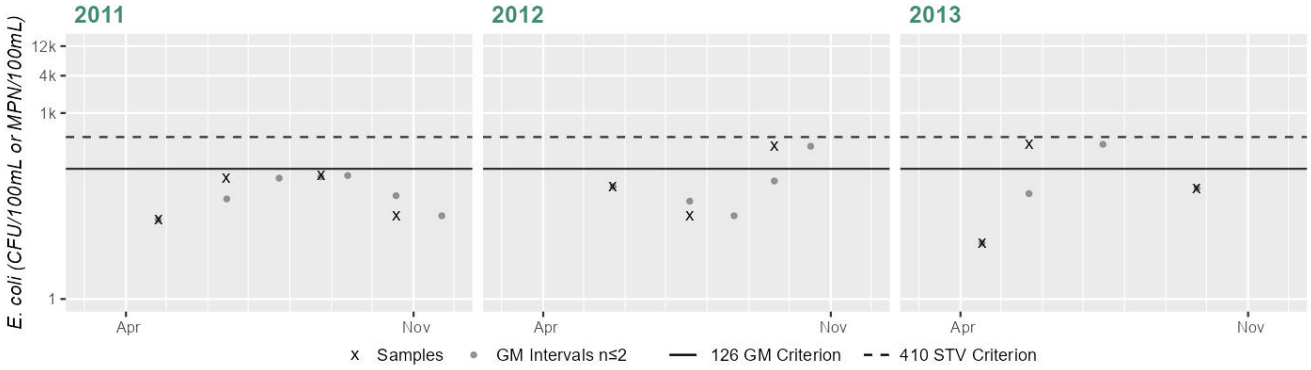
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W0487	MassDEP	E. coli	04/25/11	10/19/11	4	19	98	43
W0487	MassDEP	E. coli	05/22/12	09/19/12	3	22	291	74
W0487	MassDEP	E. coli	04/17/13	09/24/13	3	8	313	53
NRWA_SQ1012	Nashua River Watershed Association	E. coli	07/25/22	08/31/22	4	40	185	68
NRWA_SQ1329	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	13	410	59
NRWA_SQ1329	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	7	101	42
NRWA_SQ1329	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	6	201	33
NRWA_SQ1329	Nashua River Watershed Association	E. coli	05/17/14	10/18/14	6	10	613	69
NRWA_SQ1329	Nashua River Watershed Association	E. coli	05/16/15	10/17/15	6	8	113	25

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_SQ1329	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	6	1	45	11
NRWA_SQ1329	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	7	70	31
NRWA_SQ1329	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	9	325	43
NRWA_SQ1329	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	7	727	62
NRWA_SQ1329	Nashua River Watershed Association	E. coli	05/16/20	10/17/20	6	2	49	21
NRWA_SQ1329	Nashua River Watershed Association	E. coli	05/15/21	10/16/21	6	20	648	78
NRWA_SQ1329	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	12	52	27
NRWA_SQ1788	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	13	325	113
NRWA_SQ1788	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	40	248	117
NRWA_SQ1788	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	24	235	80
NRWA_SQ1788	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	2	2419	91
NRWA_SQ1788	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	13	298	113
NRWA_SQ1788	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	6	6	980	70
NRWA_SQ1788	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	6	40	547	170
NRWA_SQ1788	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	35	461	187
NRWA_SQ1788	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	23	721	209
NRWA_SQ1788	Nashua River Watershed Association	E. coli	05/16/20	10/17/20	6	31	238	87

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_SQ1788	Nashua River Watershed Association	E. coli	04/27/21	10/16/21	7	30	1299	136
NRWA_SQ1788	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	5	56	387	131
NRWA_SQ1895	Nashua River Watershed Association	E. coli	08/09/22	08/31/22	3	83	224	124
NRWA_SQ2400	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	5	313	53
NRWA_SQ2400	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	27	365	83
NRWA_SQ2400	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	10	150	50
NRWA_SQ2400	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	11	1413	98
NRWA_SQ2400	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	7	95	38
NRWA_SQ2400	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	6	13	130	51
NRWA_SQ2400	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	5	9	461	61
NRWA_SQBlckRk	Nashua River Watershed Association	E. coli	07/25/22	07/25/22	1	313	313	312

Station MASSDEP_W0487 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	4
SeasGM	43
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	3
SeasGM	74
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

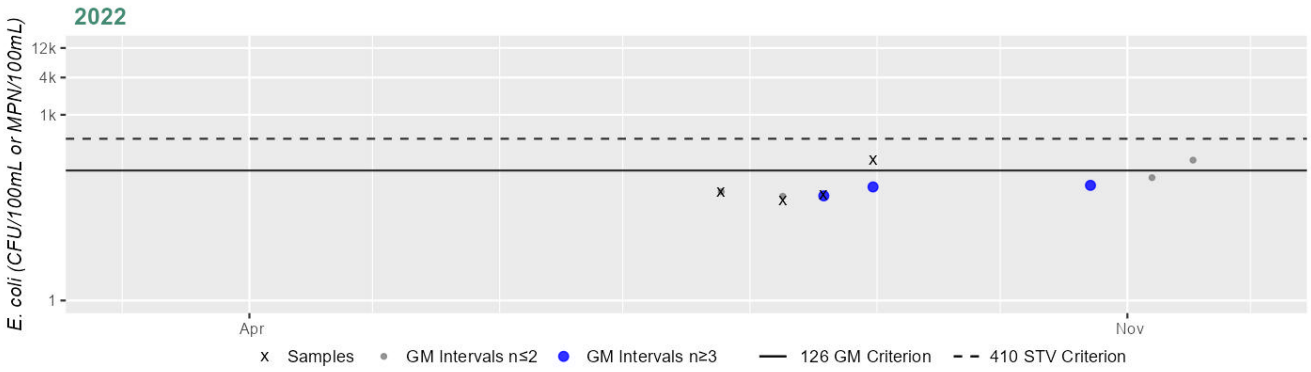
Variable*	Result
Samples	3
SeasGM	53
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_SQ1012 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



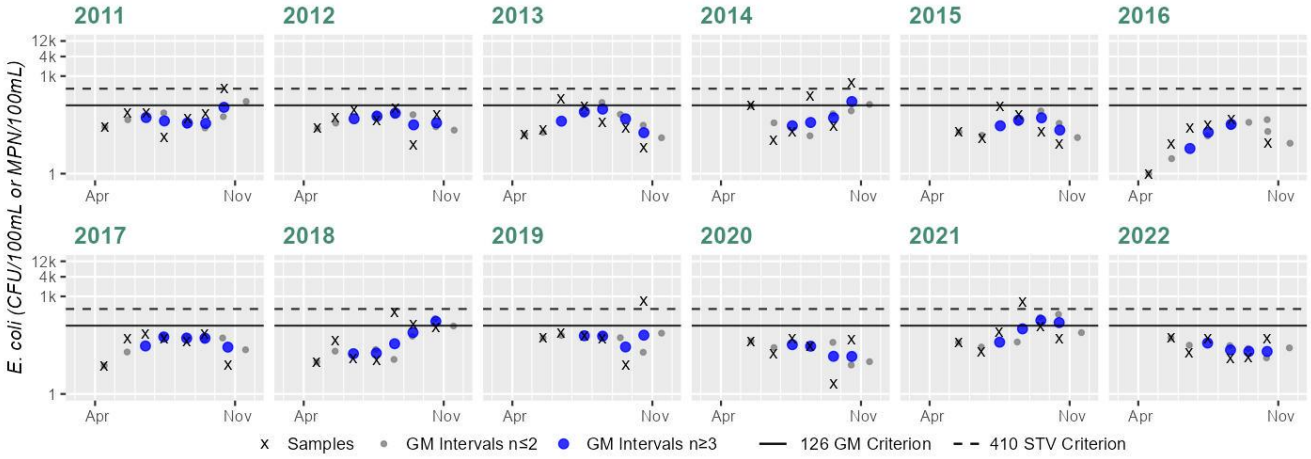
Variable*	Result
Samples	4
SeasGM	68
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_SQ1329 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	59
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	42
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	33
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	69
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	6
SeasGM	25
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	11
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	31
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	43
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	62
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	6
SeasGM	21
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	78
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	6
SeasGM	27
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Current (2011-2022)

7%

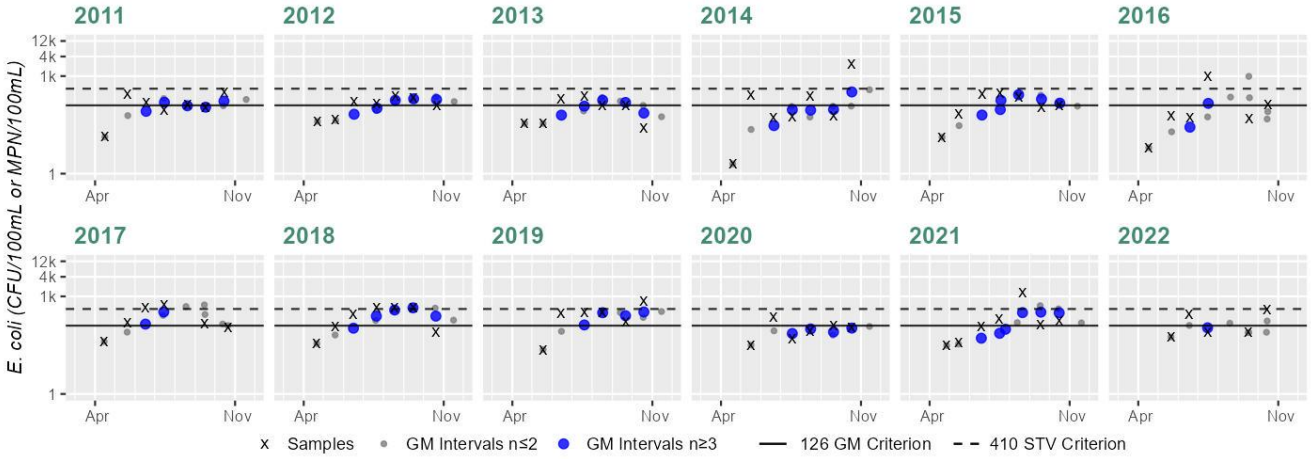
Cumulative %GMI Exceedance Current (Recent 5 Years)

14%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_SQ1788 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	113
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	117
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	80
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	91
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	113
#GMI	6
#GMI Ex	4
%GMI Ex	66%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	70
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	6
SeasGM	170
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	7
SeasGM	187
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	3
%n>STV	42%

Variable*	Result
Samples	6
SeasGM	209
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	6
SeasGM	87
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	136
#GMI	6
#GMI Ex	3
%GMI Ex	50%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	5
SeasGM	131
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

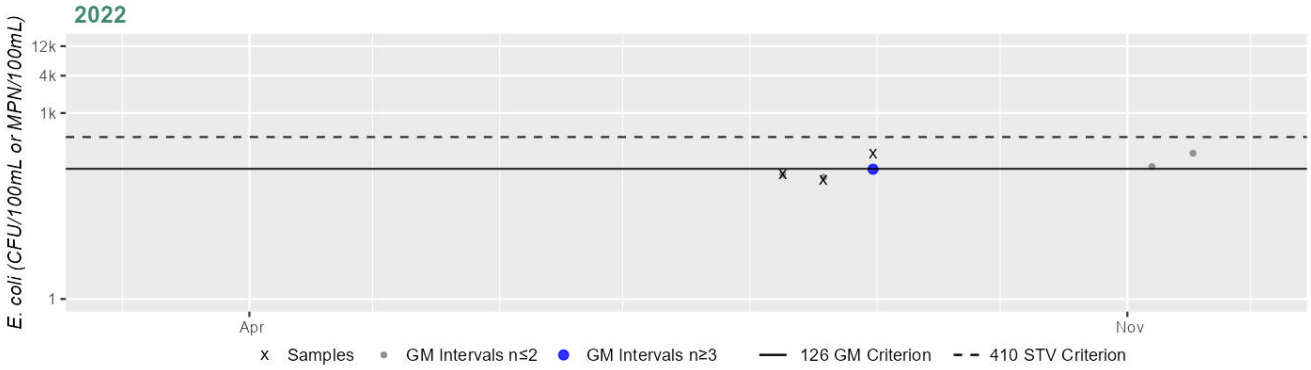
Cumulative %GMI Exceedance Current (2011-2022)
52%

Cumulative %GMI Exceedance Current (Recent 5 Years)
55%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_SQ1895 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



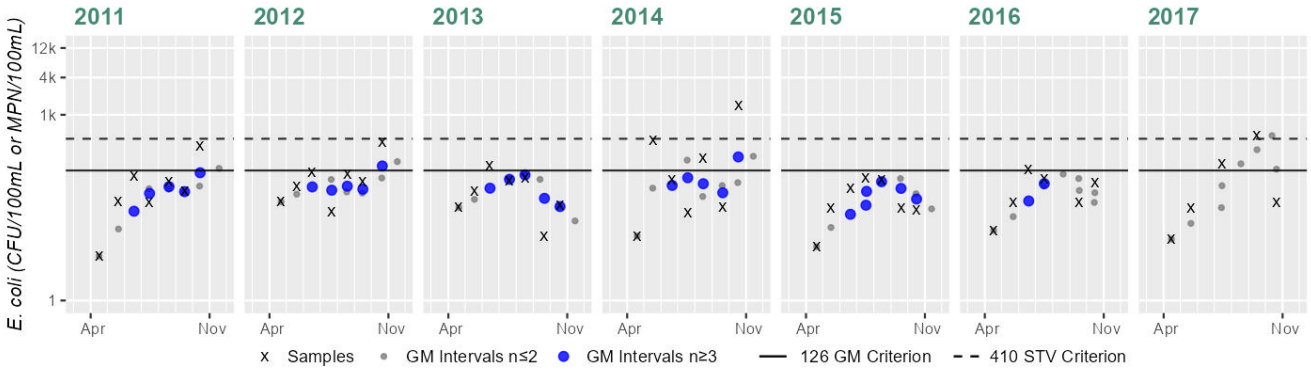
Variable*	Result
Samples	3
SeasGM	124
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_SQ2400 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	53
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	83
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	50
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	98
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	38
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	51
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	61
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	20%

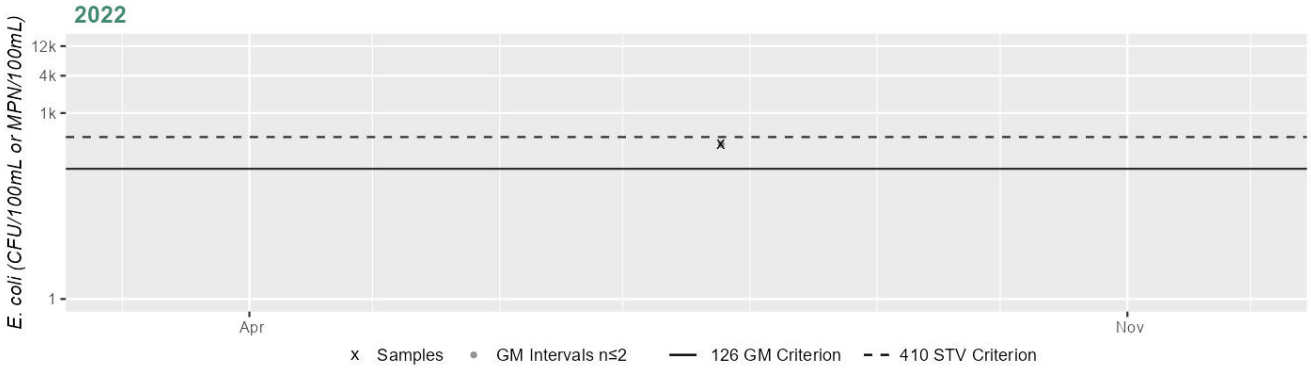
Cumulative %GMI Exceedance
Current (2011-2022)
7%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
8%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_SQBlckRk - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	1
SeasGM	313
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for the Squannacook River (MA81-18) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at 1 station in 2018-2022. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in the Squannacook River from 1998-2022 at 8 stations. Samples were collected from the following stations/sample years from upstream to downstream: close to the upstream end of the AU at NRWA_SQ2400 [At Mason Rd, at Stone bridge, Townsend] from 2008-2010 (historic n=5-7/yr) and 2011-2017 (current n=5-7/yr), a quarter of the way down at NRWA_SQBlckRk [Black Rock, Townsend] from Jul 2022 (n=1), a little further down at NRWA_SQ1895 [Adams Dam, Townsend] in Aug 2022 (n=3), and W1283 [Elm St (Rt. 13), Townsend] from May-Sep 2008 (n=6), a third of the way down at NRWA_SQ1788 [Squannacook River off of Elm Circle, W side of Rte. 13. Path leading from dead end parking lot to river, Townsend] from 2009-2010 (historic n=7/yr) and 2011-2022 (current n=5-7/yr), halfway down at NRWA_SQ1329 [DS from Shepards Auto body, Townsend] from 2008-2010 (historic n=6-7/yr) and 2011-2022 (current n=6-7/yr), three-quarters of the way down at NRWA_SQ1012 [Bertozzi WMA, Groton] from Jul-Aug 2022 (n=4), close to the downstream end at W0487 [W of Townsend Rd (directly across from Candice Lane), Groton] in 1998, 2003, and 2007-2010 (historic n=1-8/yr) and 2011-2013 (current n=4-5/yr). Since bacteria data from the historic IR window are all indicative of good water quality conditions, only the analysis from the current IR window (7 stations) will be summarized here. Analysis of the recent five years of the multi-year moderate frequency *E. coli* dataset from NRWA_SQ2400 indicated 0 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml, 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. Analysis of the single year limited frequency *E. coli* dataset from NRWA_SQ1895 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 124 CFU/100ml. Analysis of the recent five years of this multi-year limited frequency *E. coli* dataset from NRWA_SQ1788 indicated 3: out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2018-2019 and 2021, 50-80%), 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 50% of intervals had GMs >244 CFU/100ml. Analysis of the recent five years of this multi-year limited frequency *E. coli* dataset from NRWA_SQ1329 indicated 0 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml, 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. Analysis of the single year limited frequency *E. coli* dataset from NRWA_SQ1012 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 68 CFU/100ml. Analysis of the single year limited frequency *E. coli* dataset from W0487 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 32 CFU/100ml. *E. coli* data from NRWA_SQBlckRk are too limited according to the 2024 CALM to assess the Secondary Contact Recreation Use. While *E. coli* data from NRWA_SQ2400, NRWA_SQ1895, NRWA_SQ1329, NRWA_SQ1012, and W0487 meet 2024 CALM guidance, *E. coli* data from NRWA_SQ1788 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0487	MassDEP	Water Quality	Squannacook River	[west of Townsend Road (directly across from Candice Lane), Groton]	42.620942	-71.643810
W1283	MassDEP	Water Quality	Squannacook River	[Elm Street (Route 13), Townsend]	42.663449	-71.709146
NRWA_SQ1012	Nashua River Watershed Association	Water Quality	Squannacook River	Bertozzi WMA, Groton	42.634350	-71.657931
NRWA_SQ1329	Nashua River Watershed Association	Water Quality	Squannacook River	DS from Shepards Auto body, Townsend	42.652000	-71.670700
NRWA_SQ1788	Nashua River Watershed Association	Water Quality	Squannacook River	Squannacook River off of Elm Circle, west side of Rte. 13. Path leading from dead end parking lot to river, Townsend	42.663000	-71.708600
NRWA_SQ1895	Nashua River Watershed Association	Water Quality	Squannacook River	Adams Dam, Townsend	42.666070	-71.709731
NRWA_SQ2400	Nashua River Watershed Association	Water Quality	Squannacook River	At Mason Rd, at Stone bridge, Townsend	42.678900	-71.740100
NRWA_SQBlckRk	Nashua River Watershed Association	Water Quality	Squannacook River	Black Rock, Townsend	42.674110	-71.708160

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

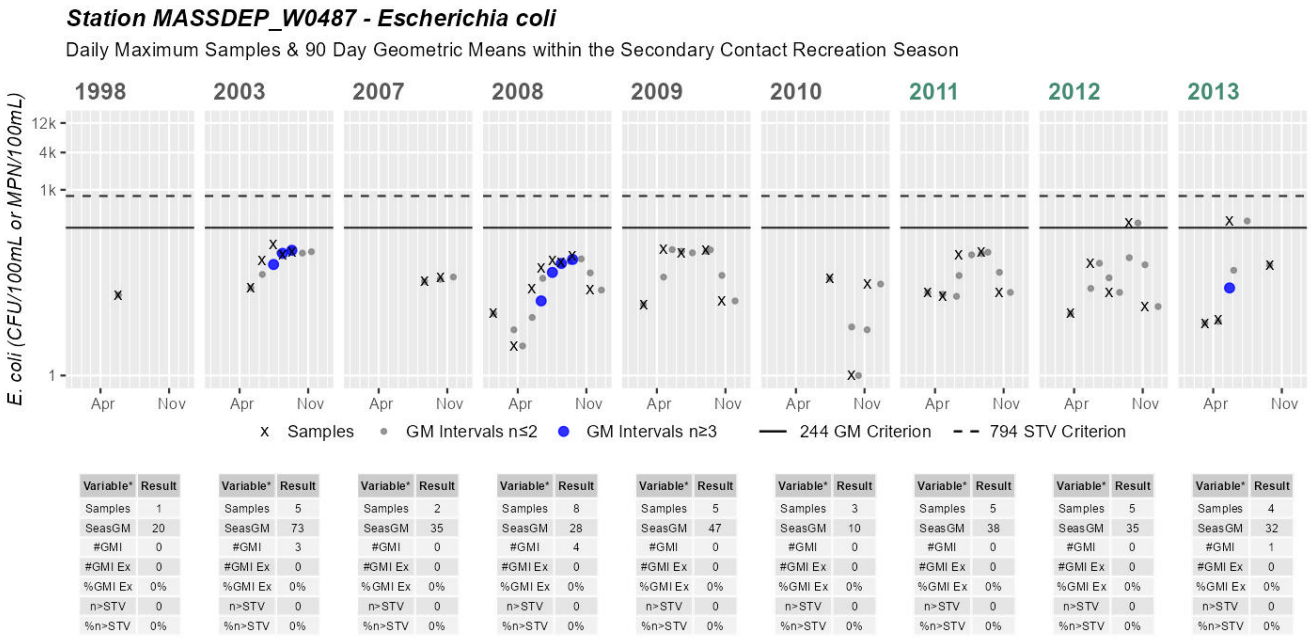
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W0487	MassDEP	E. coli	05/27/98	05/27/98	1	20	20	19
W0487	MassDEP	E. coli	05/06/03	09/11/03	5	26	130	73
W0487	MassDEP	E. coli	08/22/07	10/10/07	2	33	39	35
W0487	MassDEP	E. coli	01/16/08	11/12/08	8	3	86	28
W0487	MassDEP	E. coli	02/18/09	10/21/09	5	14	108	47
W0487	MassDEP	E. coli	07/15/10	11/09/10	3	1	37	10
W0487	MassDEP	E. coli	03/09/11	10/19/11	5	19	98	38
W0487	MassDEP	E. coli	03/20/12	11/07/12	5	10	291	35

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W0487	MassDEP	E. coli	03/06/13	09/24/13	4	7	313	32
W1283	MassDEP	E. coli	05/13/08	09/16/08	6	24	200	86
NRWA_SQ1012	Nashua River Watershed Association	E. coli	07/25/22	08/31/22	4	40	185	68
NRWA_SQ1329	Nashua River Watershed Association	E. coli	04/19/08	10/18/08	6	1	42	9
NRWA_SQ1329	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	5	613	50
NRWA_SQ1329	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	7	12	142	38
NRWA_SQ1329	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	13	410	59
NRWA_SQ1329	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	7	101	42
NRWA_SQ1329	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	6	201	33
NRWA_SQ1329	Nashua River Watershed Association	E. coli	05/17/14	10/18/14	6	10	613	69
NRWA_SQ1329	Nashua River Watershed Association	E. coli	05/16/15	10/17/15	6	8	113	25
NRWA_SQ1329	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	6	1	45	11
NRWA_SQ1329	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	7	70	31
NRWA_SQ1329	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	9	325	43
NRWA_SQ1329	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	7	727	62
NRWA_SQ1329	Nashua River Watershed Association	E. coli	05/16/20	10/17/20	6	2	49	21
NRWA_SQ1329	Nashua River Watershed Association	E. coli	05/15/21	10/16/21	6	20	648	78
NRWA_SQ1329	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	12	52	27
NRWA_SQ1788	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	40	365	127

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_SQ1788	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	7	20	260	110
NRWA_SQ1788	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	13	325	113
NRWA_SQ1788	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	40	248	117
NRWA_SQ1788	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	24	235	80
NRWA_SQ1788	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	2	2419	91
NRWA_SQ1788	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	13	298	113
NRWA_SQ1788	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	6	6	980	70
NRWA_SQ1788	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	6	40	547	170
NRWA_SQ1788	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	35	461	187
NRWA_SQ1788	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	23	721	209
NRWA_SQ1788	Nashua River Watershed Association	E. coli	05/16/20	10/17/20	6	31	238	87
NRWA_SQ1788	Nashua River Watershed Association	E. coli	04/27/21	10/16/21	7	30	1299	136
NRWA_SQ1788	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	5	56	387	131
NRWA_SQ1895	Nashua River Watershed Association	E. coli	08/09/22	08/31/22	3	83	224	124
NRWA_SQ2400	Nashua River Watershed Association	E. coli	04/19/08	10/18/08	5	4	160	27
NRWA_SQ2400	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	9	248	62
NRWA_SQ2400	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	7	25	387	116

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_SQ2400	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	5	313	53
NRWA_SQ2400	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	27	365	83
NRWA_SQ2400	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	10	150	50
NRWA_SQ2400	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	11	1413	98
NRWA_SQ2400	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	7	95	38
NRWA_SQ2400	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	6	13	130	51
NRWA_SQ2400	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	5	9	461	61
NRWA_SQBlckRk	Nashua River Watershed Association	E. coli	07/25/22	07/25/22	1	313	313	312



Variable*	Result
Samples	1
SeasGM	20
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	73
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	35
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	8
SeasGM	28
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	47
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	3
SeasGM	10
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	38
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

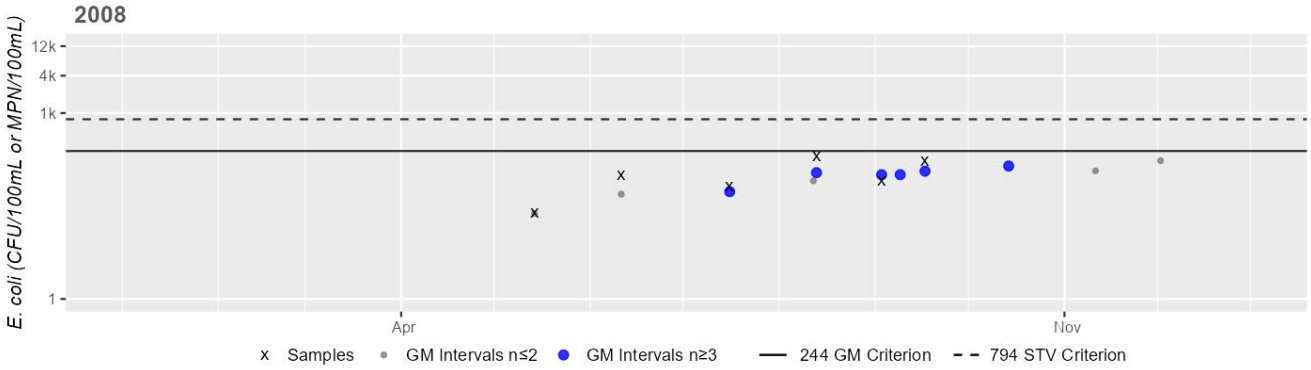
Variable*	Result
Samples	5
SeasGM	35
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	32
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

Station MASSDEP_W1283 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



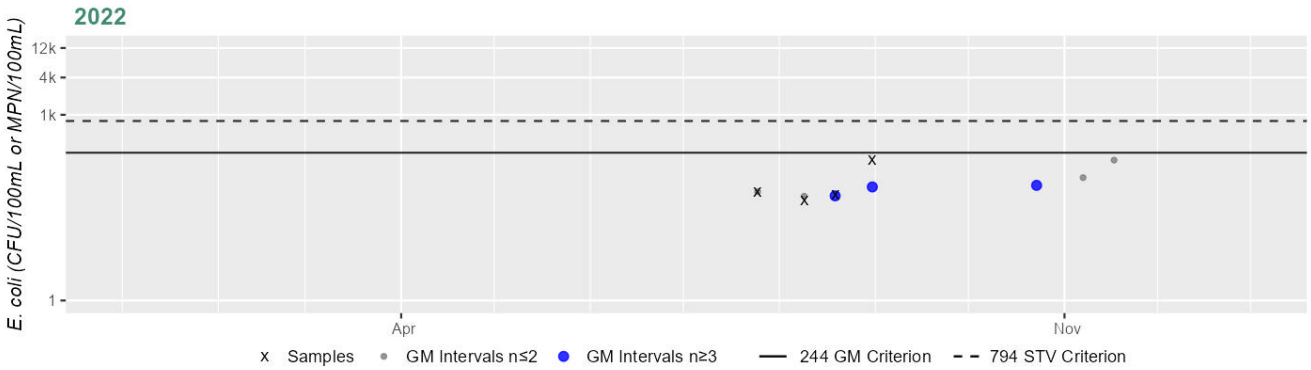
Variable*	Result
Samples	6
SeasGM	86
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_SQ1012 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



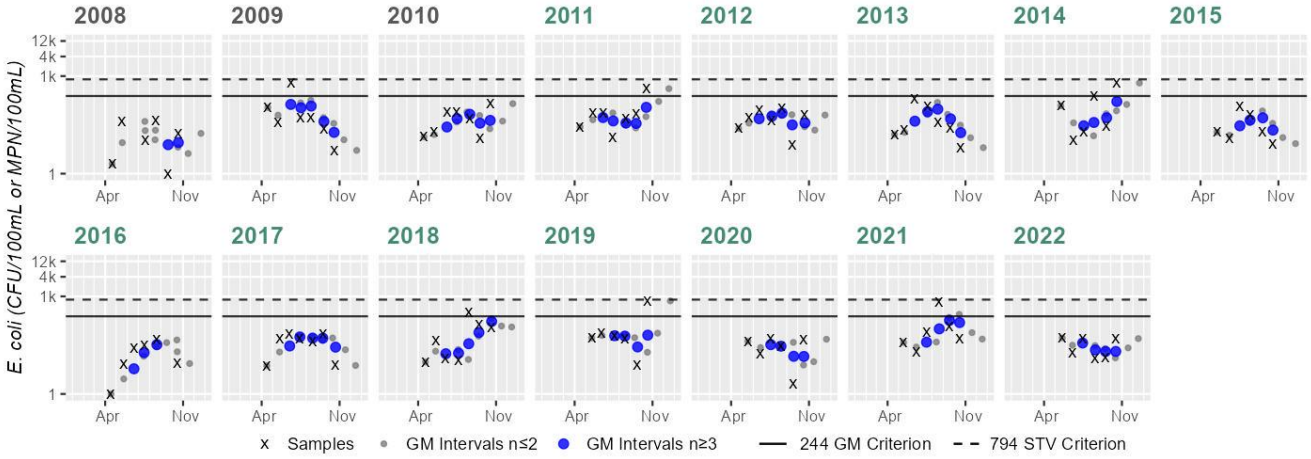
Variable*	Result
Samples	4
SeasGM	68
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_SQ1329 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	9
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	50
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	38
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	59
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	42
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	33
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	69
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	25
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	11
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	31
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	43
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	62
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	21
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	78
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	27
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

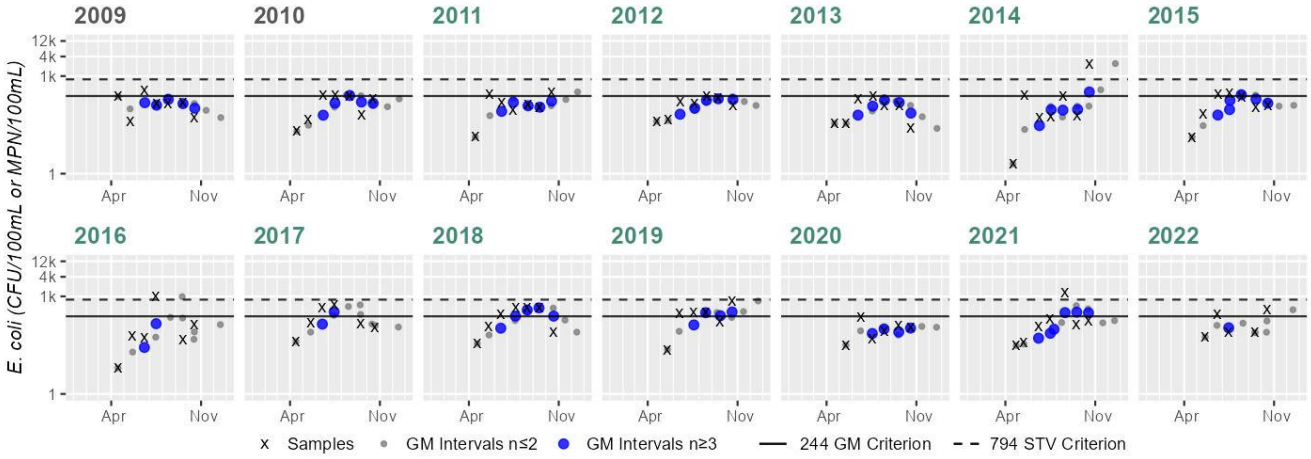
Cumulative %GMI Exceedance
Current (2011-2022)
0%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_SQ1788 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	127
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	110
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	113
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	117
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	80
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	91
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	113
#GMI	6
#GMI Ex	1
%GMI Ex	16%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	70
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	6
SeasGM	170
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	187
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	209
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	87
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	136
#GMI	6
#GMI Ex	3
%GMI Ex	50%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	5
SeasGM	131
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)
10%

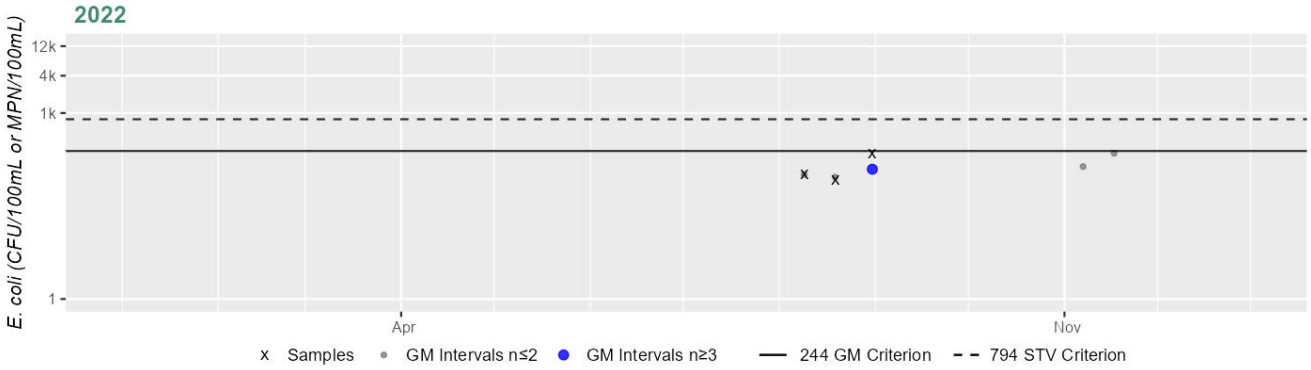
Cumulative %GMI Exceedance Current (2011-2022)
26%

Cumulative %GMI Exceedance Current (Recent 5 Years)
50%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_SQ1895 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



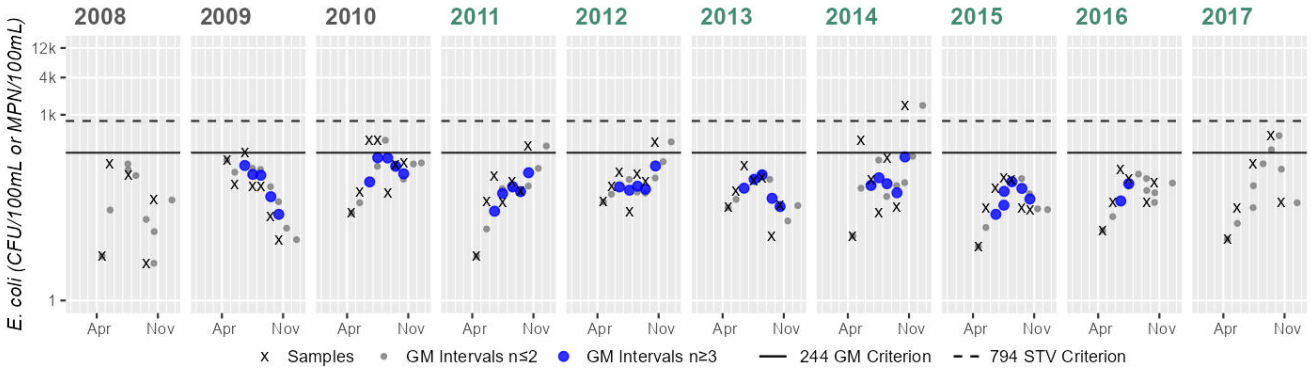
Variable*	Result
Samples	3
SeasGM	124
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_SQ2400 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	27
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	62
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	116
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	53
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	83
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	50
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	98
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	38
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	51
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	61
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

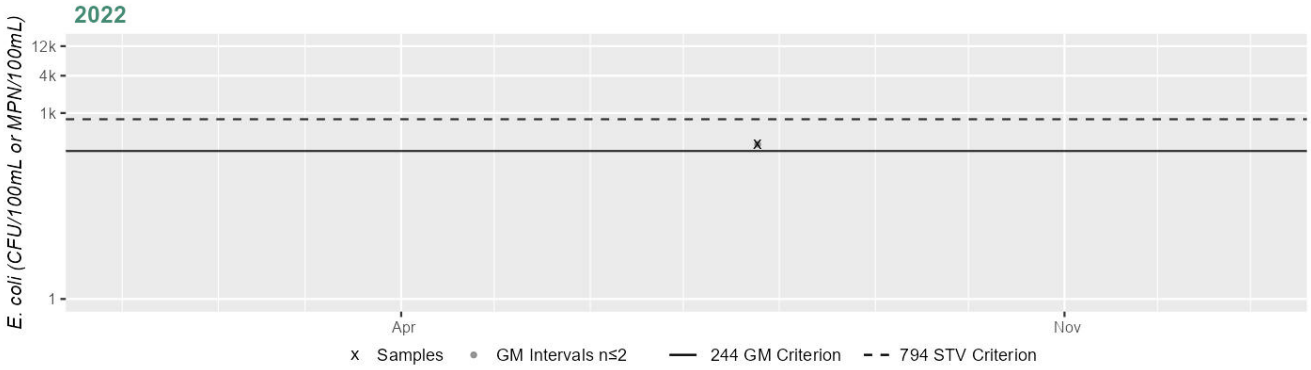
Cumulative %GMI Exceedance
Current (2011-2022)
0%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_SQBlckRk - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	1
SeasGM	313
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance

Current (2011-2022)

0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Squannacook River (MA81-19)

Location:	Hollingsworth and Vose Dam (NATID: MA00443), Groton/Shirley to mouth at confluence with Nashua River, Shirley/Groton/Ayer.
AU Type:	RIVER
AU Size:	3.7 MILES
Classification/Qualifier:	B: WWF

Squannacook River (MA81-19)

Watershed Area: 71.07 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	54.90	3.57	15.18	0.80
Agriculture	2.9%	1.5%	2.7%	0.1%
Developed	10.1%	11.9%	8.3%	10%
Natural	79.8%	73.6%	75.4%	65.5%
Wetland	7.1%	13%	13.6%	24.4%
Impervious	4.1%	5.3%	3.7%	5.5%

