

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

Appendix 6

**Boston Harbor: Mystic River Basin and Coastal Drainage Area
Assessment and Listing Decision Summary**

Prepared by:

Watershed Planning Program

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Massachusetts Department of Environmental Protection

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

Watershed Planning Program

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

Disclaimer

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

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Notice of Availability

This report is available on the Massachusetts Department of Environmental Protection website:

<https://www.mass.gov/lists/integrated-lists-of-waters-related-reports>.

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2022 Cycle Impairment Changes

Waterbody	AU_ID	2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
Aberjona River	MA71-01	5	5	(Physical Substrate Habitat Alterations*)		Unchanged
Aberjona River	MA71-01	5	5	Ammonia, Un-ionized		Unchanged
Aberjona River	MA71-01	5	5	Arsenic in Sediment		Unchanged
Aberjona River	MA71-01	5	5	Benthic Macroinvertebrates		Unchanged
Aberjona River	MA71-01	5	5	Chloride		Unchanged
Aberjona River	MA71-01	5	5	Dissolved Oxygen	R1_MA_2020_5a	Unchanged
Aberjona River	MA71-01	5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Unchanged
Aberjona River	MA71-01	5	5	Fish Bioassessments		Unchanged
Aberjona River	MA71-01	5	5	Phosphorus, Total	R1_MA_2020_5a	Unchanged
Aberjona River	MA71-01	5	5	Sediment Bioassay [Chronic Toxicity Freshwater]		Unchanged
Alewife Brook	MA71-20	5	5	(Debris*)		Unchanged
Alewife Brook	MA71-20	5	5	(Water Chestnut*)		Unchanged
Alewife Brook	MA71-20	5	5	Chloride		Unchanged
Alewife Brook	MA71-20	5	5	Copper in Sediment		Unchanged
Alewife Brook	MA71-20	5	5	Dissolved Oxygen	R1_MA_2020_5a	Unchanged
Alewife Brook	MA71-20	5	5	Enterococcus		Added
Alewife Brook	MA71-20	5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Unchanged
Alewife Brook	MA71-20	5	5	Flocculant Masses		Unchanged
Alewife Brook	MA71-20	5	5	Lead in Sediment		Unchanged
Alewife Brook	MA71-20	5	5	Odor		Unchanged
Alewife Brook	MA71-20	5	5	Oil and Grease		Unchanged
Alewife Brook	MA71-20	5	5	PCBs in Fish Tissue		Unchanged
Alewife Brook	MA71-20	5	5	Phosphorus, Total	R1_MA_2020_5a	Unchanged
Alewife Brook	MA71-20	5	5	Scum/Foam		Unchanged
Alewife Brook	MA71-20	5	5	Sediment Bioassay [Chronic Toxicity Freshwater]		Unchanged
Alewife Brook	MA71-20	5	5	Transparency / Clarity	R1_MA_2020_5a	Changed
Alewife Brook	MA71-20	5	5	Trash		Unchanged
Belle Isle Inlet	MA71-14	5	5	Cause Unknown [Contaminants in Fish and/or Shellfish]		Unchanged
Belle Isle Inlet	MA71-14	5	5	Enterococcus	R1_MA_2019_01	Added
Belle Isle Inlet	MA71-14	5	5	Fecal Coliform	R1_MA_2019_01	Unchanged
Belle Isle Inlet	MA71-14	5	5	PCBs in Fish Tissue		Unchanged
Bellevue Pond	MA71004	3	3	None		Unchanged
Blacks Nook	MA71005	5	5	(Water Chestnut*)		Unchanged
Blacks Nook	MA71005	5	5	Nutrient/Eutrophication Biological Indicators		Unchanged
Blacks Nook	MA71005	5	5	Transparency / Clarity		Unchanged
Chelsea River	MA71-06	5	5	(Debris*)		Unchanged
Chelsea River	MA71-06	5	5	Ammonia, Un-ionized		Unchanged
Chelsea River	MA71-06	5	5	Cause Unknown [Contaminants in Fish and/or Shellfish; Sediment Screening Value (Exceedance)]		Unchanged

Waterbody	AU_ID	2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
Chelsea River	MA71-06	5	5	Fecal Coliform	R1_MA_2019_01	Unchanged
Chelsea River	MA71-06	5	5	Odor		Unchanged
Chelsea River	MA71-06	5	5	PCBs in Fish Tissue		Unchanged
Chelsea River	MA71-06	5	5	Petroleum Hydrocarbons		Unchanged
Chelsea River	MA71-06	5	5	Trash		Unchanged
Chelsea River	MA71-06	5	5	Turbidity		Unchanged
Clay Pit Pond	MA71011	5	5	Chlordane in Fish Tissue		Unchanged
Cummings Brook	MA71-10	5	5	Escherichia Coli (E. Coli)		Unchanged
Ell Pond	MA71014	5	5	Chlorophyll-a		Unchanged
Ell Pond	MA71014	5	5	Fecal Coliform		Unchanged
Ell Pond	MA71014	5	5	Harmful Algal Blooms		Unchanged
Ell Pond	MA71014	5	5	Phosphorus, Total		Unchanged
Ell Pond	MA71014	5	5	Total Suspended Solids (TSS)		Unchanged
Ell Pond	MA71014	5	5	Transparency / Clarity		Unchanged
Fellsmere Pond	MA71016	5	5	Harmful Algal Blooms		Unchanged
Hills Pond	MA71018	4c	5	(Eurasian Water Milfoil, Myriophyllum Spicatum*)		Unchanged
Hills Pond	MA71018	4c	5	Harmful Algal Blooms		Added
Horn Pond	MA71019	5	5	(Curly-leaf Pondweed*)		Unchanged
Horn Pond	MA71019	5	5	(Fish Passage Barrier*)		Unchanged
Horn Pond	MA71019	5	5	DDT in Fish Tissue		Unchanged
Horn Pond	MA71019	5	5	Dissolved Oxygen		Unchanged
Horn Pond	MA71019	5	5	Harmful Algal Blooms		Unchanged
Horn Pond	MA71019	5	5	Phosphorus, Total		Unchanged
Little Pond	MA71024	5	5	(Water Chestnut*)		Unchanged
Little Pond	MA71024	5	5	Harmful Algal Blooms		Unchanged
Little River	MA71-21	5	5	(Debris*)		Unchanged
Little River	MA71-21	5	5	(Water Chestnut*)		Unchanged
Little River	MA71-21	5	5	Chloride		Unchanged
Little River	MA71-21	5	5	Copper in Sediment		Unchanged
Little River	MA71-21	5	5	Dissolved Oxygen	R1_MA_2020_5a	Unchanged
Little River	MA71-21	5	5	Enterococcus		Added
Little River	MA71-21	5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Unchanged
Little River	MA71-21	5	5	Flocculant Masses		Unchanged
Little River	MA71-21	5	5	Lead in Sediment		Unchanged
Little River	MA71-21	5	5	Odor		Unchanged
Little River	MA71-21	5	5	Oil and Grease		Unchanged
Little River	MA71-21	5	5	PCBs in Fish Tissue		Unchanged
Little River	MA71-21	5	5	Phosphorus, Total	R1_MA_2020_5a	Unchanged
Little River	MA71-21	5	5	Scum/Foam		Unchanged
Little River	MA71-21	5	5	Transparency / Clarity	R1_MA_2020_5a	Changed
Little River	MA71-21	5	5	Trash		Unchanged
Little River	MA71-22	5	5	(Debris*)		Unchanged
Little River	MA71-22	5	5	Copper in Sediment		Unchanged
Little River	MA71-22	5	5	Dissolved Oxygen	R1_MA_2020_5a	Unchanged
Little River	MA71-22	5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Unchanged
Little River	MA71-22	5	5	Flocculant Masses		Unchanged
Little River	MA71-22	5	5	Lead in Sediment		Unchanged
Little River	MA71-22	5	5	Odor		Unchanged
Little River	MA71-22	5	5	Oil and Grease		Unchanged

Waterbody	AU_ID	2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
Little River	MA71-22	5	5	PCBs in Fish Tissue		Unchanged
Little River	MA71-22	5	5	Phosphorus, Total	R1_MA_2020_5a	Unchanged
Little River	MA71-22	5	5	Scum/Foam		Unchanged
Little River	MA71-22	5	5	Transparency / Clarity		Unchanged
Little River	MA71-22	5	5	Trash		Unchanged
Lower Mystic Lake	MA71027	5	5	DDT in Fish Tissue		Unchanged
Lower Mystic Lake	MA71027	5	5	Dissolved Oxygen	R1_MA_2020_5a	Unchanged
Lower Mystic Lake	MA71027	5	5	Hydrogen Sulfide		Unchanged
Lower Mystic Lake	MA71027	5	5	PCBs in Fish Tissue		Unchanged
Lower Mystic Lake	MA71027	5	5	Salinity		Unchanged
Lower Mystic Lake	MA71027	5	5	Sediment Bioassay [Chronic Toxicity Freshwater]		Unchanged
Malden River	MA71-05	5	5	(Debris*)		Unchanged
Malden River	MA71-05	5	5	(Water Chestnut*)		Unchanged
Malden River	MA71-05	5	5	Chlordane in Fish Tissue		Unchanged
Malden River	MA71-05	5	5	DDT in Fish Tissue		Unchanged
Malden River	MA71-05	5	5	Dissolved Oxygen	R1_MA_2020_5a	Unchanged
Malden River	MA71-05	5	5	Dissolved Oxygen Supersaturation	R1_MA_2020_5a	Unchanged
Malden River	MA71-05	5	5	Enterococcus		Added
Malden River	MA71-05	5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Unchanged
Malden River	MA71-05	5	5	Fecal Coliform		Unchanged
Malden River	MA71-05	5	5	Flocculant Masses	R1_MA_2020_5a	Unchanged
Malden River	MA71-05	5	5	Odor		Unchanged
Malden River	MA71-05	5	5	Oil and Grease		Unchanged
Malden River	MA71-05	5	5	PCBs in Fish Tissue		Unchanged
Malden River	MA71-05	5	5	pH, High		Unchanged
Malden River	MA71-05	5	5	Phosphorus, Total	R1_MA_2020_5a	Unchanged
Malden River	MA71-05	5	5	Scum/Foam		Unchanged
Malden River	MA71-05	5	5	Sediment Bioassay [Chronic Toxicity Freshwater]		Unchanged
Malden River	MA71-05	5	5	Temperature		Unchanged
Malden River	MA71-05	5	5	Total Suspended Solids (TSS)		Unchanged
Malden River	MA71-05	5	5	Transparency / Clarity	R1_MA_2020_5a	Unchanged
Malden River	MA71-05	5	5	Trash		Unchanged
Mill Brook	MA71-07	5	5	(Physical Substrate Habitat Alterations*)		Unchanged
Mill Brook	MA71-07	5	5	Benthic Macroinvertebrates		Unchanged
Mill Brook	MA71-07	5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Unchanged
Mill Brook	MA71-07	5	5	Fish Bioassessments		Added
Mill Creek	MA71-08	5	5	Cause Unknown [Contaminants in Fish and/or Shellfish]		Unchanged
Mill Creek	MA71-08	5	5	Enterococcus	R1_MA_2019_01	Added
Mill Creek	MA71-08	5	5	Fecal Coliform	R1_MA_2019_01	Unchanged
Mill Creek	MA71-08	5	5	PCBs in Fish Tissue		Unchanged
Munroe Brook	MA71-15	5	5	Escherichia Coli (E. Coli)		Unchanged
Mystic River	MA71-02	5	5	(Eurasian Water Milfoil, Myriophyllum Spicatum*)		Unchanged
Mystic River	MA71-02	5	5	(Non-Native Aquatic Plants*)		Removed

Waterbody	AU_ID	2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
Mystic River	MA71-02	5	5	(Water Chestnut*)		Unchanged
Mystic River	MA71-02	5	5	Arsenic		Unchanged
Mystic River	MA71-02	5	5	Chlordane in Fish Tissue		Unchanged
Mystic River	MA71-02	5	5	Chlorophyll-a	R1_MA_2020_5a	Unchanged
Mystic River	MA71-02	5	5	DDT in Fish Tissue		Unchanged
Mystic River	MA71-02	5	5	Dissolved Oxygen	R1_MA_2020_5a	Unchanged
Mystic River	MA71-02	5	5	Dissolved Oxygen Supersaturation	R1_MA_2020_5a	Unchanged
Mystic River	MA71-02	5	5	Enterococcus		Added
Mystic River	MA71-02	5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Unchanged
Mystic River	MA71-02	5	5	Harmful Algal Blooms		Added
Mystic River	MA71-02	5	5	PCBs in Fish Tissue		Unchanged
Mystic River	MA71-02	5	5	pH, High		Unchanged
Mystic River	MA71-02	5	5	Phosphorus, Total	R1_MA_2020_5a	Unchanged
Mystic River	MA71-02	5	5	Sediment Bioassay [Chronic Toxicity Freshwater]		Unchanged
Mystic River	MA71-02	5	5	Transparency / Clarity	R1_MA_2020_5a	Unchanged
Mystic River	MA71-03	5	5	Ammonia, Un-ionized		Unchanged
Mystic River	MA71-03	5	5	Cause Unknown [Contaminants in Fish and/or Shellfish; Sediment Screening Value (Exceedance)]		Unchanged
Mystic River	MA71-03	5	5	Dissolved Oxygen	R1_MA_2020_5a	Unchanged
Mystic River	MA71-03	5	5	Enterococcus	R1_MA_2019_01	Added
Mystic River	MA71-03	5	5	Fecal Coliform	R1_MA_2019_01	Unchanged
Mystic River	MA71-03	5	5	Flocculant Masses	R1_MA_2020_5a	Unchanged
Mystic River	MA71-03	5	5	Nutrient/Eutrophication Biological Indicators	R1_MA_2020_5a	Unchanged
Mystic River	MA71-03	5	5	Odor		Unchanged
Mystic River	MA71-03	5	5	Oil and Grease		Unchanged
Mystic River	MA71-03	5	5	PCBs in Fish Tissue		Unchanged
Mystic River	MA71-03	5	5	Petroleum Hydrocarbons		Unchanged
Mystic River	MA71-03	5	5	Scum/Foam		Unchanged
Pond Brook	MA71-16	5	5	(Fish Passage Barrier*)		Unchanged
Pond Brook	MA71-16	5	5	Benthic Macroinvertebrates		Unchanged
Sales Creek	MA71-12	3	3	None		Unchanged
Shaker Glen Brook	MA71-11	5	5	Escherichia Coli (E. Coli)		Unchanged
Spot Pond	MA71039	3	3	None		Unchanged
Spot Pond Brook	MA71-17	2	3	None		Unchanged
Spy Pond	MA71040	5	5	(Curly-leaf Pondweed*)		Unchanged
Spy Pond	MA71040	5	5	(Eurasian Water Milfoil, Myriophyllum Spicatum*)		Unchanged
Spy Pond	MA71040	5	5	(Water Chestnut*)		Unchanged
Spy Pond	MA71040	5	5	Chlordane in Fish Tissue		Unchanged
Spy Pond	MA71040	5	5	DDT in Fish Tissue		Unchanged
Spy Pond	MA71040	5	5	Dissolved Oxygen		Unchanged
Spy Pond	MA71040	5	5	Harmful Algal Blooms		Unchanged
Spy Pond	MA71040	5	5	Phosphorus, Total		Unchanged
Unnamed Tributary	MA71-13	4a	4a	Escherichia Coli (E. Coli)	R1_MA_2019_01	Unchanged

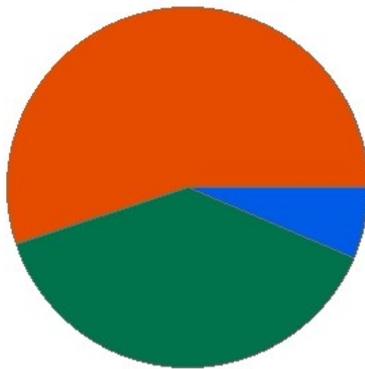
Waterbody	AU_ID	2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
Unnamed Tributary	MA71-19	5	5	Benthic Macroinvertebrates		Unchanged
Upper Mystic Lake	MA71043	5	5	(Curly-leaf Pondweed*)		Unchanged
Upper Mystic Lake	MA71043	5	5	Dissolved Oxygen	R1_MA_2020_5a	Unchanged
Upper Mystic Lake	MA71043	5	5	Dissolved Oxygen Supersaturation	R1_MA_2020_5a	Unchanged
Upper Mystic Lake	MA71043	5	5	Enterococcus		Unchanged
Wedge Pond	MA71045	5	5	Dissolved Oxygen		Unchanged
Wedge Pond	MA71045	5	5	Harmful Algal Blooms		Unchanged
Wedge Pond	MA71045	5	5	Phosphorus, Total		Unchanged
Winn Brook	MA71-09	4a	4a	(Physical Substrate Habitat Alterations*)		Unchanged
Winn Brook	MA71-09	4a	4a	Escherichia Coli (E. Coli)	R1_MA_2019_01	Unchanged
Winter Pond	MA71047	5	5	(Non-Native Aquatic Plants*)		Unchanged
Winter Pond	MA71047	5	5	Nutrient/Eutrophication Biological Indicators		Unchanged

Aberjona River (MA71-01)

Location:	Source just south of Birch Meadow Drive, Reading to inlet Upper Mystic Lake at Mystic Valley Parkway, Winchester (portion culverted underground). (through former 2010 segments: Judkins Pond MA71021 and Mill Pond MA71031).
AU Type:	RIVER
AU Size:	9.2 MILES
Classification/Qualifier:	B: WWF

Aberjona River - MA71-01

Watershed Area: 25.21 square miles



■ Percent Agriculture ■ Percent Natural
■ Percent Developed ■ Percent Wetland

Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	25.21	11.41	5.07	2.8
Agriculture	0.2%	0.4%	0.1%	0.1%
Developed	55%	49.1%	43.4%	39.4%
Natural	38.4%	46.5%	40.3%	49.4%
Wetland	6.4%	4.1%	16.1%	11.1%
Impervious Cover	36.1%			

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Physical Substrate Habitat Alterations*)		Unchanged
5	5	Ammonia, Un-ionized		Unchanged
5	5	Arsenic in Sediment		Unchanged
5	5	Benthic Macroinvertebrates		Unchanged
5	5	Chloride		Unchanged
5	5	Dissolved Oxygen	R1_MA_2020_5a	Unchanged
5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Unchanged
5	5	Fish Bioassessments		Unchanged
5	5	Phosphorus, Total	R1_MA_2020_5a	Unchanged
5	5	Sediment Bioassay [Chronic Toxicity Freshwater]		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
(Physical Substrate Habitat Alterations*)	Channelization (Y)	X				
Ammonia, Un-ionized	Municipal Point Source Discharges (Y)	X				
Arsenic in Sediment	Source Unknown (N)	X				

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Benthic Macroinvertebrates	Source Unknown (N)	X				
Chloride	Source Unknown (N)	X				
Dissolved Oxygen	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
Fish Bioassessments	Source Unknown (N)	X				
Phosphorus, Total	Source Unknown (N)	X				
Sediment Bioassay [Chronic Toxicity Freshwater]	CERCLA NPL (Superfund) Sites (Y)	X				
Sediment Bioassay [Chronic Toxicity Freshwater]	Contaminated Sediments (Y)	X				

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
Recent data are not available so the Aquatic Life Use of the Aberjona River (MA71-01) will continue to be assessed as Not Supporting, with all impairments (Ammonia, Un-ionized, Arsenic in Sediment, Benthic Macroinvertebrates, Chloride, Dissolved Oxygen, Fish Bioassessment, Phosphorus, Total, Physical Substrate Habitat Alterations, and Sediment Bioassay [Chronic Toxicity Freshwater]) being carried forward.	

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No fish toxics sampling has been conducted in the Aberjona River (MA71-01), so the Fish Consumption Use is Not Assessed.	

Aesthetic

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Recent data are not available, so the Aesthetics Use of the Aberjona River (MA71-01) is Not Assessed.	

Primary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	

E. coli bacteria sampling was conducted in the Aberjona River (MA71-01) by MyRWA staff/volunteers during the 2011-2019 recreational seasons (Apr 1 – Oct 31). Bacteria samples were collected (generally, n=7/yr) from multiple stations as follows: MyRWA_ABR049 (Salem Street bridge, downstream side, Woburn), MyRWA_ABR028 (Washington Street bridge, upstream side, Winchester), and MyRWA_ABR006 (at USGS Gaging Station in Winchester, the bank upstream of weir). Analysis of this moderate frequency dataset indicated that among all stations, 100% of intervals in the most recent five years of data had GMs >126 cfu/100mL and that for nearly all years of data (in the most recent five years) for the three stations, ≥2 samples (n= 2-7) exceeded the 410 cfu/100mL STV. While bacteria data were collected infrequently at several additional MyRWA stations (MyRWA_ABR036, MyRWA_ABR031, MyRWA_ABRJUP), sample size was insufficient to allow analysis of these data for use attainment decisions.

MyRWA bacteria data indicate that the Primary Contact Recreational Use for the Aberjona River (MA71-01) should remain assessed as Not Supporting, with the prior impairment for Escherichia Coli (E. Coli) being carried forward.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MyRWA_ABR006	Mystic River Watershed Association	Water Quality	Aberjona River	Aberjona River at USGS Gaging Station in Winchester; the bank upstream of weir	42.447347	-71.138722
MyRWA_ABR028	Mystic River Watershed Association	Water Quality	Aberjona River	Aberjona River at Washington Street in Winchester; upstream side of the bridge	42.469472	-71.124958
MyRWA_ABR031	Mystic River Watershed Association	Water Quality	Aberjona River	None submitted by MYRWA	42.4742	-71.119833
MyRWA_ABR036	Mystic River Watershed Association	Water Quality	Aberjona River	None submitted by MYRWA	42.479141	-71.117941
MyRWA_ABR049	Mystic River Watershed Association	Water Quality	Aberjona River	Aberjona River at Salem Street in Woburn; downstream side of the bridge	42.491475	-71.128875
MyRWA_ABRJUP	Mystic River Watershed Association	Water Quality	Aberjona River	Centerline site near former outfall in Judkin's Pond	42.454952	-71.13473

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MyRWA 2019) (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
MyRWA_ABR006	Mystic River Watershed Association	E. coli	04/20/11	09/21/11	6	122	2010	425
MyRWA_ABR006	Mystic River Watershed Association	E. coli	04/18/12	10/17/12	7	98	24200	511
MyRWA_ABR006	Mystic River Watershed Association	E. coli	04/17/13	10/16/13	7	160	1660	591