**Land cover analysis only includes watershed area within Massachusetts.*

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Squannacook River (MA81-19) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Squannacook River (MA81-19) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for the Squannacook River (MA81-19) continues to be assessed as Fully Supporting. Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples halfway down the Squannacook River at NRWA_SQ0356 [D.S. of Rt 225 bridge, Shirley] from 2011-2017 and 2021-2022 (n=5-10/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from NRWA_SQ0356 indicated 0 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml, 0 yrs had ≥2 samples exceed the 410 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >126 CFU/100ml. *E. coli* data from NRWA_SQ0356 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_SQ0356	Nashua River Watershed Association	Water Quality	Squannacook River	D.S. of Rt 225 bridge, Shirley	42.598800	-71.626500

Bacteria Data

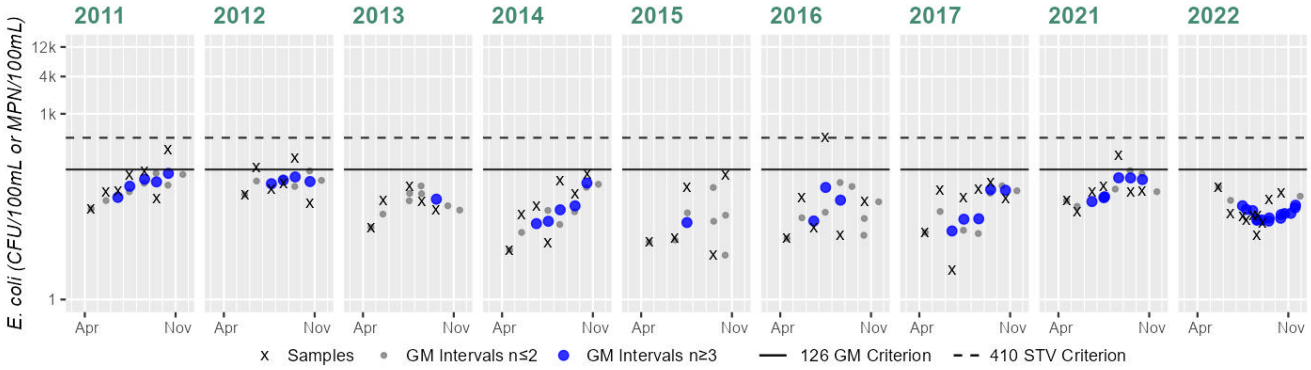
Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)
(NRWA 2022) (MassDEP Undated 2)
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_SQ0356	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	29	261	73
NRWA_SQ0356	Nashua River Watershed Association	E. coli	05/19/12	10/20/12	6	36	193	77
NRWA_SQ0356	Nashua River Watershed Association	E. coli	04/20/13	09/21/13	5	14	68	33

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_SQ0356	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	6	105	29
NRWA_SQ0356	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	5	5	101	19
NRWA_SQ0356	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	6	9	410	32
NRWA_SQ0356	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	3	77	29
NRWA_SQ0356	Nashua River Watershed Association	E. coli	04/20/21	10/16/21	7	25	214	58
NRWA_SQ0356	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	10	10	65	25

Station NRWA_SQ0356 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	73
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	77
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	33
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	29
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	19
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	32
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	7
SeasGM	29
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	58
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	25
#GMI	14
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Current (2011-2022)
0%

Cumulative %GMI Exceedance Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for the Squannacook River (MA81-19) continues to be assessed as Fully Supporting. MassDEP and NRWA staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in the Squannacook River (MA81-19) from 2003-2022 at 3 stations. Samples were collected from the following stations/sample years from upstream to downstream: nearly halfway down at W0999 [Rt. 225, downstream of dam and just upstream of canal confluence, Shirley/Groton] from May-Sep 2003 (n=5), halfway down at NRWA_SQ0356 [D.S. of Rt 225 bridge, Shirley] from 2008-2010 (historic n=5-7/yr), 2011-2017 and 2021-2022 (current n=5-10/yr), three-quarters of the way down at W1814 [~1 mile downstream from Rt. 225 (off Shirley Rod & Gun Club private Rd), Shirley] from May-Sep 2008 (n=6). Since bacteria data from the historic IR window are all indicative of good water quality conditions, only the analysis from the current IR window (1 station) will be summarized here: Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from NRWA_SQ0356 indicated 0 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml, 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. *E. coli* data from NRWA_SQ0356 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0999	MassDEP	Water Quality	Squannacook River	[Route 225, downstream of dam and just upstream of canal confluence, Shirley/Groton]	42.601122	-71.628366
W1814	MassDEP	Water Quality	Squannacook River	[approximately 1 mile downstream from Route 225 (off Shirley Rod & Gun Club private road), Shirley]	42.590912	-71.623966
NRWA_SQ0356	Nashua River Watershed Association	Water Quality	Squannacook River	D.S. of Rt 225 bridge, Shirley	42.598800	-71.626500

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

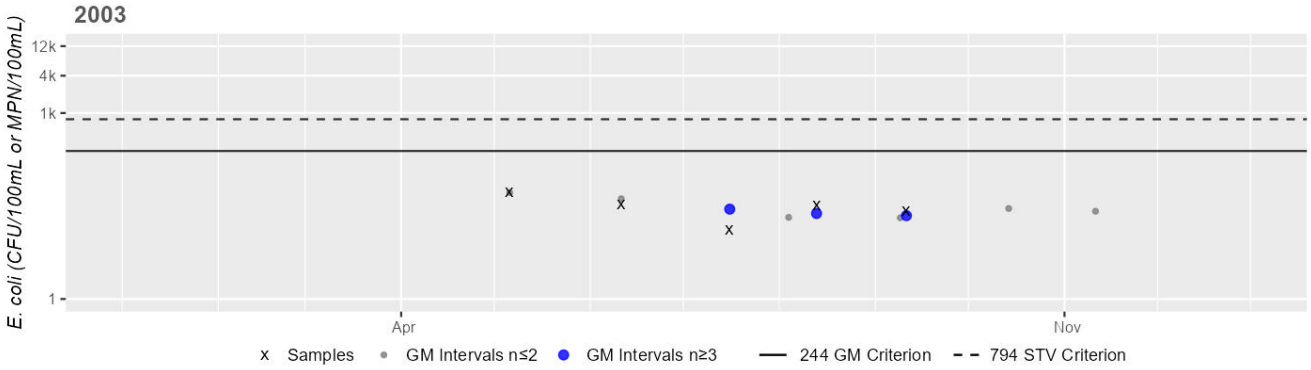
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W0999	MassDEP	E. coli	05/06/03	09/11/03	5	13	52	28
W1814	MassDEP	E. coli	05/15/08	09/18/08	6	19	83	59
NRWA_SQ0356	Nashua River Watershed Association	E. coli	04/19/08	10/18/08	5	4	78	33

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_SQ0356	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	15	172	46
NRWA_SQ0356	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	7	18	172	57
NRWA_SQ0356	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	29	261	73
NRWA_SQ0356	Nashua River Watershed Association	E. coli	05/19/12	10/20/12	6	36	193	77
NRWA_SQ0356	Nashua River Watershed Association	E. coli	04/20/13	09/21/13	5	14	68	33
NRWA_SQ0356	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	6	105	29
NRWA_SQ0356	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	5	5	101	19
NRWA_SQ0356	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	6	9	410	32
NRWA_SQ0356	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	3	77	29
NRWA_SQ0356	Nashua River Watershed Association	E. coli	04/20/21	10/16/21	7	25	214	58
NRWA_SQ0356	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	10	10	65	25

Station MASSDEP_W0999 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



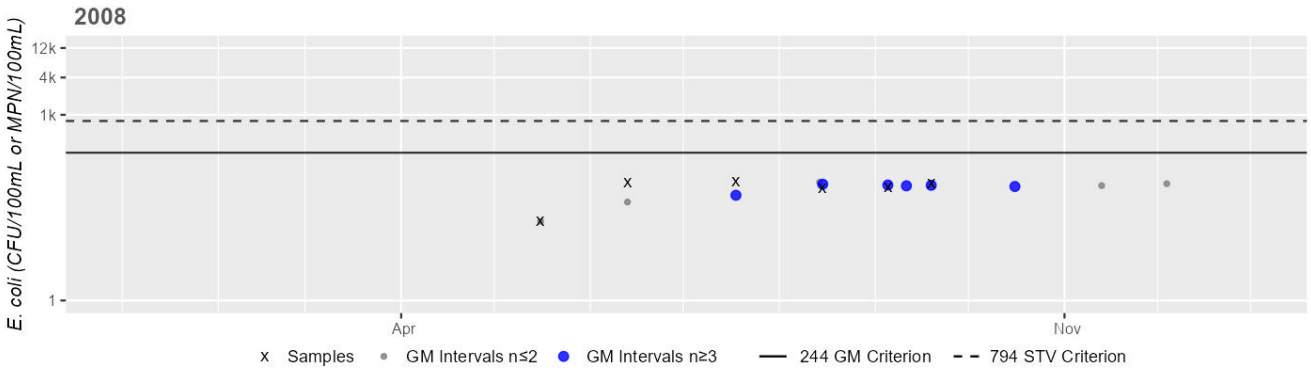
Variable*	Result
Samples	5
SeasGM	28
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W1814 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



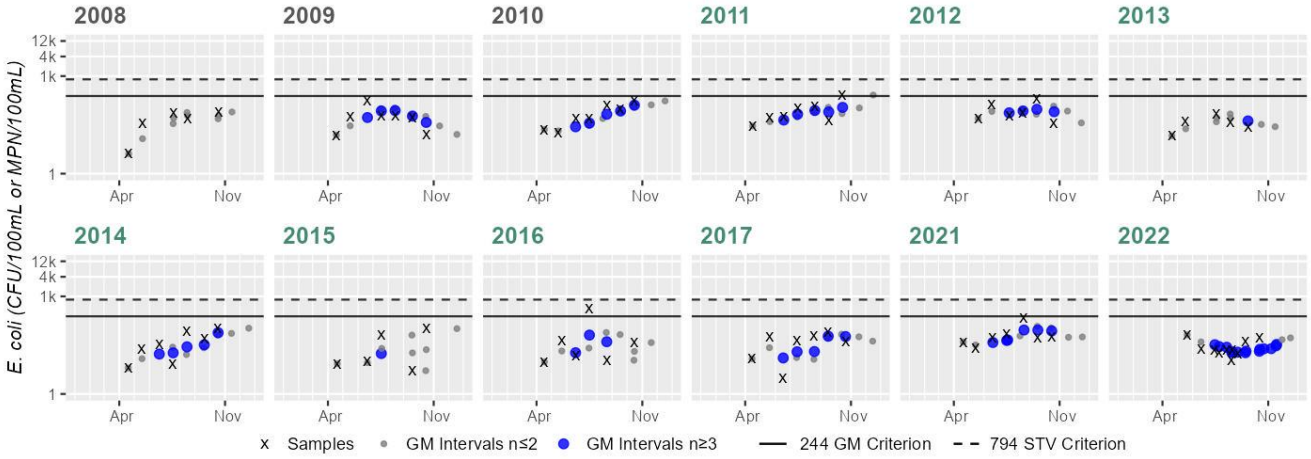
Variable*	Result
Samples	6
SeasGM	59
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_SQ0356 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	33
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	46
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	57
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	73
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	77
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	33
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	29
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	19
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	32
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	29
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	58
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	25
#GMI	14
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)
0%

Cumulative %GMI Exceedance Current (2011-2022)
0%

Cumulative %GMI Exceedance Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Steam Mill Brook (MA81-96)

Location:	Headwaters east of Laurel Lane, Princeton to mouth at confluence with Bartlett Pond Brook, Sterling.
AU Type:	RIVER
AU Size:	1.9 MILES
Classification/Qualifier:	A: PWS, ORW, CWF (Tributary)

No usable data were available for Steam Mill Brook (MA81-96) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

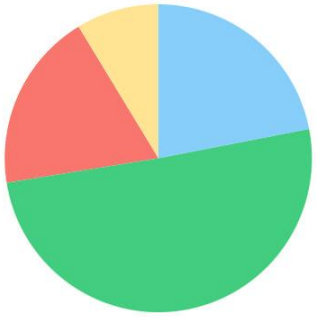
AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Still River (MA81-15)

Location:	From Route 117, Bolton to mouth at confluence with Nashua River, Harvard/Lancaster (prior to 2010 this segment included portion upstream of Route 117).
AU Type:	RIVER
AU Size:	2.7 MILES
Classification/Qualifier:	B

Still River (MA81-15)

Watershed Area: 4.04 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	4.04	3.94	1.55	1.55
Agriculture	8.7%	8.7%	5.6%	5.6%
Developed	18.9%	19%	10.1%	10.1%
Natural	50.5%	49.9%	40.8%	40.8%
Wetland	21.9%	22.5%	43.5%	43.5%
Impervious	7.2%	7.3%	4%	4%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	3	None	--	Unchanged

Recommendations

2024/26 Recommendations
2016 IR [E. COLI, MEDIUM] Additional bacteria sampling should be conducted to better evaluate the Primary Contact Recreational Use for the Still River (MA81-15) because station {W0995} in the upper watershed slightly exceeded standards. This is of medium priority;

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Still River (MA81-15) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Still River (MA81-15) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	YES

2024/26 Use Attainment Summary
No bacteria or other indicator data for the Still River (MA81-15) are available, so the Primary Contact Recreation Use is Not Assessed. The prior Alert for Escherichia Coli (E. Coli) is being carried forward.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for the Still River (MA81-15) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MassDEP staff collected *E. coli* bacteria samples just over halfway down the Still River at W1811 [W off Rt. 110 at footbridge at Bolton Flats Wildlife Management Area entrance (SW of Autumn Lane), Bolton] from May-Sep 2008 (n=6). Analysis of this historic single year limited frequency *E. coli* dataset from W1811 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 39 CFU/100ml. Historic *E. coli* data from W1811 meet 2024 CALM guidance. However, since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1811	MassDEP	Water Quality	Still River	[west off Route 110 at footbridge at Bolton Flats Wildlife Management Area entrance (southwest of Autumn Lane), Bolton]	42.469172	-71.632431

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

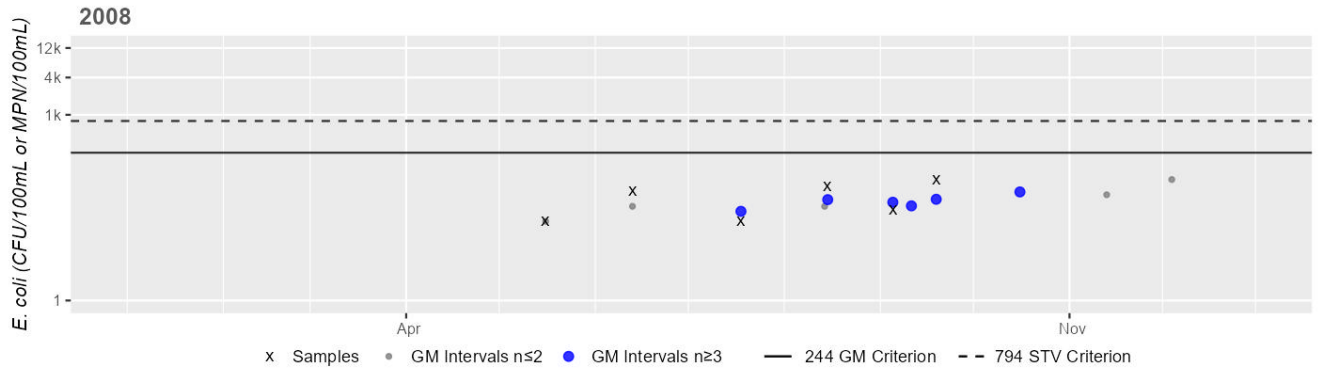
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W1811	MassDEP	E. coli	05/15/08	09/18/08	6	19	90	39

Station MASSDEP_W1811 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	39
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Still River (MA81-60)

Location:	Headwaters, Lancaster to Route 117, Bolton (formerly part of 2008 segment: Still River MA81-15).
AU Type:	RIVER
AU Size:	0.6 MILES
Classification/Qualifier:	B: CWF

Still River (MA81-60)

Watershed Area: 2.34 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	2.34	2.34	0.86	0.86
Agriculture	13.1%	13.1%	8.3%	8.3%
Developed	19.4%	19.4%	10.6%	10.6%
Natural	48.2%	48.2%	37.3%	37.3%
Wetland	19.3%	19.3%	43.9%	43.9%
Impervious	7.5%	7.5%	4.2%	4.2%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Dissolved Oxygen	--	Unchanged
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Dissolved Oxygen	Source Unknown (N)	X	--	--	--	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--
Escherichia Coli (E. Coli)	Wet Weather Discharges (Non-Point Source) (Y)	--	--	--	X	--

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Still River (MA81-60) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Still River (MA81-60) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for the Still River (MA81-60) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior Escherichia Coli (E. Coli) impairment is being carried forward.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for the Still River (MA81-60) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MassDEP staff collected *E. coli* bacteria samples at the downstream end of the Still River AU at W0995 [Rt. 117, Bolton] in 2003 and 2008 (n=5-6/yr). Analysis of this historic multi-year limited frequency *E. coli* dataset from W0995 indicated 1 out of 2 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2003, 66%), 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 22% of intervals had GMs >244 CFU/100ml. Historic *E. coli* data from W0995 meet 2024 CALM guidance. However, since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0995	MassDEP	Water Quality	Still River	[Route 117, Bolton]	42.455860	-71.645563

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

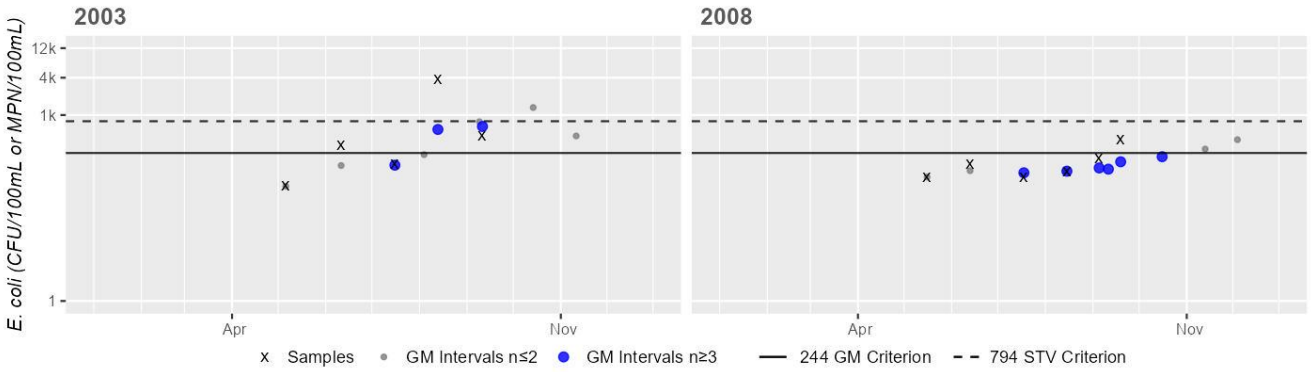
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W0995	MassDEP	E. coli	05/06/03	09/11/03	5	71	3800	365
W0995	MassDEP	E. coli	05/15/08	09/18/08	6	100	400	157

Station MASSDEP_W0995 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	365
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	1
%n>STV	20%

Variable*	Result
Samples	6
SeasGM	157
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
22%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Stillwater River (MA81-31)

Location:	Headwaters, confluence of Justice and Keyes brooks, Princeton/Sterling to mouth at inlet of Wachusett Reservoir (Stillwater Basin), Sterling.
AU Type:	RIVER
AU Size:	6.7 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Stillwater River (MA81-31)

Watershed Area: 29.51 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	29.51	7.11	16.99	4.46
Agriculture	4.5%	8.6%	3.6%	8.2%
Developed	8.4%	13.7%	8.1%	12.4%
Natural	77.9%	66.3%	73.8%	62.2%
Wetland	9.2%	11.5%	14.5%	17.3%
Impervious	3.7%	5.8%	3.7%	5.6%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
5	5	Temperature	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--
Temperature	Source Unknown (N)	X	--	--	--	--

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Stillwater River (MA81-31) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Stillwater River (MA81-31) continues to be assessed as Fully Supporting. MassDEP staff recorded aesthetics observations at one station a third of the way down Stillwater River ~150 feet upstream/west of Rt. 140, Princeton (W2886, n=4) as part of the Reference Site Network monitoring project during the summer of 2019. No persistent objectionable conditions (i.e., odors, deposits, growths, or turbidity) were observed during any of the surveys.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2886	MassDEP	Water Quality	Stillwater River	[approximately 150 feet upstream/west of Route 140, Princeton]	42.446630	-71.818123

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2886	2019	4	Aesthetic observations were made by MassDEP field sampling crews at Station W2886 on Stillwater River (MA81-31) during 4 site visits between Jun 2019 and Sep 2019. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2886	2019	4	4	0

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2886	Stillwater River	2019	Aesthetics Impaired?	No	4	4
W2886	Stillwater River	2019	Aquatic Plant Density, Overall	None	3	4
W2886	Stillwater River	2019	Aquatic Plant Density, Overall	Sparse	1	4
W2886	Stillwater River	2019	Color	None	4	4
W2886	Stillwater River	2019	Objectionable Deposits	No	4	4
W2886	Stillwater River	2019	Odor	None	4	4
W2886	Stillwater River	2019	Periphyton Density, Filamentous	None	3	4
W2886	Stillwater River	2019	Periphyton Density, Filamentous	Sparse	1	4
W2886	Stillwater River	2019	Periphyton Density, Film	None	4	4
W2886	Stillwater River	2019	Scum	No	4	4
W2886	Stillwater River	2019	Turbidity	None	4	4

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for the Stillwater River (MA81-31) continues to be assessed as Not Supporting. The prior Escherichia Coli (E. Coli) impairment is being carried forward based on bacteria data not meeting the threshold at 1 station in 2018-2022. Surface water sampling was conducted by the USGS on the Stillwater River at station USGS_01094950 at West Sterling on three dates during August to October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities (however, this station was not associated with a WWTF). The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS) were all less than the 90 ng/L (ppt) recreational screening value (HFPO-DA/GenX was not analyzed in this study). In addition, MA DCR (DCRWS) staff collected *E. coli* bacteria samples close to the downstream end of the Stillwater River at DCRWS_MD07 [downstream of Muddy Pond Rd, Sterling] from 2011-2022 (n=11-35/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from DCRWS_MD07 indicated 5 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2018-2022, 34-64%), and while only 1 yr had ≥2 samples exceed the 410 CFU/100ml STV (2022, n=3), cumulatively across years 43% of intervals had GMs >126 CFU/100ml. *E. coli* data from DCRWS_MD07 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD07	MA DCR Division of Water Supply Protection	Water Quality	STILLWATER RIVER	DOWNSTREAM OF MUDDY POND RD, STERLING MA	42.410782	-71.790997
USGS-01094950	USGS Massachusetts Water Science Center	Water Quality	Stillwater River	STILLWATER RIVER AT WEST STERLING, MA; no WWTF	42.447000	-71.818000

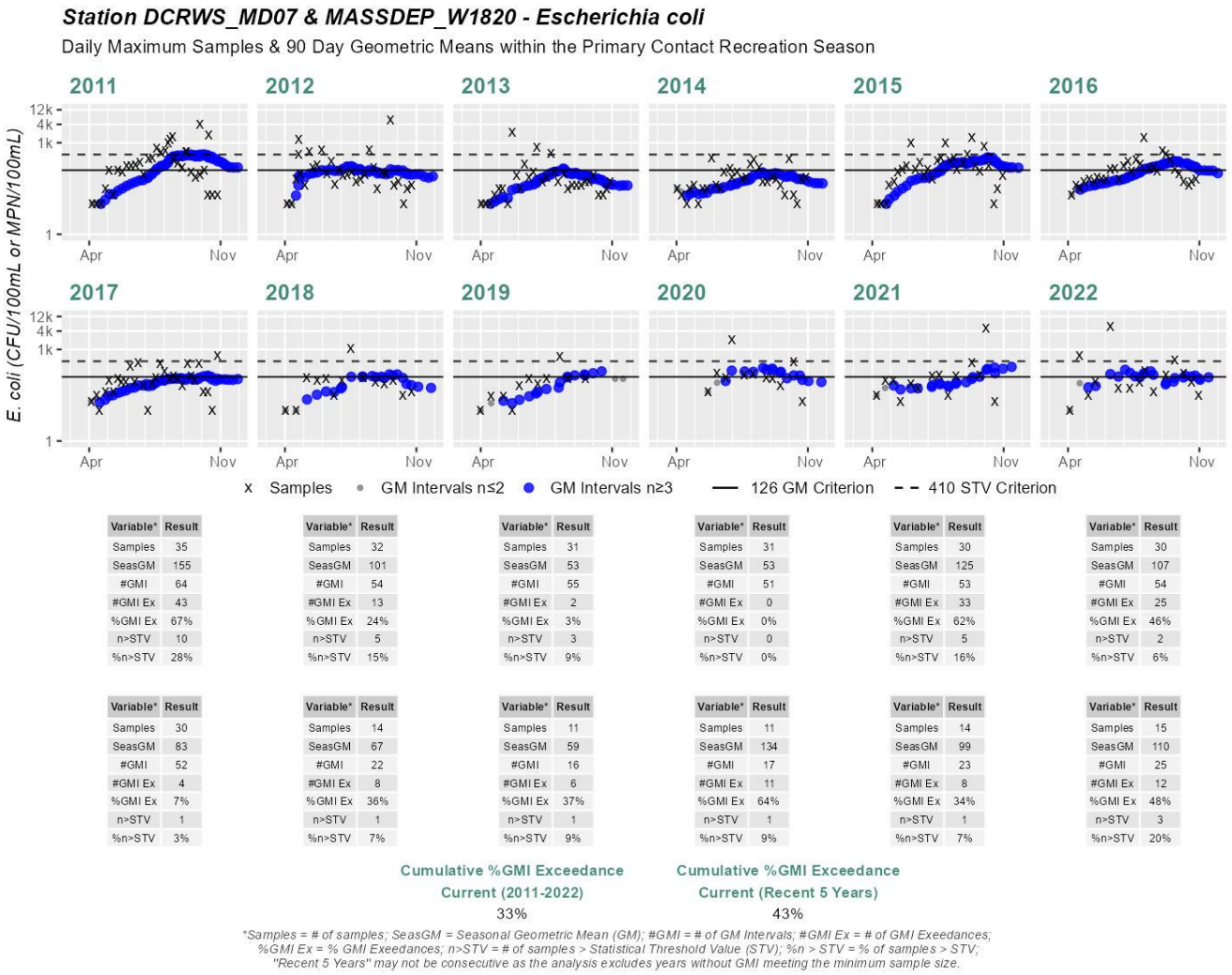
Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 2)

[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
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	04/06/11	11/22/11	35	10	3870	155
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	04/04/12	12/05/12	32	10	5480	101
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	04/02/13	12/04/13	31	10	2190	53
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	04/02/14	12/17/14	31	10	318	53

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	04/09/15	11/04/15	30	10	1450	125
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	04/06/16	11/30/16	30	20	1480	107
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	04/04/17	12/19/17	30	10	644	83
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	04/02/18	10/24/18	14	10	1090	67
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	04/01/19	09/18/19	11	10	581	59
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	05/21/20	12/15/20	11	20	2100	134
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	04/08/21	10/18/21	14	20	4880	99
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	04/04/22	10/31/22	15	10	5480	110



Variable*	Result
Samples	35
SeasGM	155
#GMI	64
#GMI Ex	43
%GMI Ex	67%
n>STV	10
%n>STV	28%

Variable*	Result
Samples	32
SeasGM	101
#GMI	54
#GMI Ex	13
%GMI Ex	24%
n>STV	5
%n>STV	15%

Variable*	Result
Samples	31
SeasGM	53
#GMI	55
#GMI Ex	2
%GMI Ex	3%
n>STV	3
%n>STV	9%

Variable*	Result
Samples	31
SeasGM	53
#GMI	51
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	30
SeasGM	125
#GMI	53
#GMI Ex	33
%GMI Ex	62%
n>STV	5
%n>STV	16%

Variable*	Result
Samples	30
SeasGM	107
#GMI	54
#GMI Ex	25
%GMI Ex	46%
n>STV	2
%n>STV	6%

Variable*	Result
Samples	30
SeasGM	83
#GMI	52
#GMI Ex	4
%GMI Ex	7%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	14
SeasGM	67
#GMI	22
#GMI Ex	8
%GMI Ex	36%
n>STV	1
%n>STV	7%

Variable*	Result
Samples	11
SeasGM	59
#GMI	16
#GMI Ex	6
%GMI Ex	37%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	11
SeasGM	134
#GMI	17
#GMI Ex	11
%GMI Ex	64%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	14
SeasGM	99
#GMI	23
#GMI Ex	8
%GMI Ex	34%
n>STV	1
%n>STV	7%

Variable*	Result
Samples	15
SeasGM	110
#GMI	25
#GMI Ex	12
%GMI Ex	48%
n>STV	3
%n>STV	20%

Other Indicators

Summary Statement(s) for USGS 2020 PFAS in Water Column Data (Savoie and Argue 2023) (MassDEP Undated 2)

Summary
Surface water sampling was conducted by the USGS on the Stillwater River (MA81-31) at station USGS_01094950 at West Sterling, MA on three dates during August to October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities (however, this station was not associated with a WWTF). The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS) were all less than the 90 ng/L (ppt) recreational screening value (HFPO-DA/GenX was not analyzed in this study).

USGS 2020 PFAS in Water Column Data Collected Upstream and Downstream of Wastewater Treatment Facilities (Savoie and Argue 2023) (MassDEP Undated 2)

[The ∑PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here). * indicates the ∑PFAS6 concentration is qualified since data for one or more individual PFAS6 analytes were qualified. A concentration with a "<" was less

than the reporting detection limit (RDL) and the RDL was used to calculate the ΣPFAS6. E = qualifier "value is estimated"; V = qualifier "value affected by field or laboratory contamination"]

Station Code	Sample Date	PFOA ng/L	PFOS ng/L	PFNA ng/L	PFHxS ng/L	PFBA ng/L	PFBS ng/L	ΣPFAS6 ng/L
USGS-01094950	8/24/2020	3.72	E1.46	E0.548	<1.92	E1.58	E1.12	11.8*
USGS-01094950	9/21/2020	2.7	E1.35	E0.297	<1.88	E0.839	E0.711	9.8*
USGS-01094950	10/29/2020	E2.46	E1.03	E0.299	<1.89	E0.83	E0.924	9.0*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for the Stillwater River (MA81-31) continues to be assessed as Fully Supporting. MA DCR (DCRWS) and MassDEP staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in the Stillwater River from 2008-2022 at 2 stations/combined stations. Samples were collected from the following stations/sample years from upstream to downstream: halfway down at DCRWS_MD99 [Rt. 62, Sterling] from Jan-Dec 2008 (n=49), and close to the downstream end at DCRWS_MD07 & W1820 [Muddy Pond Rd, Sterling] from 2008-2010 (historic n=99-102/yr) and 2011-2022 (current n=17-58/yr). Since bacteria data from the historic IR window are all indicative of good water quality conditions, only the analysis from the current IR window (1 station) will be summarized here: Analysis of the recent five years of this multi-year high frequency *E. coli* dataset from combined station DCRWS_MD07 & W1820 indicated 0 out of 5 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml, 0 yrs had >10% of samples exceed the 794 CFU/100ml STV, and cumulatively across years 1% of intervals had GMs >244 CFU/100ml. Current *E. coli* data from DCRWS_MD07 & W1820 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD07	MA DCR Division of Water Supply Protection	Water Quality	STILLWATER RIVER	DOWNSTREAM OF MUDDY POND RD, STERLING MA	42.410782	-71.790997
DCRWS_MD99	MA DCR Division of Water Supply Protection	Water Quality	STILLWATER RIVER	Rt. 62, Sterling	42.433324	-71.810854
W1820	MassDEP	Water Quality	Stillwater River	[Muddy Pond Road, Sterling]	42.410774	-71.791117

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1) (MassDEP Undated 7) (MassDEP Undated 3)

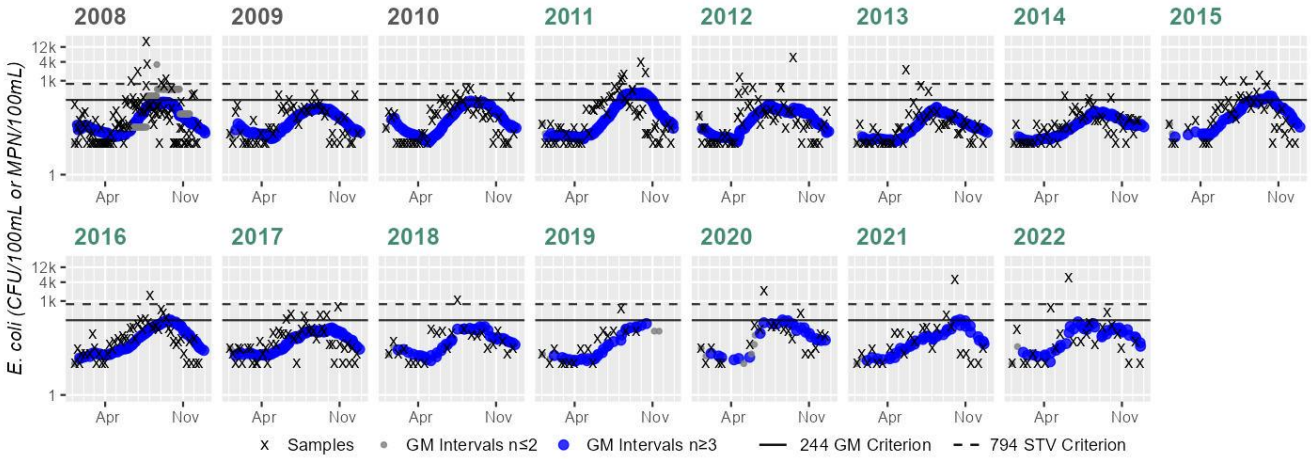
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	01/07/08	12/10/08	99	10	17300	50
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	01/05/09	12/22/09	51	10	384	43
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	01/04/10	12/20/10	51	10	560	51
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	01/03/11	12/22/11	58	10	3870	66
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	01/04/12	12/19/12	54	10	5480	49
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	01/08/13	12/19/13	50	10	2190	33
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	01/09/14	12/17/14	50	10	318	36
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	01/06/15	12/17/15	42	10	1450	79
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	01/07/16	12/14/16	49	10	1480	53
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	01/05/17	12/19/17	50	10	644	47
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	01/10/18	12/17/18	24	10	1090	46
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	01/03/19	09/18/19	17	10	581	35
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	01/09/20	12/15/20	20	10	2100	63
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	01/07/21	12/20/21	24	10	4880	44
DCRWS_MD07	MA DCR Division of Water Supply Protection	E. coli	01/03/22	12/22/22	24	10	5480	54

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD99	MA DCR Division of Water Supply Protection	E. coli	01/09/08	12/10/08	49	10	11200	42
W1820	MassDEP	E. coli	05/22/08	08/21/08	3	33	3300	211

Station DCRWS_MD07 & MASSDEP_W1820 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	102
SeasGM	52
#GMI	179
#GMI Ex	0
%GMI Ex	0%
n>STV	6
%n>STV	5%

Variable*	Result
Samples	51
SeasGM	43
#GMI	91
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	51
SeasGM	51
#GMI	88
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	58
SeasGM	66
#GMI	106
#GMI Ex	27
%GMI Ex	25%
n>STV	5
%n>STV	8%

Variable*	Result
Samples	54
SeasGM	49
#GMI	92
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	3%

Variable*	Result
Samples	50
SeasGM	33
#GMI	88
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	50
SeasGM	36
#GMI	80
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	42
SeasGM	79
#GMI	75
#GMI Ex	10
%GMI Ex	13%
n>STV	3
%n>STV	7%

Variable*	Result
Samples	49
SeasGM	53
#GMI	83
#GMI Ex	2
%GMI Ex	2%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	50
SeasGM	47
#GMI	87
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	24
SeasGM	46
#GMI	42
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	17
SeasGM	35
#GMI	28
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	63
#GMI	29
#GMI Ex	1
%GMI Ex	3%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	24
SeasGM	44
#GMI	43
#GMI Ex	1
%GMI Ex	2%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	24
SeasGM	54
#GMI	42
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

Cumulative %GMI Exceedance Historic (1997-2010)
0%

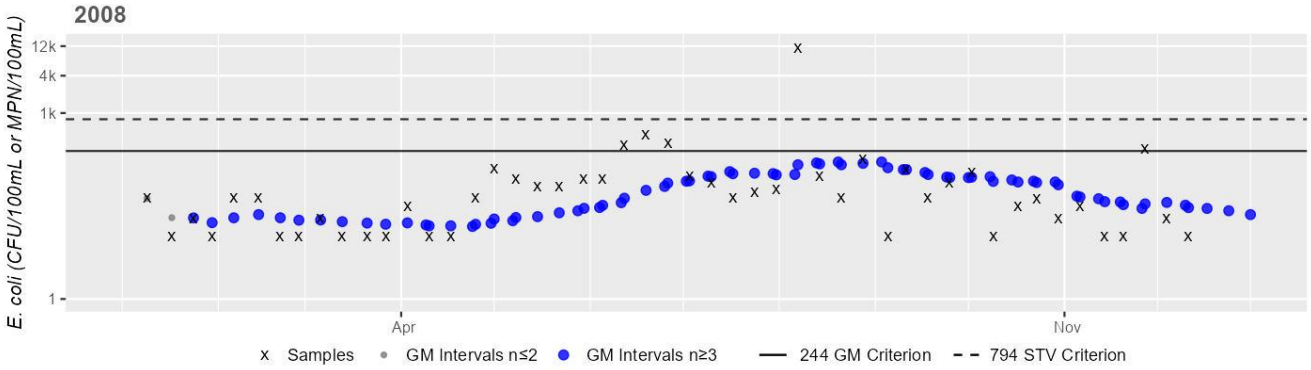
Cumulative %GMI Exceedance Current (2011-2022)
5%

Cumulative %GMI Exceedance Current (Recent 5 Years)
1%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station DCRWS_MD99 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	49
SeasGM	42
#GMI	86
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Streeter Pond (MA81136)

Location:	Paxton/Holden.
AU Type:	FRESHWATER LAKE
AU Size:	18 ACRES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for Streeter Pond (MA81136) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Stuart Pond (MA81137)

Location:	Sterling.
AU Type:	FRESHWATER LAKE
AU Size:	42 ACRES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for Stuart Pond (MA81137) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Stump Pond (MA81171)

Location:	Holden.
AU Type:	FRESHWATER LAKE
AU Size:	27 ACRES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for Stump Pond (MA81171) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

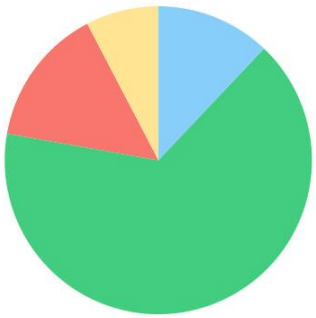
Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Sucker Brook (MA81-23)

Location:	Headwaters outlet Coon Tree Pond, Pepperell to mouth at confluence with Nissitissit River, Pepperell.
AU Type:	RIVER
AU Size:	4 MILES
Classification/Qualifier:	B: ORW

Sucker Brook (MA81-23)

Watershed Area: 3.58 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	3.58	3.51	1.10	1.05
Agriculture	7.7%	7.8%	6.9%	7.2%
Developed	14.6%	14.6%	8.5%	8.8%
Natural	65.7%	65.3%	62.5%	61.4%
Wetland	12.1%	12.2%	22%	22.6%
Impervious	5.6%	5.6%	3.1%	3.3%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	5	Escherichia Coli (E. Coli)	--	Added