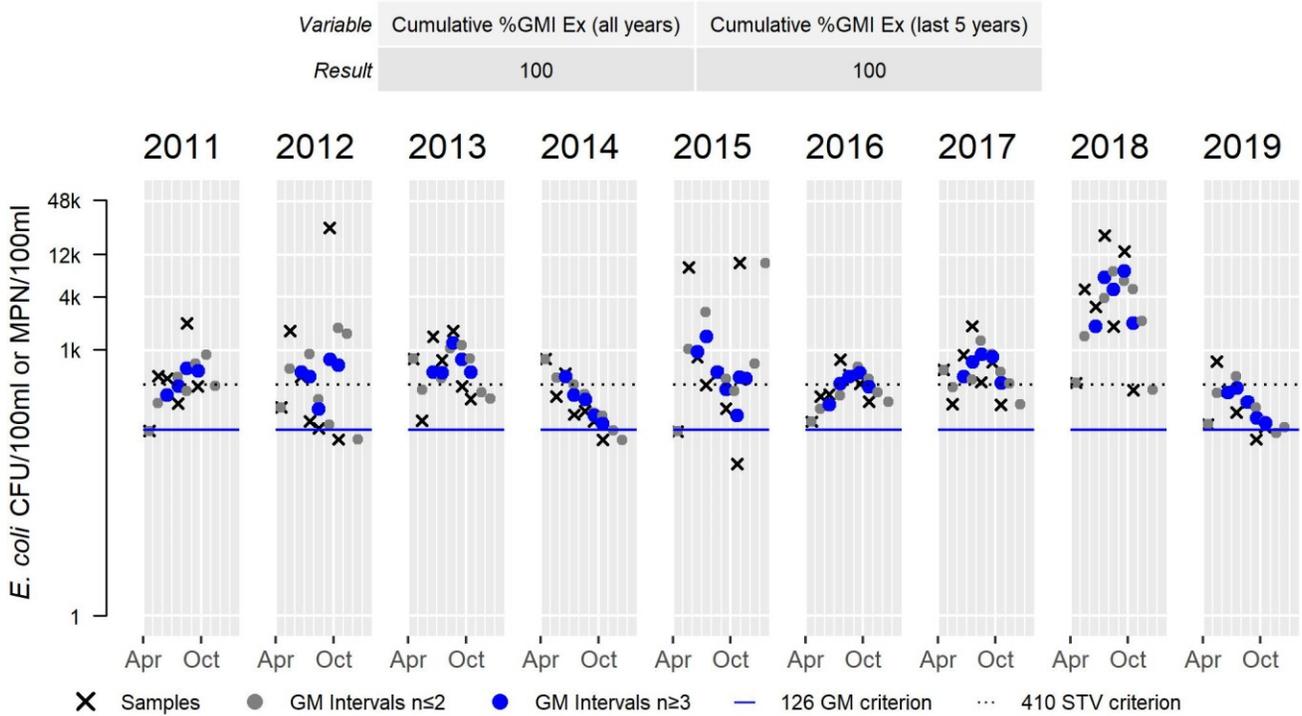
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MyRWA_ABR006	Mystic River Watershed Association	E. coli	04/16/14	10/15/14	7	97	794	258
MyRWA_ABR006	Mystic River Watershed Association	E. coli	04/15/15	10/29/15	8	52	9678	618
MyRWA_ABR006	Mystic River Watershed Association	E. coli	04/20/16	10/19/16	7	156	780	351
MyRWA_ABR006	Mystic River Watershed Association	E. coli	04/19/17	10/18/17	7	243	1870	567
MyRWA_ABR006	Mystic River Watershed Association	E. coli	04/18/18	10/17/18	7	354	19900	2718
MyRWA_ABR006	Mystic River Watershed Association	E. coli	04/17/19	10/16/19	7	98	749	220
MyRWA_ABR028	Mystic River Watershed Association	E. coli	04/20/11	10/19/11	7	110	2990	483
MyRWA_ABR028	Mystic River Watershed Association	E. coli	04/18/12	10/17/12	7	173	14100	630
MyRWA_ABR028	Mystic River Watershed Association	E. coli	04/17/13	10/16/13	7	158	2280	463
MyRWA_ABR028	Mystic River Watershed Association	E. coli	04/16/14	10/15/14	7	41	1330	357
MyRWA_ABR028	Mystic River Watershed Association	E. coli	04/15/15	10/29/15	8	85	24200	1511
MyRWA_ABR028	Mystic River Watershed Association	E. coli	04/20/16	10/19/16	7	169	1150	551
MyRWA_ABR028	Mystic River Watershed Association	E. coli	04/19/17	10/18/17	7	288	1550	736
MyRWA_ABR028	Mystic River Watershed Association	E. coli	04/18/18	10/17/18	7	546	19900	2810
MyRWA_ABR028	Mystic River Watershed Association	E. coli	04/17/19	10/16/19	7	63	906	271
MyRWA_ABR031	Mystic River Watershed Association	E. coli	10/29/15	10/29/15	1	9678	9678	9678
MyRWA_ABR036	Mystic River Watershed Association	E. coli	10/29/15	10/29/15	1	19890	19890	19890
MyRWA_ABR049	Mystic River Watershed Association	E. coli	04/20/11	10/19/11	7	145	8160	401
MyRWA_ABR049	Mystic River Watershed Association	E. coli	04/18/12	10/17/12	7	73	24200	545

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MyRWA_ABR049	Mystic River Watershed Association	E. coli	04/17/13	10/16/13	7	10	1610	109
MyRWA_ABR049	Mystic River Watershed Association	E. coli	04/16/14	10/15/14	7	175	1600	454
MyRWA_ABR049	Mystic River Watershed Association	E. coli	04/15/15	10/29/15	8	84	27550	1142
MyRWA_ABR049	Mystic River Watershed Association	E. coli	04/20/16	10/19/16	7	31	933	297
MyRWA_ABR049	Mystic River Watershed Association	E. coli	04/19/17	10/18/17	6	63	909	386
MyRWA_ABR049	Mystic River Watershed Association	E. coli	04/18/18	10/17/18	7	384	24200	3422
MyRWA_ABR049	Mystic River Watershed Association	E. coli	04/17/19	10/16/19	7	122	1070	306
MyRWA_ABRJUP	Mystic River Watershed Association	E. coli	08/15/13	08/15/13	1	1102	1102	1102

MyRWA_ABR006 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res														
Samples	6	Samples	7	Samples	7	Samples	7	Samples	8	Samples	7	Samples	7	Samples	7
SeasGM	425	SeasGM	511	SeasGM	591	SeasGM	258	SeasGM	618	SeasGM	351	SeasGM	567	SeasGM	2718
#GMI	4	#GMI	5	#GMI	5	#GMI	5	#GMI	7	#GMI	5	#GMI	5	#GMI	5
#GMI Ex	4	#GMI Ex	5	#GMI Ex	5	#GMI Ex	5	#GMI Ex	7	#GMI Ex	5	#GMI Ex	5	#GMI Ex	5
%GMI Ex	100														
n>STV	3	n>STV	3	n>STV	4	n>STV	2	n>STV	4	n>STV	3	n>STV	5	n>STV	6
%n>STV	50	%n>STV	43	%n>STV	57	%n>STV	29	%n>STV	50	%n>STV	43	%n>STV	71	%n>STV	86

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

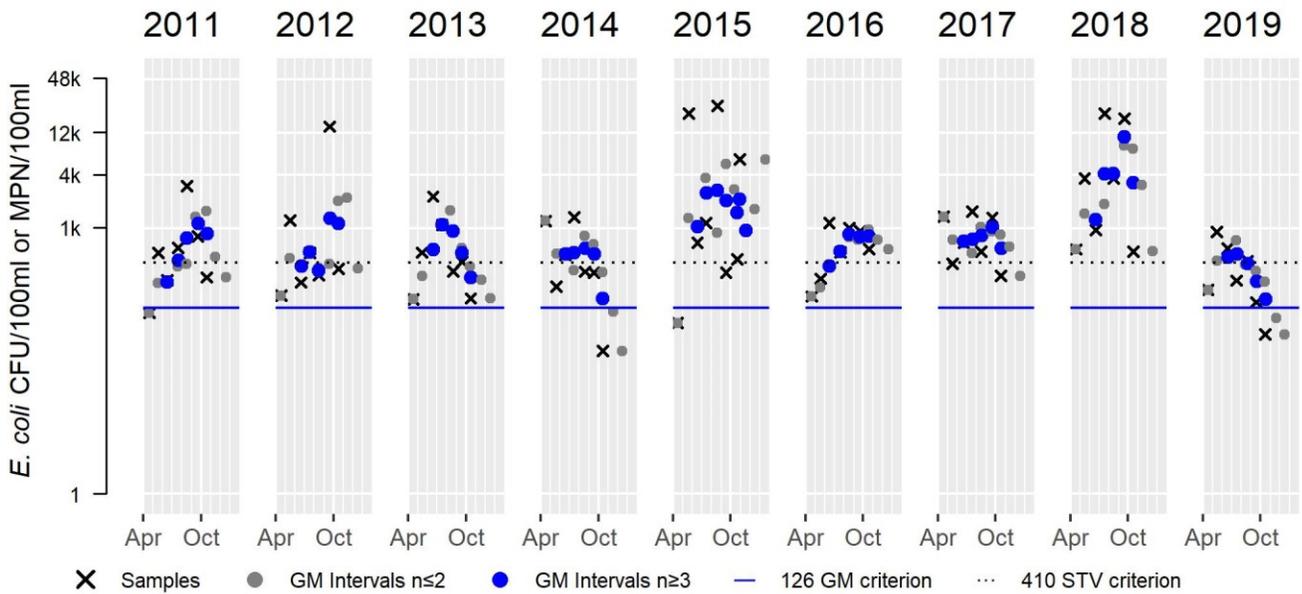


MyRWA_ABR028 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res	Var	Res	Var	Res	Var	Res								
Samples	7	Samples	7	Samples	7	Samples	7	Samples	8	Samples	7	Samples	7	Samples	7
SeasGM	483	SeasGM	630	SeasGM	463	SeasGM	357	SeasGM	1511	SeasGM	551	SeasGM	736	SeasGM	2810
#GMI	5	#GMI	5	#GMI	5	#GMI	5	#GMI	7	#GMI	5	#GMI	5	#GMI	5
#GMI Ex	5	#GMI Ex	7	#GMI Ex	5	#GMI Ex	5	#GMI Ex	5						
%GMI Ex	100	%GMI Ex	100	%GMI Ex	100	%GMI Ex	100								
n>STV	4	n>STV	3	n>STV	4	n>STV	3	n>STV	6	n>STV	5	n>STV	5	n>STV	7
%n>STV	57	%n>STV	43	%n>STV	57	%n>STV	43	%n>STV	75	%n>STV	71	%n>STV	71	%n>STV	100