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Sucker Brook (MA81-23) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Sucker Brook (MA81-23) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Sucker Brook (MA81-23) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at 2 stations in 2014-2019. Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in Sucker Brook from 2011-2019 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: halfway down at NRWA_SB0295 [D.S. of Sartell St., Pepperell] from 2011-2018 (n=4-7/yr), and the downstream end at NRWA_SB0025 [Sucker Brook d.s. of Brookline Rd bridge. Access across lawn, Pepperell] from 2011-2019 (n=6-7/yr). Analysis of the recent five years of the multi-year limited frequency *E. coli* dataset from NRWA_SB0295 indicated 3 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2014 and 2016-2017, 50-66%), and while only 1 yr had ≥2 samples exceed the 410 CFU/100ml STV (2014, n=3), cumulatively across years 37% of intervals had GMs >126 CFU/100ml. Analysis of the recent five years of this multi-year limited frequency *E. coli* dataset from NRWA_SB0025 indicated 3 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2015 and 2018-2019, 25-60%), 0 yrs had ≥2 samples exceed the 410 CFU/100ml STV, and cumulatively across years 28% of intervals had GMs >126 CFU/100ml. *E. coli* data from NRWA_SB0295 and NRWA_SB0025 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_SB0025	Nashua River Watershed Association	Water Quality	Sucker Brook	Sucker Brook d.s. of Brookline Road bridge. Access across lawn, Pepperell	42.696400	-71.611100
NRWA_SB0295	Nashua River Watershed Association	Water Quality	Sucker Brook	D.S. of Sartell St., Pepperell	42.675500	-71.608300

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

(NRWA 2022) (MassDEP Undated 2)

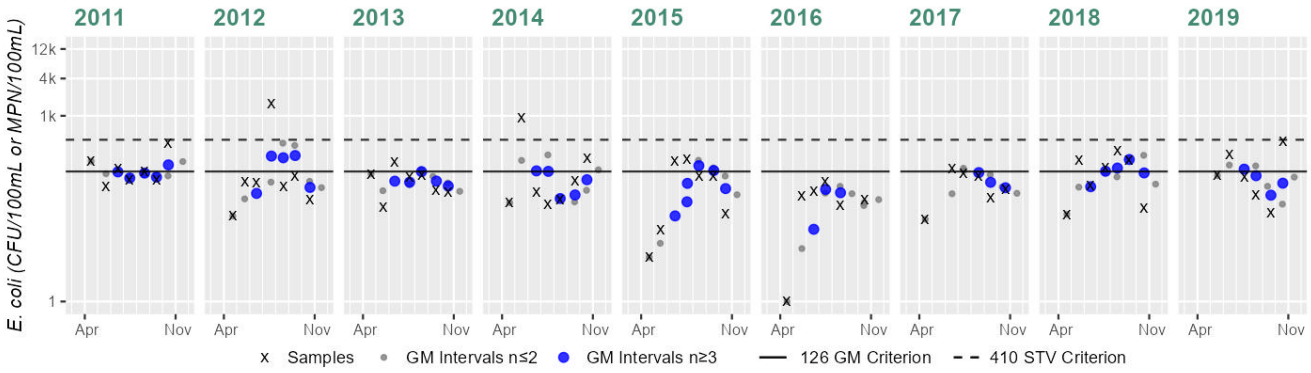
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_SB0025	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	72	365	133
NRWA_SB0025	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	24	1553	98
NRWA_SB0025	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	33	178	82
NRWA_SB0025	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	37	920	93
NRWA_SB0025	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	5	196	50
NRWA_SB0025	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	6	1	85	27
NRWA_SB0025	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	6	21	142	69
NRWA_SB0025	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	25	275	98
NRWA_SB0025	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	26	387	105
NRWA_SB0295	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	27	648	79
NRWA_SB0295	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	42	533	83
NRWA_SB0295	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	1	157	25

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_SB0295	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	6	6	2419	227
NRWA_SB0295	Nashua River Watershed Association	E. coli	04/20/15	08/15/15	5	1	185	33
NRWA_SB0295	Nashua River Watershed Association	E. coli	04/16/16	07/16/16	4	35	2419	154
NRWA_SB0295	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	9	488	82
NRWA_SB0295	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	6	15	90	37

Station MASSDEP_W1816 & NRWA_SB0025 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	133
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	98
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	82
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	93
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	50
#GMI	6
#GMI Ex	2
%GMI Ex	33%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	27
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	69
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	98
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	105
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	0
%n>STV	0%

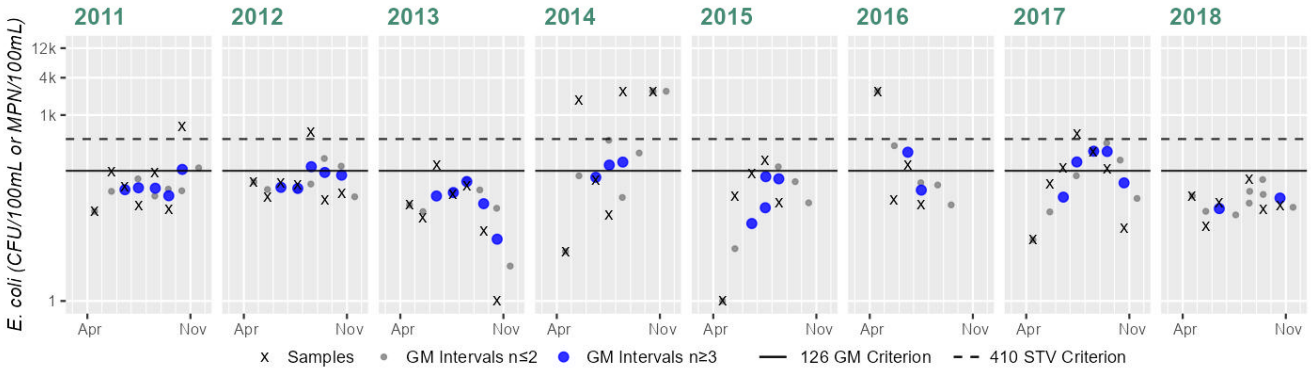
Cumulative %GMI Exceedance Current (2011-2022)
29%

Cumulative %GMI Exceedance Current (Recent 5 Years)
28%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_SB0295 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	79
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	83
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	25
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	227
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	3
%n>STV	50%

Variable*	Result
Samples	5
SeasGM	33
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	154
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	1
%n>STV	25%

Variable*	Result
Samples	7
SeasGM	82
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	37
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Current (2011-2022)
25%

Cumulative %GMI Exceedance Current (Recent 5 Years)
37%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Sucker Brook (MA81-23) continues to be assessed as Fully Supporting. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in Sucker Brook from 2008-2019 at 2 stations/combined stations. Samples were collected from the following stations/sample years from upstream to downstream: halfway down at NRWA_SB0295 [D.S. of Sartell St., Pepperell] from 2008-2010 (historic n=5-7/yr) and 2011-2018 (current n=4-7/yr), and the downstream end at W1816 & NRWA_SB0025 [Brookline St, Pepperell & Sucker Brook d.s. of Brookline Rd bridge. Access across lawn, Pepperell] from 2008-2010 (historic n=6-7/yr) and 2011-2019 (current n=6-7/yr). Since bacteria data from the historic IR window are all indicative of good water quality conditions, only the analysis from the current IR window will be summarized here: Analysis of the recent five years of the multi-year limited frequency *E. coli* dataset from NRWA_SB0295 indicated 2 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2016 and 2017, 50 & 40%), only 1 yr had ≥2 samples exceed the 794 CFU/100ml STV (2014, n=3), and cumulatively across years 18% of intervals had GMs >244 CFU/100ml. Analysis of the recent five years of this multi-year limited frequency *E. coli* dataset from W1816 & NRWA_SB0025 indicated 0 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml, 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. *E. coli* data from NRWA_SB0295 and W1816 & NRWA_SB0025 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1816	MassDEP	Water Quality	Sucker Brook	[Brookline Street, Pepperell]	42.696342	-71.611446
NRWA_SB0025	Nashua River Watershed Association	Water Quality	Sucker Brook	Sucker Brook d.s. of Brookline Road bridge. Access across lawn, Pepperell	42.696400	-71.611100
NRWA_SB0295	Nashua River Watershed Association	Water Quality	Sucker Brook	D.S. of Sartell St., Pepperell	42.675500	-71.608300

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

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

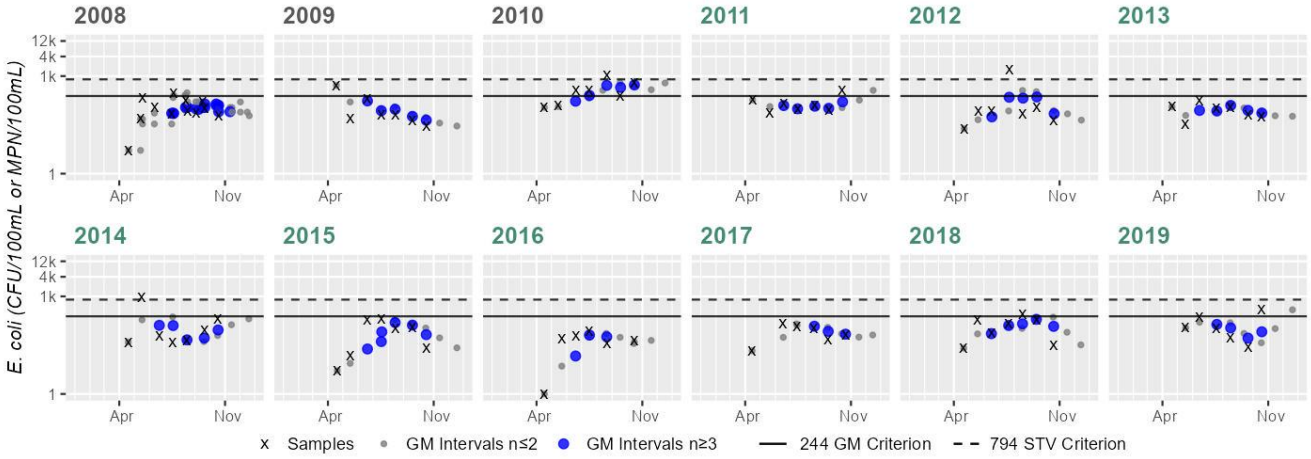
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1816	MassDEP	E. coli	05/13/08	09/16/08	6	48	170	94

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_SB0025	Nashua River Watershed Association	E. coli	04/19/08	10/18/08	6	5	307	75
NRWA_SB0025	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	29	517	83
NRWA_SB0025	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	7	108	1046	308
NRWA_SB0025	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	72	365	133
NRWA_SB0025	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	24	1553	98
NRWA_SB0025	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	33	178	82
NRWA_SB0025	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	37	920	93
NRWA_SB0025	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	5	196	50
NRWA_SB0025	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	6	1	85	27
NRWA_SB0025	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	6	21	142	69
NRWA_SB0025	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	7	25	275	98
NRWA_SB0025	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	6	26	387	105
NRWA_SB0295	Nashua River Watershed Association	E. coli	04/19/08	10/18/08	5	9	141	47
NRWA_SB0295	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	83	261	118
NRWA_SB0295	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	7	38	2419	186
NRWA_SB0295	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	27	648	79
NRWA_SB0295	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	42	533	83

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_SB0295	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	1	157	25
NRWA_SB0295	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	6	6	2419	227
NRWA_SB0295	Nashua River Watershed Association	E. coli	04/20/15	08/15/15	5	1	185	33
NRWA_SB0295	Nashua River Watershed Association	E. coli	04/16/16	07/16/16	4	35	2419	154
NRWA_SB0295	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	9	488	82
NRWA_SB0295	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	6	15	90	37

Station MASSDEP_W1816 & NRWA_SB0025 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	12
SeasGM	84
#GMI	17
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	83
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	308
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	133
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	98
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	82
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	93
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	50
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	27
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	69
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	98
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	105
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)
14%

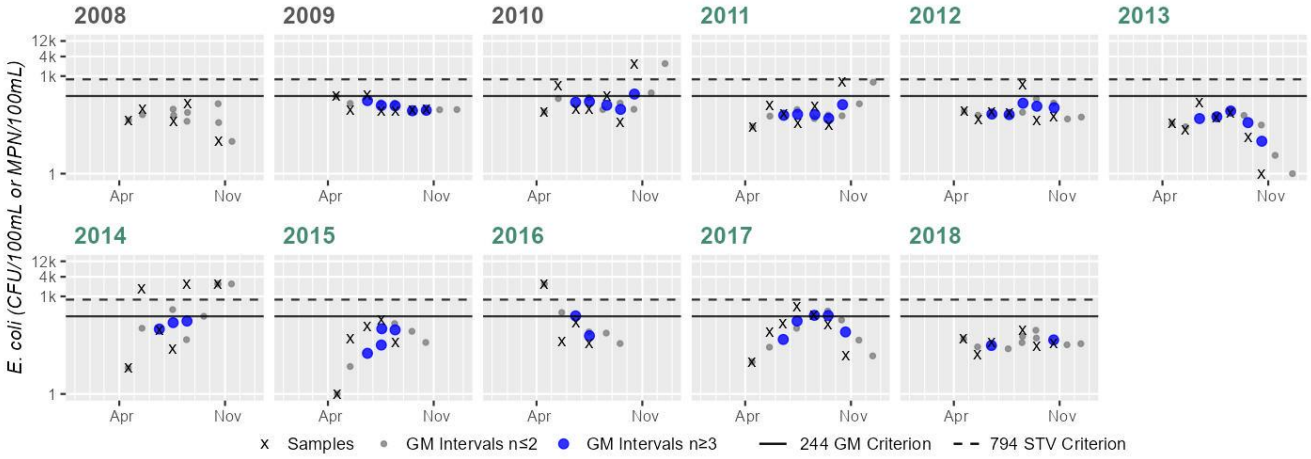
Cumulative %GMI Exceedance Current (2011-2022)
0%

Cumulative %GMI Exceedance Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_SB0295 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	47
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	118
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	186
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	79
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	83
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	25
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	227
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	50%

Variable*	Result
Samples	5
SeasGM	33
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	154
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	1
%n>STV	25%

Variable*	Result
Samples	7
SeasGM	82
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	37
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
10%	9%	18%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

The Quag (MA81170)

Location:	Sterling.
AU Type:	FRESHWATER LAKE
AU Size:	32 ACRES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for The Quag (MA81170) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Brittle Naiad, Najas Minor*)	--	Unchanged
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Brittle Naiad, Najas Minor*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Trapfall Brook (MA81-77)

Location:	Headwaters, north of Jones Hill Road, Ashby to mouth at confluence with Willard Brook, Ashby.
AU Type:	RIVER
AU Size:	5.5 MILES
Classification/Qualifier:	B: ORW

Trapfall Brook (MA81-77)

Watershed Area: 5.88 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	5.71	4.42	1.79	1.44
Agriculture	7.3%	7.5%	4.6%	4.6%
Developed	8.5%	10%	7.3%	8.5%
Natural	78.2%	75.5%	76.7%	74.1%
Wetland	6.1%	7%	11.4%	12.7%
Impervious	3.2%	3.9%	3.1%	3.6%

**Land cover analysis only includes watershed area within Massachusetts.*

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Trapfall Brook (MA81-77) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Trapfall Brook (MA81-77) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Trapfall Brook (MA81-77) continues to be assessed as Fully Supporting. Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples at the downstream end of Trapfall Brook at NRWA_TF0033 [Trap Falls, Ashby] from May-Oct 2018 (n=5). Analysis of the single year limited frequency *E. coli* dataset from NRWA_TF0033 indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 70 CFU/100ml. *E. coli* data from NRWA_TF0033 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_TF0033	Nashua River Watershed Association	Water Quality	Trapfall Brook	Trap Falls, Ashby	42.672270	-71.776030

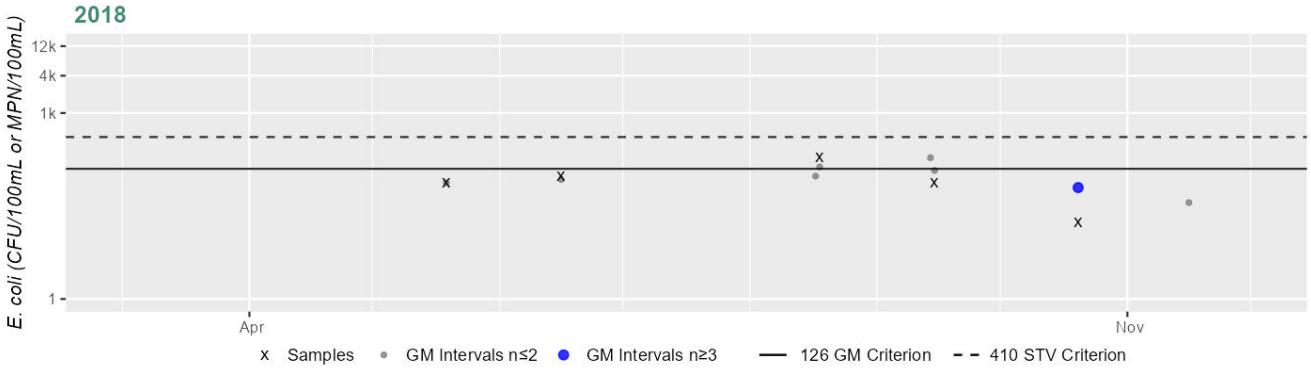
Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)
(NRWA 2022) (MassDEP Undated 2)
[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
NRWA_TF0033	Nashua River Watershed Association	E. coli	05/19/18	10/20/18	5	17	190	70

Station NRWA_TF0033 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	70
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Trapfall Brook (MA81-77) continues to be assessed as Fully Supporting. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in Trapfall Brook from 2008-2018 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: close to the downstream end at W1833 [Turnpike Rd, Ashby] from May-Sep 2008 (n=6), and the downstream end of the AU at NRWA_TF0033 [Trap Falls, Ashby] from May-Oct 2018 (n=5). Since bacteria data from the historic IR window are indicative of good water quality conditions, only the analysis from the current IR window (1 station) will be summarized here. Analysis of the single year limited frequency *E. coli* dataset from NRWA_TF0033 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 70 CFU/100ml. *E. coli* data from NRWA_TF0033 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1833	MassDEP	Water Quality	Trapfall Brook	[Turnpike Road, Ashby]	42.672653	-71.781613
NRWA_TF0033	Nashua River Watershed Association	Water Quality	Trapfall Brook	Trap Falls, Ashby	42.672270	-71.776030

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

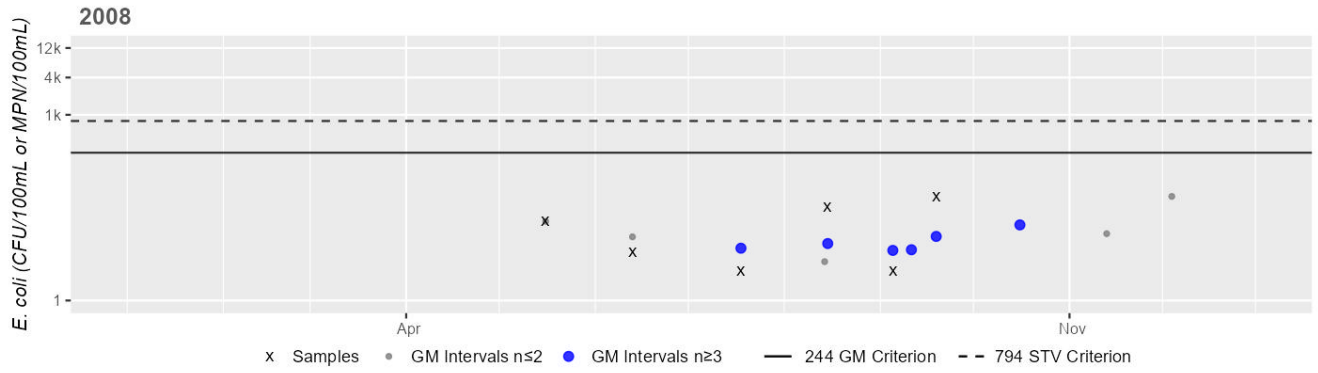
(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

[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
W1833	MassDEP	E. coli	05/15/08	09/18/08	6	3	48	10
NRWA_TF0033	Nashua River Watershed Association	E. coli	05/19/18	10/20/18	5	17	190	70

Station MASSDEP_W1833 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



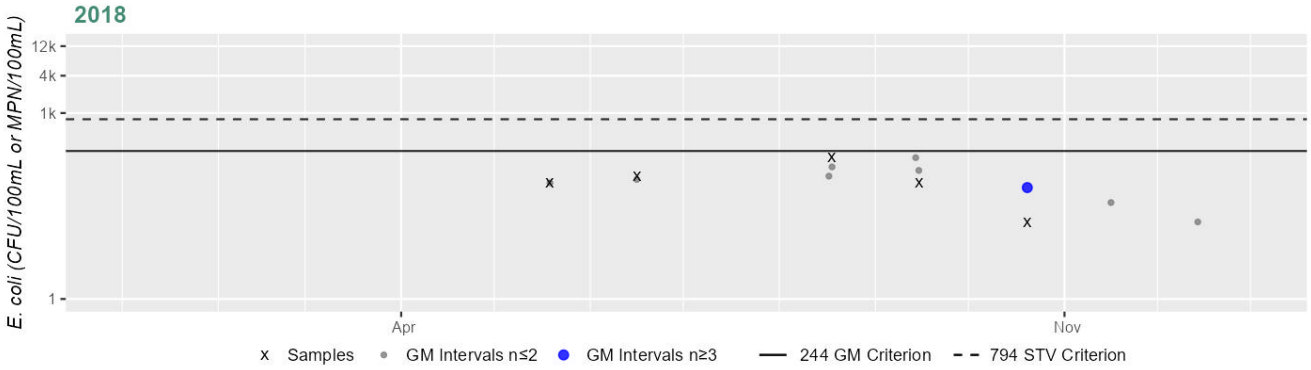
Variable*	Result
Samples	6
SeasGM	10
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_TF0033 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	70
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance

Current (2011-2022)

0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Trout Brook (MA81-26)

Location:	Headwaters, outlet Cournoyer Pond, Holden to mouth at confluence with Quinepoxet River, Holden.
AU Type:	RIVER
AU Size:	1.9 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Trout Brook (MA81-26)

Watershed Area: 8.49 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	8.49	4.95	4.66	2.71
Agriculture	4.2%	5.6%	3.6%	5.1%
Developed	6.4%	5%	4.5%	3.5%
Natural	77.1%	76.1%	71.7%	69.6%
Wetland	12.3%	13.3%	20.2%	21.8%
Impervious	2.8%	2.3%	2%	1.6%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Temperature	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Temperature	Dam or Impoundment (Y)	X	--	--	--	--
Temperature	Source Unknown (N)	X	--	--	--	--

Recommendations

2024/26 Recommendations
2024/26 IR [Bacteria, Low] Additional monitoring for bacteria is recommended for Trout Brook (MA81-26) in particular at station {DCRWS_M110} downstream of Manning St, Holden. An Alert was identified for Escherichia Coli (E. Coli) as 7 samples excededed the STV in the most recent 5 years (2018-2022), with maximum's of 2,360 & 4,350 CFU in 2021 & 2022 respectively.

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Trout Brook (MA81-26) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Trout Brook (MA81-26) is assessed as Fully Supporting. MassDEP staff recorded aesthetics observations at one station close to the downstream end of Trout Brook ~140 feet upstream of Manning Street, Holden (W2226, n=3-5/yr) as part of the Reference Site Network monitoring project, during the summers of 2011 through 2016. No persistent objectionable conditions (i.e., odors, deposits, growths, or turbidity) were observed during any of the surveys.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2226	MassDEP	Water Quality	Trout Brook	[approximately 140 feet upstream of Manning Street, Holden]	42.383816	-71.837751

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2226	2011	3	Aesthetic observations were made by MassDEP field sampling crews at Station W2226 on Trout Brook (MA81-26) during 3 site visits between Jun 2011 and Aug 2011. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.
W2226	2012	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2226 on Trout Brook (MA81-26) during 5 site visits between May 2012 and Oct 2012. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.
W2226	2013	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2226 on Trout Brook (MA81-26) during 5 site visits between May 2013 and Oct 2013. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.
W2226	2014	4	Aesthetic observations were made by MassDEP field sampling crews at Station W2226 on Trout Brook (MA81-26) during 4 site visits between Jun 2014 and Aug 2014. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.
W2226	2015	4	Aesthetic observations were made by MassDEP field sampling crews at Station W2226 on Trout Brook (MA81-26) during 4 site visits between May 2015 and Aug 2015. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.
W2226	2016	4	Aesthetic observations were made by MassDEP field sampling crews at Station W2226 on Trout Brook (MA81-26) during 4 site visits between May 2016 and Aug 2016. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2226	2011	3	3	0
W2226	2012	5	5	0
W2226	2013	5	2	0
W2226	2014	4	4	0
W2226	2015	4	4	0
W2226	2016	4	4	0

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2226	Trout Brook	2011	Aquatic Plant Density, Overall	None	2	3
W2226	Trout Brook	2011	Aquatic Plant Density, Overall	Sparse	1	3
W2226	Trout Brook	2011	Color	Dark Tan	1	3
W2226	Trout Brook	2011	Color	Light Yellow/Tan	1	3
W2226	Trout Brook	2011	Color	Reddish	1	3
W2226	Trout Brook	2011	Objectionable Deposits	No	3	3
W2226	Trout Brook	2011	Odor	None	3	3
W2226	Trout Brook	2011	Periphyton Density, Filamentous	None	3	3
W2226	Trout Brook	2011	Periphyton Density, Film	None	3	3
W2226	Trout Brook	2011	Scum	No	1	3
W2226	Trout Brook	2011	Scum	Yes	2	3
W2226	Trout Brook	2011	Turbidity	None	2	3
W2226	Trout Brook	2011	Turbidity	Slightly Turbid	1	3
W2226	Trout Brook	2012	Aquatic Plant Density, Overall	None	5	5
W2226	Trout Brook	2012	Color	Light Yellow/Tan	2	5
W2226	Trout Brook	2012	Color	Reddish	3	5
W2226	Trout Brook	2012	Objectionable Deposits	No	5	5
W2226	Trout Brook	2012	Odor	Musty (Basement)	1	5
W2226	Trout Brook	2012	Odor	None	4	5
W2226	Trout Brook	2012	Periphyton Density, Filamentous	None	5	5
W2226	Trout Brook	2012	Periphyton Density, Film	Moderate	1	5
W2226	Trout Brook	2012	Periphyton Density, Film	None	3	5
W2226	Trout Brook	2012	Periphyton Density, Film	Sparse	1	5
W2226	Trout Brook	2012	Scum	No	3	5
W2226	Trout Brook	2012	Scum	Yes	2	5
W2226	Trout Brook	2012	Turbidity	None	4	5
W2226	Trout Brook	2012	Turbidity	Slightly Turbid	1	5
W2226	Trout Brook	2013	Aesthetics Impaired?	No	5	5
W2226	Trout Brook	2013	Aquatic Plant Density, Overall	None	5	5
W2226	Trout Brook	2013	Color	Brownish	2	5
W2226	Trout Brook	2013	Color	Dark Tan	1	5
W2226	Trout Brook	2013	Color	Light Yellow/Tan	2	5
W2226	Trout Brook	2013	Objectionable Deposits	No	5	5
W2226	Trout Brook	2013	Odor	None	5	5
W2226	Trout Brook	2013	Periphyton Density, Filamentous	None	2	5
W2226	Trout Brook	2013	Periphyton Density, Filamentous	NR	3	5
W2226	Trout Brook	2013	Periphyton Density, Film	None	2	5

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2226	Trout Brook	2013	Periphyton Density, Film	NR	3	5
W2226	Trout Brook	2013	Scum	No	2	5
W2226	Trout Brook	2013	Scum	Yes	3	5
W2226	Trout Brook	2013	Turbidity	None	5	5
W2226	Trout Brook	2014	Aesthetics Impaired?	No	4	4
W2226	Trout Brook	2014	Aquatic Plant Density, Overall	None	3	4
W2226	Trout Brook	2014	Aquatic Plant Density, Overall	Sparse	1	4
W2226	Trout Brook	2014	Color	Light Yellow/Tan	3	4
W2226	Trout Brook	2014	Color	Reddish	1	4
W2226	Trout Brook	2014	Objectionable Deposits	No	4	4
W2226	Trout Brook	2014	Odor	None	4	4
W2226	Trout Brook	2014	Periphyton Density, Filamentous	None	4	4
W2226	Trout Brook	2014	Periphyton Density, Film	None	3	4
W2226	Trout Brook	2014	Periphyton Density, Film	Sparse	1	4
W2226	Trout Brook	2014	Scum	No	1	4
W2226	Trout Brook	2014	Scum	Yes	3	4
W2226	Trout Brook	2014	Turbidity	None	4	4
W2226	Trout Brook	2015	Aesthetics Impaired?	No	4	4
W2226	Trout Brook	2015	Aquatic Plant Density, Overall	None	4	4
W2226	Trout Brook	2015	Color	Light Yellow/Tan	2	4
W2226	Trout Brook	2015	Color	Reddish	2	4
W2226	Trout Brook	2015	Objectionable Deposits	No	4	4
W2226	Trout Brook	2015	Odor	None	4	4
W2226	Trout Brook	2015	Periphyton Density, Filamentous	None	4	4
W2226	Trout Brook	2015	Periphyton Density, Film	None	3	4
W2226	Trout Brook	2015	Periphyton Density, Film	Sparse	1	4
W2226	Trout Brook	2015	Scum	No	3	4
W2226	Trout Brook	2015	Scum	Yes	1	4
W2226	Trout Brook	2015	Turbidity	None	3	4
W2226	Trout Brook	2015	Turbidity	Slightly Turbid	1	4
W2226	Trout Brook	2016	Aesthetics Impaired?	No	4	4
W2226	Trout Brook	2016	Aquatic Plant Density, Overall	None	4	4
W2226	Trout Brook	2016	Color	Light Yellow/Tan	3	4
W2226	Trout Brook	2016	Color	None	1	4
W2226	Trout Brook	2016	Objectionable Deposits	No	4	4
W2226	Trout Brook	2016	Odor	None	4	4
W2226	Trout Brook	2016	Periphyton Density, Filamentous	None	4	4
W2226	Trout Brook	2016	Periphyton Density, Film	None	4	4

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2226	Trout Brook	2016	Scum	No	4	4
W2226	Trout Brook	2016	Turbidity	None	4	4

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	YES

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for Trout Brook (MA81-26) is assessed as Fully Supporting. An Alert is identified for Escherichia Coli (E. Coli). MA DCR (DCRWS) staff collected *E. coli* bacteria samples close to the downstream end of Trout Brook at DCRWS_M110 [downstream of Manning St, Holden] from 2012-2022 (n=11-31/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from DCRWS_M110 indicated 0 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml, 2 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2021 and 2022, n=2 & 2 with maximum's of 2,360 & 4,350 CFU respectively), and cumulatively across years 0% of intervals had GMs >126 CFU/100ml. *E. coli* data from DCRWS_M110 meet 2024 CALM guidance. However an Alert is identified for Escherichia Coli (E. Coli) as 7 samples excededed the STV in the most recent 5 years (2018-2022), additional sampling is being recommended.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_M110	MA DCR Division of Water Supply Protection	Water Quality	TROUT BROOK	DOWNSTREAM OF MANNING ST, HOLDEN	42.383474	-71.837071

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 2)

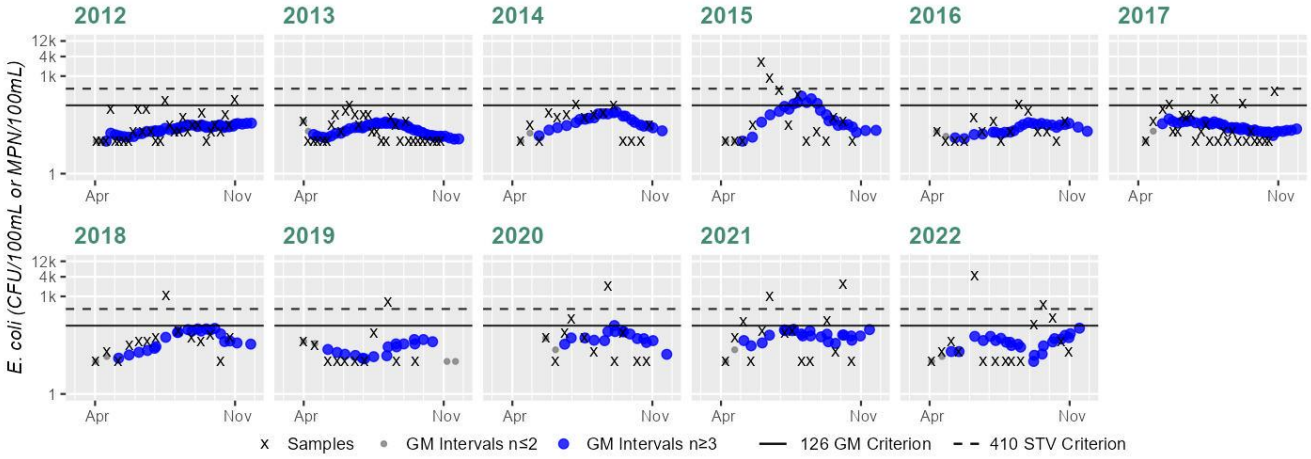
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	04/02/12	12/03/12	31	10	187	25

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	04/01/13	10/28/13	31	10	122	20
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	04/14/14	10/27/14	15	10	132	33
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	04/08/15	10/19/15	15	10	2720	45
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	04/11/16	10/24/16	15	10	134	23
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	04/12/17	12/19/17	27	10	345	26
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	04/02/18	10/24/18	14	10	1040	40
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	04/01/19	09/18/19	11	10	657	22
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	05/21/20	12/15/20	11	10	2100	44
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	04/08/21	10/18/21	14	10	2360	56
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	04/04/22	10/31/22	15	10	4350	39

Station DCRWS_M110 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	31
SeasGM	25
#GMI	53
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	31
SeasGM	20
#GMI	53
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	15
SeasGM	33
#GMI	25
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	15
SeasGM	45
#GMI	25
#GMI Ex	6
%GMI Ex	24%
n>STV	2
%n>STV	13%

Variable*	Result
Samples	15
SeasGM	23
#GMI	25
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	27
SeasGM	26
#GMI	47
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	14
SeasGM	40
#GMI	22
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	7%

Variable*	Result
Samples	11
SeasGM	22
#GMI	16
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	11
SeasGM	44
#GMI	17
#GMI Ex	1
%GMI Ex	5%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	14
SeasGM	56
#GMI	23
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	14%

Variable*	Result
Samples	15
SeasGM	39
#GMI	25
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	13%

Cumulative %GMI Exceedance Current (2011-2022)
2%

Cumulative %GMI Exceedance Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Trout Brook (MA81-26) is assessed as Fully Supporting. MA DCR (DCRWS) staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) close to the downstream end of Trout Brook at DCRWS_M110 [downstream of Manning St, Holden] from 2008-2010 (historic n=49-51/yr) and 2011-2022 (current n=1-50/yr). Since bacteria data from the historic IR window are all indicative of good water quality conditions, only the analysis from the current IR window will be summarized here: Analysis of the recent five years of this multi-year high frequency *E. coli* dataset from DCRWS_M110 indicated 0 out of 5 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml, 0 yrs had >10% of samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. *E. coli* data from DCRWS_M110 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_M110	MA DCR Division of Water Supply Protection	Water Quality	TROUT BROOK	DOWNSTREAM OF MANNING ST, HOLDEN	42.383474	-71.837071

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

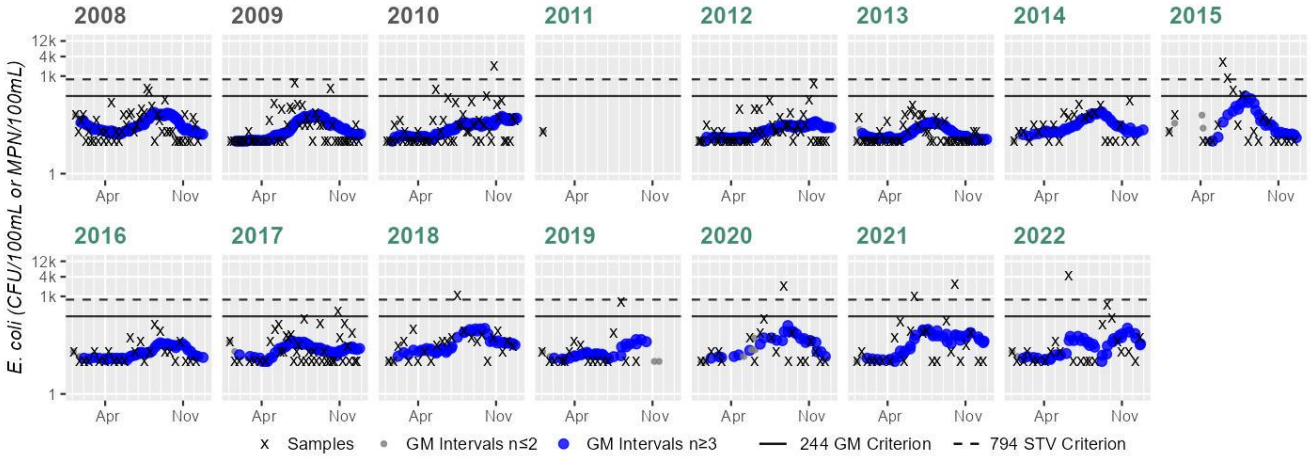
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	01/10/08	12/11/08	49	10	426	28
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	01/06/09	12/23/09	50	10	602	21
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	01/06/10	12/22/10	51	10	2000	25
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	01/05/11	01/05/11	1	20	20	19
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	01/03/12	12/17/12	50	10	563	20
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	01/07/13	12/18/13	50	10	122	16

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	01/08/14	12/09/14	25	10	173	27
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	01/05/15	12/15/15	21	10	2720	33
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	01/04/16	12/05/16	25	10	134	17
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	01/03/17	12/19/17	41	10	345	23
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	01/10/18	12/17/18	24	10	1040	34
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	01/03/19	09/18/19	17	10	657	18
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	01/09/20	12/15/20	20	10	2100	26
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	01/07/21	12/20/21	24	10	2360	32
DCRWS_M110	MA DCR Division of Water Supply Protection	E. coli	01/03/22	12/22/22	24	10	4350	27

Station DCRWS_M110 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	49
SeasGM	28
#GMI	85
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	50
SeasGM	21
#GMI	91
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	51
SeasGM	25
#GMI	92
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	1%

Variable*	Result
Samples	1
SeasGM	20
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	50
SeasGM	20
#GMI	87
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	50
SeasGM	16
#GMI	89
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	25
SeasGM	27
#GMI	45
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	33
#GMI	33
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	9%

Variable*	Result
Samples	25
SeasGM	17
#GMI	45
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	41
SeasGM	23
#GMI	72
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	24
SeasGM	34
#GMI	42
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	17
SeasGM	18
#GMI	28
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	26
#GMI	29
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	24
SeasGM	32
#GMI	43
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	8%

Variable*	Result
Samples	24
SeasGM	27
#GMI	42
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Unionville Pond (MA81143)

Location:	Holden.
AU Type:	FRESHWATER LAKE
AU Size:	19 ACRES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for Unionville Pond (MA81143) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Eurasian Water Milfoil, Myriophyllum Spicatum*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Unkety Brook (MA81-81)

Location:	Headwaters, east of Chicopee Row, Groton to mouth at confluence with Nashua River, Dunstable.
AU Type:	RIVER
AU Size:	6.7 MILES
Classification/Qualifier:	B

Unkety Brook (MA81-81)

Watershed Area: 6.90 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	6.90	3.55	1.68	0.89
Agriculture	5%	5.1%	1.9%	3.1%
Developed	8.3%	10.8%	6%	5.8%
Natural	71.3%	67.2%	65.7%	59.8%
Wetland	15.4%	16.9%	26.3%	31.3%
Impervious	3%	3.8%	2.2%	2.2%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Unkety Brook (MA81-81) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Unkety Brook (MA81-81) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Unkety Brook (MA81-81) continues to be assessed as Fully Supporting. Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples at the downstream end of Unkety Brook at NRWA_UK0675 [Unkety Brook, Dunstable] from May-Oct 2018 (n=6). Analysis of the single year limited frequency *E. coli* dataset from NRWA_UK0675 indicated 25% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 113 CFU/100ml. *E. coli* data from NRWA_UK0675 meet 2024 CALM guidance.