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

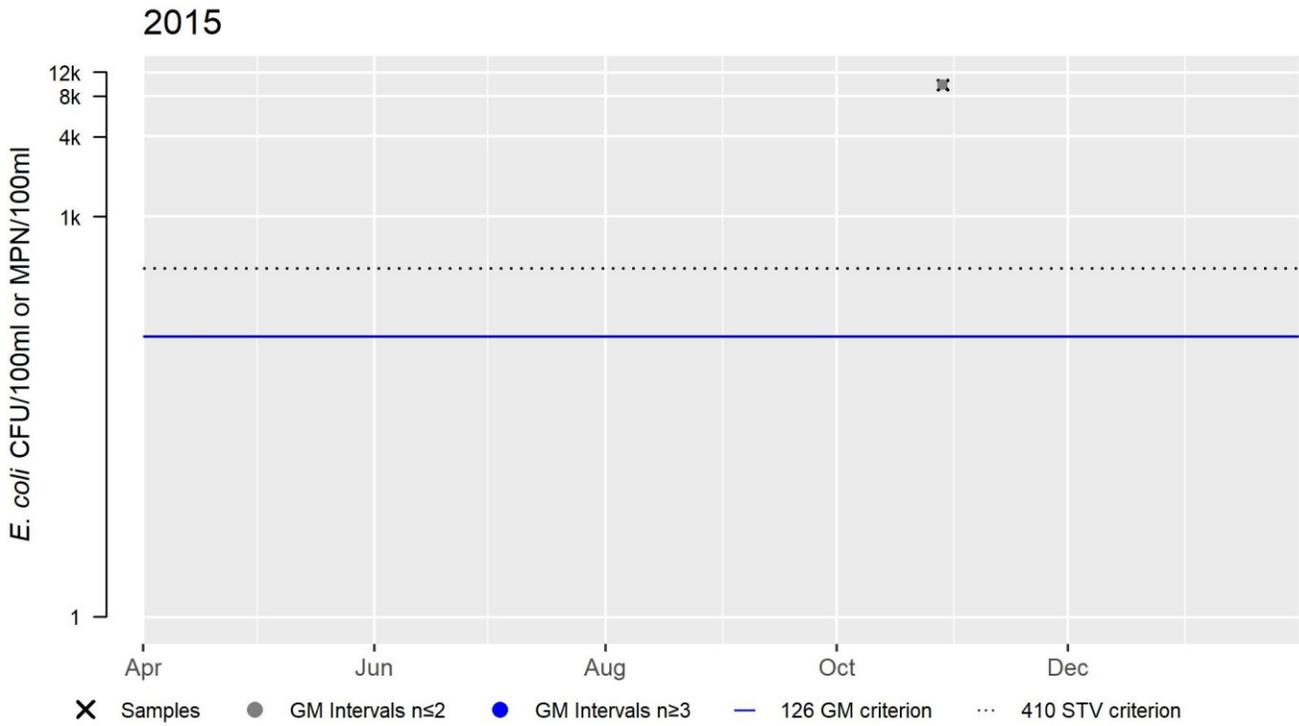
Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	100	100



MyRWA_ABR031 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	9678
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

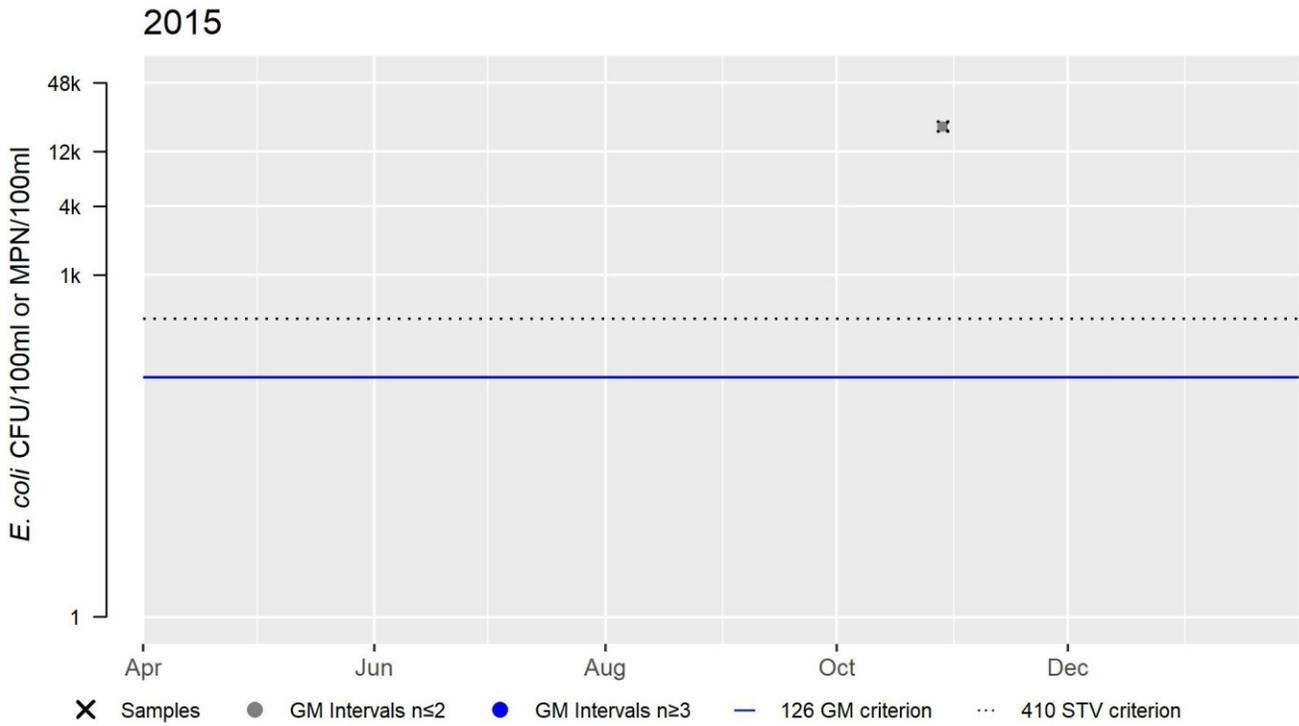
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exceedances; %GMI Ex = percent GMI Exceedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



MyRWA_ABR036 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	19890
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

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

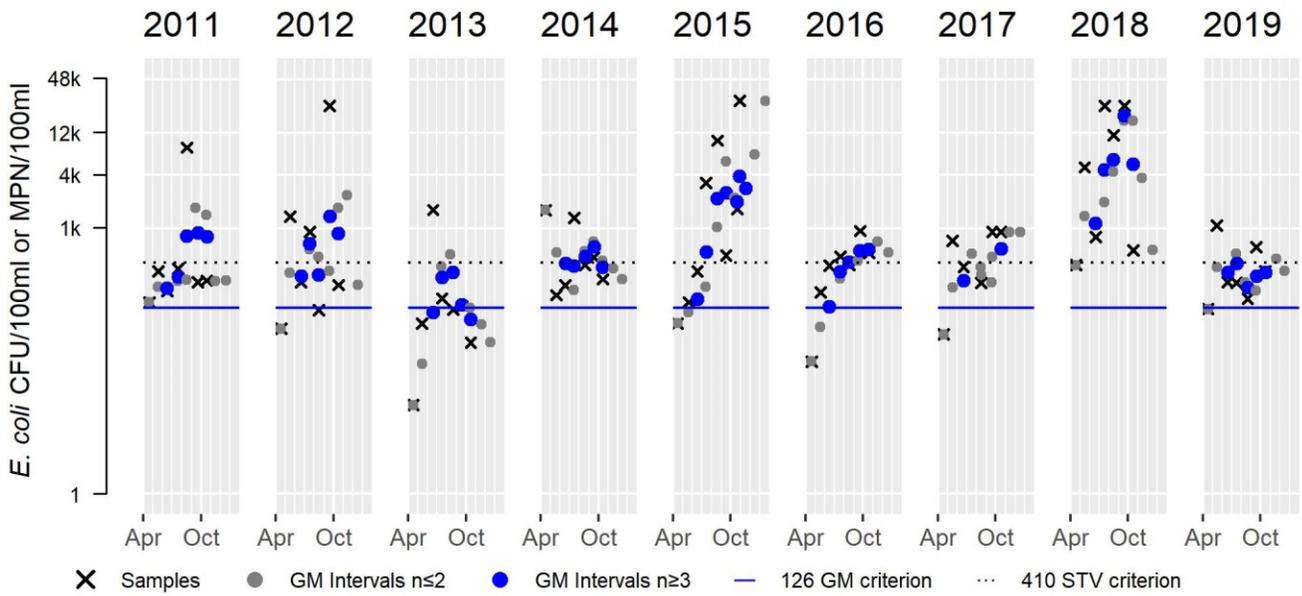


MyRWA_ABR049 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res	Var	Res	Var	Res	Var	Res								
Samples	7	Samples	7	Samples	7	Samples	7	Samples	8	Samples	7	Samples	6	Samples	7
SeasGM	401	SeasGM	545	SeasGM	109	SeasGM	454	SeasGM	1142	SeasGM	297	SeasGM	386	SeasGM	3422
#GMI	5	#GMI	5	#GMI	5	#GMI	5	#GMI	7	#GMI	5	#GMI	2	#GMI	5
#GMI Ex	5	#GMI Ex	5	#GMI Ex	3	#GMI Ex	5	#GMI Ex	7	#GMI Ex	5	#GMI Ex	2	#GMI Ex	5
%GMI Ex	100	%GMI Ex	100	%GMI Ex	60	%GMI Ex	100	%GMI Ex	100	%GMI Ex	100	%GMI Ex	100	%GMI Ex	100
n>STV	1	n>STV	3	n>STV	1	n>STV	3	n>STV	5	n>STV	3	n>STV	3	n>STV	6
%n>STV	14	%n>STV	43	%n>STV	14	%n>STV	43	%n>STV	62	%n>STV	43	%n>STV	50	%n>STV	86

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

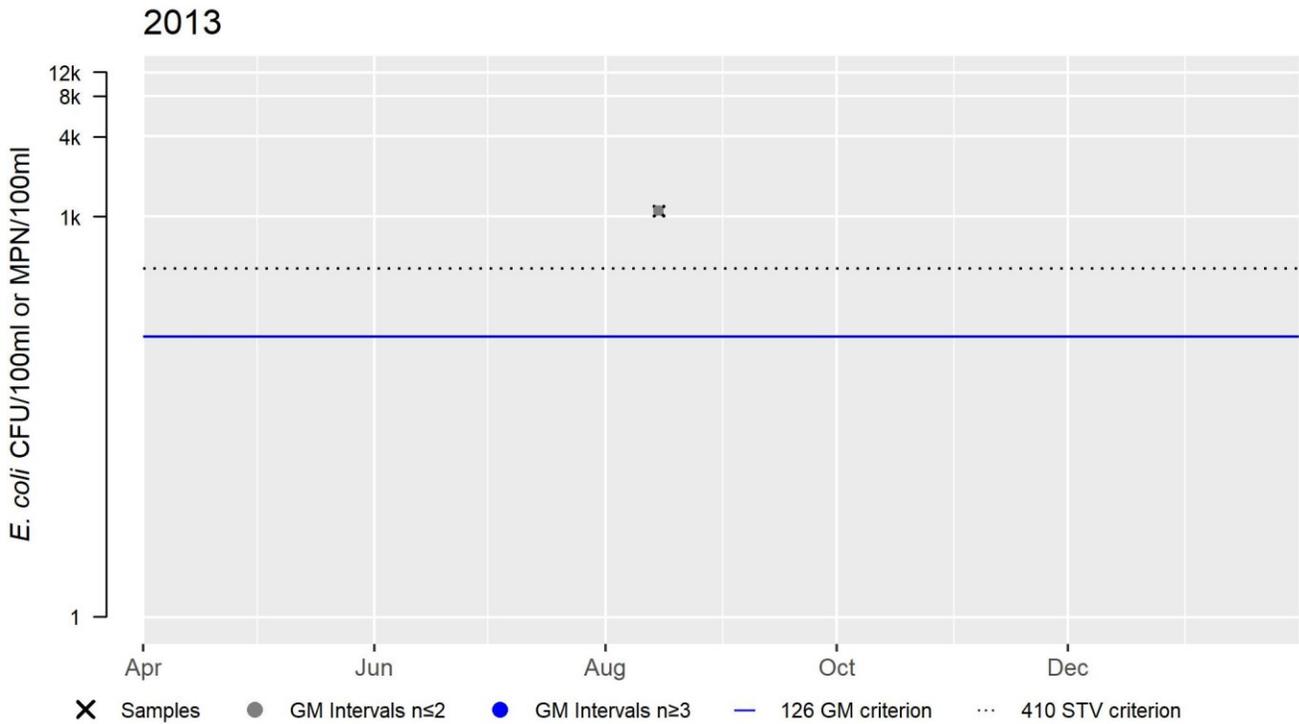
Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	95	100