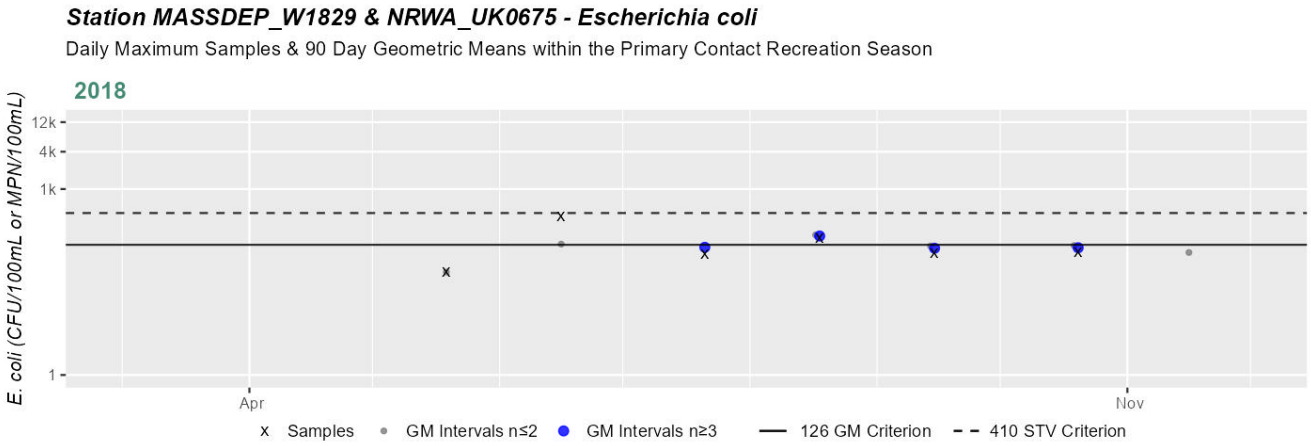
Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_UK0675	Nashua River Watershed Association	Water Quality	Unkety Brook	Unkety Brook, Dunstable	42.689770	-71.548090

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)
(NRWA 2022) (MassDEP Undated 2)
[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
NRWA_UK0675	Nashua River Watershed Association	E. coli	05/19/18	10/20/18	6	45	365	113



Variable*	Result
Samples	6
SeasGM	113
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
25%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Unkety Brook (MA81-81) continues to be assessed as Fully Supporting. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) at the downstream end of Unkety Brook at combined station W1829 & NRWA_UK0675 [River St, Dunstable & Unkety Brook, Dunstable] from May-Sep 2008 (historic n=6) and May-Oct 2018 (current n=6). Since bacteria data from the historic IR window are all indicative of good water quality conditions, only the analysis from the current IR window will be summarized here: Analysis of the single year limited frequency *E. coli* dataset from W1829 & NRWA_UK0675 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 113 CFU/100ml. *E. coli* data from W1829 & NRWA_UK0675 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1829	MassDEP	Water Quality	Unkety Brook	[River Street, Dunstable]	42.689567	-71.548117
NRWA_UK0675	Nashua River Watershed Association	Water Quality	Unkety Brook	Unkety Brook, Dunstable	42.689770	-71.548090

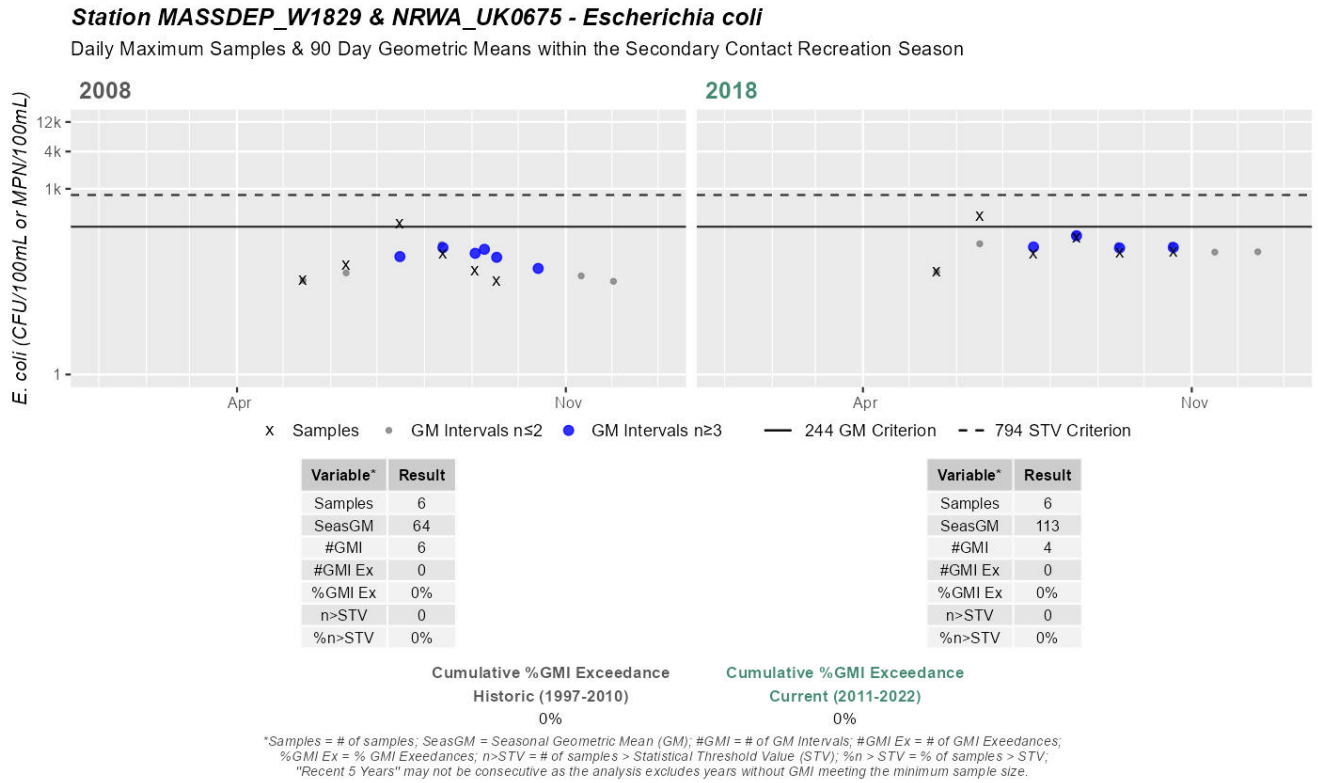
Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

[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
W1829	MassDEP	E. coli	05/13/08	09/16/08	6	32	270	64
NRWA_UK0675	Nashua River Watershed Association	E. coli	05/19/18	10/20/18	6	45	365	113

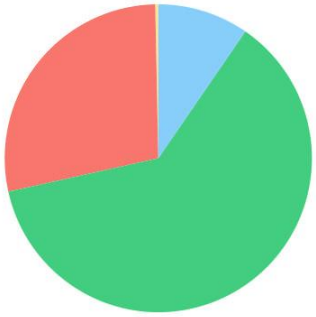


Unnamed Tributary (MA81-35)

Location:	Unnamed tributary to Quinepoxet River locally considered "Lower Chaffin Brook", headwaters outlet Unionville Pond, Holden to mouth at confluence with Quinepoxet River, Holden.
AU Type:	RIVER
AU Size:	0.5 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Unnamed Tributary (MA81-35)

Watershed Area: 7.08 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	7.08	5.40	4.21	3.25
Agriculture	0.3%	0.1%	0.4%	0.1%
Developed	28.2%	31.1%	21.7%	24%
Natural	61.9%	58.8%	62.6%	60.2%
Wetland	9.6%	10%	15.4%	15.7%
Impervious	13.2%	14.6%	10.7%	11.9%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Benthic Macroinvertebrates	--	Unchanged
5	5	Dissolved Oxygen	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Benthic Macroinvertebrates	Dam or Impoundment (Y)	X	--	--	--	--
Dissolved Oxygen	Dam or Impoundment (Y)	X	--	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Unnamed Tributary (MA81-35) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Unnamed Tributary (MA81-35) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Unnamed Tributary (MA81-35) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary

Too limited bacteria data are available to assess the Secondary Contact Recreation Use for Unnamed Tributary (MA81-35), so it is assessed as having Insufficient Information. MA DCR (DCRWS) staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) at the upstream end of this Unnamed Tributary at DCRWS_M103 [upstream of Wachusett St at Unionville Pond Outlet, Holden] from 2008-2010 (historic n=45-51/yr) and Jan 2011 (current n=1). Analysis of the historic multi-year high frequency *E. coli* dataset from DCRWS_M103 indicated 0 out of 3 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml, 0 yrs had >10% of samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. Historic *E. coli* data from DCRWS_M103 meet 2024 CALM guidance. While the historic bacteria concentrations meet 2024 CALM guidance, too limited bacteria data from the current IR window (2011-2022) are available to assess the Secondary Contact Recreation Use.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_M103	MA DCR Division of Water Supply Protection	Water Quality	UNNAMED TRIBUTARY	UPSTREAM OF WACHUSETT ST AT UNIONVILLE POND OUTLET, HOLDEN	42.361274	-71.838999

Bacteria Data

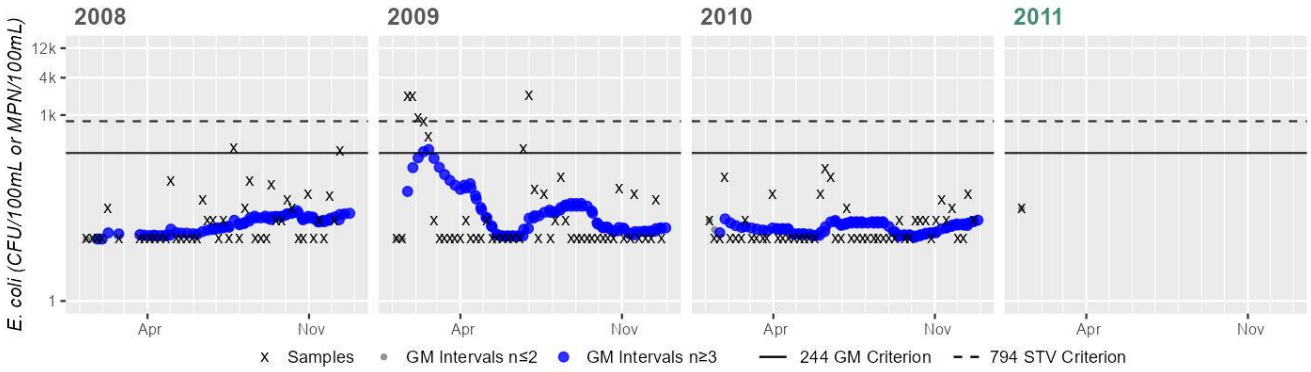
Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

[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
DCRWS_M103	MA DCR Division of Water Supply Protection	E. coli	01/10/08	12/11/08	45	10	288	18
DCRWS_M103	MA DCR Division of Water Supply Protection	E. coli	01/06/09	12/23/09	51	10	2050	24
DCRWS_M103	MA DCR Division of Water Supply Protection	E. coli	01/06/10	12/22/10	51	10	137	15
DCRWS_M103	MA DCR Division of Water Supply Protection	E. coli	01/05/11	01/05/11	1	31	31	31

Station DCRWS_M103 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	45
SeasGM	18
#GMI	78
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	51
SeasGM	24
#GMI	93
#GMI Ex	2
%GMI Ex	2%
n>STV	4
%n>STV	7%

Variable*	Result
Samples	51
SeasGM	15
#GMI	92
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	1
SeasGM	31
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)
0%

Cumulative %GMI Exceedance Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Unnamed Tributary (MA81-46)

Location:	Unnamed tributary to Rocky Brook, headwaters south of Upper North Row Road, Sterling to mouth at the confluence with Rocky Brook, Sterling.
AU Type:	RIVER
AU Size:	0.7 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Unnamed Tributary (MA81-46)

Watershed Area: 0.28 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	0.28	0.28	0.16	0.16
Agriculture	0%	0%	0%	0%
Developed	2.8%	2.8%	2.8%	2.8%
Natural	87%	87%	84.7%	84.7%
Wetland	10.2%	10.2%	12.5%	12.5%
Impervious	1.4%	1.4%	1.5%	1.5%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Unnamed Tributary (MA81-46) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Unnamed Tributary (MA81-46) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Unnamed Tributary (MA81-46) is assessed as Fully Supporting. MA DCR (DCRWS) staff collected *E. coli* bacteria samples two-thirds of the way down this Unnamed Tributary at DCRWS_MD13 [upstream of Rowley Hill Rd, Sterling] from Apr-Nov 2011 (n=27). Analysis of the single year high frequency *E. coli* dataset from DCRWS_MD13 indicated 0% of intervals had GMs >126 CFU/100ml and 3% of samples exceeded the 410 CFU/100ml STV. *E. coli* data from DCRWS_MD13 meet 2024 CALM guidance.

Monitoring Stations

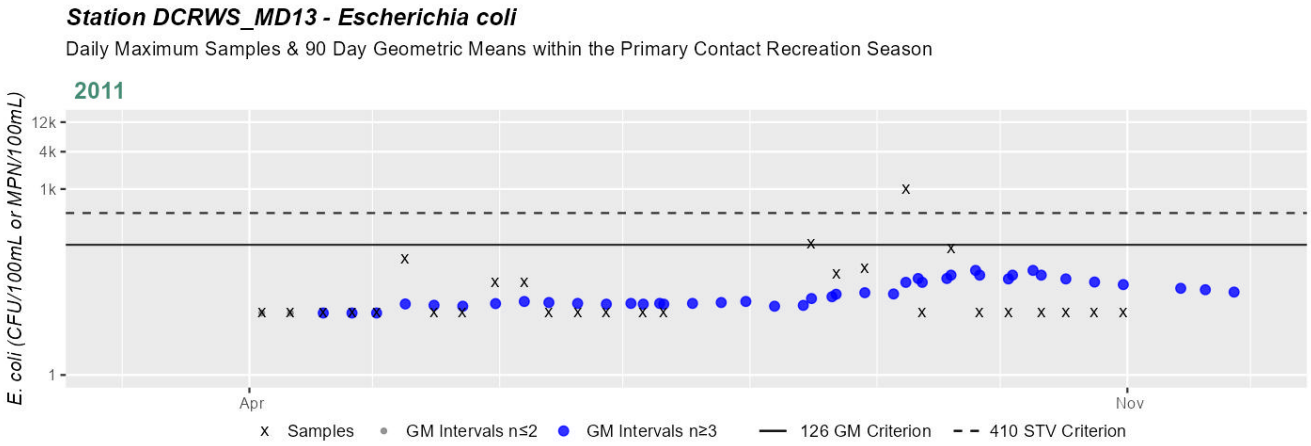
Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD13	MA DCR Division of Water Supply Protection	Water Quality	ROCKY BROOK	UPSTREAM OF ROWLEY HILL RD, STERLING	42.467206	-71.799726

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 2)

[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
DCRWS_MD13	MA DCR Division of Water Supply Protection	E. coli	04/04/11	11/14/11	27	10	988	18



Variable*	Result
Samples	27
SeasGM	18
#GMI	48
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	3%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Unnamed Tributary (MA81-46) is assessed as Fully Supporting. MA DCR (DCRWS) staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) samples two-thirds of the way down this Unnamed Tributary at DCRWS_MD13 [upstream of Rowley Hill Rd, Sterling] from 2008-2010 (historic n=40-51/yr) and Jan-Dec 2011 (current n=47). Since bacteria data from the historic IR window are all indicative of good water quality conditions, only the analysis from the current IR window will be summarized here: Analysis of the single year high frequency *E. coli* dataset from DCRWS_MD13 indicated 0% of intervals had GMs >244 CFU/100ml and 2% of samples exceeded the 794 CFU/100ml STV. *E. coli* data from DCRWS_MD13 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD13	MA DCR Division of Water Supply Protection	Water Quality	ROCKY BROOK	UPSTREAM OF ROWLEY HILL RD, STERLING	42.467206	-71.799726

Bacteria Data

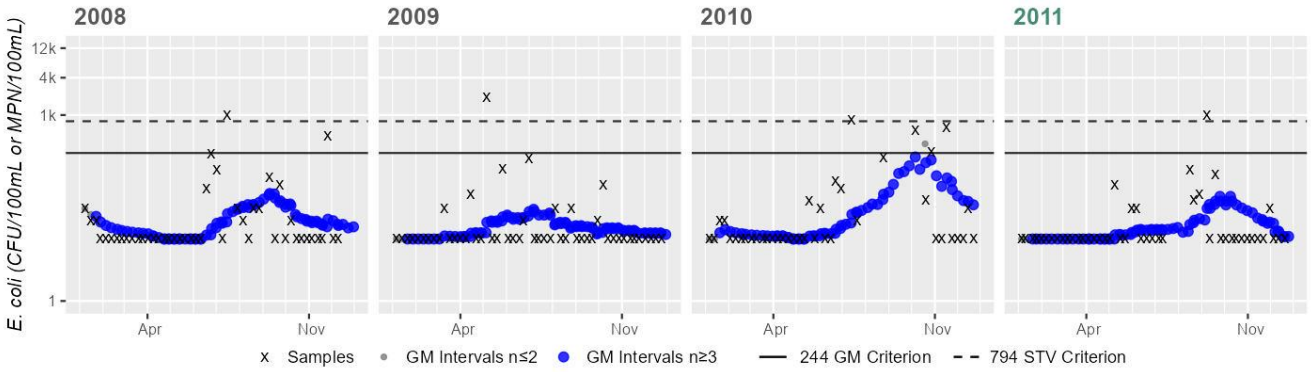
Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

[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
DCRWS_MD13	MA DCR Division of Water Supply Protection	E. coli	01/08/08	12/09/08	47	10	1010	18
DCRWS_MD13	MA DCR Division of Water Supply Protection	E. coli	01/06/09	12/23/09	51	10	1920	14
DCRWS_MD13	MA DCR Division of Water Supply Protection	E. coli	01/06/10	12/22/10	40	10	831	21
DCRWS_MD13	MA DCR Division of Water Supply Protection	E. coli	01/05/11	12/20/11	47	10	988	14

Station DCRWS_MD13 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	47
SeasGM	18
#GMI	85
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	51
SeasGM	14
#GMI	93
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	1%

Variable*	Result
Samples	40
SeasGM	21
#GMI	72
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	47
SeasGM	14
#GMI	84
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Unnamed Tributary (MA81-49)

Location:	Unnamed tributary to Wachusett Reservoir, headwaters, outlet Carrolls Pond, West Boylston to mouth at inlet Wachusett Reservoir, West Boylston.
AU Type:	RIVER
AU Size:	0.8 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Unnamed Tributary (MA81-49)

Watershed Area: 0.38 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	0.38	0.38	0.26	0.26
Agriculture	4.2%	4.2%	5.8%	5.8%
Developed	32.7%	32.7%	24.6%	24.6%
Natural	54.8%	54.8%	57.3%	57.3%
Wetland	8.3%	8.3%	12.3%	12.3%
Impervious	14.8%	14.8%	12%	12%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Chloride	--	Unchanged
5	5	Escherichia Coli (E. Coli)	--	Added

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Chloride	Highway/Road/Bridge Runoff (Non-construction Related) (Y)	X	--	--	--	--
Chloride	Impervious Surface/Parking Lot Runoff (Y)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Chloride	Source Unknown (N)	X	--	--	--	--
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Unnamed Tributary (MA81-49) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Unnamed Tributary (MA81-49) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for Unnamed Tributary (MA81-49) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at 1 station in 2018-2022. MA DCR (DCRWS) staff collected *E. coli* bacteria samples at the downstream end of this Unnamed Tributary AU at DCRWS_MD05 [upstream of Access Rd Inside Gate 25, W Boylston] from 2011-2022 (n=11-31/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from DCRWS_MD05 indicated 4 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2019-2022, 50-100%), 5 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2018-2022, n=2-5), and cumulatively across years 63% of intervals had GMs >126 CFU/100ml. *E. coli* data from DCRWS_MD05 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD05	MA DCR Division of Water Supply Protection	Water Quality	WEST BOYLSTON BROOK	UPSTREAM OF ACCESS ROAD INSIDE GATE 25, WEST BOYLSTON	42.368420	-71.781017

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 2)

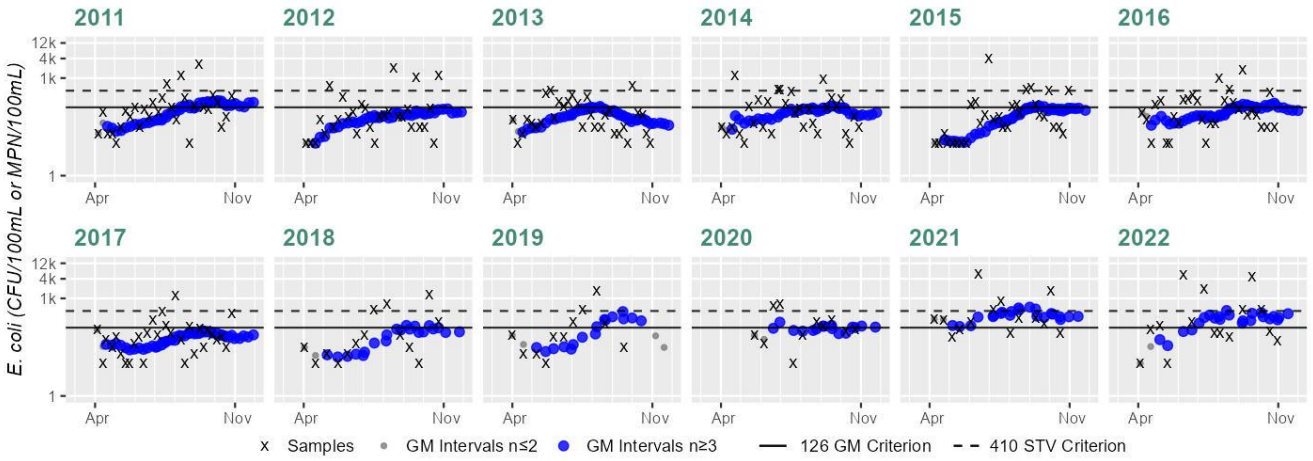
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	04/06/11	11/22/11	30	10	2610	95
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	04/04/12	12/05/12	30	10	2005	64
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	04/02/13	12/04/13	31	10	563	60
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	04/02/14	12/17/14	31	10	1190	78
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	04/09/15	11/04/15	30	10	4110	59
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	04/06/16	11/30/16	30	10	1780	86
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	04/04/17	12/19/17	30	10	1180	57

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	04/02/18	10/24/18	14	10	1330	59
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	04/01/19	09/18/19	11	10	1720	79
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	05/21/20	12/15/20	11	10	677	115
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	04/08/21	10/18/21	14	63	5790	278
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	04/04/22	10/31/22	15	10	5170	178

Station DCRWS_MD05 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	30
SeasGM	95
#GMI	55
#GMI Ex	25
%GMI Ex	45%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	30
SeasGM	64
#GMI	50
#GMI Ex	0
%GMI Ex	0%
n>STV	4
%n>STV	13%

Variable*	Result
Samples	31
SeasGM	60
#GMI	55
#GMI Ex	2
%GMI Ex	3%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	31
SeasGM	78
#GMI	51
#GMI Ex	3
%GMI Ex	5%
n>STV	4
%n>STV	12%

Variable*	Result
Samples	30
SeasGM	59
#GMI	53
#GMI Ex	5
%GMI Ex	9%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	30
SeasGM	86
#GMI	54
#GMI Ex	16
%GMI Ex	29%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	30
SeasGM	57
#GMI	52
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	14
SeasGM	59
#GMI	22
#GMI Ex	4
%GMI Ex	18%
n>STV	3
%n>STV	21%

Variable*	Result
Samples	11
SeasGM	79
#GMI	16
#GMI Ex	8
%GMI Ex	50%
n>STV	2
%n>STV	18%

Variable*	Result
Samples	11
SeasGM	115
#GMI	17
#GMI Ex	9
%GMI Ex	52%
n>STV	2
%n>STV	18%

Variable*	Result
Samples	14
SeasGM	278
#GMI	23
#GMI Ex	23
%GMI Ex	100%
n>STV	4
%n>STV	28%

Variable*	Result
Samples	15
SeasGM	178
#GMI	25
#GMI Ex	21
%GMI Ex	84%
n>STV	5
%n>STV	33%

Cumulative %GMI Exceedance Current (2011-2022)
24%

Cumulative %GMI Exceedance Current (Recent 5 Years)
63%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Unnamed Tributary (MA81-49) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at 1 station in 2018-2022. MA DCR (DCRWS) staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) at the downstream end of this Unnamed Tributary AU at DCRWS_MD05 [upstream of Access Rd Inside Gate 25, W Boylston] from 2008-2010 (historic n=49-52/yr) and 2011-2022 (current n=17-51/yr). Analysis of the recent five years of this multi-year high frequency *E. coli* dataset from DCRWS_MD05 indicated 4 out of 5 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml (2019-2022, 10-39%), 3 yrs had >10% of samples exceed the 794 CFU/100ml STV (2020-2022, 10-16%), and cumulatively across years 20% of intervals had GMs >244 CFU/100ml. Recent *E. coli* data in the current IR window from DCRWS_MD05 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD05	MA DCR Division of Water Supply Protection	Water Quality	WEST BOYLSTON BROOK	UPSTREAM OF ACCESS ROAD INSIDE GATE 25, WEST BOYLSTON	42.368420	-71.781017

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

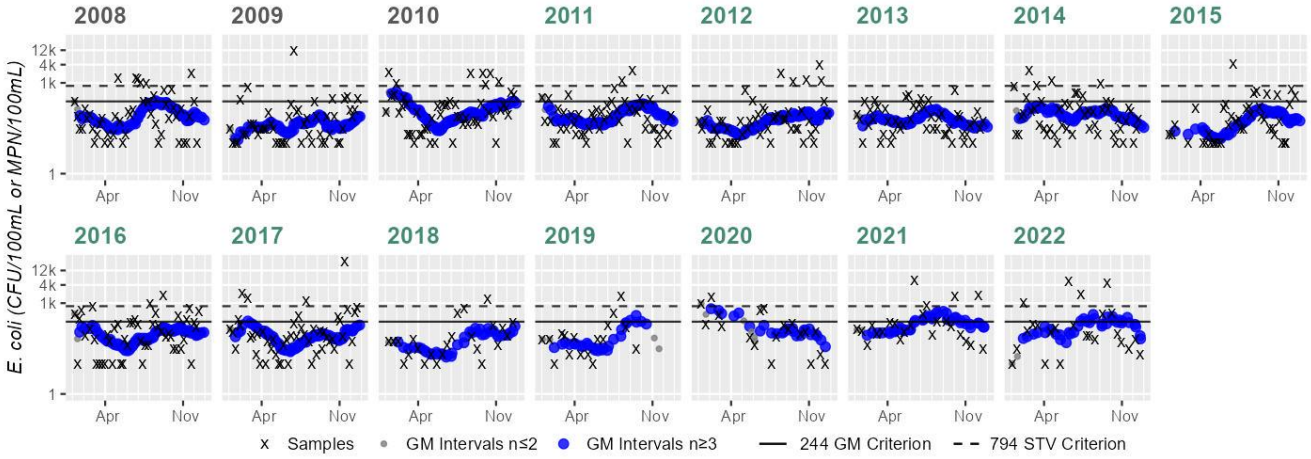
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	01/07/08	12/08/08	49	10	2010	78
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	01/05/09	12/22/09	51	10	11200	44
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	01/04/10	12/20/10	52	10	2220	109

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	01/03/11	12/22/11	51	10	2610	75
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	01/04/12	12/19/12	51	10	3870	57
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	01/08/13	12/19/13	50	10	563	57
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	01/09/14	12/17/14	50	10	2490	84
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	01/06/15	12/17/15	42	10	4110	54
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	01/07/16	12/14/16	49	10	1780	87
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	01/05/17	12/19/17	50	10	24200	89
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	01/10/18	12/17/18	24	10	1330	56
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	01/03/19	09/18/19	17	10	1720	64
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	01/09/20	12/15/20	20	10	1550	116
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	01/07/21	12/20/21	24	31	5790	185
DCRWS_MD05	MA DCR Division of Water Supply Protection	E. coli	01/03/22	12/22/22	24	10	5170	127

Station DCRWS_MD05 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	49
SeasGM	78
#GMI	87
#GMI Ex	1
%GMI Ex	1%
n>STV	6
%n>STV	12%

Variable*	Result
Samples	51
SeasGM	44
#GMI	91
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	1%

Variable*	Result
Samples	52
SeasGM	109
#GMI	90
#GMI Ex	10
%GMI Ex	11%
n>STV	7
%n>STV	13%

Variable*	Result
Samples	51
SeasGM	75
#GMI	93
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	3%

Variable*	Result
Samples	51
SeasGM	57
#GMI	87
#GMI Ex	3
%GMI Ex	3%
n>STV	5
%n>STV	9%

Variable*	Result
Samples	50
SeasGM	57
#GMI	88
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	50
SeasGM	84
#GMI	80
#GMI Ex	0
%GMI Ex	0%
n>STV	4
%n>STV	8%

Variable*	Result
Samples	42
SeasGM	54
#GMI	75
#GMI Ex	1
%GMI Ex	1%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	49
SeasGM	87
#GMI	83
#GMI Ex	1
%GMI Ex	1%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	50
SeasGM	89
#GMI	87
#GMI Ex	6
%GMI Ex	6%
n>STV	4
%n>STV	8%

Variable*	Result
Samples	24
SeasGM	56
#GMI	42
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	17
SeasGM	64
#GMI	28
#GMI Ex	3
%GMI Ex	10%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	20
SeasGM	116
#GMI	29
#GMI Ex	5
%GMI Ex	17%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	24
SeasGM	185
#GMI	43
#GMI Ex	17
%GMI Ex	39%
n>STV	4
%n>STV	16%

Variable*	Result
Samples	24
SeasGM	127
#GMI	42
#GMI Ex	12
%GMI Ex	28%
n>STV	4
%n>STV	16%

Cumulative %GMI Exceedance
Historic (1997-2010)
4%

Cumulative %GMI Exceedance
Current (2011-2022)
6%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
20%

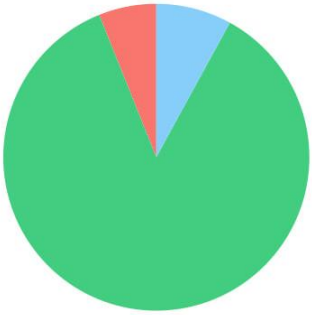
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Unnamed Tributary (MA81-50)

Location:	Unnamed tributary to Wachusett Reservoir, headwaters, east of Linden Street, Boylston to mouth at inlet Wachusett Reservoir (Hastings Cove), Boylston.
AU Type:	RIVER
AU Size:	1.3 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Unnamed Tributary (MA81-50)

Watershed Area: 0.55 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	0.55	0.55	0.28	0.28
Agriculture	0%	0%	0%	0%
Developed	6.1%	6.1%	4.7%	4.7%
Natural	85.9%	85.9%	81.4%	81.4%
Wetland	8%	8%	13.8%	13.8%
Impervious	2.3%	2.3%	2.1%	2.1%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Unnamed Tributary (MA81-50) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Unnamed Tributary (MA81-50) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Unnamed Tributary (MA81-50) is assessed as Fully Supporting. MA DCR (DCRWS) staff collected *E. coli* bacteria samples at the downstream end of this Unnamed Tributary AU at DCRWS_MD76 [Above Mouth of Hastings Cove Off Rt. 70, Boylston] from 2011-2013 (n=29-30/yr). Analysis of the multi-year high frequency *E. coli* dataset from DCRWS_MD76 indicated 0 out of 3 sufficient data yrs had intervals where >10% of the GMs were >126 CFU/100ml, 0 yrs had >10% of samples exceed the 410 CFU/100ml STV, and cumulatively across years 2% of intervals had GMs >126 CFU/100ml. *E. coli* data from DCRWS_MD76 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD76	MA DCR Division of Water Supply Protection	Water Quality	UNNAMED TRIBUTARY	ABOVE MOUTH OF HASTINGS COVE OFF RT. 70, BOYLSTON	42.379235	-71.707789

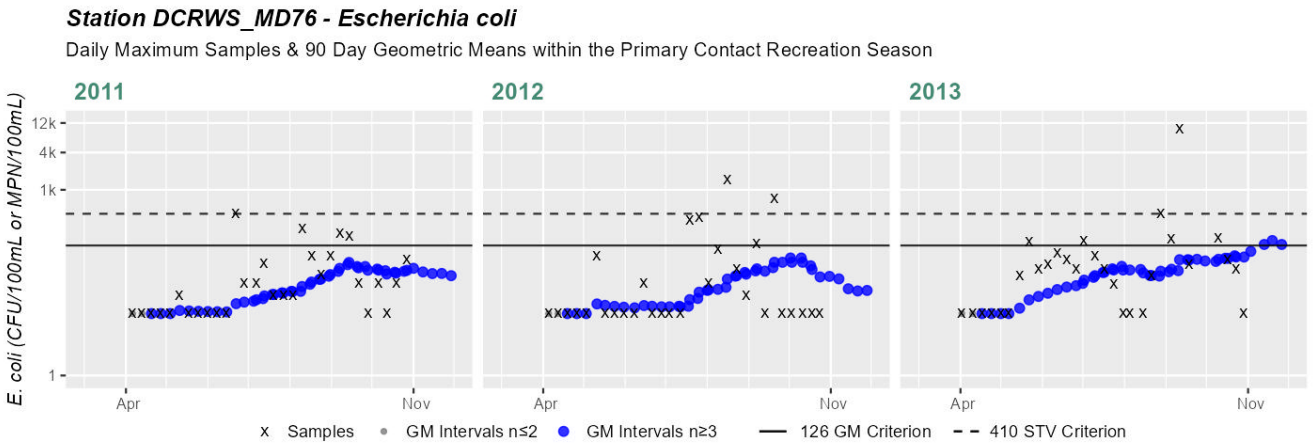
Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 2)

[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
DCRWS_MD76	MA DCR Division of Water Supply Protection	E. coli	04/06/11	11/22/11	30	10	417	27
DCRWS_MD76	MA DCR Division of Water Supply Protection	E. coli	04/04/12	12/05/12	30	10	1440	25

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD76	MA DCR Division of Water Supply Protection	E. coli	04/02/13	12/04/13	29	10	9800	45



Variable*	Result
Samples	30
SeasGM	27
#GMI	55
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	30
SeasGM	25
#GMI	50
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	6%

Variable*	Result
Samples	29
SeasGM	45
#GMI	51
#GMI Ex	4
%GMI Ex	7%
n>STV	2
%n>STV	6%

Cumulative %GMI Exceedance
Current (2011-2022)
2%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Unnamed Tributary (MA81-50) is assessed as Fully Supporting. MA DCR (DCRWS) staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) at the downstream end of this Unnamed Tributary at DCRWS_MD76 [Above Mouth of Hastings Cove Off Rt. 70, Boylston] from 2008-2010 (historic n=42-51/yr) and 2011-2013 (current n=48-51/yr). Since bacteria data from the historic IR window are all indicative of good water quality conditions, only the analysis from the current IR window will be summarized here: Analysis of the multi-year high frequency *E. coli* dataset from DCRWS_MD76 indicated 0 out of 3 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml, 0 yrs had >10% of samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. *E. coli* data from DCRWS_MD76 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD76	MA DCR Division of Water Supply Protection	Water Quality	UNNAMED TRIBUTARY	ABOVE MOUTH OF HASTINGS COVE OFF RT. 70, BOYLSTON	42.379235	-71.707789

Bacteria Data

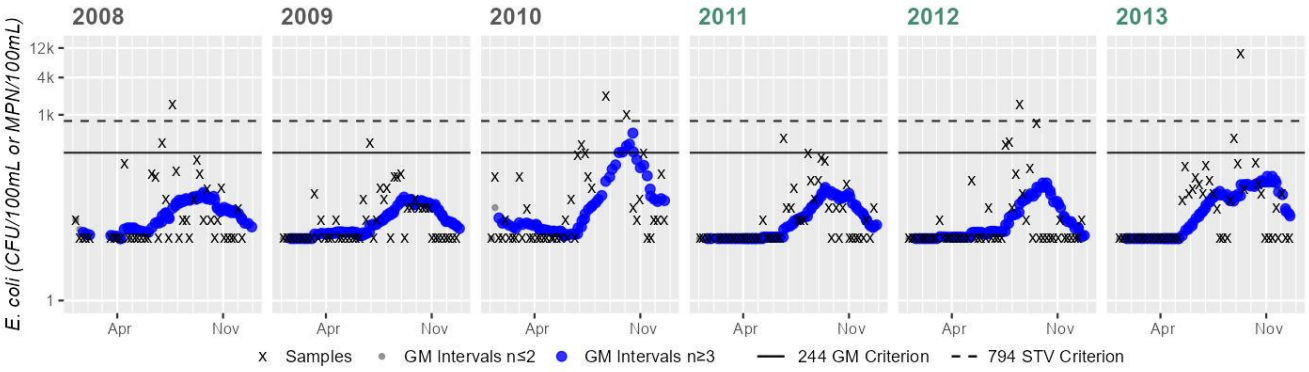
Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

[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
DCRWS_MD76	MA DCR Division of Water Supply Protection	E. coli	01/07/08	12/08/08	44	10	1470	22
DCRWS_MD76	MA DCR Division of Water Supply Protection	E. coli	01/05/09	12/22/09	51	10	350	17
DCRWS_MD76	MA DCR Division of Water Supply Protection	E. coli	01/04/10	12/20/10	42	10	2000	27
DCRWS_MD76	MA DCR Division of Water Supply Protection	E. coli	01/03/11	12/22/11	50	10	417	19
DCRWS_MD76	MA DCR Division of Water Supply Protection	E. coli	01/04/12	12/19/12	51	10	1440	18
DCRWS_MD76	MA DCR Division of Water Supply Protection	E. coli	01/08/13	12/19/13	48	10	9800	26

Station DCRWS_MD76 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	44
SeasGM	22
#GMI	78
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	51
SeasGM	17
#GMI	91
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	42
SeasGM	27
#GMI	73
#GMI Ex	6
%GMI Ex	8%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	50
SeasGM	19
#GMI	92
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	51
SeasGM	18
#GMI	87
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	1%

Variable*	Result
Samples	48
SeasGM	26
#GMI	84
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Cumulative %GMI Exceedance
Historic (1997-2010)
2%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Unnamed Tributary (MA81-51)

Location:	Unnamed tributary to Quinapoxet River, headwaters, south of Malden Street, Holden to mouth at confluence with the Quinapoxet River, Holden.
AU Type:	RIVER
AU Size:	1.5 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Unnamed Tributary (MA81-51)

Watershed Area: 1.31 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	1.31	1.31	0.80	0.80
Agriculture	5.3%	5.3%	8%	8%
Developed	11.9%	11.9%	11.6%	11.6%
Natural	73.3%	73.3%	65.8%	65.8%
Wetland	9.5%	9.5%	14.6%	14.6%
Impervious	4.9%	4.9%	5.4%	5.4%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Unnamed Tributary (MA81-51) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Unnamed Tributary (MA81-51) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Unnamed Tributary (MA81-51) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Unnamed Tributary (MA81-51) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MA DCR (DCRWS) staff collected *E. coli* bacteria samples three-quarters of the way down this Unnamed Tributary AU at DCRWS_M109 [Harris St., Holden] from Jan-Dec 2008 (n=49). Analysis of the historic single year high frequency *E. coli* dataset from DCRWS_M109 indicated 0% of intervals had GMs >244 CFU/100ml and 2% of samples exceeded the 794 CFU/100ml STV. Historic *E. coli* data from DCRWS_M109 meet 2024 CALM guidance. However, since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_M109	MA DCR Division of Water Supply Protection	Water Quality	UNNAMED TRIBUTARY	Harris St., Holden	42.363998	-71.831325

Bacteria Data

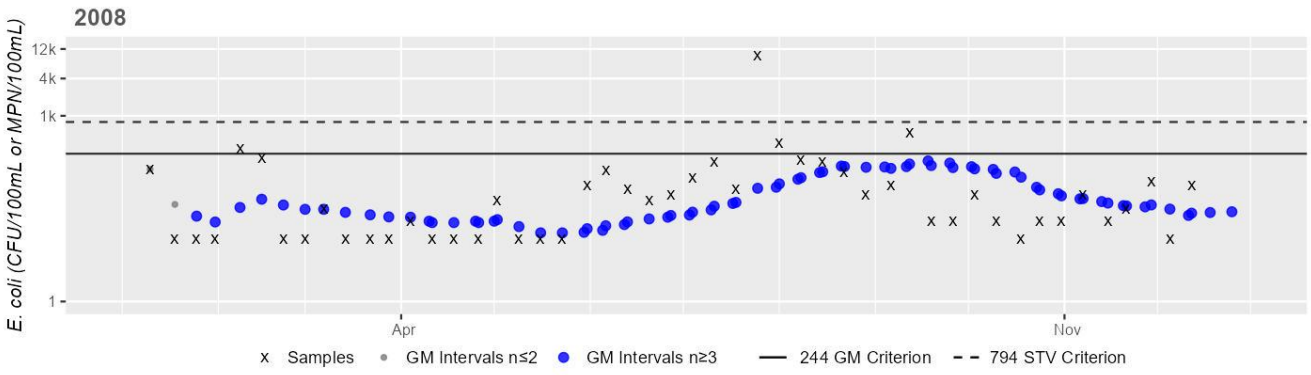
Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

[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
DCRWS_M109	MA DCR Division of Water Supply Protection	E. coli	01/10/08	12/11/08	49	10	9210	40

Station DCRWS_M109 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	49
SeasGM	40
#GMI	85
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

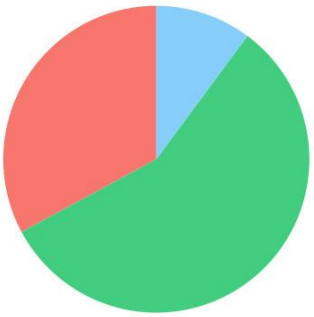
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Unnamed Tributary (MA81-54)

Location:	Unnamed tributary to Wachusett Reservoir, headwaters, west of Route 140, West Boylston to mouth at inlet Wachusett Reservoir (Stillwater Basin), West Boylston.
AU Type:	RIVER
AU Size:	0.8 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Unnamed Tributary (MA81-54)

Watershed Area: 0.43 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	0.43	0.43	0.28	0.28
Agriculture	0%	0%	0%	0%
Developed	32.9%	32.9%	30.8%	30.8%
Natural	57%	57%	53.9%	53.9%
Wetland	10.2%	10.2%	15.3%	15.3%
Impervious	13%	13%	12.9%	12.9%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Chloride	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Chloride	Highway/Road/Bridge Runoff (Non-construction Related) (Y)	X	--	--	--	--
Chloride	Impervious Surface/Parking Lot Runoff (Y)	X	--	--	--	--
Chloride	Source Unknown (N)	X	--	--	--	--

Recommendations

2024/26 Recommendations
2024/26 IR [Bacteria, Low] Additional monitoring for bacteria is recommended for Unnamed Tributary (MA81-54) in particular at station {DCRWS_MD80} downstream of Waushacum St, E of Rt 140, W Boylston. The prior Alert identified for Escherichia Coli (E. Coli) was carried forward as 7 samples excededed the STV in the most recent 5 years (2018-2022), with maximum's of 733 & 7,700 CFU respectively in 2021 & 2022.