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

Var	Res
Samples	1
SeasGM	1102
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

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



Secondary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	

E. coli bacteria sampling was conducted at multiple locations in the Aberjona River (MA71-01) by MyRWA staff and volunteers from 2011-2019. Bacteria samples were collected throughout the year (n= 10-12/yr) on the downstream side of the Salem Street bridge in Woburn (MyRWA_ABR049). Analysis of this moderate frequency dataset indicated that in two of the most recent five years of data, >20% of intervals (64%) had GMs >630 cfu/100mL, and that cumulatively, 31% of intervals exceeded the GM criterion. However, ≥2 samples (n= 4-5/yr) exceeded the 1260 cfu/100mL STV in only two of the most recent five years of data, while the remaining years had fewer exceedances (n= 0-1). Downstream, MyRWA staff/volunteers also collected bacteria samples roughly monthly (n= 10-12/yr) at Washington Street in Winchester on the upstream side of the bridge (MyRWA_ABR028). Analysis of this moderate frequency data indicated that except for GM intervals in the most recent year with data (0% exceedances in 2019), four of the most recent five years of data had >20% of intervals (40-73%) with GMs >630 cfu/100mL. Cumulatively, 49% of intervals had GMs >630 cfu/100mL and of the five most recent years of data, there were three years in which ≥2 samples (n= 3-5/yr) exceeded the STV criterion. Bacteria samples were collected by MyRWA staff/volunteers at a third station (n=10-12/yr) near the USGS Gaging Station in Winchester, from the bank upstream of the weir (MyRWA_ABR006). Analysis of this moderate frequency data indicated that in three of the most recent five years of data, >20% of intervals (23-73%) had GMs >630 cfu/100mL. Cumulatively, >20% of intervals (30%) in the most recent five years exceeded the GM criterion, but only two out of five years had ≥2 samples (n=2-5) which exceeded the 1260 cfu/100 mL STV criterion. While bacteria data were collected infrequently at several additional MyRWA stations (MyRWA_ABR036, MyRWA_ABR031, MyRWA_ABRUTA001, MyRWA_ABRJUP), sample size was insufficient to allow analysis of these data for use attainment decisions. The Secondary Contact Recreational Use for the Aberjona River is assessed as Not Supporting based on the MyRWA *E. coli* data from all three stations with long-term data (since at least two of three use impairment conditions (MassDEP 2022) were documented for each station), so an impairment is being added for Escherichia Coli (*E. Coli*).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MyRWA_ABR006	Mystic River Watershed Association	Water Quality	Aberjona River	Aberjona River at USGS Gaging Station in Winchester; the bank upstream of weir	42.447347	-71.138722
MyRWA_ABR028	Mystic River Watershed Association	Water Quality	Aberjona River	Aberjona River at Washington Street in Winchester; upstream side of the bridge	42.469472	-71.124958
MyRWA_ABR031	Mystic River Watershed Association	Water Quality	Aberjona River	None submitted by MYRWA	42.4742	-71.119833
MyRWA_ABR036	Mystic River Watershed Association	Water Quality	Aberjona River	None submitted by MYRWA	42.479141	-71.117941
MyRWA_ABR049	Mystic River Watershed Association	Water Quality	Aberjona River	Aberjona River at Salem Street in Woburn; downstream side of the bridge	42.491475	-71.128875
MyRWA_ABRJUP	Mystic River Watershed Association	Water Quality	Aberjona River	Centerline site near former outfall in Judkin's Pond	42.454952	-71.13473
MyRWA_ABRUTA001	Mystic River Watershed Association	Water Quality	Aberjona River	None submitted by MYRWA	42.4681	-71.130872

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MyRWA 2019)
(MassDEP Undated 2)

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

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MyRWA_ABR006	Mystic River Watershed Association	E. coli	01/19/11	12/14/11	11	52	2010	295
MyRWA_ABR006	Mystic River Watershed Association	E. coli	01/18/12	12/19/12	12	63	24200	457
MyRWA_ABR006	Mystic River Watershed Association	E. coli	01/16/13	11/20/13	11	109	1660	407
MyRWA_ABR006	Mystic River Watershed Association	E. coli	01/15/14	12/17/14	11	97	1330	355
MyRWA_ABR006	Mystic River Watershed Association	E. coli	01/21/15	12/16/15	12	10	9678	387
MyRWA_ABR006	Mystic River Watershed Association	E. coli	01/20/16	12/21/16	12	156	3650	405
MyRWA_ABR006	Mystic River Watershed Association	E. coli	01/18/17	12/20/17	12	156	1870	436
MyRWA_ABR006	Mystic River Watershed Association	E. coli	01/17/18	12/19/18	12	265	19900	1284
MyRWA_ABR006	Mystic River Watershed Association	E. coli	01/16/19	10/16/19	10	98	749	215
MyRWA_ABR028	Mystic River Watershed Association	E. coli	01/19/11	12/14/11	12	63	2990	368
MyRWA_ABR028	Mystic River Watershed Association	E. coli	01/18/12	12/19/12	12	52	14100	586
MyRWA_ABR028	Mystic River Watershed Association	E. coli	01/16/13	12/18/13	12	158	2280	345
MyRWA_ABR028	Mystic River Watershed Association	E. coli	01/15/14	12/17/14	12	41	2500	495
MyRWA_ABR028	Mystic River Watershed Association	E. coli	01/21/15	12/16/15	12	52	24200	791
MyRWA_ABR028	Mystic River Watershed Association	E. coli	01/20/16	12/21/16	12	169	3450	524
MyRWA_ABR028	Mystic River Watershed Association	E. coli	01/18/17	12/20/17	12	201	1550	534
MyRWA_ABR028	Mystic River Watershed Association	E. coli	01/17/18	12/19/18	12	135	19900	1294

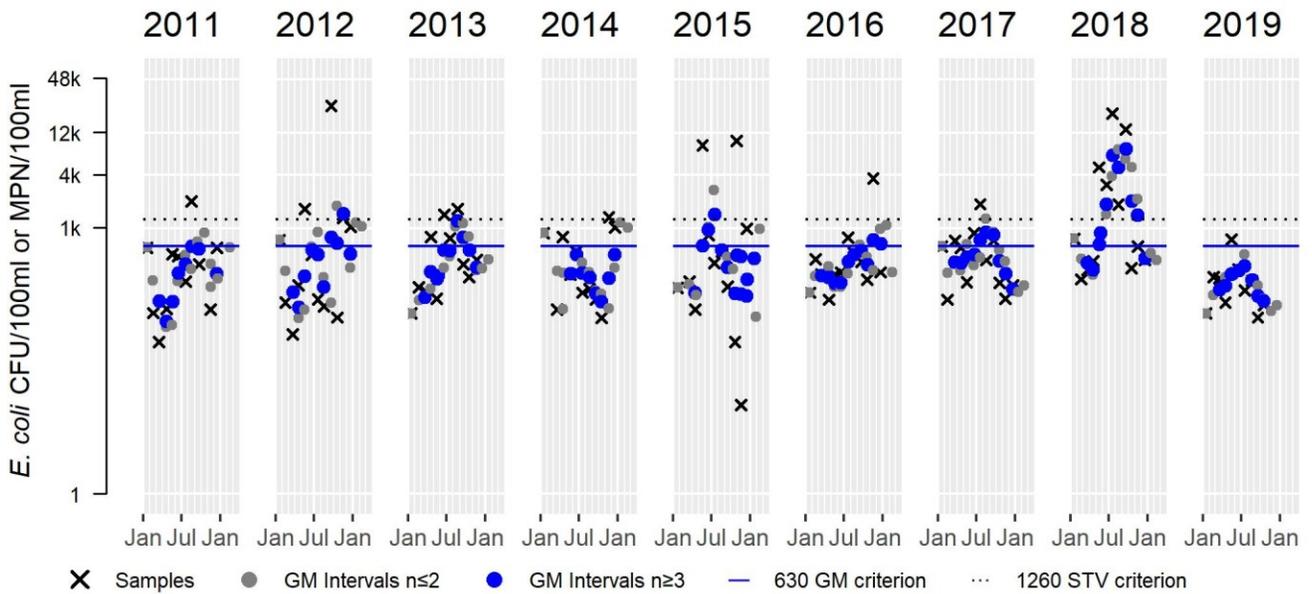
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MyRWA_ABR028	Mystic River Watershed Association	E. coli	01/16/19	10/16/19	10	63	906	249
MyRWA_ABR031	Mystic River Watershed Association	E. coli	10/29/15	10/29/15	1	9678	9678	9678
MyRWA_ABR036	Mystic River Watershed Association	E. coli	11/10/14	11/10/14	1	58	58	58
MyRWA_ABR036	Mystic River Watershed Association	E. coli	10/29/15	10/29/15	1	19890	19890	19890
MyRWA_ABR049	Mystic River Watershed Association	E. coli	02/16/11	12/14/11	11	20	8160	228
MyRWA_ABR049	Mystic River Watershed Association	E. coli	01/18/12	12/19/12	12	31	24200	375
MyRWA_ABR049	Mystic River Watershed Association	E. coli	01/16/13	11/20/13	10	10	1610	119
MyRWA_ABR049	Mystic River Watershed Association	E. coli	01/15/14	12/17/14	11	160	1600	487
MyRWA_ABR049	Mystic River Watershed Association	E. coli	01/21/15	11/18/15	11	63	27550	654
MyRWA_ABR049	Mystic River Watershed Association	E. coli	01/20/16	12/21/16	12	31	3450	308
MyRWA_ABR049	Mystic River Watershed Association	E. coli	01/18/17	12/20/17	11	63	909	235
MyRWA_ABR049	Mystic River Watershed Association	E. coli	01/17/18	12/19/18	12	31	24200	961
MyRWA_ABR049	Mystic River Watershed Association	E. coli	01/16/19	10/16/19	10	119	1070	251
MyRWA_ABRJUP	Mystic River Watershed Association	E. coli	08/15/13	08/15/13	1	1102	1102	1102
MyRWA_ABRUTA001	Mystic River Watershed Association	E. coli	02/22/11	02/22/11	1	8	8	8

MyRWA_ABR006 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res														
Samples	11	Samples	12	Samples	11	Samples	11	Samples	12	Samples	12	Samples	12	Samples	10
SeasGM	295	SeasGM	457	SeasGM	407	SeasGM	355	SeasGM	387	SeasGM	405	SeasGM	436	SeasGM	1284
#GMI	8	#GMI	10	#GMI	10	#GMI	8	#GMI	13	#GMI	10	#GMI	10	#GMI	11
#GMI Ex	0	#GMI Ex	3	#GMI Ex	2	#GMI Ex	0	#GMI Ex	3	#GMI Ex	2	#GMI Ex	3	#GMI Ex	8
%GMI Ex	0	%GMI Ex	30	%GMI Ex	20	%GMI Ex	0	%GMI Ex	23	%GMI Ex	20	%GMI Ex	30	%GMI Ex	73
n>STV	1	n>STV	3	n>STV	2	n>STV	1	n>STV	2	n>STV	1	n>STV	1	n>STV	5
%n>STV	9	%n>STV	25	%n>STV	18	%n>STV	9	%n>STV	17	%n>STV	8	%n>STV	8	%n>STV	42