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Unnamed Tributary (MA81-54) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Unnamed Tributary (MA81-54) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	YES

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for Unnamed Tributary (MA81-54) is assessed as Fully Supporting. The prior Alert for Escherichia Coli (E. Coli) is being carried forward. MA DCR (DCRWS) staff collected *E. coli* bacteria samples three-quarters of the way down Unnamed Tributary (MA81-54) at DCRWS_MD80 [downstream of Waushacum St, E of Rt 140, W Boylston] from 2011-2022 (n=11-31/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from DCRWS_MD80 indicated 1 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2022, 36%), 2 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2021 and 2022, n=2 & 2, maximum's of 733 & 7,700 CFU respectively), and cumulatively across years 10% of intervals had GMs >126 CFU/100ml. *E. coli* data from DCRWS_MD80 meet 2024 CALM guidance. However the prior Alert identified for Escherichia Coli (E. Coli) on this Unnamed Tributary is being retained, as 7 samples excededed the STV in the most recent 5 years (2018-2022), additional sampling is being recommended.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD80	MA DCR Division of Water Supply Protection	Water Quality	UNNAMED TRIBUTARY; OAKDALE BROOK	DOWNSTREAM OF WAUSHACUM ST, EAST OF RT 140, WEST BOYLSTON	42.391293	-71.793292

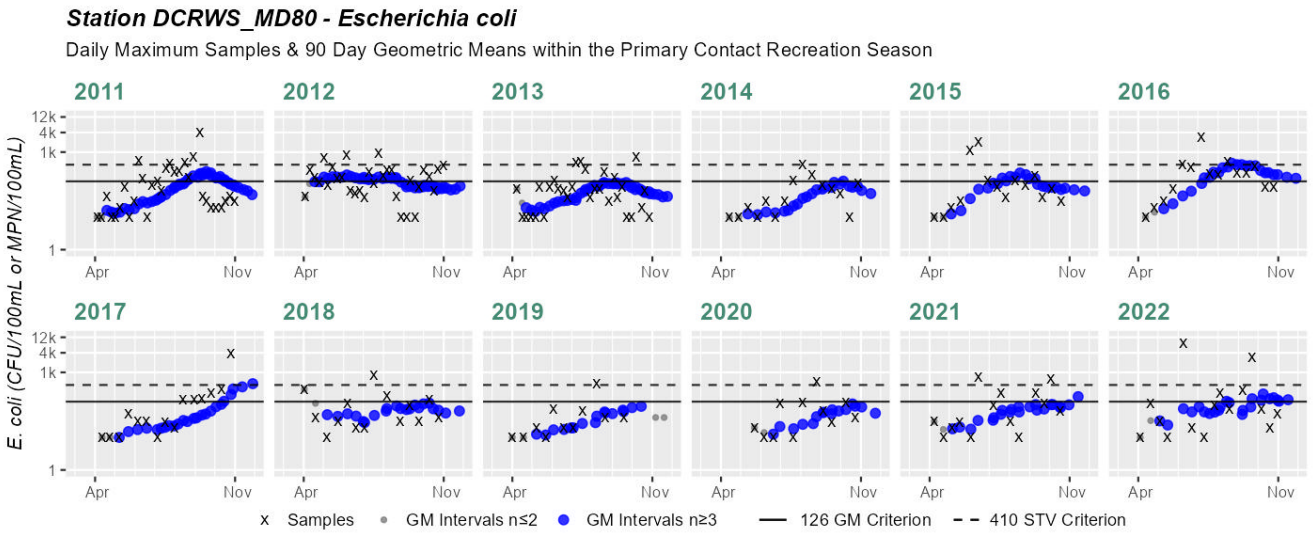
Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 2)

[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
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	04/04/11	11/14/11	31	10	3970	64
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	04/02/12	12/03/12	31	10	945	122
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	04/08/13	10/28/13	30	10	727	53
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	04/14/14	10/27/14	15	10	428	39
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	04/08/15	10/19/15	15	10	1990	75
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	04/11/16	10/24/16	15	10	2910	151

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	04/12/17	10/26/17	15	10	3870	57
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	04/02/18	10/24/18	14	10	833	62
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	04/01/19	09/18/19	11	10	441	31
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	05/21/20	12/15/20	11	10	504	44
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	04/08/21	10/18/21	14	10	733	60
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	04/04/22	10/31/22	15	10	7700	82



Variable*	Result
Samples	31
SeasGM	64
#GMI	54
#GMI Ex	16
%GMI Ex	29%
n>STV	5
%n>STV	16%

Variable*	Result
Samples	31
SeasGM	122
#GMI	53
#GMI Ex	26
%GMI Ex	49%
n>STV	3
%n>STV	9%

Variable*	Result
Samples	30
SeasGM	53
#GMI	51
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	15
SeasGM	39
#GMI	25
#GMI Ex	1
%GMI Ex	4%
n>STV	1
%n>STV	6%

Variable*	Result
Samples	15
SeasGM	75
#GMI	25
#GMI Ex	8
%GMI Ex	32%
n>STV	2
%n>STV	13%

Variable*	Result
Samples	15
SeasGM	151
#GMI	25
#GMI Ex	20
%GMI Ex	80%
n>STV	2
%n>STV	13%

Variable*	Result
Samples	15
SeasGM	57
#GMI	25
#GMI Ex	6
%GMI Ex	24%
n>STV	1
%n>STV	6%

Variable*	Result
Samples	14
SeasGM	62
#GMI	22
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	7%

Variable*	Result
Samples	11
SeasGM	31
#GMI	16
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	11
SeasGM	44
#GMI	17
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	14
SeasGM	60
#GMI	23
#GMI Ex	2
%GMI Ex	8%
n>STV	2
%n>STV	14%

Variable*	Result
Samples	15
SeasGM	82
#GMI	25
#GMI Ex	9
%GMI Ex	36%
n>STV	2
%n>STV	13%

Cumulative %GMI Exceedance Current (2011-2022)
24%

Cumulative %GMI Exceedance Current (Recent 5 Years)
10%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Unnamed Tributary (MA81-54) is assessed as Fully Supporting. MA DCR (DCRWS) staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) three-quarters of the way down Unnamed Tributary (MA81-54) at DCRWS_MD80 [downstream of Waushacum St, E of Rt 140, W Boylston] from 2008-2010 (historic n=49-51/yr) and 2011-2022 (current n=17-51/yr). Analysis of the recent five years of the multi-year high frequency *E. coli* dataset from DCRWS_MD80 indicated 0 out of 5 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml, 0 yrs had >10% of samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. *E. coli* data from DCRWS_MD80 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD80	MA DCR Division of Water Supply Protection	Water Quality	UNNAMED TRIBUTARY; OAKDALE BROOK	DOWNSTREAM OF WAUSHACUM ST, EAST OF RT 140, WEST BOYLSTON	42.391293	-71.793292

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

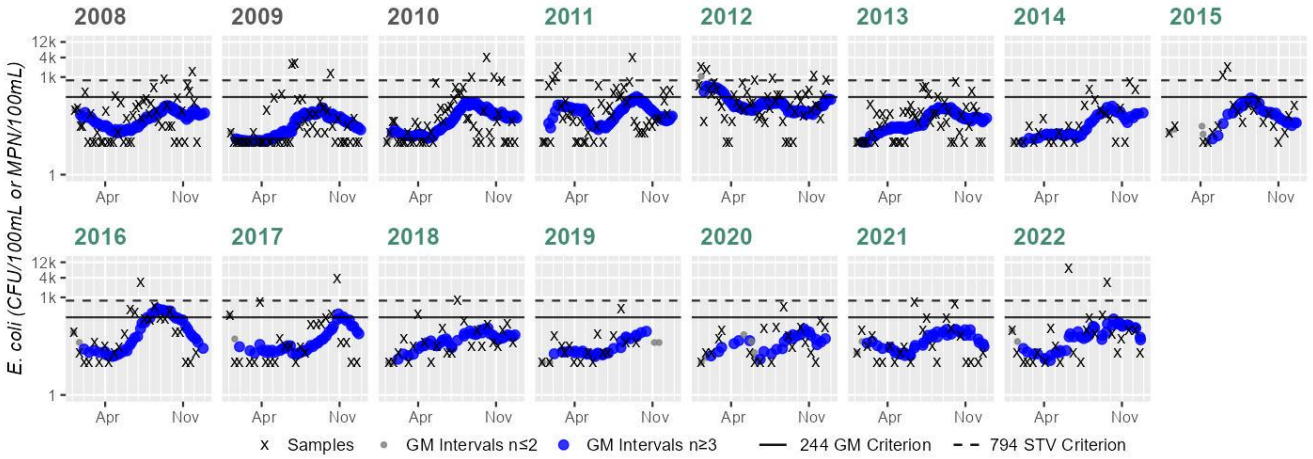
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	01/08/08	12/09/08	49	10	1450	53
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	01/06/09	12/23/09	51	10	2760	29
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	01/06/10	12/22/10	51	10	4110	43
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	01/05/11	12/20/11	51	10	3970	79
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	01/03/12	12/17/12	51	10	2000	146
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	01/07/13	12/18/13	49	10	727	43
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	01/08/14	12/09/14	25	10	728	36
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	01/05/15	12/15/15	21	10	1990	58
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	01/04/16	12/05/16	25	10	2910	65
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	01/03/17	12/19/17	25	10	3870	43
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	01/10/18	12/17/18	24	10	833	46

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	01/03/19	09/18/19	17	10	441	27
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	01/09/20	12/15/20	20	10	504	40
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	01/07/21	12/20/21	24	10	733	37
DCRWS_MD80	MA DCR Division of Water Supply Protection	E. coli	01/03/22	12/22/22	24	10	7700	54

Station DCRWS_MD80 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	49
SeasGM	53
#GMI	87
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	51
SeasGM	29
#GMI	93
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	5%

Variable*	Result
Samples	51
SeasGM	43
#GMI	92
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	5%

Variable*	Result
Samples	51
SeasGM	79
#GMI	90
#GMI Ex	1
%GMI Ex	1%
n>STV	4
%n>STV	7%

Variable*	Result
Samples	51
SeasGM	146
#GMI	89
#GMI Ex	10
%GMI Ex	11%
n>STV	5
%n>STV	9%

Variable*	Result
Samples	49
SeasGM	43
#GMI	87
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	25
SeasGM	36
#GMI	45
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	58
#GMI	33
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	9%

Variable*	Result
Samples	25
SeasGM	65
#GMI	45
#GMI Ex	9
%GMI Ex	20%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	25
SeasGM	43
#GMI	45
#GMI Ex	2
%GMI Ex	4%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	24
SeasGM	46
#GMI	42
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	17
SeasGM	27
#GMI	28
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	40
#GMI	29
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	24
SeasGM	37
#GMI	43
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	24
SeasGM	54
#GMI	42
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	8%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

Cumulative %GMI Exceedance
Current (2011-2022)
3%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
0%

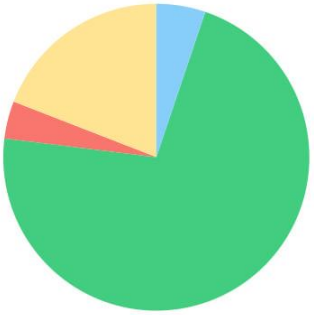
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Unnamed Tributary (MA81-58)

Location:	Unnamed tributary to Quinapoxet Reservoir, headwaters, west of Route 68, Rutland to mouth at confluence with unnamed tributary to the Quinapoxet Reservoir (east of Bryant Road), Holden.
AU Type:	RIVER
AU Size:	1.3 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Unnamed Tributary (MA81-58)

Watershed Area: 0.66 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	0.66	0.66	0.49	0.49
Agriculture	19.1%	19.1%	13.6%	13.6%
Developed	3.9%	3.9%	2.7%	2.7%
Natural	71.7%	71.7%	76.6%	76.6%
Wetland	5.2%	5.2%	7%	7%
Impervious	3%	3%	2%	2%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	5	Escherichia Coli (E. Coli)	--	Added

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Unnamed Tributary (MA81-58) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Unnamed Tributary (MA81-58) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Unnamed Tributary (MA81-58) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at 1 station in 2018-2022. MA DCR (DCRWS) staff collected *E. coli* bacteria samples a quarter of the way down Unnamed Tributary (MA81-58) at DCRWS_MD12 [upstream of Rt. 68, Rutland] from 2011-2022 (n=6-31/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from DCRWS_MD12 indicated 4 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2019-2022, 39-65%), 4 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2019-2022, n=2-5), and cumulatively across years 43% of intervals had GMs >126 CFU/100ml. *E. coli* data from DCRWS_MD12 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD12	MA DCR Division of Water Supply Protection	Water Quality	UNNAMED TRIBUTARY; JORDAN FARM BROOK	UPSTREAM OF RT. 68, RUTLAND	42.386581	-71.905644

Bacteria Data

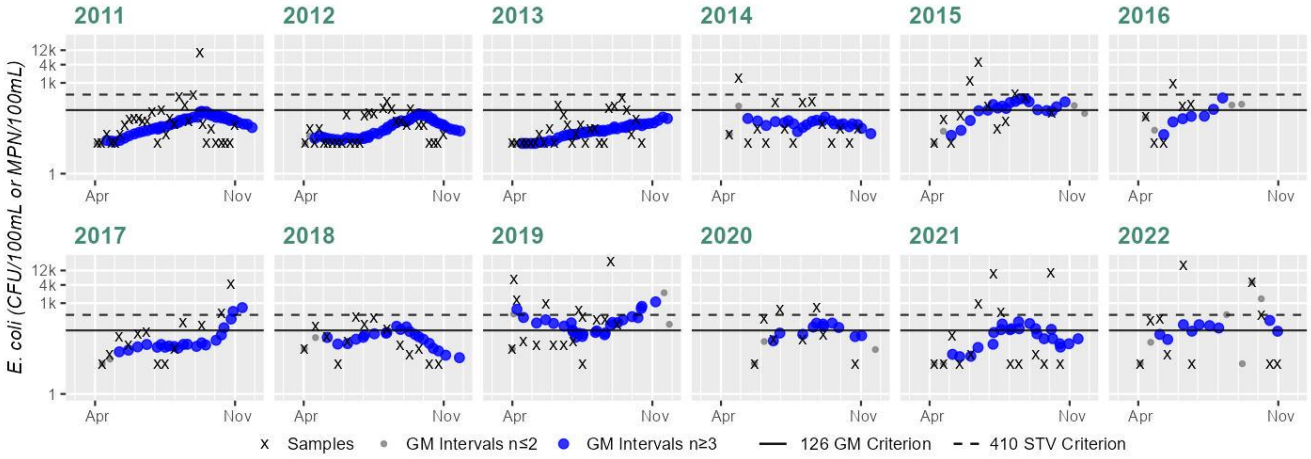
Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 2)

[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
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	04/04/11	11/14/11	31	10	9800	40
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	04/02/12	12/03/12	29	10	238	28
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	04/01/13	10/16/13	28	10	323	25
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	04/14/14	10/27/14	15	10	1480	40
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	04/08/15	10/05/15	12	10	4880	121
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	04/11/16	06/20/16	6	10	933	78
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	04/12/17	10/26/17	13	10	4350	72
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	04/02/18	10/24/18	14	10	341	53
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	04/01/19	09/09/19	16	10	24200	221
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	05/21/20	12/03/20	8	10	712	89
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	04/08/21	10/18/21	14	10	9800	62
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	04/04/22	10/31/22	10	10	17300	118

Station DCRWS_MD12 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	31
SeasGM	40
#GMI	54
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	29
SeasGM	28
#GMI	50
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	28
SeasGM	25
#GMI	47
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	15
SeasGM	40
#GMI	25
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	6%

Variable*	Result
Samples	12
SeasGM	121
#GMI	19
#GMI Ex	12
%GMI Ex	63%
n>STV	3
%n>STV	25%

Variable*	Result
Samples	6
SeasGM	78
#GMI	7
#GMI Ex	2
%GMI Ex	28%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	13
SeasGM	72
#GMI	21
#GMI Ex	4
%GMI Ex	19%
n>STV	2
%n>STV	15%

Variable*	Result
Samples	14
SeasGM	53
#GMI	22
#GMI Ex	3
%GMI Ex	13%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	16
SeasGM	221
#GMI	26
#GMI Ex	17
%GMI Ex	65%
n>STV	5
%n>STV	31%

Variable*	Result
Samples	8
SeasGM	89
#GMI	11
#GMI Ex	6
%GMI Ex	54%
n>STV	2
%n>STV	25%

Variable*	Result
Samples	14
SeasGM	62
#GMI	23
#GMI Ex	9
%GMI Ex	39%
n>STV	4
%n>STV	28%

Variable*	Result
Samples	10
SeasGM	118
#GMI	10
#GMI Ex	5
%GMI Ex	50%
n>STV	2
%n>STV	20%

Cumulative %GMI Exceedance Current (2011-2022)
18%

Cumulative %GMI Exceedance Current (Recent 5 Years)
43%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Unnamed Tributary (MA81-58) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at 1 station in 2018-2022. MA DCR (DCRWS) staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) a quarter of the way down Unnamed Tributary (MA81-58) at DCRWS_MD12 [upstream of Rt. 68, Rutland] from 2008-2010 (historic n=43-51/yr) and 2011-2022 (current n=15-51/yr). Analysis of the recent five years of the multi-year high frequency *E. coli* dataset from DCRWS_MD12 indicated 2 out of 5 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml (2018 and 2019, 23 & 16%), 4 yrs had >10% of samples exceed the 794 CFU/100ml STV (2018-2019 and 2021-2022, 10-18%), and cumulatively across years 9% of intervals had GMs >244 CFU/100ml. *E. coli* data from DCRWS_MD12 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD12	MA DCR Division of Water Supply Protection	Water Quality	UNNAMED TRIBUTARY; JORDAN FARM BROOK	UPSTREAM OF RT. 68, RUTLAND	42.386581	-71.905644

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

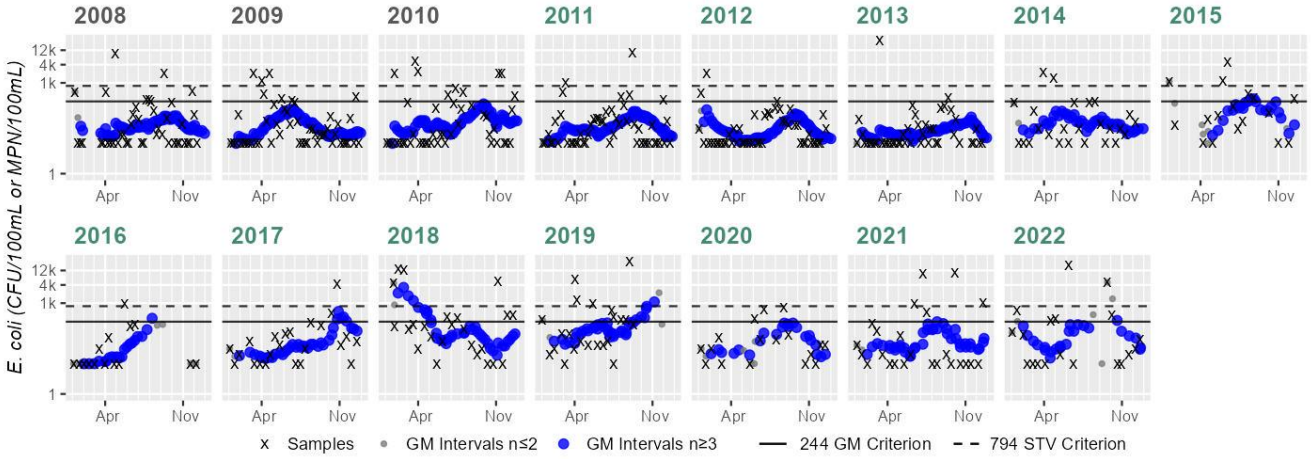
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	01/08/08	12/09/08	43	10	9210	37
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	01/06/09	12/23/09	51	10	2010	33
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	01/06/10	12/22/10	45	10	5170	48
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	01/05/11	12/20/11	51	10	9800	33
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	01/03/12	12/17/12	49	10	2000	24
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	01/07/13	12/18/13	45	10	24200	23

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	01/08/14	12/09/14	25	10	2190	45
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	01/05/15	12/15/15	17	10	4880	101
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	01/04/16	12/05/16	15	10	933	24
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	01/03/17	12/19/17	23	10	4350	44
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	01/24/18	12/17/18	24	10	13000	155
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	01/03/19	09/09/19	22	10	24200	147
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	01/09/20	12/15/20	17	10	712	44
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	01/07/21	12/20/21	24	10	9800	50
DCRWS_MD12	MA DCR Division of Water Supply Protection	E. coli	01/03/22	12/22/22	19	10	17300	69

Station DCRWS_MD12 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	43
SeasGM	37
#GMI	75
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	51
SeasGM	33
#GMI	93
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	5%

Variable*	Result
Samples	45
SeasGM	48
#GMI	82
#GMI Ex	0
%GMI Ex	0%
n>STV	5
%n>STV	11%

Variable*	Result
Samples	51
SeasGM	33
#GMI	90
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	3%

Variable*	Result
Samples	49
SeasGM	24
#GMI	86
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	45
SeasGM	23
#GMI	79
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	25
SeasGM	45
#GMI	45
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	8%

Variable*	Result
Samples	17
SeasGM	101
#GMI	24
#GMI Ex	3
%GMI Ex	12%
n>STV	3
%n>STV	17%

Variable*	Result
Samples	15
SeasGM	24
#GMI	21
#GMI Ex	1
%GMI Ex	4%
n>STV	1
%n>STV	6%

Variable*	Result
Samples	23
SeasGM	44
#GMI	41
#GMI Ex	5
%GMI Ex	12%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	24
SeasGM	155
#GMI	42
#GMI Ex	10
%GMI Ex	23%
n>STV	4
%n>STV	16%

Variable*	Result
Samples	22
SeasGM	147
#GMI	37
#GMI Ex	6
%GMI Ex	16%
n>STV	4
%n>STV	18%

Variable*	Result
Samples	17
SeasGM	44
#GMI	24
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	24
SeasGM	50
#GMI	43
#GMI Ex	0
%GMI Ex	0%
n>STV	4
%n>STV	16%

Variable*	Result
Samples	19
SeasGM	69
#GMI	27
#GMI Ex	1
%GMI Ex	3%
n>STV	2
%n>STV	10%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

Cumulative %GMI Exceedance
Current (2011-2022)
4%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
9%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Unnamed Tributary (MA81-59)

Location:	Unnamed tributary to Quinapoxet River, headwaters, southwest of Hog Hill, Sterling to mouth at confluence with the Quinapoxet River, West Boylston.
AU Type:	RIVER
AU Size:	1.6 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Unnamed Tributary (MA81-59)

Watershed Area: 1.03 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	1.03	1.03	0.56	0.56
Agriculture	1.3%	1.3%	0.8%	0.8%
Developed	8.4%	8.4%	11.1%	11.1%
Natural	76.7%	76.7%	64.4%	64.4%
Wetland	13.5%	13.5%	23.8%	23.8%
Impervious	3.9%	3.9%	5.6%	5.6%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Unnamed Tributary (MA81-59) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Unnamed Tributary (MA81-59) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Unnamed Tributary (MA81-59) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Unnamed Tributary (MA81-59) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MA DCR (DCRWS) staff collected *E. coli* bacteria samples two-thirds of the way down this Unnamed Tributary (MA81-59) at DCRWS_M107 [Laurel St., W Boylston] from Jan-Dec 2008 (n=49). Analysis of the historic single year high frequency *E. coli* dataset from DCRWS_M107 indicated 0% of intervals had GMs >244 CFU/100ml and 2% of samples exceeded the 794 CFU/100ml STV. Historic *E. coli* data from DCRWS_M107 meet 2024 CALM guidance. However, since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_M107	MA DCR Division of Water Supply Protection	Water Quality	UNT to Quinapoxet River (1)	Laurel St., West Boylston	42.391849	-71.807959

Bacteria Data

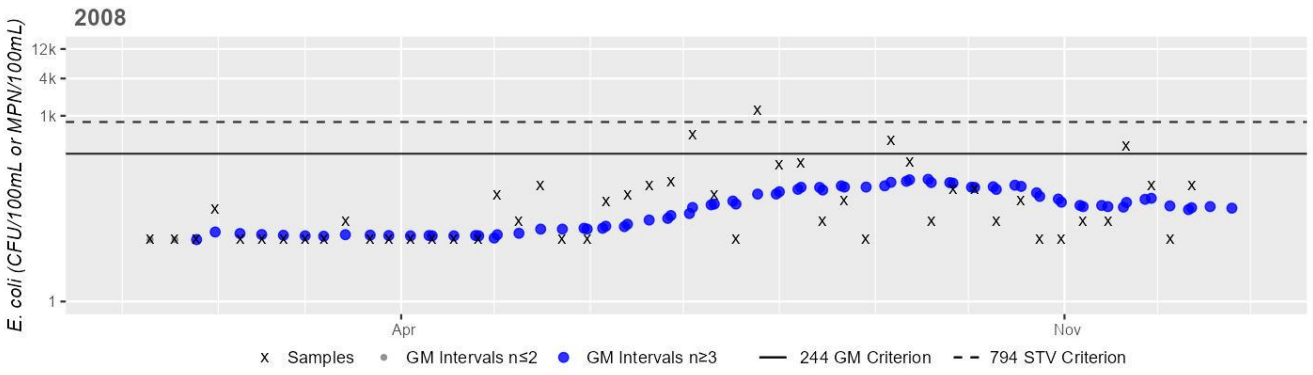
Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

[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
DCRWS_M107	MA DCR Division of Water Supply Protection	E. coli	01/10/08	12/11/08	49	10	1240	29

Station DCRWS_M107 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	49
SeasGM	29
#GMI	85
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Unnamed Tributary (MA81-83)

Location:	Unnamed tributary to Pearl Hill Brook, headwaters north of Sauna Row Road, Townsend to mouth at confluence with Pearl Hill Brook, Townsend.
AU Type:	RIVER
AU Size:	0.8 MILES
Classification/Qualifier:	B

No usable data were available for Unnamed Tributary (MA81-83) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Unnamed Tributary (MA81-85)

Location:	Unnamed tributary to unnamed tributary to Slate Rock Pond, headwaters north of State Road, Lancaster to mouth at confluence with unnamed tributary west of Old Shirley Road, Lancaster.
AU Type:	RIVER
AU Size:	1.3 MILES
Classification/Qualifier:	B

No usable data were available for Unnamed Tributary (MA81-85) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Unnamed Tributary (MA81-86)

Location:	Headwaters outlet small unnamed pond northeast of Main Street, Bolton to mouth at confluence with Still River, Lancaster.
AU Type:	RIVER
AU Size:	2.6 MILES
Classification/Qualifier:	B

No usable data were available for Unnamed Tributary (MA81-86) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Unnamed Tributary (MA81-88)

Location:	Unnamed tributary to Lynde Basins, headwaters outlet Fitch Basin to mouth at inlet Lynde Basins, Sterling.
AU Type:	RIVER
AU Size:	0.4 MILES
Classification/Qualifier:	B

No usable data were available for Unnamed Tributary (MA81-88) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Unnamed Tributary (MA81-89)

Location:	Unnamed tributary to Lovell Reservoir, headwaters, perennial portion south of Billings Road, Fitchburg to mouth at inlet Lovell Reservoir (a Falulah Brook impoundment), Fitchburg.
AU Type:	RIVER
AU Size:	0.7 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for Unnamed Tributary (MA81-89) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Unnamed Tributary (MA81-91)

Location:	Unnamed tributary to Whitman River, headwaters south of Batherick Road, Westminster to mouth at confluence with Whitman River, Westminster.
AU Type:	RIVER
AU Size:	0.8 MILES
Classification/Qualifier:	B

No usable data were available for Unnamed Tributary (MA81-91) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Unnamed Tributary (MA81-92)

Location:	Unnamed tributary to Whitman River, headwaters west of railroad tracks downstream from Crocker Pond, Westminster to mouth at confluence with Whitman River, Westminster.
AU Type:	RIVER
AU Size:	0.2 MILES
Classification/Qualifier:	B

No usable data were available for Unnamed Tributary (MA81-92) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Unnamed Tributary (MA81-93)

Location:	Unnamed tributary to Eagle Lake, headwaters outlet Kendall Reservoir, Holden to mouth at inlet Eagle Lake, Holden.
AU Type:	RIVER
AU Size:	0.3 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for Unnamed Tributary (MA81-93) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Unnamed Tributary (MA81-95)

Location:	Unnamed tributary to Pine Hill Reservoir, headwaters east of Maple Avenue (Route 56), Rutland to mouth at confluence with Pine Hill Reservoir, Rutland.
AU Type:	RIVER
AU Size:	0.8 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for Unnamed Tributary (MA81-95) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

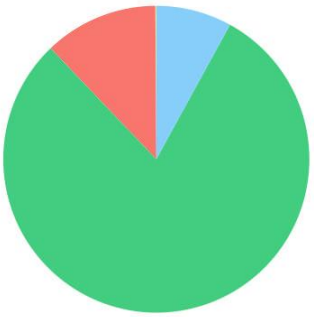
AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Unnamed Tributary (MA81-97)

Location:	Unnamed tributary to Phillips Brook, headwaters east of Cowees Hill, Westminster to mouth at confluence with Phillips Brook, Westminster.
AU Type:	RIVER
AU Size:	1.6 MILES
Classification/Qualifier:	B

Unnamed Tributary (MA81-97)

Watershed Area: 0.81 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	0.81	0.81	0.20	0.20
Agriculture	0.1%	0.1%	0%	0%
Developed	12%	12%	5.9%	5.9%
Natural	79.9%	79.9%	73%	73%
Wetland	8%	8%	21.1%	21.1%
Impervious	2.2%	2.2%	2.6%	2.6%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Unnamed Tributary (MA81-97) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Unnamed Tributary (MA81-97) is assessed as Fully Supporting. MassDEP staff recorded aesthetics observations in 2011 as part of the MAP2 wadeable streams monitoring project, at one station at the downstream end of this Unnamed Tributary AU to Phillips Brook, Potato Hill Road, Westminster (W2209, n=6). No persistent objectionable conditions (i.e., odors, deposits, growths, or turbidity) were observed during any of the surveys.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2209	MassDEP	Water Quality	Unnamed Tributary	[unnamed tributary to Phillips Brook, Potato Hill Road, Westminster]	42.590409	-71.863344

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2209	2011	6	Aesthetic observations were made by MassDEP field sampling crews at Station W2209 on Unnamed Tributary (MA81-97) during 6 site visits between May 2011 and Sep 2011. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2209	2011	6	6	0

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2209	Unnamed Tributary	2011	Aquatic Plant Density, Overall	None	6	6
W2209	Unnamed Tributary	2011	Color	Light Yellow/Tan	5	6
W2209	Unnamed Tributary	2011	Color	NR	1	6
W2209	Unnamed Tributary	2011	Objectionable Deposits	No	5	6
W2209	Unnamed Tributary	2011	Objectionable Deposits	Yes	1	6
W2209	Unnamed Tributary	2011	Odor	None	6	6
W2209	Unnamed Tributary	2011	Periphyton Density, Filamentous	None	6	6
W2209	Unnamed Tributary	2011	Periphyton Density, Film	None	5	6
W2209	Unnamed Tributary	2011	Periphyton Density, Film	Sparse	1	6
W2209	Unnamed Tributary	2011	Scum	No	4	6
W2209	Unnamed Tributary	2011	Scum	Yes	2	6
W2209	Unnamed Tributary	2011	Turbidity	None	6	6

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Unnamed Tributary (MA81-97) is assessed as Fully Supporting. MassDEP staff collected *E. coli* bacteria samples at the downstream end of this Unnamed Tributary at W2209 [unnamed tributary to Phillips Brook, Potato Hill Rd, Westminster] from May-Sep 2011 (n=6). Analysis of the single year limited frequency *E. coli* dataset from W2209 indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 21 CFU/100ml. *E. coli* data from W2209 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2209	MassDEP	Water Quality	Unnamed Tributary	[unnamed tributary to Phillips Brook, Potato Hill Road, Westminster]	42.590409	-71.863344

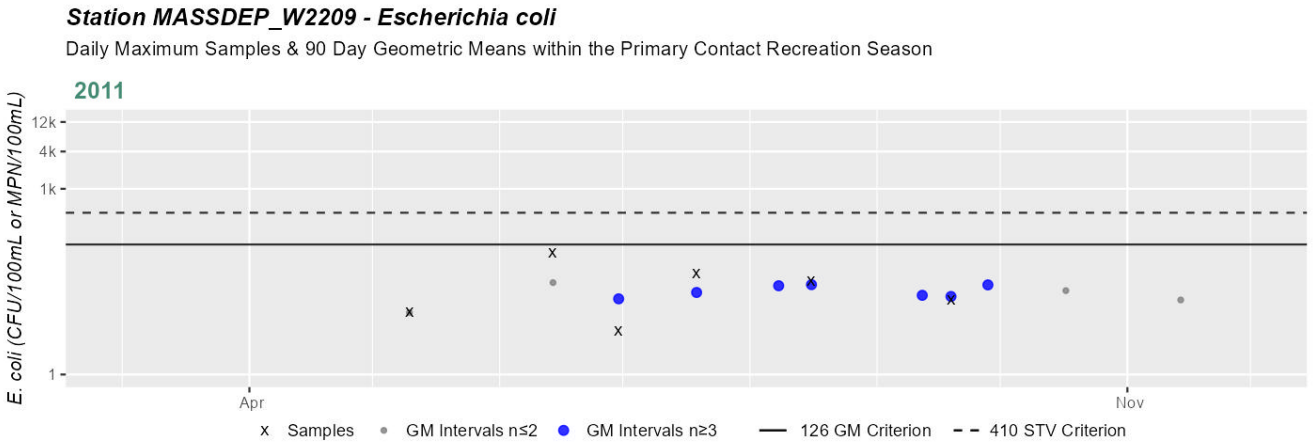
Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (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
W2209	MassDEP	E. coli	05/10/11	09/19/11	6	5	93	21



Variable*	Result
Samples	6
SeasGM	21
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Unnamed Tributary (MA81-97) is assessed as Fully Supporting. MassDEP staff collected *E. coli* bacteria samples at the downstream end Unnamed Tributary (MA81-97) at W2209 [unnamed tributary to Phillips Brook, Potato Hill Rd, Westminster] from May-Sep 2011 (n=6). Analysis of the single year limited frequency *E. coli* dataset from W2209 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 21 CFU/100ml. *E. coli* data from W2209 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2209	MassDEP	Water Quality	Unnamed Tributary	[unnamed tributary to Phillips Brook, Potato Hill Road, Westminster]	42.590409	-71.863344

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

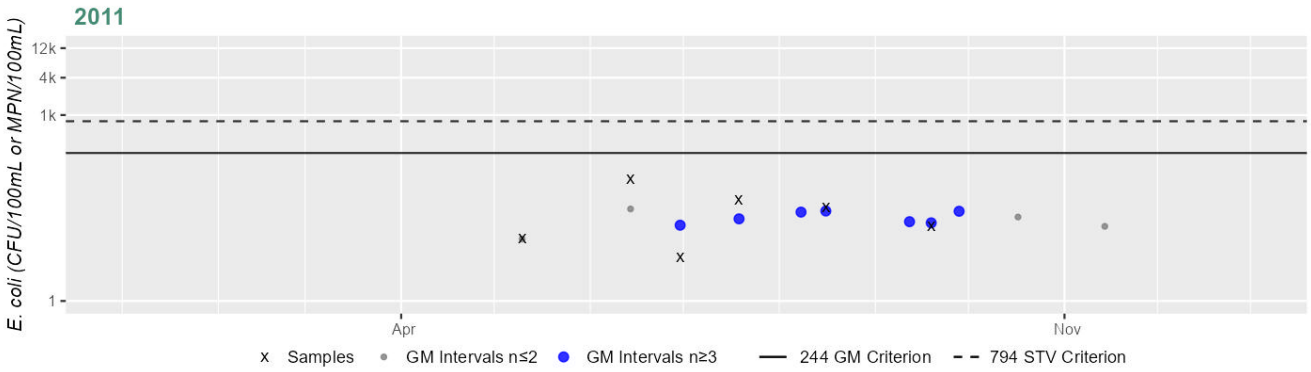
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W2209	MassDEP	E. coli	05/10/11	09/19/11	6	5	93	21

Station MASSDEP_W2209 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	21
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance

Current (2011-2022)

0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Unnamed Tributary (MA81-98)

Location:	Unnamed tributary to the North Nashua River, headwaters east of Westminster Hill Road, Fitchburg to mouth at confluence with the North Nashua River, Fitchburg (approximately 900 feet culverted between Overland and Westminster streets).
AU Type:	RIVER
AU Size:	0.9 MILES
Classification/Qualifier:	B

No usable data were available for Unnamed Tributary (MA81-98) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

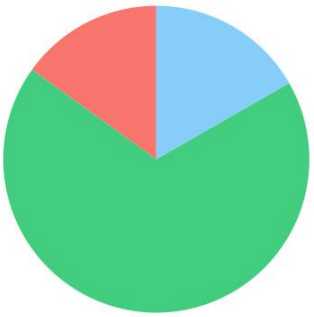
AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Unnamed Tributary (Boylston Brook) (MA81-34)

Location:	Unnamed tributary locally known as "Boylston Brook." Headwaters north of French Drive, Boylston to mouth at confluence with Potash Brook, Boylston.
AU Type:	RIVER
AU Size:	0.5 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Unnamed Tributary (Boylston Brook) (MA81-34)