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	24	30

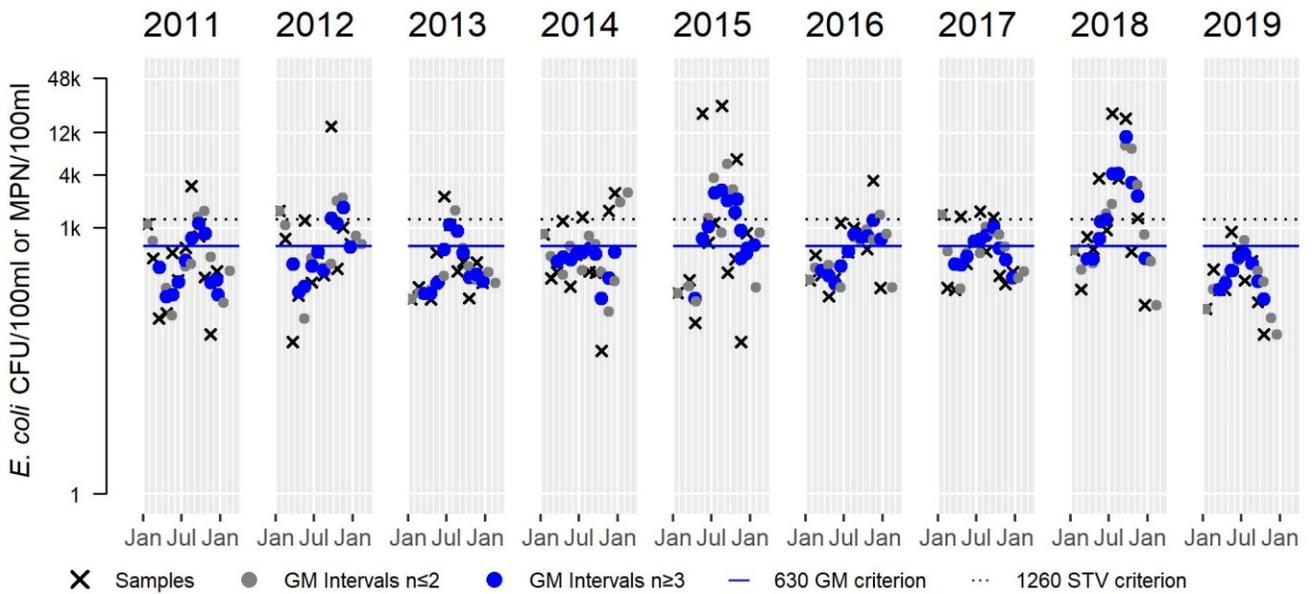


MyRWA_ABR028 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res														
Samples	12	Samples	10												
SeasGM	368	SeasGM	586	SeasGM	345	SeasGM	495	SeasGM	791	SeasGM	524	SeasGM	534	SeasGM	1294
#GMI	11	#GMI	10	#GMI	11	#GMI	10	#GMI	13	#GMI	10	#GMI	10	#GMI	11
#GMI Ex	3	#GMI Ex	3	#GMI Ex	2	#GMI Ex	0	#GMI Ex	9	#GMI Ex	5	#GMI Ex	4	#GMI Ex	8
%GMI Ex	27	%GMI Ex	30	%GMI Ex	18	%GMI Ex	0	%GMI Ex	69	%GMI Ex	50	%GMI Ex	40	%GMI Ex	73
n>STV	1	n>STV	2	n>STV	1	n>STV	3	n>STV	3	n>STV	1	n>STV	4	n>STV	5
%n>STV	8	%n>STV	17	%n>STV	8	%n>STV	25	%n>STV	25	%n>STV	8	%n>STV	33	%n>STV	42

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

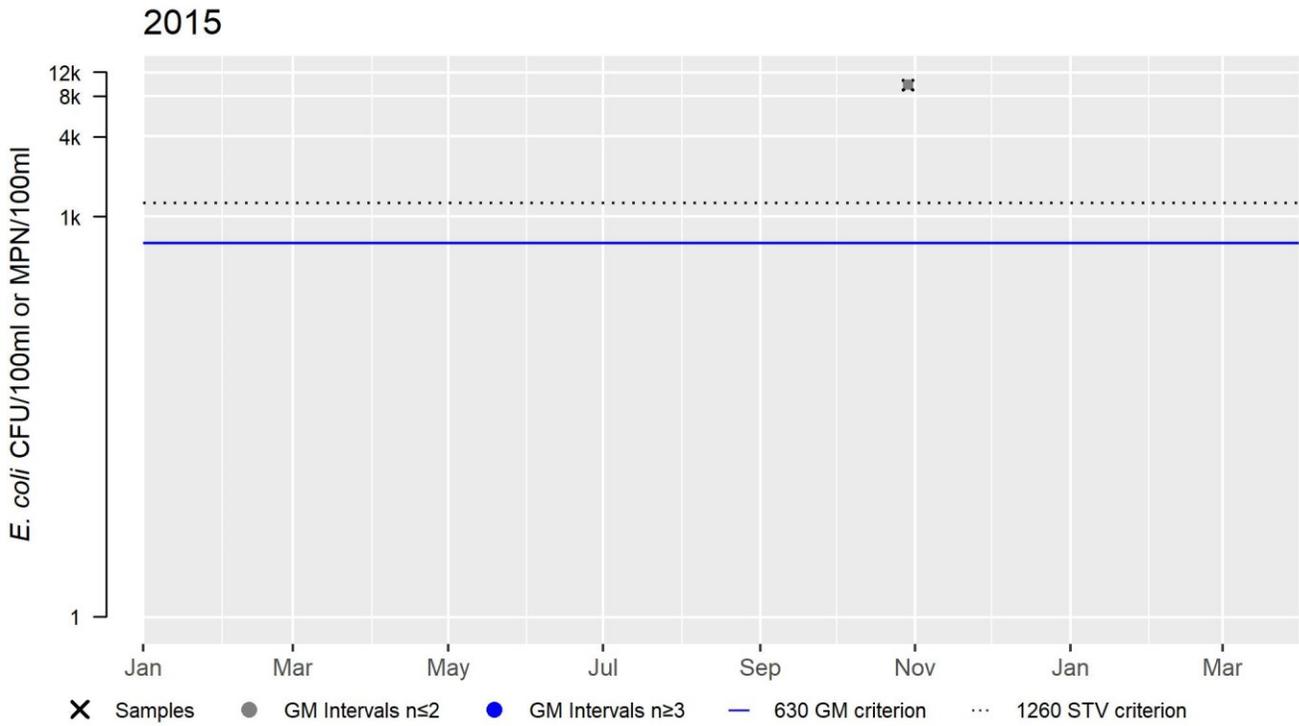
Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	36	49



MyRWA_ABR031 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	9678
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

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



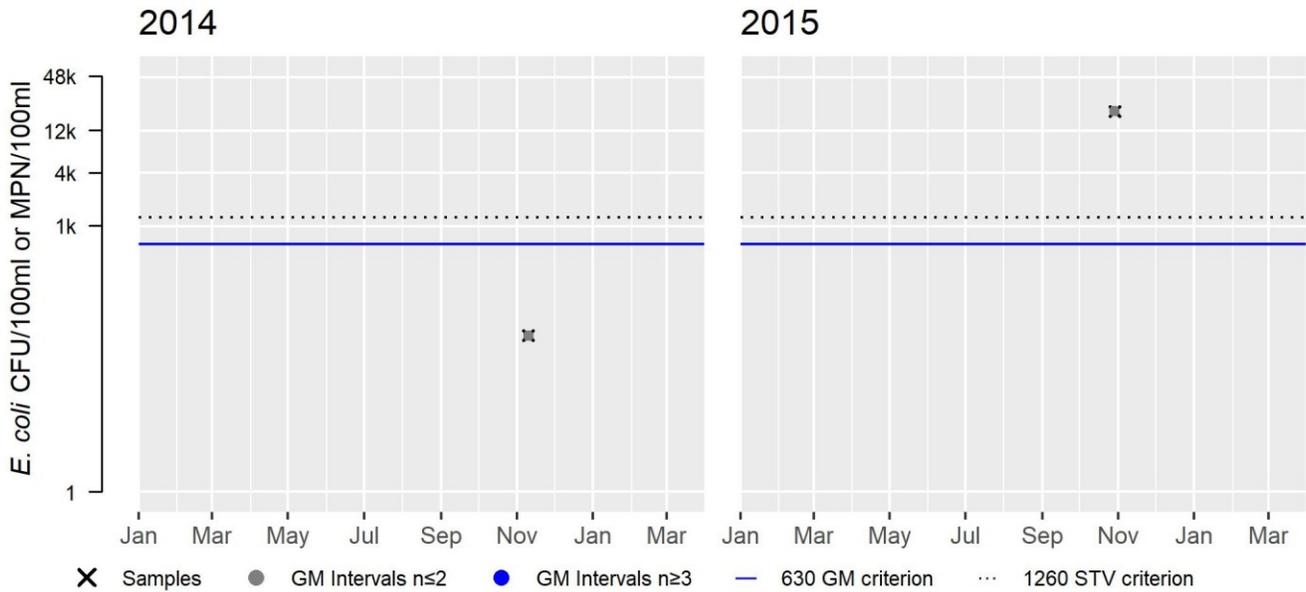
MyRWA_ABR036 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	58
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

Var	Res
Samples	1
SeasGM	19890
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

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

Variable	Cumulative %GMI Ex (all years)
Result	0

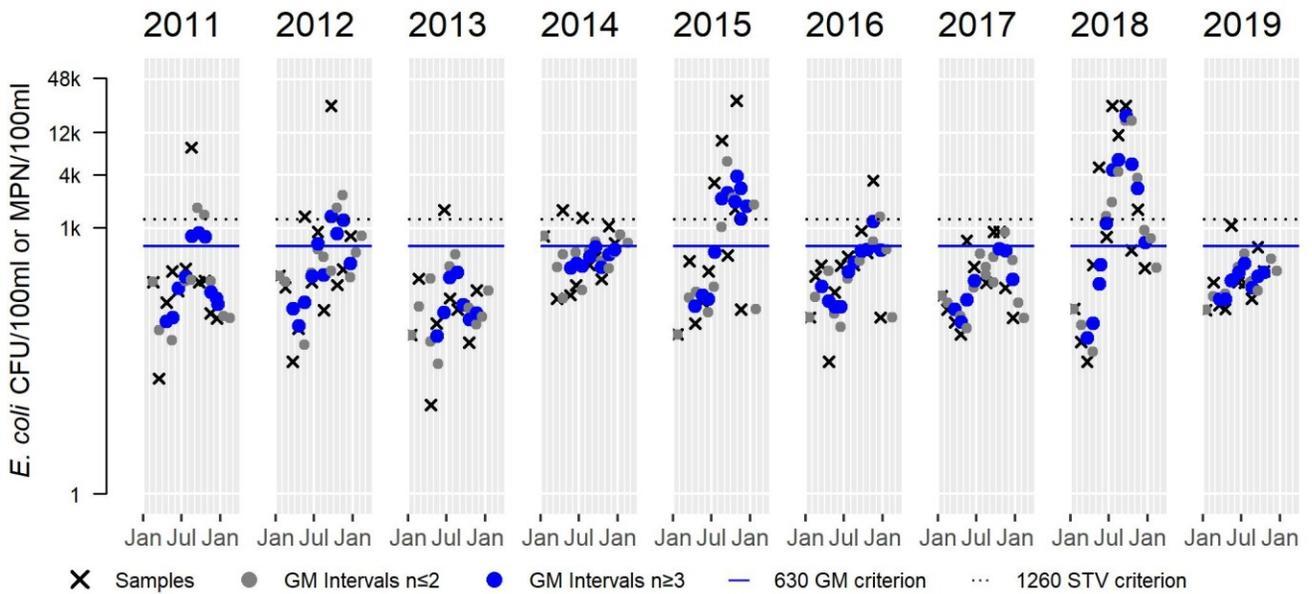


MyRWA_ABR049 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res														
Samples	11	Samples	12	Samples	10	Samples	11	Samples	11	Samples	12	Samples	11	Samples	10
SeasGM	228	SeasGM	375	SeasGM	119	SeasGM	487	SeasGM	654	SeasGM	308	SeasGM	235	SeasGM	961
#GMI	10	#GMI	10	#GMI	7	#GMI	8	#GMI	11	#GMI	10	#GMI	7	#GMI	11
#GMI Ex	3	#GMI Ex	4	#GMI Ex	0	#GMI Ex	0	#GMI Ex	7	#GMI Ex	1	#GMI Ex	0	#GMI Ex	7
%GMI Ex	30	%GMI Ex	40	%GMI Ex	0	%GMI Ex	0	%GMI Ex	64	%GMI Ex	10	%GMI Ex	0	%GMI Ex	64
n>STV	1	n>STV	2	n>STV	1	n>STV	2	n>STV	4	n>STV	1	n>STV	0	n>STV	5
%n>STV	9	%n>STV	17	%n>STV	10	%n>STV	18	%n>STV	36	%n>STV	8	%n>STV	0	%n>STV	42