Watershed Area: 0.21 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	0.21	0.21	0.16	0.16
Agriculture	0%	0%	0%	0%
Developed	15.1%	15.1%	9.6%	9.6%
Natural	68.2%	68.2%	68.8%	68.8%
Wetland	16.7%	16.7%	21.6%	21.6%
Impervious	7.1%	7.1%	5.3%	5.3%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Unnamed Tributary (Boylston Brook) (MA81-34) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Unnamed Tributary (Boylston Brook) (MA81-34) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Unnamed Tributary (Boylston Brook) (MA81-34) is assessed as Fully Supporting. MA DCR (DCRWS) staff collected *E. coli* bacteria samples three-quarters of the way down Unnamed Tributary (Boylston Brook) at DCRWS_MD70 [downstream of Rt. 70, Boylston] from 2011-2022 (n=4-28/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from DCRWS_MD70 indicated 1 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2022, 41%), 2 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2021 and 2022, n=3 & 3), and cumulatively across years 14% of intervals had GMs >126 CFU/100ml. *E. coli* data from DCRWS_MD70 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD70	MA DCR Division of Water Supply Protection	Water Quality	UNNAMED TRIBUTARY; BOYLSTON BROOK	DOWNSTREAM OF RT. 70, BOYLSTON	42.357479	-71.732583

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 2)

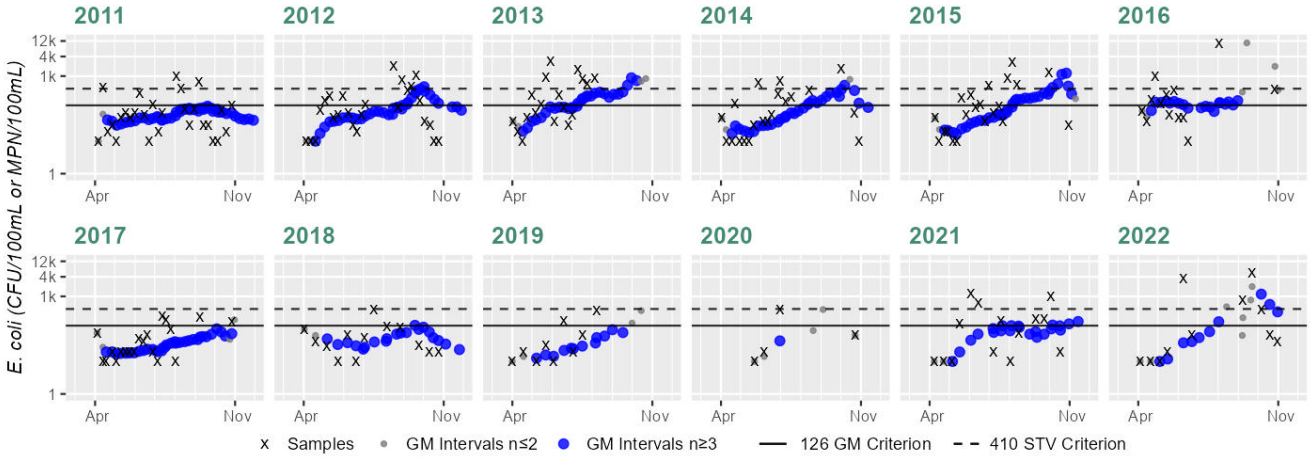
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	04/06/11	11/22/11	28	10	1010	58

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	04/04/12	12/05/12	25	10	2005	82
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	04/02/13	08/05/13	18	10	2850	158
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	04/02/14	11/12/14	20	10	1720	68
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	04/09/15	11/04/15	21	10	2610	96
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	04/06/16	10/26/16	13	10	10500	163
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	04/04/17	10/27/17	20	10	246	35
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	04/02/18	10/24/18	13	10	399	44
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	04/01/19	08/08/19	9	10	364	33
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	05/21/20	10/22/20	4	10	393	47
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	04/08/21	10/18/21	14	10	1250	76
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	04/04/22	10/31/22	11	10	5170	106

Station DCRWS_MD70 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	28
SeasGM	58
#GMI	51
#GMI Ex	0
%GMI Ex	0%
n>STV	4
%n>STV	14%

Variable*	Result
Samples	25
SeasGM	82
#GMI	42
#GMI Ex	11
%GMI Ex	26%
n>STV	4
%n>STV	16%

Variable*	Result
Samples	18
SeasGM	158
#GMI	30
#GMI Ex	16
%GMI Ex	53%
n>STV	6
%n>STV	33%

Variable*	Result
Samples	20
SeasGM	68
#GMI	32
#GMI Ex	13
%GMI Ex	40%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	21
SeasGM	96
#GMI	36
#GMI Ex	17
%GMI Ex	47%
n>STV	5
%n>STV	23%

Variable*	Result
Samples	13
SeasGM	163
#GMI	19
#GMI Ex	13
%GMI Ex	68%
n>STV	2
%n>STV	15%

Variable*	Result
Samples	20
SeasGM	35
#GMI	33
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	13
SeasGM	44
#GMI	20
#GMI Ex	1
%GMI Ex	5%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	9
SeasGM	33
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	47
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	14
SeasGM	76
#GMI	23
#GMI Ex	4
%GMI Ex	17%
n>STV	3
%n>STV	21%

Variable*	Result
Samples	11
SeasGM	106
#GMI	12
#GMI Ex	5
%GMI Ex	41%
n>STV	3
%n>STV	27%

Cumulative %GMI Exceedance Current (2011-2022)
25%

Cumulative %GMI Exceedance Current (Recent 5 Years)
14%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Unnamed Tributary (Boylston Brook) (MA81-34) is assessed as Fully Supporting. MA DCR (DCRWS) staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) three-quarters of the way down Unnamed Tributary (Boylston Brook) at DCRWS_MD70 [downstream of Rt. 70, Boylston] from 2008-2010 (historic n=39-51/yr) and 2011-2022 (current n=13-48/yr). Analysis of the recent five years of this multi-year high frequency *E. coli* dataset from DCRWS_MD70 indicated 1 out of 5 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml (2022, 10%), 1 yr had >10% of samples exceed the 794 CFU/100ml STV (2022, 10%), and cumulatively across years 2% of intervals had GMs >244 CFU/100ml. *E. coli* data from DCRWS_MD70 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD70	MA DCR Division of Water Supply Protection	Water Quality	UNNAMED TRIBUTARY; BOYLSTON BROOK	DOWNSTREAM OF RT. 70, BOYLSTON	42.357479	-71.732583

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

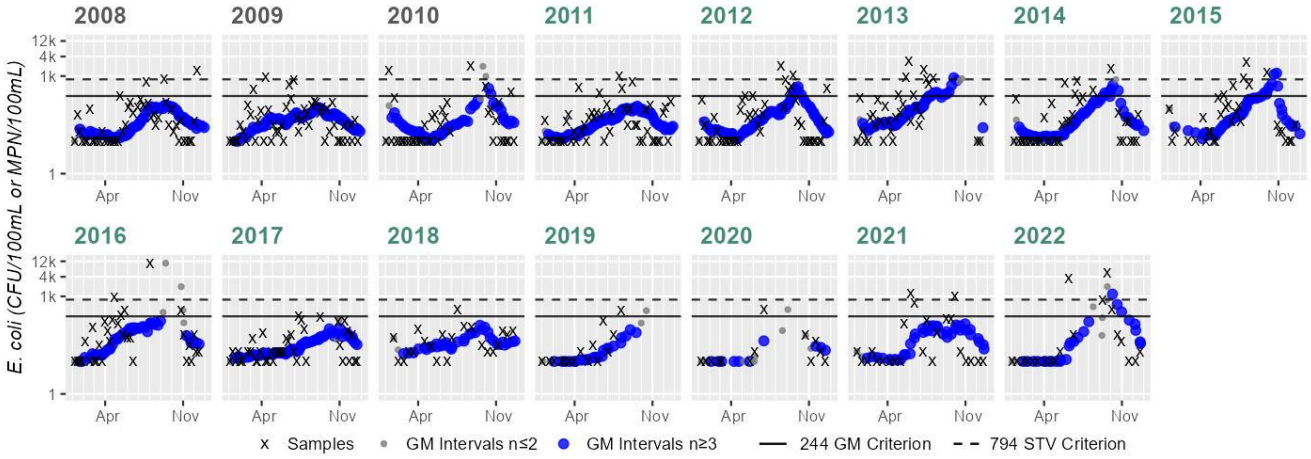
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	01/07/08	12/08/08	47	10	1450	35
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	01/05/09	12/22/09	51	10	945	39
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	01/04/10	12/20/10	39	10	2000	29
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	01/03/11	12/22/11	48	10	1010	36
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	01/04/12	12/19/12	46	10	2005	40
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	01/08/13	12/19/13	33	10	2850	77

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	01/09/14	12/17/14	39	10	1720	32
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	01/06/15	12/17/15	32	10	2610	52
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	01/07/16	12/14/16	32	10	10500	48
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	01/05/17	12/19/17	40	10	246	26
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	01/24/18	12/17/18	22	10	399	38
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	01/03/19	08/08/19	15	10	364	20
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	01/09/20	12/15/20	13	10	393	18
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	01/07/21	12/20/21	24	10	1250	34
DCRWS_MD70	MA DCR Division of Water Supply Protection	E. coli	01/03/22	12/22/22	20	10	5170	37

Station DCRWS_MD70 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	47
SeasGM	35
#GMI	84
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	51
SeasGM	39
#GMI	91
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	1%

Variable*	Result
Samples	39
SeasGM	29
#GMI	67
#GMI Ex	2
%GMI Ex	2%
n>STV	2
%n>STV	5%

Variable*	Result
Samples	48
SeasGM	36
#GMI	88
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	46
SeasGM	40
#GMI	80
#GMI Ex	6
%GMI Ex	7%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	33
SeasGM	77
#GMI	52
#GMI Ex	10
%GMI Ex	19%
n>STV	5
%n>STV	15%

Variable*	Result
Samples	39
SeasGM	32
#GMI	63
#GMI Ex	5
%GMI Ex	7%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	32
SeasGM	52
#GMI	56
#GMI Ex	8
%GMI Ex	14%
n>STV	3
%n>STV	9%

Variable*	Result
Samples	32
SeasGM	48
#GMI	48
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	6%

Variable*	Result
Samples	40
SeasGM	26
#GMI	70
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	22
SeasGM	38
#GMI	38
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	15
SeasGM	20
#GMI	24
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	13
SeasGM	18
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	24
SeasGM	34
#GMI	43
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	8%

Variable*	Result
Samples	20
SeasGM	37
#GMI	29
#GMI Ex	3
%GMI Ex	10%
n>STV	2
%n>STV	10%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

Cumulative %GMI Exceedance
Current (2011-2022)
5%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
2%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Unnamed Tributary (Burnt Mill Pond Brook) (MA81-65)

Location:	Unnamed tributary to Snows Millpond locally known as "Burnt Mill Pond Brook", headwaters outlet Round Meadow Pond, Westminster to mouth at inlet Snows Millpond, Fitchburg/Westminster.
AU Type:	RIVER
AU Size:	2 MILES
Classification/Qualifier:	B: CWF

No usable data were available for Unnamed Tributary (Burnt Mill Pond Brook) (MA81-65) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Upper Crow Hill Pond (MA81169)

Location:	Westminster.
AU Type:	FRESHWATER LAKE
AU Size:	5 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Recommendations

2024/26 Recommendations
2024 IR [HARMFUL ALGAL BLOOMS, MEDIUM] Follow-up monitoring should be conducted in Upper Crow Hill Pond (MA81169) to determine if Harmful Algal Blooms may be impairing the Recreational and Aesthetic uses. Monitoring should include observational data and collection of cyanobacteria cell count data, as well as continued reporting of algal blooms to MDPH. This is of medium priority; 2024 IR [ENTEROCOCCUS, MEDIUM] Follow-up monitoring is recommended in Upper Crow Hill Pond (MA81169) at Crow Hill Pond [Beach ID: 5033] due to the Beach being posted for >10% of the swimming season in 2020. This is of medium priority.

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Upper Crow Hill Pond (MA81169) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary
Too limited data are available to assess the Aesthetics Use for Upper Crow Hill Pond (MA81169), so it is assessed as having Insufficient Information. However, an Alert is being identified for Harmful Algal Blooms in this waterbody since C-HAB postings (blooms of >15 days in duration) were reported to MDPH for 2020. During the period 2015 through 2022, C-HAB postings for Upper Crow Hill Pond (MDPH name Crow Hill Pond) were reported to MDPH by DCR for 19 days in 2020 and no blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, an Alert is being identified for Harmful Algal Blooms and a recommendation for follow-up sampling will be made.

Algal Bloom Information

Cyanobacteria Harmful Algal Bloom (C-HAB) Summary Statements for 2015-2022 MDPH Data (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

C-HAB Summary Statement
During the period 2015 through 2022, C-HAB postings for Upper Crow Hill Pond (MDPH name Crow Hill Pond) (MA81169) were reported to MDPH by DCR for 19 days in 2020. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, an Alert is being identified for C-HABs in this waterbody and a recommendation for follow-up sampling will be made.

Cyanobacteria Harmful Algal Bloom (C-HAB) Data (2015-2022) Provided by MDPH (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

[* indicates a C-HAB posting of unknown duration]

DEP Waterbody (DPH Waterbody)	DPH Town	Posting Days 2015	Posting Days 2016	Posting Days 2017	Posting Days 2018	Posting Days 2019	Posting Days 2020	Posting Days 2021	Posting Days 2022
Upper Crow Hill Pond (MDPH name Crow Hill Pond)	Leominster/Princeton/Westminster						19		

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	YES

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Upper Crow Hill Pond (MA81169) continues to be assessed as Fully Supporting. An Alert is being identified for Harmful Algal Blooms and Enterococcus, additional sampling is recommended for this AU. Upper Crow Hill Pond has a beach with DPH Beach Closure data: Crow Hill Pond (DCR) [Beach ID: 5033] beach in Westminster. The beach was rarely, if at all, posted for swimming from 2018-2022. However, an Alert for *Enterococcus* is being identified since Crow Hill Pond Beach (DCR) was posted for >10% of the swimming season in 2020 (48%). During the period 2015 through 2022, C-HAB postings for Upper Crow Hill Pond (MDPH name Crow Hill Pond) were reported to MDPH by DCR for 19 days in 2020. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, a Harmful Algal Blooms Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made.

Beach Postings

MDPH Beach Posting Data Summary (% Bathing Season Posted 2014-2022) (Bailey, Logan Feb. 2, 2021) (Bailey Sept. 10, 2023) (MassDEP Undated 2)

Beach ID	Beach Name/ Town	Left Border (Lat., Long.)	Right Border (Lat., Long.)	2014	2015	2016	2017	2018	2019	2020	2021	2022	# years >10%
5033	Crow Hill Pond Beach (DCR)/ Westminster	42.52092, -71.85540	42.52036, -71.85510	0%	0%	2%	0%	8%	2%	48%	2%	7%	1

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	YES

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Upper Crow Hill Pond (MA81169) continues to be assessed as Fully Supporting. An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU. Upper Crow Hill Pond has a beach with DPH Beach Closure data: Crow Hill Pond (DCR) [Beach ID: 5033] beach in Westminster. The beach was rarely, if at all, posted for swimming from 2018-2022. During the period 2015 through 2022, C-HAB postings for Upper Crow Hill Pond (MDPH name Crow Hill Pond) were reported to MDPH by DCR for 19 days in 2020. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, a Harmful Algal Blooms Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made.

Vinton Pond (MA81145)

Location:	Townsend.
AU Type:	FRESHWATER LAKE
AU Size:	16 ACRES
Classification/Qualifier:	B

No usable data were available for Vinton Pond (MA81145) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Wachusett Lake (MA81146)

Location:	Westminster/Princeton.
AU Type:	FRESHWATER LAKE
AU Size:	129 ACRES
Classification/Qualifier:	A: PWS, ORW

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Mercury in Fish Tissue	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Mercury in Fish Tissue	Atmospheric Deposition (N)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for Wachusett Lake (MA81146) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. DPH included a site-specific advisory for Wachusett Lake in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Wachusett Lake (MA81146) is assessed as Fully Supporting. MassDEP staff recorded aesthetics observations as part of the MAP2 lake monitoring project in summer 2017 at two stations in Westminster, for Wachusett Lake, at the northwestern edge of lake, off of Mile Hill Road (~0.2 miles south of Rt. 140) (W2693/MAP2L-147S, n=5) and at the deep hole index station (W2692/MAP2L-147, n=3). There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, or littoral zone duckweed recorded in ten shoreline plots (n=1). During the MAP2 macrophyte mapping survey in Aug 2017 (n=1), less than 25% (1.4%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2692	MassDEP	Water Quality	Wachusett Lake	[index site, Westminster]	42.508310	-71.881184
W2693	MassDEP	Water Quality	Wachusett Lake	[northwestern edge of lake, off of Mile Hill Road (approximately 0.2 miles south of Route 140), Westminster]	42.512605	-71.885528

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2692	2017	3	Aesthetic observations were made by MassDEP field sampling crews at Station W2692 (MAP2L-147) on Wachusett Lake (MA81146) during 3 site visits between Jun 2017 and Sep 2017. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded. During the MAP2 macrophyte mapping survey (n=1) in Aug 2017, less than 25% (1.4%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%.
W2693	2017	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2693 (MAP2L-147S) on Wachusett Lake (MA81146) during 5 site visits between May 2017 and Aug 2017. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded. During the MAP2 littoral survey (n=1), duckweed was not noted in any of the 10 shoreline plots.

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2692	Wachusett Lake	2017	Aesthetics Impaired?	No	3	3
W2692	Wachusett Lake	2017	Aquatic Plant Density, Overall	None	3	3
W2692	Wachusett Lake	2017	Aquatic Plant Density, Whole Lake	Sparse	1	2
W2692	Wachusett Lake	2017	Aquatic Plant Density, Whole Lake	Unobservable	1	2
W2692	Wachusett Lake	2017	Color	Light Yellow/Tan	1	3
W2692	Wachusett Lake	2017	Color	None	2	3
W2692	Wachusett Lake	2017	Duckweed Density, Whole Lake	None	1	2
W2692	Wachusett Lake	2017	Duckweed Density, Whole Lake	Unobservable	1	2
W2692	Wachusett Lake	2017	Objectionable Deposits	No	3	3
W2692	Wachusett Lake	2017	Odor	None	3	3
W2692	Wachusett Lake	2017	Scum	No	3	3
W2692	Wachusett Lake	2017	Turbidity	None	3	3
W2693	Wachusett Lake	2017	Aesthetics Impaired?	No	5	5
W2693	Wachusett Lake	2017	Color	None	4	5
W2693	Wachusett Lake	2017	Color	NR	1	5
W2693	Wachusett Lake	2017	Objectionable Deposits	No	5	5
W2693	Wachusett Lake	2017	Odor	None	5	5
W2693	Wachusett Lake	2017	Scum	No	5	5
W2693	Wachusett Lake	2017	Turbidity	None	3	5
W2693	Wachusett Lake	2017	Turbidity	Slightly Turbid	2	5

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for Wachusett Lake (MA81146) is assessed as Fully Supporting. In Wachusett Lake MassDEP staff collected Secchi depth and cyanobacteria cell count data at W2692 [MAP2L-147, Index-deep hole] (2017) and cyanobacteria cell count and cyanotoxins data at W2693 [MAP2L-147S, Shoreline at northwestern edge of lake, off of Mile Hill Rd (~0.2 miles S of Rt. 140), Westminster] (2017). Secchi depth data indicated water clarity meeting the 1.2m (4ft) threshold at W2692 in 2017 (n=3, 4.1-5.85m). The cyanobacteria cell count did not exceed 70,000 cells/ml in any of the water samples in 2017 (n=6). Analysis of microcystins and cylindrospermopsin samples from W2693 in 2017 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L. MassDEP staff collected *E. coli* bacteria samples in Wachusett Lake at shoreline station W2693 from May-Aug 2017 (n=5). Analysis of the single year limited frequency *E. coli* dataset from W2693 indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 10 CFU/100ml. *E. coli* data from W2693 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2692	MassDEP	Water Quality	Wachusett Lake	[index site, Westminster]	42.508310	-71.881184
W2693	MassDEP	Water Quality	Wachusett Lake	[northwestern edge of lake, off of Mile Hill Road (approximately 0.2 miles south of Route 140), Westminster]	42.512605	-71.885528

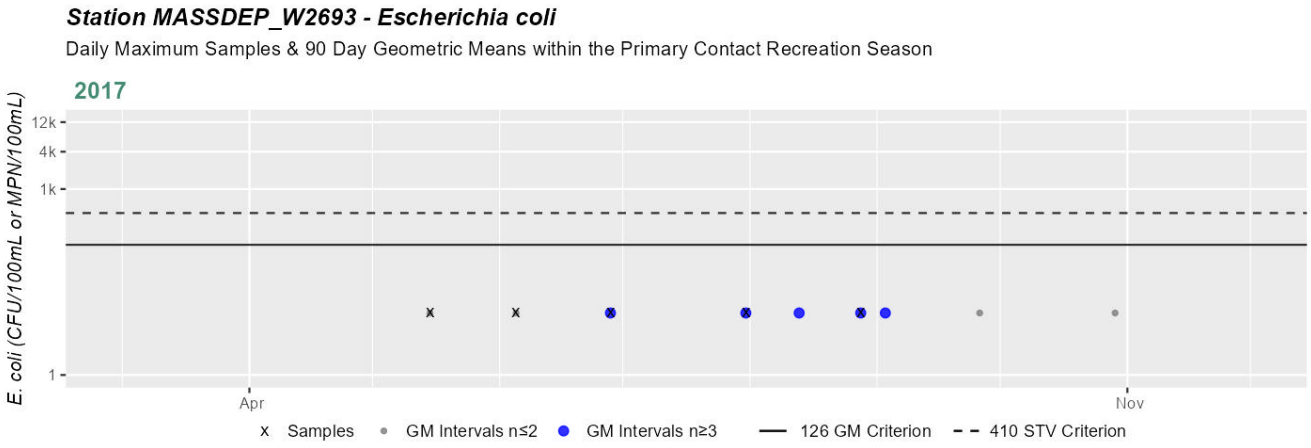
Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (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
W2693	MassDEP	E. coli	05/15/17	08/28/17	5	10	10	10



Variable*	Result
Samples	5
SeasGM	10
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Other Indicators

Summary Statement for 2011-2022 Cyanobacteria Cell Count and Cyanotoxin Data, and Secchi Depth Data (MassDEP Undated 7) (MassDEP Undated 4)

Data Year(s)	Summary
2017	In Wachusett Lake (MA81146) in 2017, MassDEP collected Secchi and cyanobacteria cell count data at W2692 [MAP2L-147, Index-deep hole], and cyanobacteria cell count and cyanotoxin data at W2693 [MAP2L-147S, Shoreline]. At station W2692 (station depth=7.7 m) the Secchi depth measurements ranged from 4.1-5.85 m (n=3) indicating water clarity meeting the 1.2 m (4 ft) threshold. The cyanobacteria cell count did not exceed 70,000 cells/mL in any of the water samples (n=6). Analysis of microcystins and cylindrospermopsin samples from the shoreline station W2693 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L.

MassDEP Cyanobacteria Cell Count Data Collected at Lakes and Impoundments (2016-2018) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Waterbody	Station Type	Data Year	Sample Count	Count >70,000 cells/mL	Exceedance Date(s)
W2692	Wachusett Lake	Index	2017	3	0	NA
W2693	Wachusett Lake	Shoreline	2017	3	0	NA

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Wachusett Lake (MA81146) is assessed as Fully Supporting. In Wachusett Lake MassDEP collected cyanobacteria cell count data at W2692 [MAP2L-147, Index-deep hole] (2017) and cyanobacteria cell count and cyanotoxins data at W2693 [MAP2L-147S, Shoreline at northwestern edge of lake, off of Mile Hill Rd (~0.2 miles S of Rt. 140), Westminster] (2017). The cyanobacteria cell count did not exceed 70,000 cells/ml in any of the water samples in 2017 (n=6). Analysis of microcystins and cylindrospermopsin samples from W2693 in 2017 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L. MassDEP staff collected *E. coli* bacteria samples in Wachusett Lake (MA81146) at shoreline station W2693 from May-Aug 2017 (n=5). Analysis of the single year limited frequency *E. coli* dataset from W2693 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 10 CFU/100ml. *E. coli* data from W2693 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2693	MassDEP	Water Quality	Wachusett Lake	[northwestern edge of lake, off of Mile Hill Road (approximately 0.2 miles south of Route 140), Westminster]	42.512605	-71.885528

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

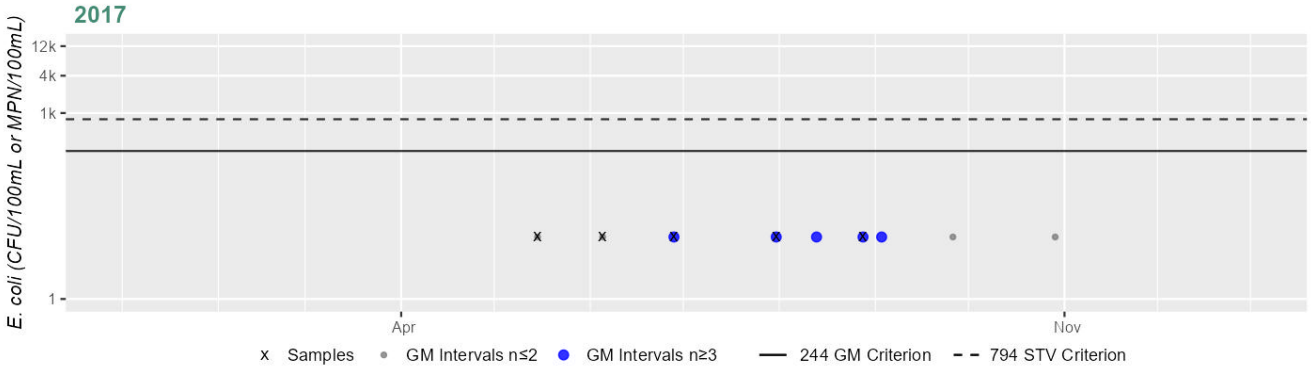
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W2693	MassDEP	E. coli	05/15/17	08/28/17	5	10	10	10

Station MASSDEP_W2693 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	10
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Wachusett Reservoir (MA81147)

Location:	Boylston/West Boylston/Clinton/Sterling.
AU Type:	FRESHWATER LAKE
AU Size:	3962 ACRES
Classification/Qualifier:	A: PWS, ORW

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	(Brittle Naiad, Najas Minor*)	--	Unchanged
4a	4a	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
4a	4a	(Fanwort*)	--	Unchanged
4a	4a	(Non-Native Aquatic Plants*)	--	Unchanged
4a	4a	Mercury in Fish Tissue	33880	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Brittle Naiad, Najas Minor*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Eurasian Water Milfoil, Myriophyllum Spicatum*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Fanwort*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for Wachusett Reservoir (MA81147) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. DPH included a site-specific advisory for Wachusett Reservoir (referred to by MDPH as ''Quabbin & Wachusett Reservoirs'' or ''Wachusett Reservoir'') in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Wachusett Reservoir (MA81147) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary
No bacteria data are available to assess the Primary Contact Recreation Use for Wachusett Reservoir (MA81147) and available other indicators for this AU did not result in any impairment, so it is assessed as having Insufficient Information. Surface water sampling was conducted in Wachusett Reservoir (MA81147) at station W3302 (PFAS Study ID 37) on 09/12/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value. In Wachusett Reservoir MA DCR Division of Water Supply Protection (DCRWS) collected Secchi depth data at DCRWS_BN3417 [42.390183, -71.70823, Basin North] (2020-2022) and DCRWS_BS3412 [42.363583, -71.747389, Basin South] (2020-2022) and DCRWS_TB3427 [42.38138, -71.78983, Thomas Basin] (2020-2022). Secchi depth data indicated water clarity meeting the 1.2m (4ft) threshold at DCRWS_BN3417 in 2020 (n=24, 5.79-10.97m), 2022 (n=24, 6.4-10.36m), and 2021 (n=28, 5.49-8.84m), DCRWS_BS3412 in 2020 (n=3, 5.64-10.36m), 2021 (n=2, 7.01-7.16m), and 2022 (n=2, 8.53-8.84m), and DCRWS_TB3427 in 2020 (n=2, 2.9-7.32m) and 2022 (n=2, 7.92-8.84m). Secchi depth data were too limited (n <3 or missing station depth) to evaluate water clarity using data from DCRWS_TB3427 in 2021 (n=1, 6.1m).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W3302	MassDEP	Water Quality	Wachusett Reservoir	[from point on western bank under electrical towers, south of Route 140 bridge, West Boylston]	42.370896	-71.779611

Other Indicators

Summary Statement(s) for MassDEP 2022 PFAS in Water Column Data (MassDEP 2023) (MassDEP Undated 4)

Summary
Surface water sampling was conducted in Wachusett Reservoir (MA81147) at station W3302 (PFAS Study ID 37) on 09/12/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value.

MassDEP 2022 PFAS in Water Column Data for Massachusetts Surface Waters (MassDEP 2023) (MassDEP Undated 4)

[HFPO-DA is also known as GenX; the ∑PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here); * indicates the ∑PFAS6 concentration was qualified since data for one or more individual PFAS6 analytes were qualified; b = blank contamination qualifier, d = qualifier indicating precision of field duplicates did not meet project data quality objectives; j = 'estimated' value qualifier; ## = censored data.]

Station Code	PFAS Study ID	Sample Date	PFOA ng/L	PFOS ng/L	PFNA ng/L	PFHxS ng/L	PFBA ng/L	PFBS ng/L	HFPO-DA ng/L	∑PFAS6 ng/L
W3302	37	09/12/2022	2.2	<0.48d	<0.48	0.58j	<1.9	0.86j	<1.9	5.6*

Summary Statement for 2011-2022 Cyanobacteria Cell Count and Cyanotoxin Data, and Secchi Depth Data (MassDEP Undated 2)

Data Year(s)	Summary
2020-2022	In Wachusett Reservoir (MA81147), MA DCR Division of Water Supply Protection (DCRWS) collected Secchi data at DCRWS_BN3417 [42.390183, -71.70823, Basin North] (2020-2022) and DCRWS_BS3412 [42.363583, -71.747389, Basin South] (2020-2022) and DCRWS_TB3427 [42.38138, -71.78983, Thomas Basin] (2020-2022). At station DCRWS_BN3417 (station depth=30 m) the Secchi depth measurements ranged from 5.79-10.97 m (n=24) in 2020, 5.49-8.84 m (n=28) in 2021, and 6.4-10.36 m (n=24) in 2022. At station DCRWS_ BS3412 (station depth=27 m) the Secchi depth measurements ranged from 5.64-10.36 m (n=3) in 2020, 7.01-7.16 m (n=2) in 2021, and 8.53-8.84 m (n=2) in 2022. At station DCRWS_TB3427 (station depth=10 m) the Secchi depth measurements ranged from 2.9-7.32 m (n=2) in 2020, 6.1 m (n=1) in 2021, and 7.92-8.84 m (n=2) in 2022. All Secchi depth measurements from all stations indicate water clarity meeting the 1.2 m (4 ft) threshold.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Wachusett Reservoir (MA81147) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.

Warren Tannery Brook (MA81-53)

Location:	Headwaters, perennial portion, north of Route 122A, Holden to mouth at confluence with Asnebumskit Brook, Holden.
AU Type:	RIVER
AU Size:	1.4 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Warren Tannery Brook (MA81-53)

Watershed Area: 1.35 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	1.35	1.35	0.65	0.65
Agriculture	4.4%	4.4%	1.7%	1.7%
Developed	29.6%	29.6%	24.8%	24.8%
Natural	54%	54%	50.2%	50.2%
Wetland	11.9%	11.9%	23.3%	23.3%
Impervious	13.7%	13.7%	12%	12%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	2	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Warren Tannery Brook (MA81-53) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Warren Tannery Brook (MA81-53) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Warren Tannery Brook (MA81-53) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Warren Tannery Brook (MA81-53) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MA DCR (DCRWS) staff collected *E. coli* bacteria samples three-quarters of the way down Warren Tannery Brook at DCRWS_M111 [Quinapoxet St., Holden] from Jan-Dec 2008 (n=49). Analysis of the historic single year high frequency *E. coli* dataset from DCRWS_M111 indicated 0% of intervals had GMs >244 CFU/100ml and 0% of samples exceeded the 794 CFU/100ml STV. Historic *E. coli* data from DCRWS_M111 meet 2024 CALM guidance. However, since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_M111	MA DCR Division of Water Supply Protection	Water Quality	WARREN TANNERY BROOK	Quinapoxet St., Holden	42.365994	-71.871718

Bacteria Data

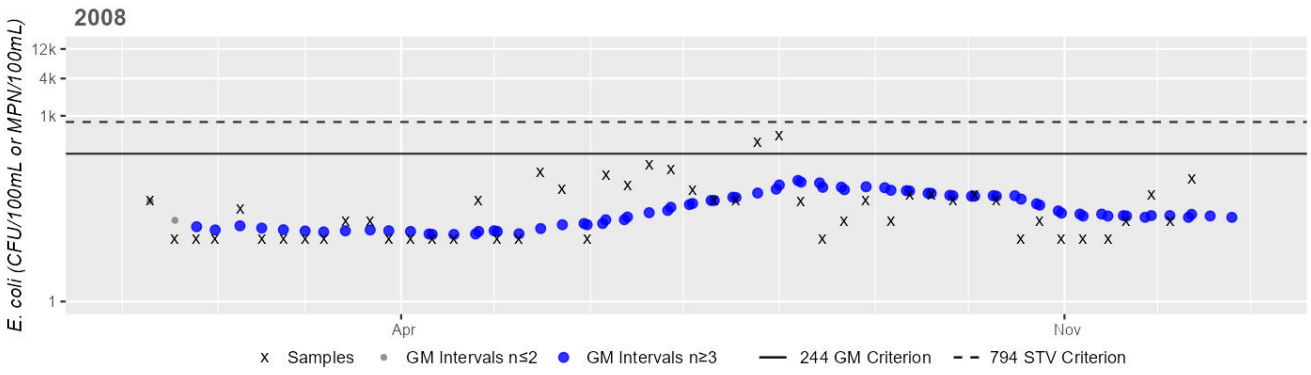
Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

[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
DCRWS_M111	MA DCR Division of Water Supply Protection	E. coli	01/10/08	12/11/08	49	10	478	27

Station DCRWS_M111 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	49
SeasGM	27
#GMI	85
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

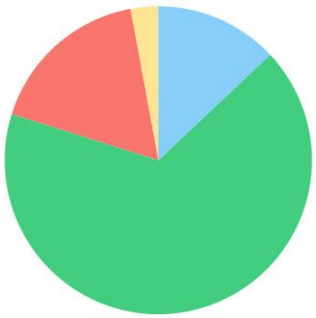
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Washacum Brook (MA81-47)

Location:	Headwaters, outlet West Waushacum Pond, Sterling to mouth at inlet Wachusett Reservoir (Stillwater Basin), West Boylston.
AU Type:	RIVER
AU Size:	1.8 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Washacum Brook (MA81-47)

Watershed Area: 7.61 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	7.61	6.59	4.83	4.26
Agriculture	2.9%	2.6%	2.7%	2.5%
Developed	17.3%	17.5%	13.7%	14%
Natural	66.8%	66.1%	64.5%	63.8%
Wetland	13%	13.8%	19.1%	19.7%
Impervious	6.9%	7%	5.8%	5.9%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Dissolved Oxygen	--	Unchanged
5	5	Escherichia Coli (E. Coli)	--	Added

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Dissolved Oxygen	Source Unknown (N)	X	--	--	--	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Washacum Brook (MA81-47) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Washacum Brook (MA81-47) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Washacum Brook (MA81-47) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at 1 station in 2018-2022. MA DCR (DCRWS) staff collected *E. coli* bacteria samples close to the downstream end of Washacum Brook at DCRWS_MD83 [downstream of Prescott St, W Boylston] from 2011-2022 (n=11-31/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from DCRWS_MD83 indicated 4 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2018 and 2020-2022, 36-47%), 2 yrs had ≥2 samples exceed the 410 CFU/100ml STV (2021 and 2022, n=3 & 2), and cumulatively across years 34% of intervals had GMs >126 CFU/100ml. *E. coli* data from DCRWS_MD83 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD83	MA DCR Division of Water Supply Protection	Water Quality	WAUSHACUM BROOK	DOWNSTREAM OF PRESCOTT ST, WEST BOYLSTON	42.397083	-71.779342

Bacteria Data

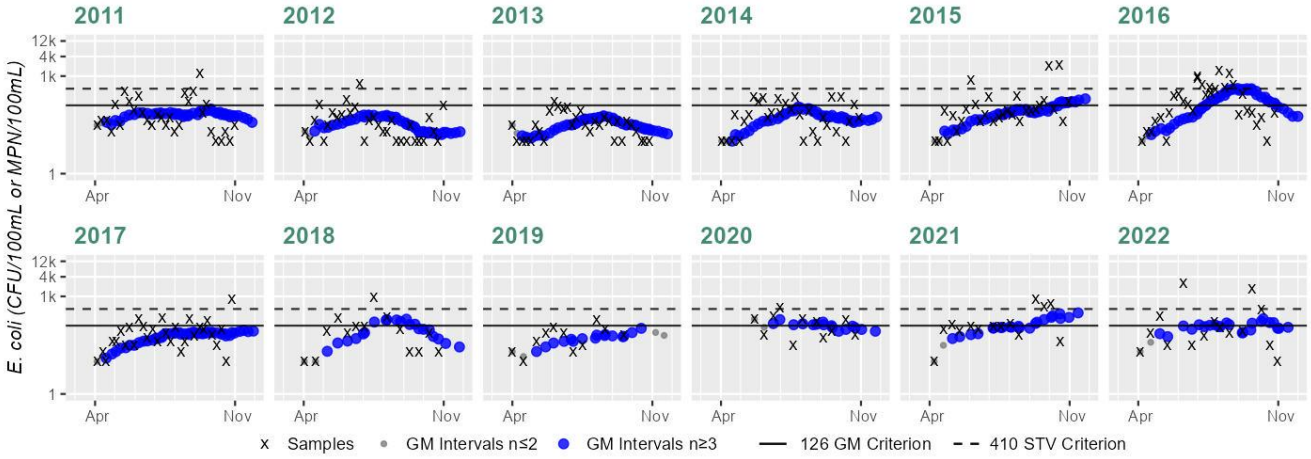
Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 2)

[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
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	04/04/11	11/14/11	31	10	1240	58
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	04/02/12	12/03/12	31	10	583	31
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	04/01/13	10/28/13	31	10	160	28
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	04/02/14	12/17/14	31	10	231	51
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	04/09/15	11/04/15	30	10	2190	85
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	04/06/16	11/30/16	31	10	1500	128
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	04/04/17	12/19/17	30	10	820	60
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	04/02/18	10/24/18	14	10	932	65
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	04/01/19	09/18/19	11	10	187	48
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	05/21/20	12/15/20	11	31	455	119
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	04/08/21	10/18/21	14	10	798	122
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	04/04/22	10/31/22	15	10	2490	101

Station DCRWS_MD83 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	31
SeasGM	58
#GMI	54
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	31
SeasGM	31
#GMI	53
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	31
SeasGM	28
#GMI	53
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	31
SeasGM	51
#GMI	51
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	30
SeasGM	85
#GMI	53
#GMI Ex	15
%GMI Ex	28%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	31
SeasGM	128
#GMI	54
#GMI Ex	30
%GMI Ex	55%
n>STV	8
%n>STV	25%

Variable*	Result
Samples	30
SeasGM	60
#GMI	52
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	14
SeasGM	65
#GMI	22
#GMI Ex	8
%GMI Ex	36%
n>STV	1
%n>STV	7%

Variable*	Result
Samples	11
SeasGM	48
#GMI	16
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	119
#GMI	17
#GMI Ex	8
%GMI Ex	47%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	14
SeasGM	122
#GMI	23
#GMI Ex	10
%GMI Ex	43%
n>STV	3
%n>STV	21%

Variable*	Result
Samples	15
SeasGM	101
#GMI	25
#GMI Ex	10
%GMI Ex	40%
n>STV	2
%n>STV	13%

Cumulative %GMI Exceedance Current (2011-2022)
17%

Cumulative %GMI Exceedance Current (Recent 5 Years)
34%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Washacum Brook (MA81-47) is assessed as Fully Supporting. MA DCR (DCRWS) staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in Washacum Brook from 2008-2022 at 3 stations. Samples were collected from the following stations/sample years from upstream to downstream: the upstream end of the AU at DCRWS_MD85 [W Waushacum Pond outlet, Gates Rd, Sterling] from Jan-Dec 2008 (n=49), halfway down the AU at DCRWS_MD84 [Fairbanks St., Sterling] from Jan-Dec 2008 (n=49), and close to the downstream end at DCRWS_MD83 [downstream of Prescott St, W Boylston] from 2008-2010 (historic n=49-51/yr) and 2011-2022 (current n=17-51/yr). Analysis of the recent five years of this multi-year high frequency *E. coli* dataset from DCRWS_MD83 indicated 0 out of 5 sufficient data yrs had intervals where >10% of the GMs were >244 CFU/100ml, 0 yrs had >10% of samples exceed the 794 CFU/100ml STV, and cumulatively across years 1% of intervals had GMs >244 CFU/100ml. *E. coli* data from DCRWS_MD83 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_MD83	MA DCR Division of Water Supply Protection	Water Quality	WAUSHACUM BROOK	DOWNSTREAM OF PRESCOTT ST, WEST BOYLSTON	42.397083	-71.779342
DCRWS_MD84	MA DCR Division of Water Supply Protection	Water Quality	WAUSHACUM BROOK	Fairbanks St., Sterling	42.400481	-71.769632
DCRWS_MD85	MA DCR Division of Water Supply Protection	Water Quality	WAUSHACUM BROOK	West Waushacum Pond outlet, Gates Rd, Sterling	42.409859	-71.764770

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

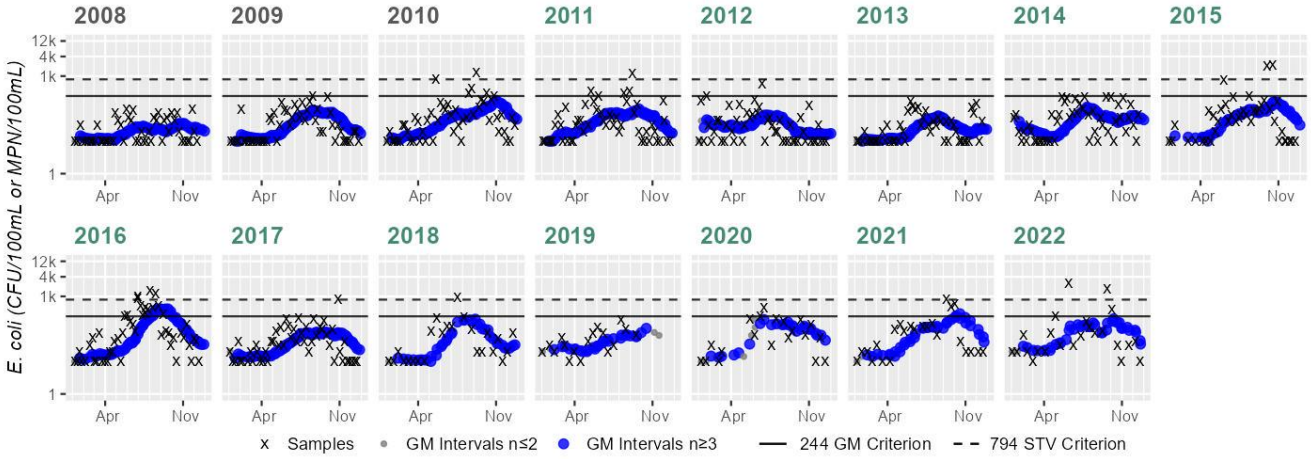
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	01/08/08	12/09/08	49	10	99	19

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	01/06/09	12/23/09	50	10	238	28
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	01/06/10	12/22/10	51	10	1300	44
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	01/05/11	12/20/11	51	10	1240	36
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	01/03/12	12/17/12	51	10	583	27
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	01/07/13	12/18/13	50	10	160	23
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	01/09/14	12/17/14	50	10	231	39
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	01/06/15	12/17/15	42	10	2190	48
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	01/07/16	12/14/16	50	10	1500	64
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	01/05/17	12/19/17	50	10	820	33
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	01/10/18	12/17/18	24	10	932	36
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	01/03/19	09/18/19	17	10	187	37
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	01/09/20	12/15/20	20	10	455	53
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	01/07/21	12/20/21	24	10	798	53
DCRWS_MD83	MA DCR Division of Water Supply Protection	E. coli	01/03/22	12/22/22	24	10	2490	57
DCRWS_MD84	MA DCR Division of Water Supply Protection	E. coli	01/08/08	12/09/08	49	10	676	32
DCRWS_MD85	MA DCR Division of Water Supply Protection	E. coli	01/08/08	12/09/08	49	10	1450	16

Station DCRWS_MD83 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	49
SeasGM	19
#GMI	87
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	50
SeasGM	28
#GMI	91
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	51
SeasGM	44
#GMI	92
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	3%

Variable*	Result
Samples	51
SeasGM	36
#GMI	90
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	1%

Variable*	Result
Samples	51
SeasGM	27
#GMI	89
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	50
SeasGM	23
#GMI	89
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	50
SeasGM	39
#GMI	80
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	42
SeasGM	48
#GMI	75
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	50
SeasGM	64
#GMI	83
#GMI Ex	17
%GMI Ex	20%
n>STV	4
%n>STV	8%

Variable*	Result
Samples	50
SeasGM	33
#GMI	87
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	24
SeasGM	36
#GMI	42
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	17
SeasGM	37
#GMI	28
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	53
#GMI	29
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	24
SeasGM	53
#GMI	43
#GMI Ex	2
%GMI Ex	4%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	24
SeasGM	57
#GMI	42
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	8%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

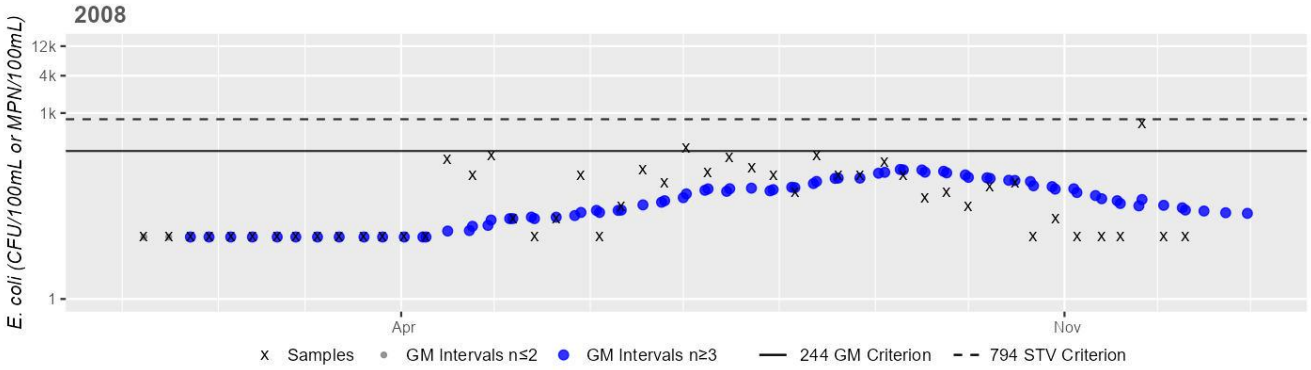
Cumulative %GMI Exceedance
Current (2011-2022)
2%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
1%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station DCRWS_MD84 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



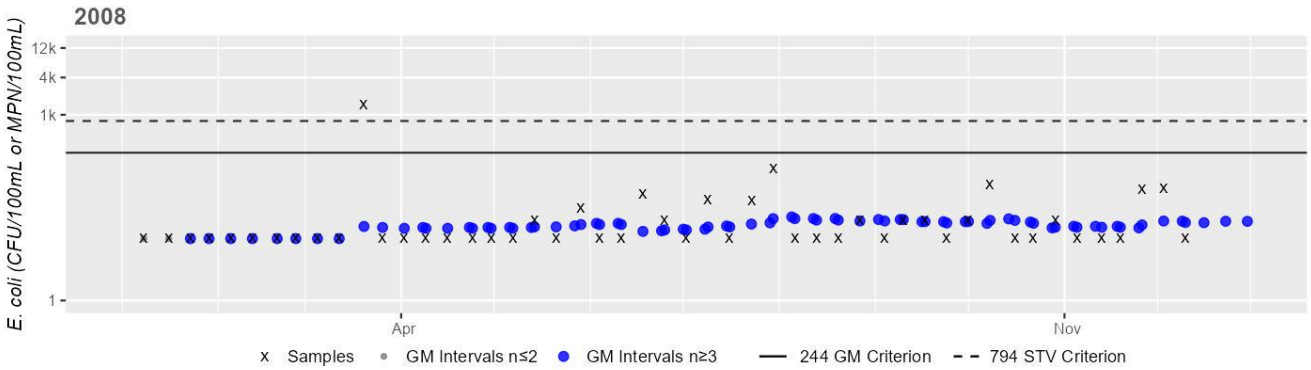
Variable*	Result
Samples	49
SeasGM	32
#GMI	87
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station DCRWS_MD85 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	49
SeasGM	16
#GMI	87
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

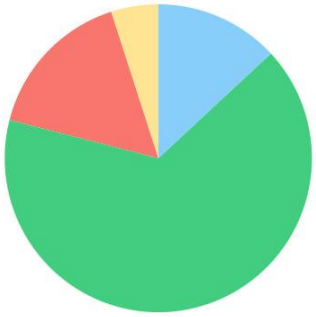
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Wekepeke Brook (MA81-72)

Location:	Headwaters, outlet Heywood Reservoir, Sterling to mouth at confluence with North Nashua River, Lancaster (through former 2014 segments: Bartlett Pond MA81008 and Unnamed Tributary MA81-61).
AU Type:	RIVER
AU Size:	5.8 MILES
Classification/Qualifier:	B

Wekepeke Brook (MA81-72)

Watershed Area: 11.68 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	11.68	6.94	4.12	2.21
Agriculture	5%	3.7%	4.4%	3%
Developed	16%	16.5%	12.6%	11.5%
Natural	65.9%	62.8%	59.9%	53.2%
Wetland	13.1%	17%	23.2%	32.2%
Impervious	6.7%	6.9%	5.4%	4.7%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
5	5	Temperature	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
Temperature	Dam or Impoundment (Y)	X	--	--	--	--
Temperature	Source Unknown (N)	X	--	--	--	--

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Wekepeke Brook (MA81-72) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Wekepeke Brook (MA81-72) continues to be assessed as Fully Supporting. MassDEP staff recorded aesthetics observations in 2011 as part of the MAP2 wadeable streams monitoring project, at one station three-quarters of the way down this Wekepeke Brook AU ~160 feet upstream of the Rt. 190 crossing in Lancaster (W2212, n=6). No persistent objectionable conditions (i.e., odors, deposits, growths, or turbidity) were observed during any of the surveys.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2212	MassDEP	Water Quality	Wekepeke Brook	[approximately 160 feet upstream of the Route 190 crossing in Lancaster]	42.476923	-71.723785

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2212	2011	6	Aesthetic observations were made by MassDEP field sampling crews at Station W2212 on Wekepeke Brook (MA81-72) during 6 site visits between May 2011 and Sep 2011. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2212	2011	6	6	1

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2212	Wekepeke Brook	2011	Aquatic Plant Density, Overall	None	6	6
W2212	Wekepeke Brook	2011	Color	Light Yellow/Tan	1	6
W2212	Wekepeke Brook	2011	Color	None	5	6
W2212	Wekepeke Brook	2011	Objectionable Deposits	No	6	6
W2212	Wekepeke Brook	2011	Odor	None	5	6
W2212	Wekepeke Brook	2011	Odor	Rotting Vegetables	1	6
W2212	Wekepeke Brook	2011	Periphyton Density, Filamentous	None	5	6
W2212	Wekepeke Brook	2011	Periphyton Density, Filamentous	Sparse	1	6
W2212	Wekepeke Brook	2011	Periphyton Density, Film	Dense	1	6
W2212	Wekepeke Brook	2011	Periphyton Density, Film	None	2	6
W2212	Wekepeke Brook	2011	Periphyton Density, Film	Sparse	3	6
W2212	Wekepeke Brook	2011	Scum	No	5	6
W2212	Wekepeke Brook	2011	Scum	Yes	1	6
W2212	Wekepeke Brook	2011	Turbidity	None	6	6

Primary Contact Recreation

2024/26 Use Attainment	Alert

Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for Wekepeke Brook (MA81-72) continues to be assessed as Not Supporting. The prior Escherichia Coli (E. Coli) impairment is being carried forward based on bacteria data not meeting the threshold at 1 station in 2018-2022. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in Wekepeke Brook from 2011-2022 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: three-quarters of the way down the AU at W2212 [~160 ft upstream of the Rt. 190 crossing in Lancaster] from May-Sep 2011 (n=6), and the downstream end of the AU at NRWA_WE0034 [D.S. Rt 117, Lancaster] from 2011-2022 (n=5-16/yr). Analysis of the single year limited frequency *E. coli* dataset from W2212 indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 85 CFU/100ml. Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from NRWA_WE0034 indicated 3 out of 5 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml (2018 and 2020-2021, 50-100%), 1 yr had ≥2 samples exceed the 410 CFU/100ml STV (2020, n=4), and cumulatively across years 58% of intervals had GMs >126 CFU/100ml. While *E. coli* data from W2212 meet 2024 CALM guidance*, E. coli* data from NRWA_WE0034 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2212	MassDEP	Water Quality	Wekepeke Brook	[approximately 160 feet upstream of the Route 190 crossing in Lancaster]	42.476923	-71.723785
NRWA_WE0034	Nashua River Watershed Association	Water Quality	Wekepeke Brook	D.S. Rt 117, Lancaster	42.488700	-71.714200

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 4) (NRWA 2022) (MassDEP Undated 2)

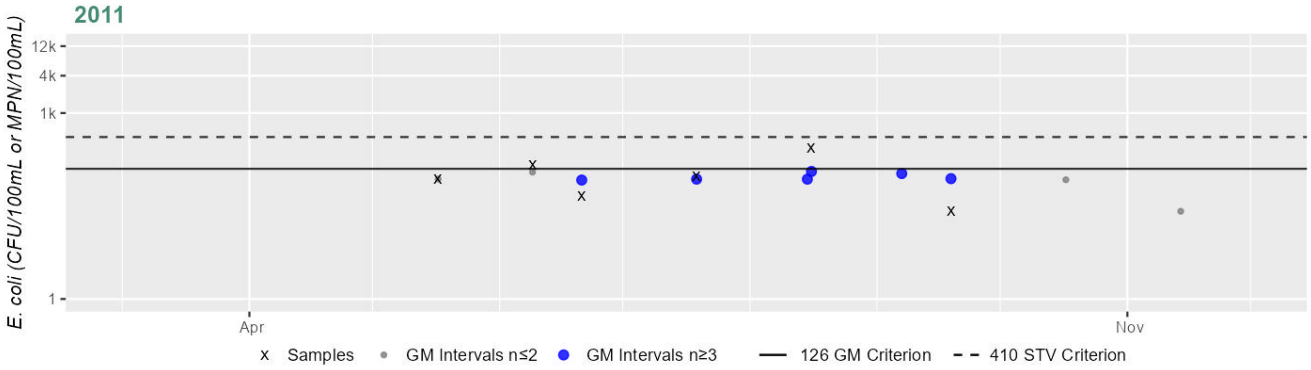
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2212	MassDEP	E. coli	05/17/11	09/19/11	6	26	270	85
NRWA_WE0034	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	93	2419	609
NRWA_WE0034	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	60	613	221

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_WE0034	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	1	1299	62
NRWA_WE0034	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	34	2419	155
NRWA_WE0034	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	40	209	105
NRWA_WE0034	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	6	30	235	71
NRWA_WE0034	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	44	686	135
NRWA_WE0034	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	6	34	980	139
NRWA_WE0034	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	9	53	344	100
NRWA_WE0034	Nashua River Watershed Association	E. coli	04/07/20	10/17/20	16	17	2419	224
NRWA_WE0034	Nashua River Watershed Association	E. coli	04/27/21	10/16/21	7	21	2419	148
NRWA_WE0034	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	5	45	157	89

Station MASSDEP_W2212 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



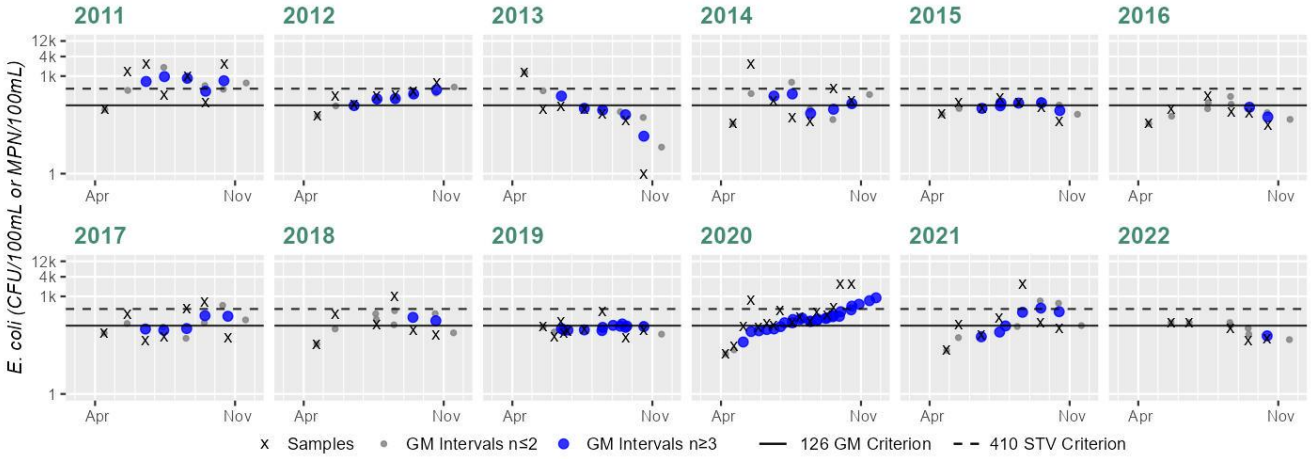
Variable*	Result
Samples	6
SeasGM	85
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_WE0034 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	609
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	4
%n>STV	57%

Variable*	Result
Samples	7
SeasGM	221
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	62
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	155
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	105
#GMI	6
#GMI Ex	3
%GMI Ex	50%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	71
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	135
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	6
SeasGM	139
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	9
SeasGM	100
#GMI	12
#GMI Ex	2
%GMI Ex	16%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	16
SeasGM	224
#GMI	27
#GMI Ex	21
%GMI Ex	77%
n>STV	4
%n>STV	25%

Variable*	Result
Samples	7
SeasGM	148
#GMI	6
#GMI Ex	3
%GMI Ex	50%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	5
SeasGM	89
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Current (2011-2022)
56%

Cumulative %GMI Exceedance Current (Recent 5 Years)
58%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Wekepeke Brook (MA81-72) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at NRWA_WE0034. MassDEP and NRWA staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in Wekepeke Brook (MA81-72) from 2008-2022 at 3 stations. Samples were collected from the following stations/sample years from upstream to downstream: about halfway down the AU at W1831 [Flanagan Hill Rd, Sterling] from May-Sep 2008 (n=6), three-quarters of the way down the AU at W2212 [~160 ft upstream of the Rt. 190 crossing in Lancaster] from May-Sep 2011 (n=6), and the downstream end of the AU at NRWA_WE0034 [D.S. Rt 117, Lancaster] from 2008-2010 (historic n=5-7/yr) and 2011-2022 (current n=5-16/yr). Analysis of the single year limited frequency *E. coli* dataset from W2212 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 85 CFU/100ml. Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from NRWA_WE0034 indicated 2 out of 5 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml (2020 and 2021, 29 & 50%), 1 yr had ≥2 samples exceed the 794 CFU/100ml STV (2020, n=2), and cumulatively across years 22% of intervals had GMs >244 CFU/100ml. While *E. coli* data from W2212 meet 2024 CALM guidance, *E. coli* data from NRWA_WE0034 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1831	MassDEP	Water Quality	Wekepeke Brook	[Flanagan Hill Road, Sterling]	42.468088	-71.733129
W2212	MassDEP	Water Quality	Wekepeke Brook	[approximately 160 feet upstream of the Route 190 crossing in Lancaster]	42.476923	-71.723785
NRWA_WE0034	Nashua River Watershed Association	Water Quality	Wekepeke Brook	D.S. Rt 117, Lancaster	42.488700	-71.714200

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

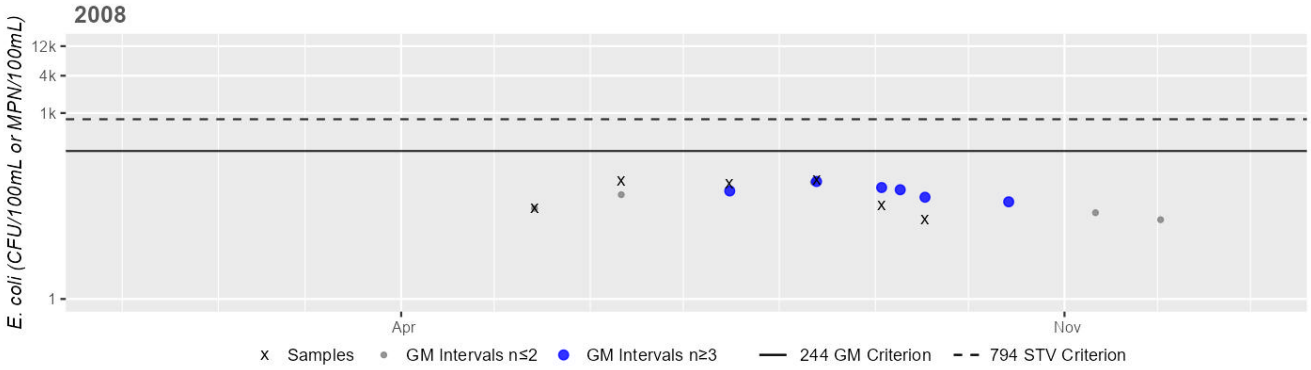
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1831	MassDEP	E. coli	05/13/08	09/16/08	6	19	83	45
W2212	MassDEP	E. coli	05/17/11	09/19/11	6	26	270	85
NRWA_WE0034	Nashua River Watershed Association	E. coli	05/17/08	10/18/08	5	156	2419	589

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_WE0034	Nashua River Watershed Association	E. coli	04/18/09	10/17/09	7	4	2419	106
NRWA_WE0034	Nashua River Watershed Association	E. coli	04/17/10	10/16/10	7	140	2419	712
NRWA_WE0034	Nashua River Watershed Association	E. coli	04/16/11	10/15/11	7	93	2419	609
NRWA_WE0034	Nashua River Watershed Association	E. coli	04/21/12	10/20/12	7	60	613	221
NRWA_WE0034	Nashua River Watershed Association	E. coli	04/20/13	10/19/13	7	1	1299	62
NRWA_WE0034	Nashua River Watershed Association	E. coli	04/19/14	10/18/14	7	34	2419	155
NRWA_WE0034	Nashua River Watershed Association	E. coli	04/20/15	10/17/15	7	40	209	105
NRWA_WE0034	Nashua River Watershed Association	E. coli	04/16/16	10/15/16	6	30	235	71
NRWA_WE0034	Nashua River Watershed Association	E. coli	04/15/17	10/21/17	7	44	686	135
NRWA_WE0034	Nashua River Watershed Association	E. coli	04/21/18	10/20/18	6	34	980	139
NRWA_WE0034	Nashua River Watershed Association	E. coli	05/18/19	10/19/19	9	53	344	100
NRWA_WE0034	Nashua River Watershed Association	E. coli	04/07/20	10/17/20	16	17	2419	224
NRWA_WE0034	Nashua River Watershed Association	E. coli	04/27/21	10/16/21	7	21	2419	148
NRWA_WE0034	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	5	45	157	89

Station MASSDEP_W1831 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



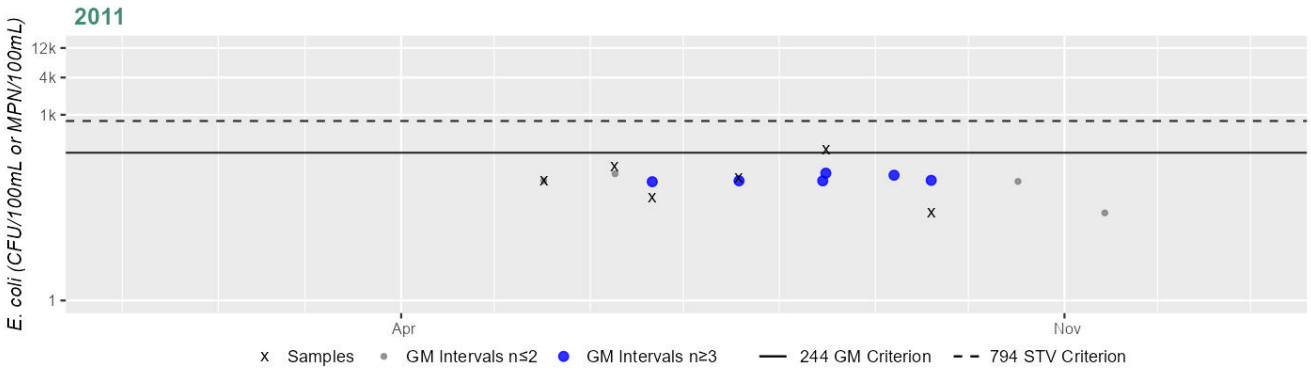
Variable*	Result
Samples	6
SeasGM	45
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W2212 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



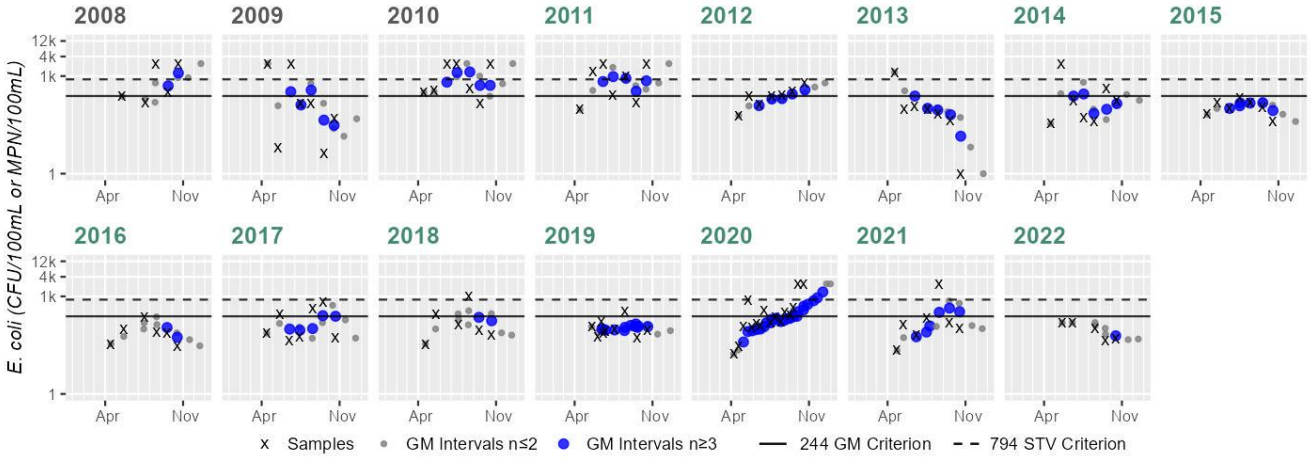
Variable*	Result
Samples	6
SeasGM	85
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_WE0034 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	589
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	2
%n>STV	40%

Variable*	Result
Samples	7
SeasGM	106
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	712
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	3
%n>STV	42%

Variable*	Result
Samples	7
SeasGM	609
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	4
%n>STV	57%

Variable*	Result
Samples	7
SeasGM	221
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	62
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	155
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	105
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	71
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	135
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	139
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	9
SeasGM	100
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	16
SeasGM	224
#GMI	27
#GMI Ex	8
%GMI Ex	29%
n>STV	2
%n>STV	12%

Variable*	Result
Samples	7
SeasGM	148
#GMI	6
#GMI Ex	3
%GMI Ex	50%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	5
SeasGM	89
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
75%

Cumulative %GMI Exceedance
Current (2011-2022)
25%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
22%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

West Waushacum Pond (MA81153)

Location:	Sterling.
AU Type:	FRESHWATER LAKE
AU Size:	111 ACRES
Classification/Qualifier:	A: PWS, ORW (Tributary)

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Brittle Naiad, Najas Minor*)	--	Unchanged
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Brittle Naiad, Najas Minor*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Recommendations

2024/26 Recommendations
2014 IR [HARMFUL ALGAL BLOOMS, MEDIUM] Follow-up monitoring should be conducted in West Waushacum Pond (MA81153) to determine if Harmful Algal Blooms may be impairing the Recreational and Aesthetic uses. Monitoring should include observational data and collection of cyanobacteria cell count data, as well as continued reporting of algal blooms to MDPH.

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for West Waushacum Pond (MA81153) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary
Too limited data are available to assess the Aesthetics Use for West Waushacum Pond (MA81153), so it is assessed as having Insufficient Information. However, an Alert is being identified for Harmful Algal Blooms in this waterbody since C-HAB postings (blooms of >15 days in duration) were reported to MDPH for 2022. During the period 2015 through 2022, C-HAB postings for West Waushacum Pond were reported to MDPH based on visual observations for 37 days in 2022 and no blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, an Alert is being identified for Harmful Algal Blooms and a recommendation for follow-up sampling will be made.

Algal Bloom Information

Cyanobacteria Harmful Algal Bloom (C-HAB) Summary Statements for 2015-2022 MDPH Data (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

C-HAB Summary Statement
During the period 2015 through 2022, C-HAB postings for West Waushacum Pond (MA81153) were reported to MDPH based on visual observations for 37 days in 2022. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, an Alert is being identified for C-HABs in this waterbody and a recommendation for follow-up sampling will be made.

Cyanobacteria Harmful Algal Bloom (C-HAB) Data (2015-2022) Provided by MDPH (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

[* indicates a C-HAB posting of unknown duration]

DEP Waterbody (DPH Waterbody)	DPH Town	Posting Days 2015	Posting Days 2016	Posting Days 2017	Posting Days 2018	Posting Days 2019	Posting Days 2020	Posting Days 2021	Posting Days 2022
West Waushacum Pond	Sterling								37

Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary
No bacteria data are available to assess the Primary Contact Recreation Use for West Waushacum Pond (MA81153) and available other indicators for this AU did not result in any impairment, so it is assessed as having Insufficient Information. An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU. During the period 2015 through 2022, C-HAB postings for West Waushacum Pond were reported to MDPH based on visual observations for 37 days in 2022. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, a Harmful Algal Blooms Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary
No bacteria data are available to assess the Secondary Contact Recreation Use for West Waushacum Pond (MA81153) and available other indicators for this AU did not result in any impairment, so it is assessed as having Insufficient Information. An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU. During the period 2015 through 2022, C-HAB postings for West Waushacum Pond were reported to MDPH based on visual observations for 37 days in 2022. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, a Harmful Algal Blooms Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made.

White Pond (MA81155)

Location:	Lancaster/Leominster.
AU Type:	FRESHWATER LAKE
AU Size:	47 ACRES
Classification/Qualifier:	B

No usable data were available for White Pond (MA81155) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Whitman River (MA81-11)

Location:	Headwaters, outlet Lake Wampanoag, Ashburnham to mouth at inlet Snows Millpond, Fitchburg/Westminster (excluding the approximately 1.2 miles through Whitmanville Reservoir segment MA81109 and the approximately 0.8 miles through Crocker Pond segment MA81025).
AU Type:	RIVER
AU Size:	6.3 MILES
Classification/Qualifier:	B

Whitman River (MA81-11)

Watershed Area: 28.14 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	28.14	9.18	7.83	2.88
Agriculture	2.6%	2.6%	1.2%	1.8%
Developed	12.7%	19.5%	10.3%	15.9%
Natural	76.2%	71.7%	74.2%	71.1%
Wetland	8.5%	6.2%	14.3%	11.3%
Impervious	5.4%	8.4%	4.6%	7%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Non-Native Aquatic Plants*)	--	Unchanged
5	5	Lead	--	Unchanged
5	5	Temperature	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Lead	Source Unknown (N)	X	--	--	--	--
Temperature	Dam or Impoundment (Y)	X	--	--	--	--
Temperature	Source Unknown (N)	X	--	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Whitman River (MA81-11) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Whitman River (MA81-11) continues to be assessed as Fully Supporting. MassDEP staff recorded aesthetics observations for Whitman River in Westminster; half way down the AU ~50 feet upstream from Whitmanville Road (W2194, n=6) and close to the downstream end of the AU ~200 feet downstream from Rt. 2A (State Road East) (W2190, n=6) as part of the Reference Site Network monitoring project in 2011. No persistent objectionable conditions (i.e., odors, deposits, growths, or turbidity) were observed during any of the surveys.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2190	MassDEP	Water Quality	Whitman River	[approximately 200 feet downstream from Route 2A (State Road East), Westminster]	42.559799	-71.866052
W2194	MassDEP	Water Quality	Whitman River	[approximately 50 feet upstream from Whitmanville Road, Westminster]	42.582132	-71.902605

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2190	2011	6	Aesthetic observations were made by MassDEP field sampling crews at Station W2190 on Whitman River (MA81-11) during 6 site visits between May 2011 and Sep 2011. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.
W2194	2011	6	Aesthetic observations were made by MassDEP field sampling crews at Station W2194 on Whitman River (MA81-11) during 6 site visits between May 2011 and Sep 2011. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2190	2011	6	5	0
W2194	2011	6	6	0

MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2190	Whitman River	2011	Aquatic Plant Density, Overall	Moderate	3	6
W2190	Whitman River	2011	Aquatic Plant Density, Overall	Sparse	3	6
W2190	Whitman River	2011	Color	Light Yellow/Tan	2	6
W2190	Whitman River	2011	Color	None	3	6
W2190	Whitman River	2011	Color	NR	1	6
W2190	Whitman River	2011	Objectionable Deposits	No	5	6

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2190	Whitman River	2011	Objectionable Deposits	Yes	1	6
W2190	Whitman River	2011	Odor	None	6	6
W2190	Whitman River	2011	Periphyton Density, Filamentous	None	4	6
W2190	Whitman River	2011	Periphyton Density, Filamentous	Sparse	1	6
W2190	Whitman River	2011	Periphyton Density, Filamentous	Unobservable	1	6
W2190	Whitman River	2011	Periphyton Density, Film	Moderate	1	6
W2190	Whitman River	2011	Periphyton Density, Film	None	1	6
W2190	Whitman River	2011	Periphyton Density, Film	Sparse	3	6
W2190	Whitman River	2011	Periphyton Density, Film	Unobservable	1	6
W2190	Whitman River	2011	Scum	No	5	6
W2190	Whitman River	2011	Scum	Yes	1	6
W2190	Whitman River	2011	Turbidity	None	6	6
W2194	Whitman River	2011	Aquatic Plant Density, Overall	Sparse	6	6
W2194	Whitman River	2011	Color	Light Yellow/Tan	3	6
W2194	Whitman River	2011	Color	None	3	6
W2194	Whitman River	2011	Objectionable Deposits	No	6	6
W2194	Whitman River	2011	Odor	Musty (Basement)	1	6
W2194	Whitman River	2011	Odor	None	5	6
W2194	Whitman River	2011	Periphyton Density, Filamentous	None	6	6
W2194	Whitman River	2011	Periphyton Density, Film	None	6	6
W2194	Whitman River	2011	Scum	No	5	6
W2194	Whitman River	2011	Scum	Yes	1	6
W2194	Whitman River	2011	Turbidity	None	6	6

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for the Whitman River (MA81-11) continues to be assessed as Fully Supporting. MassDEP staff collected *E. coli* bacteria samples in the Whitman River in 2011 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: half way down the AU at W2194 [~50 ft upstream from Whitmanville Rd, Westminster] from May-Sep 2011 (n=6), and close to the downstream end of the AU at W2190 [~200 ft downstream from Rt. 2A (State Rd East), Westminster] from May-Sep 2011 (n=6). Analysis of the single year limited frequency *E. coli* dataset from W2194 indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 21 CFU/100ml. Analysis of the single year limited frequency *E. coli* dataset from W2190 indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 49 CFU/100ml. *E. coli* data from W2194 and W2190 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2190	MassDEP	Water Quality	Whitman River	[approximately 200 feet downstream from Route 2A (State Road East), Westminster]	42.559799	-71.866052
W2194	MassDEP	Water Quality	Whitman River	[approximately 50 feet upstream from Whitmanville Road, Westminster]	42.582132	-71.902605

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

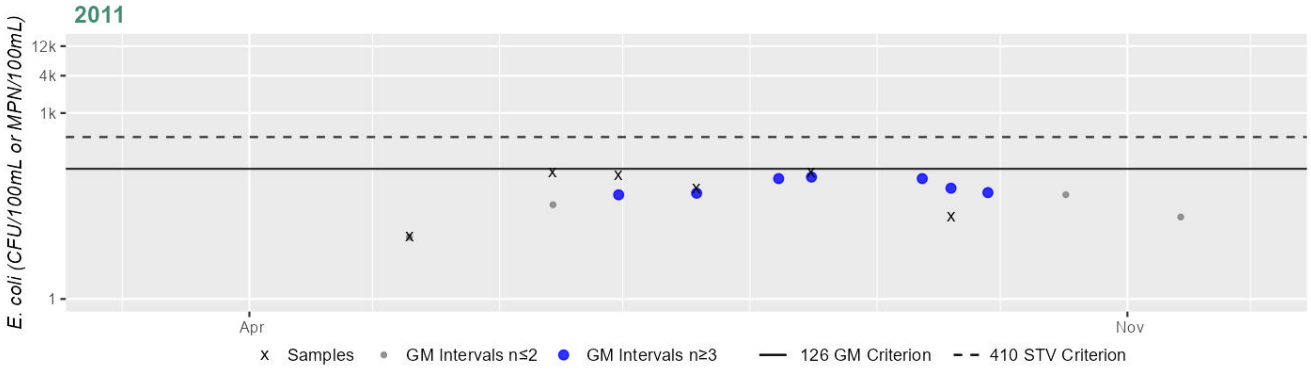
(MassDEP Undated 7) (MassDEP Undated 4)

[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
W2190	MassDEP	E. coli	05/10/11	09/19/11	6	10	110	49
W2194	MassDEP	E. coli	05/10/11	09/19/11	6	5	130	21