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

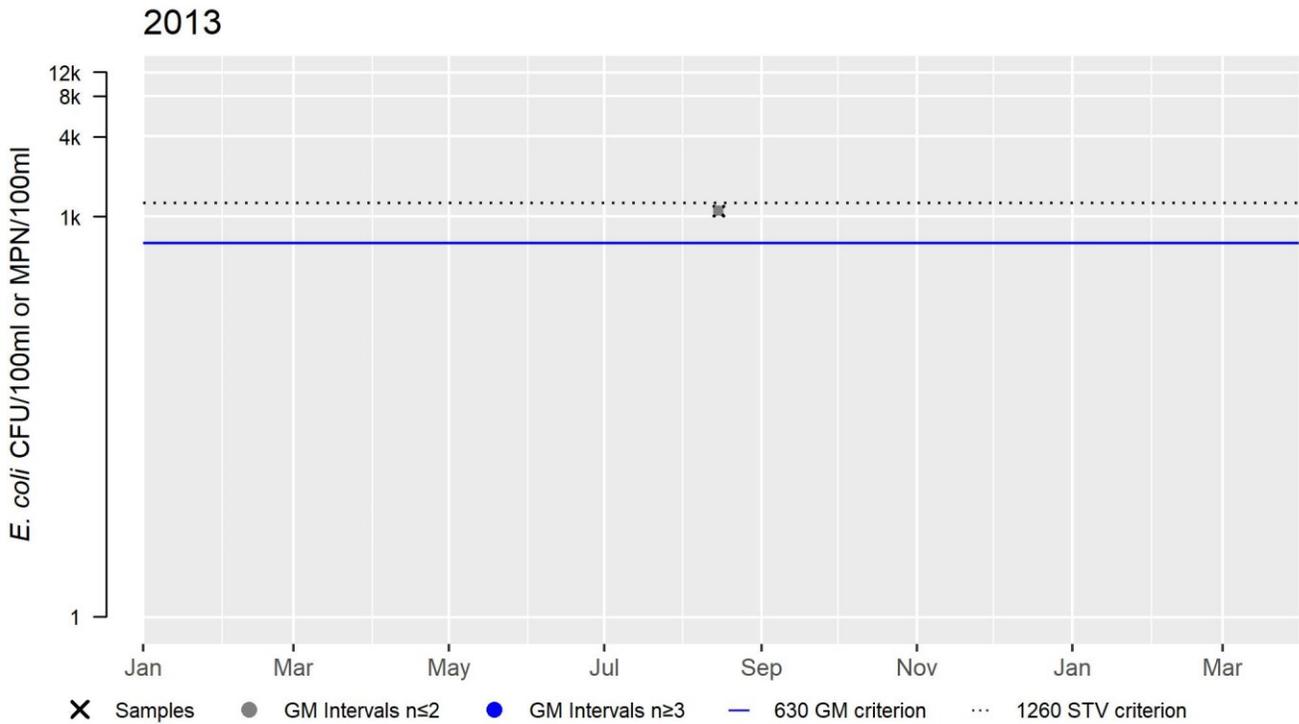
Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	27	31



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

Var	Res
Samples	1
SeasGM	1102
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

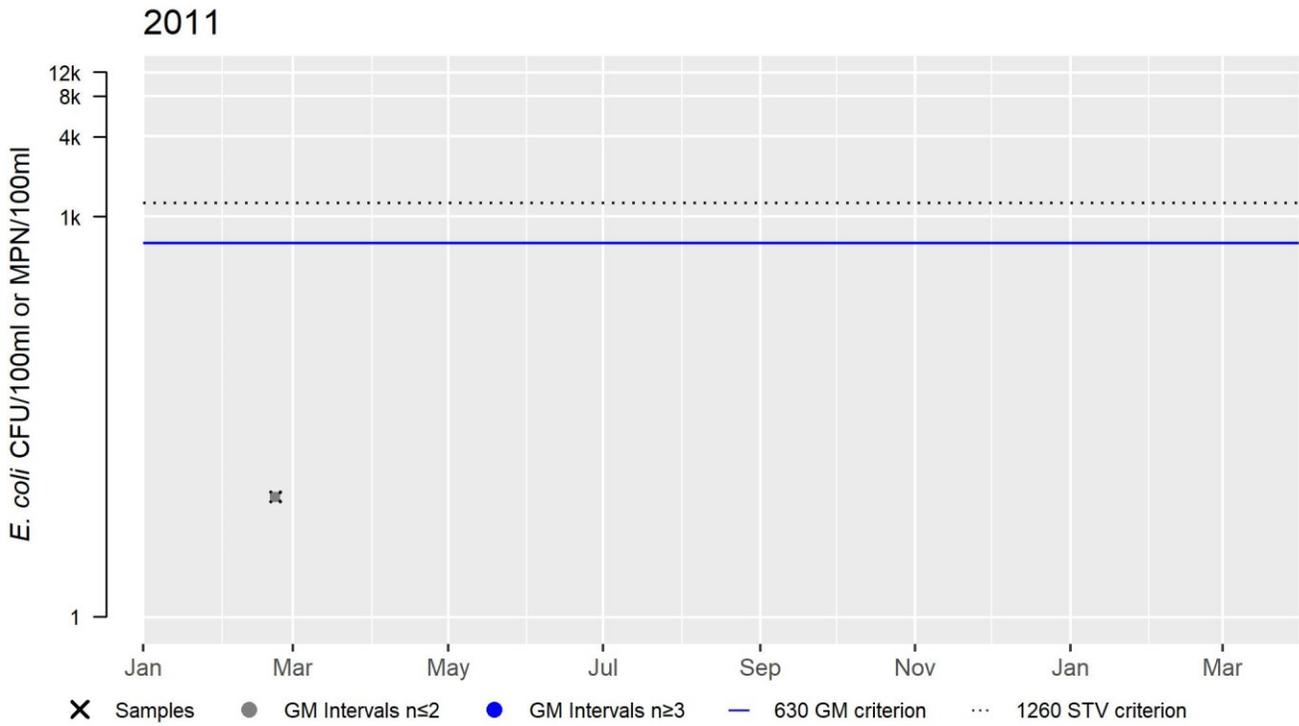
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exceedances; %GMI Ex = percent GMI Exceedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



MyRWA_ABRUTA001 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	8
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

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

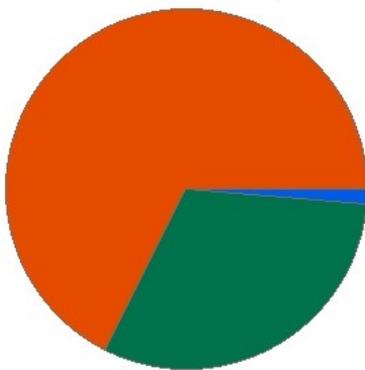


Alewife Brook (MA71-20)

Location:	From emergence north of Cambridgepark Drive, Cambridge to mouth at confluence with Mystic River, Arlington/Somerville (formerly part of 2016 segment: Alewife Brook MA71-04).
AU Type:	RIVER
AU Size:	1.6 MILES
Classification/Qualifier:	B: WWF, CSO

Alewife Brook - MA71-20

Watershed Area: 8.86 square miles



Percent Agriculture
 Percent Natural
 Percent Developed
 Percent Wetland

Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	8.86	7.99	0.65	0.65
Agriculture	0.1%	0.1%	0%	0%
Developed	67.5%	66.4%	46.9%	46.9%
Natural	31.1%	32%	45.3%	45.3%
Wetland	1.3%	1.5%	7.7%	7.7%
Impervious Cover	51.9%			

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Debris*)		Unchanged
5	5	(Water Chestnut*)		Unchanged
5	5	Chloride		Unchanged
5	5	Copper in Sediment		Unchanged
5	5	Dissolved Oxygen	R1_MA_2020_5a	Unchanged
5	5	Enterococcus		Added
5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Unchanged
5	5	Flocculant Masses		Unchanged
5	5	Lead in Sediment		Unchanged
5	5	Odor		Unchanged
5	5	Oil and Grease		Unchanged
5	5	PCBs in Fish Tissue		Unchanged
5	5	Phosphorus, Total	R1_MA_2020_5a	Unchanged
5	5	Scum/Foam		Unchanged
5	5	Sediment Bioassay [Chronic Toxicity Freshwater]		Unchanged
5	5	Transparency / Clarity	R1_MA_2020_5a	Changed
5	5	Trash		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
(Debris*)	Combined Sewer Overflows (Y)			X	X	X
(Debris*)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X	X	X
(Water Chestnut*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X				
Chloride	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X				
Chloride	Highway/Road/Bridge Runoff (Non-construction Related) (Y)	X				
Chloride	Impervious Surface/Parking Lot Runoff (Y)	X				
Copper in Sediment	Combined Sewer Overflows (Y)	X				
Copper in Sediment	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X				
Dissolved Oxygen	Combined Sewer Overflows (Y)	X				
Dissolved Oxygen	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X				
Enterococcus	Combined Sewer Overflows (Y)				X	
Enterococcus	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)				X	
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
Flocculant Masses	Combined Sewer Overflows (Y)			X	X	X
Flocculant Masses	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X	X	X
Lead in Sediment	Combined Sewer Overflows (Y)	X				
Lead in Sediment	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X				
Odor	Combined Sewer Overflows (Y)			X	X	X
Odor	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X	X	X
Oil and Grease	Combined Sewer Overflows (Y)			X	X	X
Oil and Grease	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X	X	X
PCBs in Fish Tissue	Source Unknown (N)		X			
Phosphorus, Total	Combined Sewer Overflows (Y)	X				
Phosphorus, Total	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X				
Scum/Foam	Combined Sewer Overflows (Y)			X	X	X
Scum/Foam	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X	X	X
Sediment Bioassay [Chronic Toxicity Freshwater]	Combined Sewer Overflows (Y)	X				
Sediment Bioassay [Chronic Toxicity Freshwater]	Contaminated Sediments (Y)	X				
Sediment Bioassay [Chronic Toxicity Freshwater]	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X				

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Transparency / Clarity	Combined Sewer Overflows (Y)			X	X	X
Transparency / Clarity	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X	X	X
Trash	Combined Sewer Overflows (Y)			X	X	X
Trash	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X	X	X

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
Recent data are not available for Alewife Brook (MA71-20) so the Aquatic Life Use will continue to be assessed as Not Supporting with all impairments (Chloride, Copper in Sediment, Dissolved Oxygen, Lead in Sediment, Phosphorus, Total, Sediment Bioassay [Chronic Toxicity Freshwater], and Water Chestnut) being carried forward.	