Station MASSDEP_W2190 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



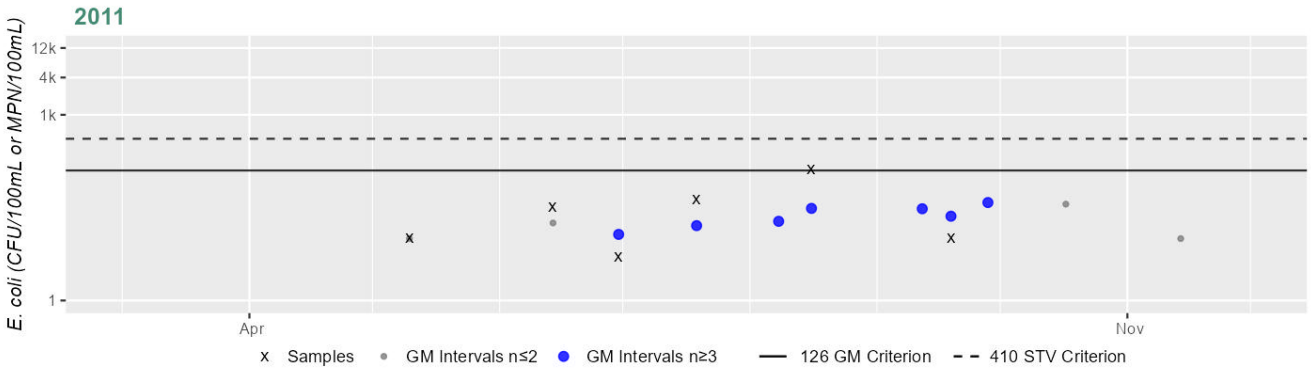
Variable*	Result
Samples	6
SeasGM	49
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W2194 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	21
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for the Whitman River (MA81-11) continues to be assessed as Fully Supporting. MassDEP staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in the Whitman River (MA81-11) from 2003-2011 at 4 stations. Samples were collected from the following stations/sample years from upstream to downstream: halfway down the AU at W2194 [~50 ft upstream from Whitmanville Rd, Westminster] from May-Sep 2011 (n=6), and W1808 [Whitmanville Rd, Westminster] from May-Sep 2008 (n=6), and close to the downstream end of the AU at W0992 [Rt. 2A, Westminster] in 2003 and 2008 (n=5-6/yr), and W2190 [~200 ft downstream from Rt. 2A (State Rd East), Westminster] from May-Sep 2011 (n=6). Since bacteria data from the historic IR window are all indicative of good water quality conditions, only the analysis from the current IR window (2 stations) will be summarized here: Analysis of the single year limited frequency *E. coli* dataset from W2194 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 21 CFU/100ml. Analysis of the single year limited frequency *E. coli* dataset from W2190 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 49 CFU/100ml. *E. coli* data from W2194 and W2190 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0992	MassDEP	Water Quality	Whitman River	[Route 2A, Westminster]	42.559902	-71.866792
W1808	MassDEP	Water Quality	Whitman River	[Whitmanville Road, Westminster]	42.582123	-71.902365
W2190	MassDEP	Water Quality	Whitman River	[approximately 200 feet downstream from Route 2A (State Road East), Westminster]	42.559799	-71.866052
W2194	MassDEP	Water Quality	Whitman River	[approximately 50 feet upstream from Whitmanville Road, Westminster]	42.582132	-71.902605

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3)

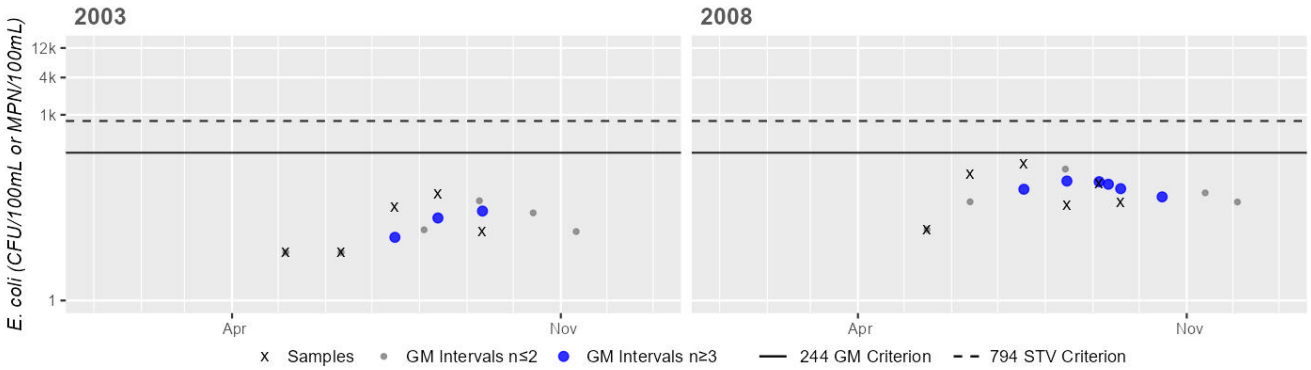
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W0992	MassDEP	E. coli	05/06/03	09/11/03	5	6	52	15
W0992	MassDEP	E. coli	05/15/08	09/18/08	6	14	160	54

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1808	MassDEP	E. coli	05/15/08	09/18/08	6	6	45	16
W2190	MassDEP	E. coli	05/10/11	09/19/11	6	10	110	49
W2194	MassDEP	E. coli	05/10/11	09/19/11	6	5	130	21

Station MASSDEP_W0992 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	15
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

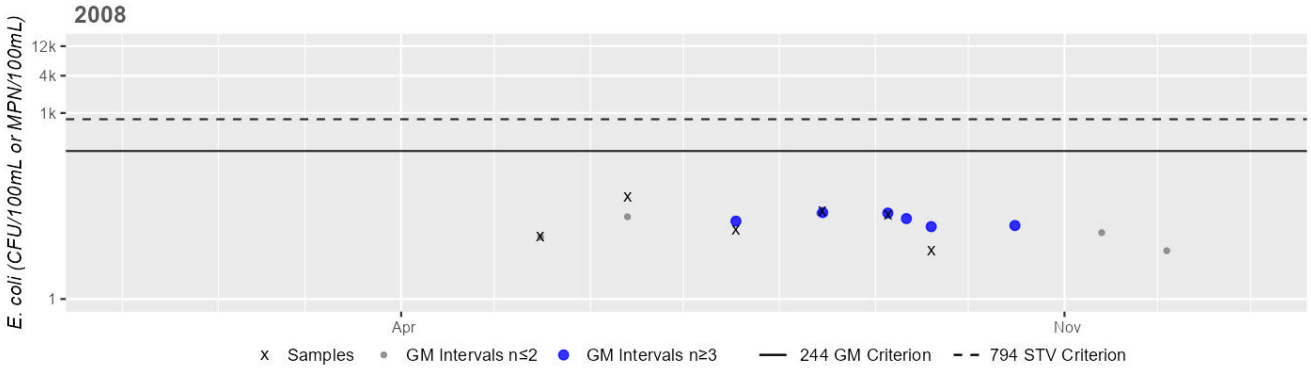
Variable*	Result
Samples	6
SeasGM	54
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W1808 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



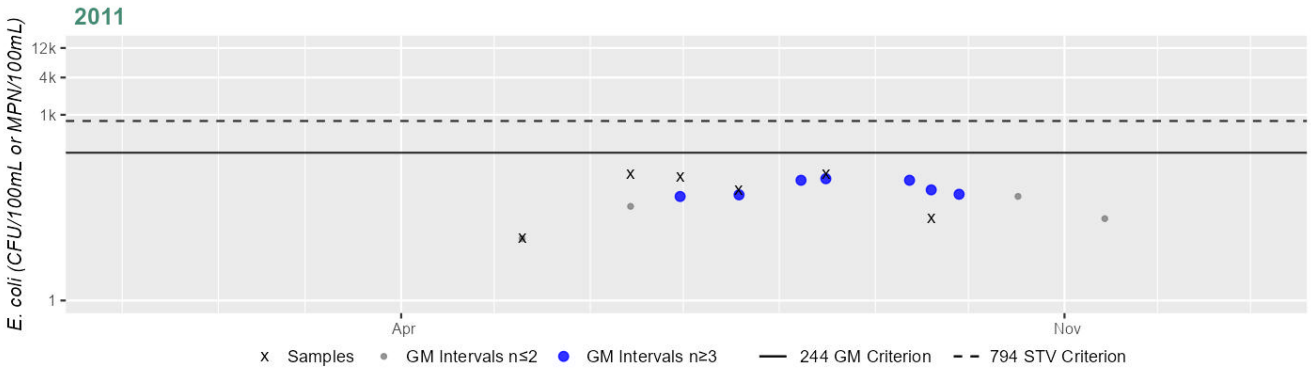
Variable*	Result
Samples	6
SeasGM	16
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W2190 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



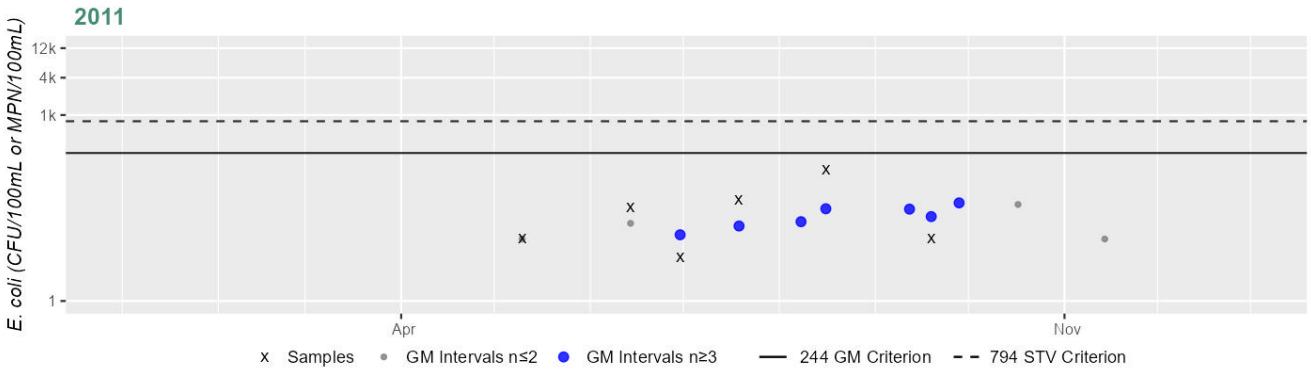
Variable*	Result
Samples	6
SeasGM	49
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station MASSDEP_W2194 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	21
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Whitmanville Reservoir (MA81109)

Location:	Westminster/Ashburnham.
AU Type:	FRESHWATER LAKE
AU Size:	107 ACRES
Classification/Qualifier:	B

No usable data were available for Whitmanville Reservoir (MA81109) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Wilder Brook (MA81-43)

Location:	Headwaters west of Osgood Road, Sterling to mouth at confluence with Stillwater River, Sterling.
AU Type:	RIVER
AU Size:	2.3 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Wilder Brook (MA81-43)

Watershed Area: 1.19 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	1.19	1.19	0.76	0.76
Agriculture	8.4%	8.4%	5.2%	5.2%
Developed	20%	20%	17.9%	17.9%
Natural	58.4%	58.4%	58.4%	58.4%
Wetland	13.1%	13.1%	18.5%	18.5%
Impervious	6.5%	6.5%	6.3%	6.3%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Wilder Brook (MA81-43) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Wilder Brook (MA81-43) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Wilder Brook (MA81-43) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Wilder Brook (MA81-43) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MA DCR (DCRWS) staff collected *E. coli* bacteria samples three-quarters of the way down Wilder Brook at DCRWS_M100 [Wilder Rd, Sterling] from Jan-Dec 2008 (n=31). Analysis of this historic single year high frequency *E. coli* dataset from DCRWS_M100 indicated 0% of intervals had GMs >244 CFU/100ml and 0% of samples exceeded the 794 CFU/100ml STV. Historic *E. coli* data from DCRWS_M100 meet 2024 CALM guidance. However, since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
DCRWS_M100	MA DCR Division of Water Supply Protection	Water Quality	WILDER BROOK	Wilder Rd, Sterling	42.436397	-71.801936

Bacteria Data

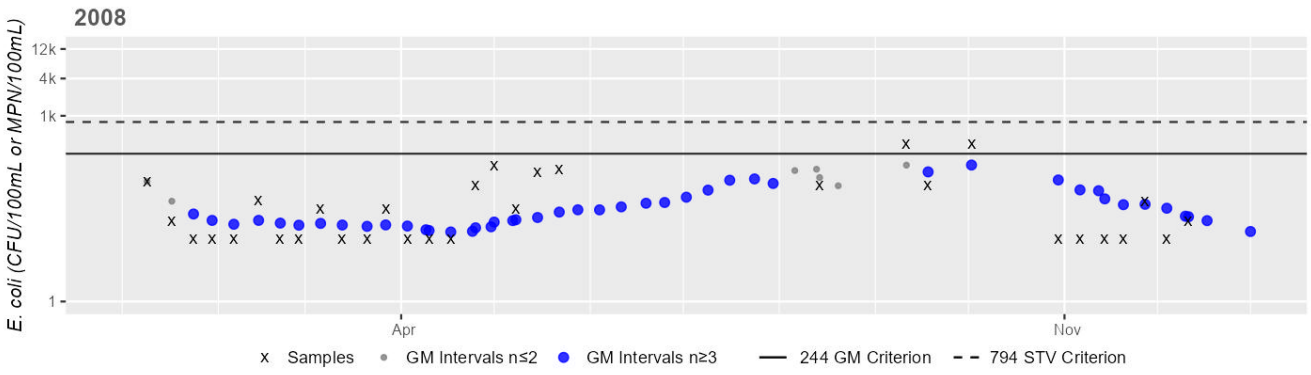
Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis) (MA DCR 2023) (MassDEP Undated 1)

[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
DCRWS_M100	MA DCR Division of Water Supply Protection	E. coli	01/09/08	12/10/08	31	10	344	27

Station DCRWS_M100 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	31
SeasGM	27
#GMI	49
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

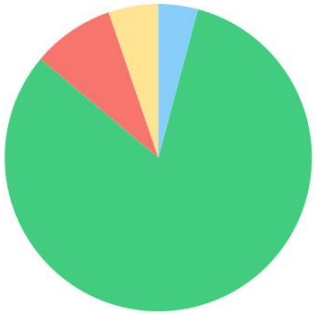
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Willard Brook (MA81-79)

Location:	Headwaters, outlet Fitchburg Reservoir, Ashby to mouth at confluence with Mason Brook forming headwaters Squannacook River, Townsend (excluding the approximate 0.3 mile through Ashby Reservoir, segment MA81001).
AU Type:	RIVER
AU Size:	6.2 MILES
Classification/Qualifier:	B: ORW

Willard Brook (MA81-79)

Watershed Area: 17.15 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	15.46	7.15	5.48	2.53
Agriculture	5.3%	3.1%	4.6%	4.8%
Developed	8.7%	9.8%	8.2%	8.8%
Natural	81.9%	83.4%	79.8%	80%
Wetland	4.2%	3.8%	7.4%	6.4%
Impervious	3.3%	3.8%	3.7%	4.1%

**Land cover analysis only includes watershed area within Massachusetts.*

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Enterococcus	R1_MA_2024_04	Changed

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Enterococcus	Source Unknown (N)	--	--	--	X	--

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Enterococcus	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Willard Brook (MA81-79) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Willard Brook (MA81-79) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for Willard Brook (MA81-79) continues to be assessed as Not Supporting. The prior *Enterococcus* impairment is being carried forward based on DPH Beach Closures data not meeting the threshold at Damon Pond Beach (DCR) [Beach ID: 4531]. Willard Brook has a beach with DPH Beach Closure data: Damon Pond (DCR) [Beach ID: 4531] beach in Ashby. Beaches were posted for >10% of the swimming season at Damon Pond Beach (DCR) in 2018 (50%), 2019 (76%), 2020 (69%), 2021 (93%), and 2022 (53%) indicating an *Enterococcus* impairment. Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in Willard Brook from 2020-2022 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: halfway down the AU at NRWA_WB0457 [U.S. Damon Pond. Former ped bridge, Ashby] from 2020-2022 (n=6-16/yr), and NRWA_WB0456 [In Damon Pond, Ashby] from May-Oct 2022 (n=6). Analysis of the multi-year limited frequency *E. coli* dataset from NRWA_WB0457 indicated 0 out of 3 sufficient data yrs had intervals where >20% of the GMs were >126 CFU/100ml, 1 yr had ≥2 samples exceed the 410 CFU/100ml STV (2020, n=2), and cumulatively across years 8% of intervals had GMs >126 CFU/100ml. Analysis of the single year limited frequency *E. coli* dataset from NRWA_WB0456 indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 12 CFU/100ml. *E. coli* data from NRWA_WB0457 and NRWA_WB0456 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
NRWA_WB0456	Nashua River Watershed Association	Water Quality	Willard Brook	In Damon Pond, Ashby	42.661722	-71.791639
NRWA_WB0457	Nashua River Watershed Association	Water Quality	Willard Brook	U.S. Damon Pond. Former ped bridge, Ashby	42.661760	-71.793010

Bacteria Data

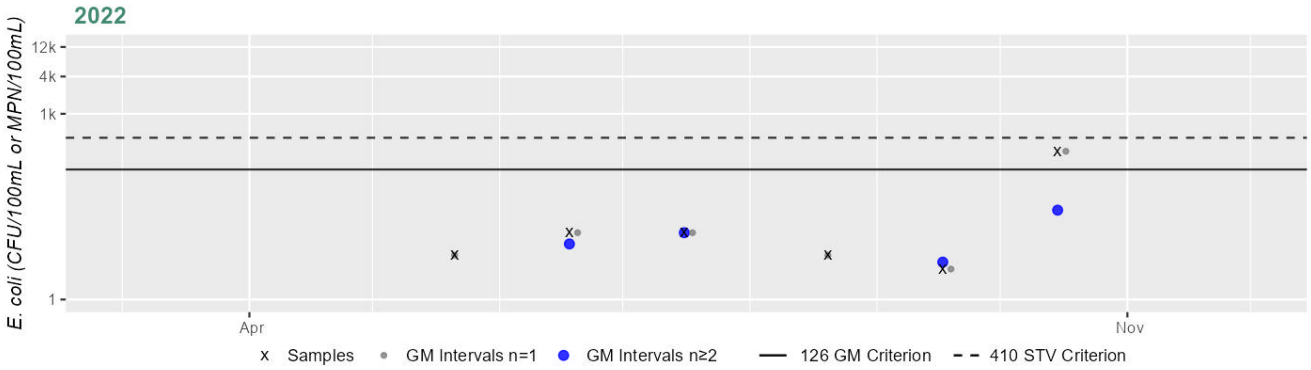
Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (30-day Interval Analysis)
(NRWA 2022) (MassDEP Undated 2)
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_WB0456	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	3	248	12
NRWA_WB0457	Nashua River Watershed Association	E. coli	04/07/20	10/17/20	16	1	2419	19
NRWA_WB0457	Nashua River Watershed Association	E. coli	05/15/21	10/16/21	6	1	325	19

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
NRWA_WB0457	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	2	127	31

Station NRWA_WB0456 - Escherichia coli

Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



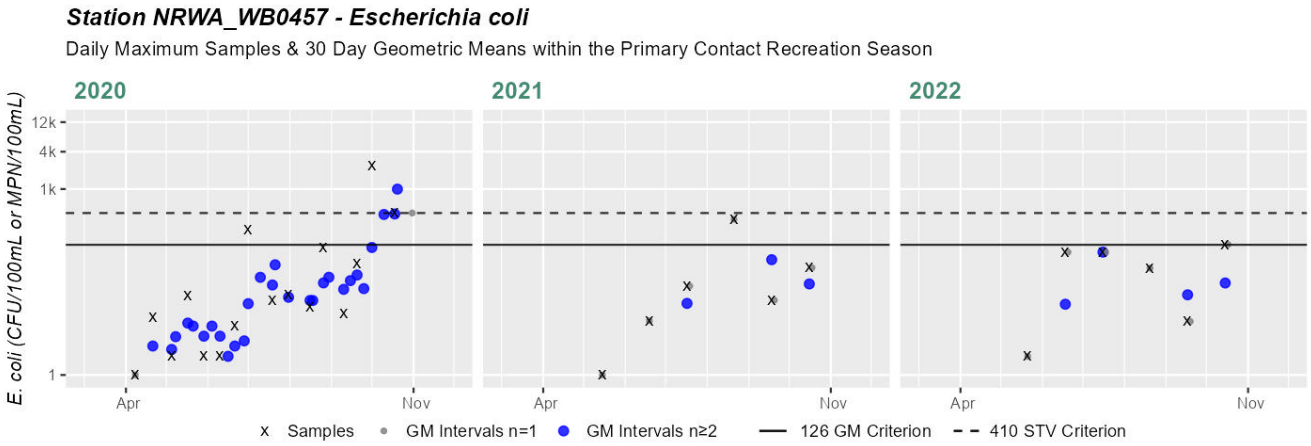
Variable*	Result
Samples	6
SeasGM	12
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance

Current (2011-2022)

0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*



Variable*	Result
Samples	16
SeasGM	19
#GMI	28
#GMI Ex	3
%GMI Ex	10%
n>STV	2
%n>STV	12%

Variable*	Result
Samples	6
SeasGM	19
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	31
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
8%

*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

Beach Postings

MDPH Beach Posting Data Summary (% Bathing Season Posted 2014-2022) (Bailey, Logan Feb. 2, 2021) (Bailey Sept. 10, 2023) (MassDEP Undated 2)

Beach ID	Beach Name/ Town	Left Border (Lat., Long.)	Right Border (Lat., Long.)	2014	2015	2016	2017	2018	2019	2020	2021	2022	# years >10%
4531	Damon Pond Beach (DCR)/ Ashby	42.66159, -71.79240	42.66197, -71.79110	0%	12%	13%	57%	50%	76%	69%	93%	53%	8

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Willard Brook (MA81-79) continues to be assessed as Fully Supporting. Willard Brook has a beach with DPH Beach Closure data: Damon Pond (DCR) [Beach ID: 4531] beach in Ashby. Available DPH Beach Closure data cannot be used to positively assess the Secondary Contact Recreation Use since beaches were posted for >10% of the swimming season: Damon Pond Beach (DCR) in 2018, 2019, 2020, 2021, and 2022. MassDEP and Nashua River Watershed Association (NRWA) staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in Willard Brook from 2008-2022 at 3 stations. Samples were collected from the following stations/sample years from upstream to downstream: halfway down the AU at NRWA_WB0457 [U.S. Damon Pond. Former ped bridge, Ashby] from 2020-2022 (n=6-16/yr), and NRWA_WB0456 [In Damon Pond, Ashby] from May-Oct 2022 (n=6), close to the downstream end of the AU at W1832 [W Meadow Rd, Townsend] from May-Sep 2008 (n=6). Since bacteria data from the historic IR window are all indicative of good water quality conditions, only the analysis from the current IR window (2 stations) will be summarized here: Analysis of the multi-year limited frequency *E. coli* dataset from NRWA_WB0457 indicated 0 out of 3 sufficient data yrs had intervals where >20% of the GMs were >244 CFU/100ml, 0 yrs had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 2% of intervals had GMs >244 CFU/100ml. Analysis of the single year limited frequency *E. coli* dataset from NRWA_WB0456 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 12 CFU/100ml. *E. coli* data from NRWA_WB0457 and NRWA_WB0456 meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1832	MassDEP	Water Quality	Willard Brook	[West Meadow Road, Townsend]	42.677187	-71.757274
NRWA_WB0456	Nashua River Watershed Association	Water Quality	Willard Brook	In Damon Pond, Ashby	42.661722	-71.791639
NRWA_WB0457	Nashua River Watershed Association	Water Quality	Willard Brook	U.S. Damon Pond. Former ped bridge, Ashby	42.661760	-71.793010

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

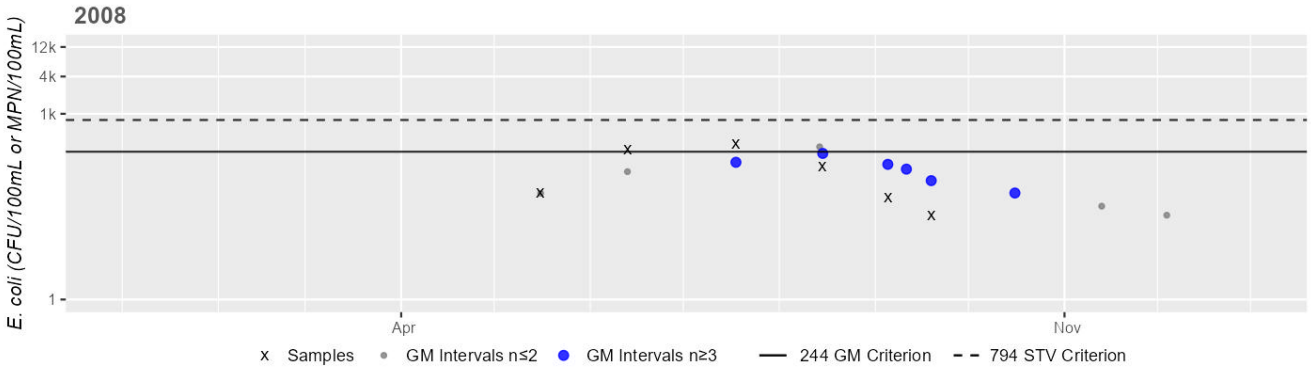
(MassDEP Undated 7) (MassDEP Undated 3) (NRWA 2022) (MassDEP Undated 1)

[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
W1832	MassDEP	E. coli	05/15/08	09/18/08	6	23	330	92
NRWA_WB0456	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	3	248	12
NRWA_WB0457	Nashua River Watershed Association	E. coli	04/07/20	10/17/20	16	1	2419	19
NRWA_WB0457	Nashua River Watershed Association	E. coli	05/15/21	10/16/21	6	1	325	19
NRWA_WB0457	Nashua River Watershed Association	E. coli	05/21/22	10/15/22	6	2	127	31

Station MASSDEP_W1832 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



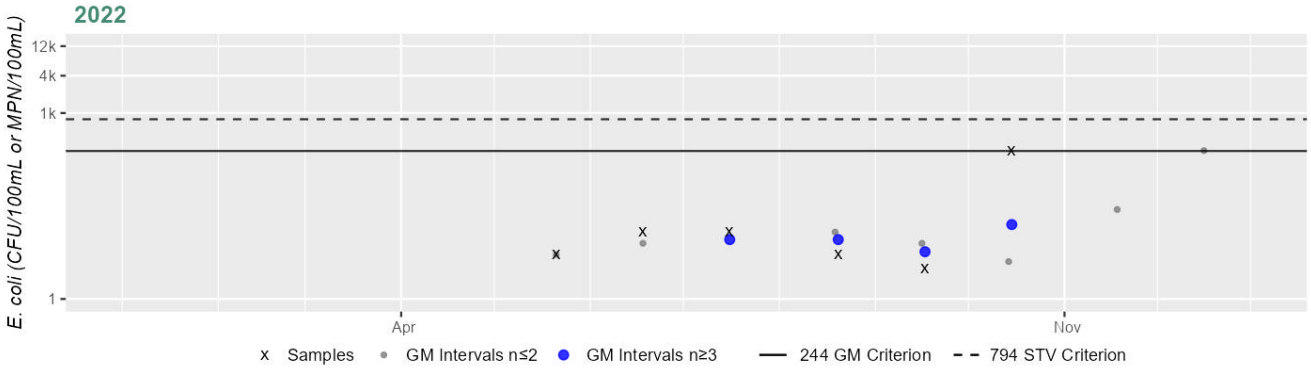
Variable*	Result
Samples	6
SeasGM	92
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_WB0456 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



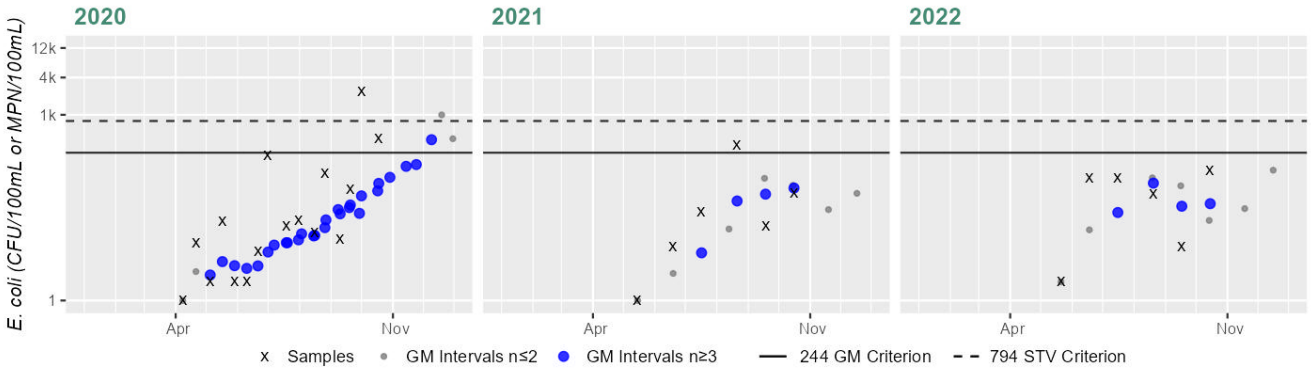
Variable*	Result
Samples	6
SeasGM	12
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Station NRWA_WB0457 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	16
SeasGM	19
#GMI	27
#GMI Ex	1
%GMI Ex	3%
n>STV	1
%n>STV	6%

Variable*	Result
Samples	6
SeasGM	19
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	31
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
2%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Winnekeag Lake (MA81157)

Location:	Ashburnham.
AU Type:	FRESHWATER LAKE
AU Size:	113 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Recommendations

2024/26 Recommendations
2024 IR [HARMFUL ALGAL BLOOMS, MEDIUM] Follow-up monitoring should be conducted in Lake Winnekeag (MA81157) to determine if Harmful Algal Blooms may be impairing the Recreational and Aesthetic uses. Monitoring should include observational data and collection of cyanobacteria cell count data, as well as continued reporting of algal blooms to MDPH.

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Winnekeag Lake (MA81157) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary
Too limited data are available to assess the Aesthetics Use for Lake Winnekeag (MA81157), so it is assessed as having Insufficient Information. However, an Alert is being identified for Harmful Algal Blooms in this waterbody since C-HAB postings (blooms of >15 days in duration) were reported to MDPH for 2020. During the period 2015 through 2022, C-HAB postings for Winnekeag Lake were reported to MDPH based on visual observations for 120 days in 2020 and no blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, an Alert is being identified for Harmful Algal Blooms and a recommendation for follow-up sampling will be made.

Algal Bloom Information

Cyanobacteria Harmful Algal Bloom (C-HAB) Summary Statements for 2015-2022 MDPH Data (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

C-HAB Summary Statement
During the period 2015 through 2022, C-HAB postings for Winnekeag Lake (MA81157) were reported to MDPH based on visual observations for 120 days in 2020. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, an Alert is being identified for C-HABs in this waterbody and a recommendation for follow-up sampling will be made.

Cyanobacteria Harmful Algal Bloom (C-HAB) Data (2015-2022) Provided by MDPH (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

[* indicates a C-HAB posting of unknown duration]

DEP Waterbody (DPH Waterbody)	DPH Town	Posting Days 2015	Posting Days 2016	Posting Days 2017	Posting Days 2018	Posting Days 2019	Posting Days 2020	Posting Days 2021	Posting Days 2022
Winnekeag Lake	Ashburnham						120		

Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary

No bacteria data are available to assess the Primary Contact Recreation Use for Winnekeag Lake (MA81157) and available other indicators for this AU did not result in any impairment, so it is assessed as having Insufficient Information. An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU. During the period 2015 through 2022, C-HAB postings for Winnekeag Lake were reported to MDPH based on visual observations for 120 days in 2020. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, a Harmful Algal Blooms Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary
No bacteria data are available to assess the Secondary Contact Recreation Use for Winnekeag Lake (MA81157) and available other indicators for this AU did not result in any impairment, so it is assessed as having Insufficient Information. An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU. During the period 2015 through 2022, C-HAB postings for Winnekeag Lake were reported to MDPH based on visual observations for 120 days in 2020. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, a Harmful Algal Blooms Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made.

Witch Brook (MA81-75)

Location:	Headwaters, outlet small unnamed pond west of Pierce Road, Townsend to mouth at confluence with Squannacook River (backwater area), Townsend.
AU Type:	RIVER
AU Size:	2.5 MILES
Classification/Qualifier:	B: ORW

Witch Brook (MA81-75)

Watershed Area: 3.74 square miles

Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	3.74	3.74	0.84	0.84
Agriculture	1.1%	1.1%	0.4%	0.4%
Developed	13.5%	13.5%	9.2%	9.2%
Natural	74%	74%	74.7%	74.7%
Wetland	11.5%	11.5%	15.7%	15.7%
Impervious	6.2%	6.2%	4.9%	4.9%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	3	None	--	Unchanged

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Witch Brook (MA81-75) is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Witch Brook (MA81-75) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Witch Brook (MA81-75) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Witch Brook (MA81-75) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MassDEP staff collected *E. coli* bacteria samples two-thirds of the way down Witch Brook at W1845 [Warren Rd, Townsend] from May-Sep 2008 (n=6). Historic *E. coli* data from W1845 meet 2024 CALM guidance. However, since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1845	MassDEP	Water Quality	Witch Brook	[Warren Road, Townsend]	42.640669	-71.671471

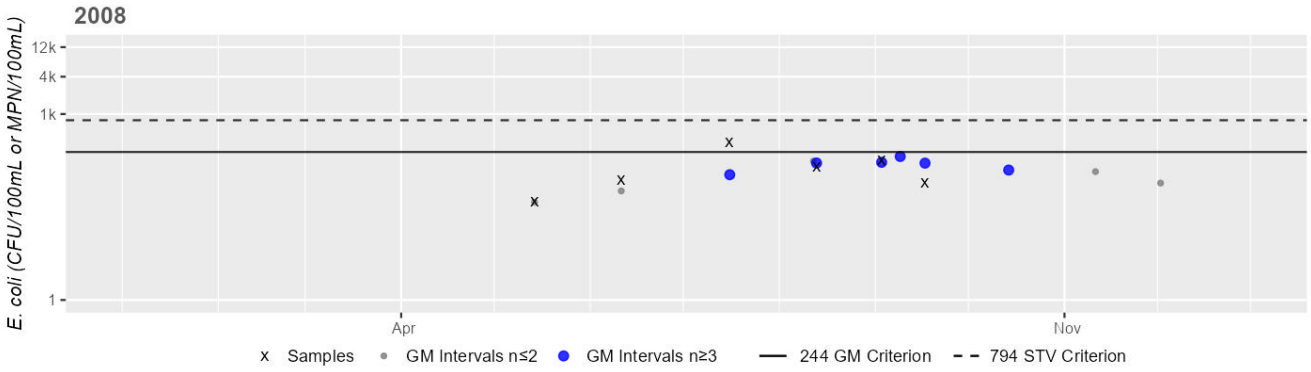
Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)
(MassDEP Undated 7) (MassDEP Undated 3)
[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
W1845	MassDEP	E. coli	05/13/08	09/16/08	6	38	350	114

Station MASSDEP_W1845 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	114
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.*

Wright Pond (MA81159)

Location:	[West Basin] Ashby.
AU Type:	FRESHWATER LAKE
AU Size:	21 ACRES
Classification/Qualifier:	B: ORW

No usable data were available for Wright Pond (MA81159) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Wyman Pond (MA81161)

Location:	Westminster.
AU Type:	FRESHWATER LAKE
AU Size:	198 ACRES
Classification/Qualifier:	B

No usable data were available for Wyman Pond (MA81161) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Data Sources

Bailey, Logan. "DPH 2022 freshwater beach posting data provided to Laurie Kennedy and Dan Davis (MassDEP Watershed Planning Program) via Excel file (FreshwaterBeachPostings_2022) attached to email (RE: DPH Beach Posting information update needed for 2024 IR)." Additional 2020-2022 freshwater/marine beach posting data downloaded from the Mass Environmental Public Health Tracker tool or EPA BEACON tool, respectively, Environmental Toxicology Program, Bureau of Environmental Health, Massachusetts Department of Public Health, Boston, MA, Sept. 10, 2023.

Bailey, Logan. "Email providing Harmful Algal Bloom advisory data (2015-2022) in the attached spreadsheet "CyanoHAB_Advisories.csv"." Email to Dan Davis and Laurie Kennedy (MassDEP Watershed Planning Program) with subject line "RE: DPH Beach Posting information update needed for 2024 IR", Environmental Toxicology Program, Bureau of Environmental Health, Massachusetts Department of Public Health, Boston, MA, April 26, 2023.

Bailey, Logan. "RE: Beaches Bill reporting data." Email to Dan Davis (MassDEP Watershed Planning Program) providing an Excel file (DEP_BeachDataRequest) with 2014-2019 data for marine and DCR freshwater beaches, Environmental Toxicology Program, Bureau of Environmental Health, Massachusetts Department of Public Health, Boston, MA, Feb. 2, 2021.

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

Haque, A. and M. Mattson. "Baseline Lake Survey 2003 Technical Memo." CN 205.1, Division of Watershed Management, Massachusetts Department of Environmental Protection, Worcester, MA, 2007.

MA DCR. "2011-2022 bacteria data for the Quabbin and Wachusett Reservoirs and their tributaries (including Ware River system), submitted to MassDEP WPP portal over multiple dates or downloaded from WQX (last submittal/download 4/27/2023)." Division of Water Supply Protection, Massachusetts Department of Conservation and Recreation, West Boylston, MA, 2023.

MA DPH. "Evaluation of PFAS in Recreational Waterbodies in Massachusetts, Technical Support Document." Environmental Toxicology Program, Bureau of Environmental Health, Massachusetts Department of Public Health. March 2023. https://www.mass.gov/doc/technical-basis-for-issuing-fish-advisories-0/download (accessed 2024).

—. "Freshwater Fish Consumption Advisory List." Bureau of Climate and Environmental Health, Massachusetts Department of Public Health. January 2025. https://www.mass.gov/doc/public-health-freshwater-fish-consumption-advisories-2025-0/download (accessed January 2025).

MassDEP. "2015 Scanned Project Files, Nashua watershed lake survey data 1998, D01-23.PDF." Division of Watershed Management, Massachusetts Department of Environmental Protection, Worcester, MA, 1998.

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.

MassDEP. "Integrated Listing History 1992-2022 (Excel file)." Watershed Planning Program, Massachusetts Department of Environmental Protection, Worcester, MA, 2024.

MassDEP. "Nashua River Watershed 2003 Water Quality Assessment Report." CN 107.5, Division of Watershed Management, Massachusetts Department of Environmental Protection, Worcester, MA, 2008.

MassDEP. "Open file analysis of external water quality data (potential date range 1997-2022) using 2024 CALM guidance." Watershed Planning Program, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 1.

MassDEP. "Open file analysis of external water quality data (potential date range 2011-2022) using 2024 CALM guidance." Watershed Planning Program, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 2.

MassDEP. "Open file analysis of MassDEP WPP water quality data collected between 1997 and 2020 using 2024 CALM guidance." Watershed Planning Program, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 3.

MassDEP. "Open file analysis of MassDEP WPP water quality data collected between 2011 and 2020 using 2024 CALM guidance." Watershed Planning Program, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 4.

MassDEP. "Open files of fish toxicity testing data, metadata, and GIS datalayers in development." Watershed Planning Program, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 5.

MassDEP. "Open files of repository documents for the 2016 Integrated Report cycle." Watershed Planning Program, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 6.

MassDEP. "Open files of unpublished, validated water quality monitoring data, field sheet data, and GIS datalayers in development." Watershed Planning Program, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 7.

—. "PFAS Concentrations in Surface Water and Fish Tissue at Selected Rivers and Lakes in Massachusetts." Watershed Planning Program, Division of Watershed Management, Bureau of Water Resources, Massachusetts Department of Environmental Protection. Worcester, MA. In cooperation with Eastern Research Group, Inc. December 2023. https://www.mass.gov/doc/massdep-final-report-on-pfas-concentrations-in-surface-water-and-fish-tissue-at-selected-rivers-and-lakes-in-massachusetts/download (accessed January 2024).

MassDEP. "Scanned historical 305B reports and 303d coding sheets nashua91-02_searchable.pdf." Division of Watershed Management, Massachusetts Department of Environmental Protection, Worcester, MA, 2002.

McNamara, Mark. "RE: Falulah brook pathogen impairment and TMDL." Email to Xiaoning, Chen (MassDEP NPDES Permitting Group) from the Deputy Commissioner of Wastewater, DPW-Wastewater Division, Fitchburg, Massachusetts, November 23, 2022.

NRWA. "2011-2022 bacteria data submitted to MassDEP WPP portal over multiple dates or downloaded from WQX (last submittal/download 1/20/2022)." Nashua River Watershed Association, Groton, MA, 2022.

Savoie, Jennifer G, and Denise M Argue. "Concentrations of Per- and Polyfluoroalkyl Substances (PFAS) in Selected Rivers and Streams in Massachusetts, 2020." U.S. Geological Survey data report 1160 version 2.0 and accompanying data prepared in cooperation with the Massachusetts Department of Environmental Protection. October 2023. https://doi.org/10.5066/P967NOOZ (accessed January 2024).

USGS. "USGS 2011-2022 bacteria data downloaded from WQX 10/21/2024." United States Geological Survey, 2024.

Weston & Sampson. "CSO regulator and outfall locations." Weston & Sampson for the City of Fitchburg, MA. June 2022.