Fish Consumption

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
Fish toxics sampling has not been conducted recently in Alewife Brook (MA71-20) so the Fish Consumption Use will continue to be assessed as Not Supporting with the PCBs in Fish Tissue impairment being carried forward. MassDPH advises that children younger than 12 years or age, pregnant women, women of childbearing age who may become pregnant, and nursing mothers should not eat any carp from this water body. There is an additional recommendation that the general public should limit consumption of carp caught in Alewife Brook to two meals per month.	

Aesthetic

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
Recent data have not been collected so the Aesthetics Use of Alewife Brook (MA71-20) will continue to be assessed as Not Supporting with the impairments for Debris, Flocculant Masses, Odor, Oil and Grease, Scum/Foam, Transparency/Clarity, and Trash being carried forward.	

Primary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	

Enterococci and *E. coli* bacteria sampling was conducted by MWRA staff and MyRWA staff/volunteers throughout the 2011-2019 recreational seasons (Apr 1 – Oct 31) at multiple locations in Alewife Brook (MA71-20). Bacteria data collection can be summarized as follows: high frequency *E. coli* and Enterococci data (n= 25-59/yr/indicator organism) from 2014-2019 at MWRA_074S (near the offramp to Alewife MBTA station, downstream of MWR003 and CAM401A CSOs); low frequency *E. coli* and Enterococci data in 2017 (n= 5/indicator organism) and high frequency data from 2018-2019 (n= 53-58/yr/indicator organism) at MWRA_277S (50 yards upstream of CAM401B CSO); high frequency *E. coli* and Enterococci data (n= 25-59/yr/indicator organism) from 2014-2019 at MWRA_172S (upstream side of Mass. Ave. bridge, midchannel, downstream of CAM401B CSO); low frequency *E. coli* and Enterococci data in 2017 (n= 5/indicator organism) and high frequency data from 2018-2019 (n= 53-60/yr/indicator organism) at MWRA_276S (10 yards downstream of SOM001A); mostly moderate frequency *E. coli* data from 2011-2019 (n= 7-10/yr), with the exception of 2016 (n=45), and more temporally limited Enterococci data (n= 3 in 2015 and 41 in 2016) from MyRWA_ALB006 (downstream of the Broadway Bridge on the bank in Somerville); and high frequency *E. coli* and Enterococci data (n= 25-60/yr/indicator organism) from 2014-2019 at MWRA_070S (mouth of Alewife Brook, off south side of Mystic Valley Pkwy Bridge). Analysis of the moderate to high frequency *E. coli* data indicated that in the most recent 5 years/all years of data (for stations with <5 years of data), the applicable GM criterion (>20% of interval GMs exceeding 126 cfu/100mL in two or more years for moderate frequency and >10% exceeding 126 cfu/100mL in two or more years for high frequency) and the applicable STV criterion (≥2 samples exceeding 410 cfu/100mL in more than two years for moderate frequency and >10% of samples exceeding 410 cfu/100mL in more than two years for high frequency) were exceeded at all stations. In the most recent 5 years of *E. coli* data, 75-100% of interval GMs were >126 cfu/100mL for all stations. For the STV criterion, 3-7 samples each year exceeded the criterion among the majority of moderate frequency data, while among high frequency data, 28-72% of samples exceeded the STV criterion for every station-year. Similarly, analysis of the moderate to high frequency Enterococci data indicated that in the most recent 5 years/all years of data, the applicable GM criterion (>20% of interval GMs exceeding 35 cfu/100mL in two or more years for moderate frequency and >10% exceeding 35 cfu/100mL in two or more years for high frequency) and the applicable STV criterion (≥2 samples exceeding 130 cfu/100mL in more than two years for moderate frequency and >10% of samples exceeding 130 cfu/100mL in more than two years for high frequency) were exceeded at all stations. In the most recent 5 years of Enterococci data, 75-100% of interval GMs were >35 cfu/100mL among all stations. For the STV criterion, 3-4 samples each year exceeded 130 cfu/100mL among moderate frequency data, whereas in high frequency data, 37-88% of samples exceeded the STV criterion. Bacteria data were collected infrequently at another MyRWA station (MyRWA_ALBOOM), and sample size was insufficient to allow analysis of these data for use attainment decisions.

The MWRA and MyRWA bacteria data confirm that the Primary Contact Recreational Use for Alewife Brook (MA71-20) should continue to be assessed as Not Supporting. Based on these data, the historical impairment for Escherichia Coli (*E. Coli*) will be carried forward and a new impairment will be added for Enterococcus. Additionally, the impairments related to poor aesthetic conditions (Debris, Flocculant Masses, Odor, Oil and Grease, Scum/Foam, Transparency/Clarity, and Trash) will also be carried forward.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MWRA_070S	Massachusetts Water Resource Authority	Water Quality	ALEWIFE BROOK	Alewife Brook, mouth, off south (upstream) side of Mystic Valley Pkwy Bridge	42.414428	-71.132413
MWRA_074S	Massachusetts Water Resource Authority	Water Quality	ALEWIFE BROOK	Alewife Brook, offramp to Alewife MBTA station, downstream of MWR003 and CAM401A	42.397422	-71.143511
MWRA_172S	Massachusetts Water Resource Authority	Water Quality	ALEWIFE BROOK	Alewife Brook, upstream side of Mass. Ave. bridge, midchannel, downstream of CAM401B	42.400918	-71.136386

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MWRA_276S	Massachusetts Water Resource Authority	Water Quality	ALEWIFE BROOK	Alewife Brook, 10 yards downstream of SOM001A	42.402258	-71.13517
MWRA_277S	Massachusetts Water Resource Authority	Water Quality	ALEWIFE BROOK	Alewife Brook, 50 yards upstream of CAM401B	42.40065	-71.137138
MyRWA_ALB006	Mystic River Watershed Association	Water Quality	Alewife Brook	Alewife Brook at Broadway Bridge in Somerville; downstream of the bridge on the bank	42.407133	-71.133767
MyRWA_ALBBOOM	Mystic River Watershed Association	Water Quality	Alewife Brook	None submitted by MYRWA	42.395696	-71.143992

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (30-day Interval Analysis) (MWRA 2019)

(MassDEP Undated 2) (MyRWA 2019) (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
MWRA_070S	Massachusetts Water Resource Authority	E. coli	04/08/14	10/24/14	28	185	727000	1848
MWRA_070S	Massachusetts Water Resource Authority	Enterococci	04/08/14	10/24/14	28	20	24200	409
MWRA_070S	Massachusetts Water Resource Authority	E. coli	04/13/15	10/05/15	25	52	79800	786
MWRA_070S	Massachusetts Water Resource Authority	Enterococci	04/13/15	10/05/15	25	20	13000	298
MWRA_070S	Massachusetts Water Resource Authority	E. coli	05/09/16	10/28/16	30	86	9210	412
MWRA_070S	Massachusetts Water Resource Authority	Enterococci	05/09/16	10/28/16	30	20	1920	130
MWRA_070S	Massachusetts Water Resource Authority	E. coli	04/03/17	10/20/17	49	41	13000	632
MWRA_070S	Massachusetts Water Resource Authority	Enterococci	04/03/17	10/20/17	49	10	12000	272
MWRA_070S	Massachusetts Water Resource Authority	E. coli	04/24/18	10/24/18	53	52	14100	690
MWRA_070S	Massachusetts Water Resource Authority	Enterococci	04/24/18	10/24/18	53	20	3080	291

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_070S	Massachusetts Water Resource Authority	E. coli	04/20/19	10/31/19	60	10	24200	919
MWRA_070S	Massachusetts Water Resource Authority	Enterococci	04/20/19	10/31/19	60	20	9800	439
MWRA_074S	Massachusetts Water Resource Authority	E. coli	04/08/14	10/24/14	27	96	62700	1674
MWRA_074S	Massachusetts Water Resource Authority	Enterococci	04/08/14	10/24/14	27	10	3260	188
MWRA_074S	Massachusetts Water Resource Authority	E. coli	04/13/15	10/05/15	25	10	24200	406
MWRA_074S	Massachusetts Water Resource Authority	Enterococci	04/13/15	10/05/15	25	10	6870	120
MWRA_074S	Massachusetts Water Resource Authority	E. coli	05/09/16	10/28/16	30	110	14100	446
MWRA_074S	Massachusetts Water Resource Authority	Enterococci	05/09/16	10/28/16	30	10	4350	97
MWRA_074S	Massachusetts Water Resource Authority	E. coli	04/03/17	10/20/17	49	84	24200	555
MWRA_074S	Massachusetts Water Resource Authority	Enterococci	04/03/17	10/20/17	49	10	9210	108
MWRA_074S	Massachusetts Water Resource Authority	E. coli	04/24/18	10/24/18	53	20	17300	716
MWRA_074S	Massachusetts Water Resource Authority	Enterococci	04/24/18	10/24/18	53	10	4350	227
MWRA_074S	Massachusetts Water Resource Authority	E. coli	04/20/19	10/31/19	59	74	72700	684
MWRA_074S	Massachusetts Water Resource Authority	Enterococci	04/20/19	10/31/19	59	10	7700	259
MWRA_172S	Massachusetts Water Resource Authority	E. coli	04/08/14	10/24/14	27	119	68900	1927
MWRA_172S	Massachusetts Water Resource Authority	Enterococci	04/08/14	10/24/14	27	20	5790	407
MWRA_172S	Massachusetts Water Resource Authority	E. coli	04/13/15	10/05/15	25	52	17300	403
MWRA_172S	Massachusetts Water Resource Authority	Enterococci	04/13/15	10/05/15	25	10	11200	157
MWRA_172S	Massachusetts Water Resource Authority	E. coli	05/09/16	10/28/16	30	108	24200	476

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_172S	Massachusetts Water Resource Authority	Enterococci	05/09/16	10/28/16	30	20	839	135
MWRA_172S	Massachusetts Water Resource Authority	E. coli	04/03/17	10/20/17	49	41	24200	541
MWRA_172S	Massachusetts Water Resource Authority	Enterococci	04/03/17	10/20/17	49	10	5170	159
MWRA_172S	Massachusetts Water Resource Authority	E. coli	04/24/18	10/24/18	53	52	24200	716
MWRA_172S	Massachusetts Water Resource Authority	Enterococci	04/24/18	10/24/18	53	30	4610	288
MWRA_172S	Massachusetts Water Resource Authority	E. coli	04/20/19	10/31/19	59	98	40800	597
MWRA_172S	Massachusetts Water Resource Authority	Enterococci	04/20/19	10/31/19	59	20	12000	308
MWRA_276S	Massachusetts Water Resource Authority	E. coli	10/16/17	10/20/17	5	272	1400	436
MWRA_276S	Massachusetts Water Resource Authority	Enterococci	10/16/17	10/20/17	5	63	228	149
MWRA_276S	Massachusetts Water Resource Authority	E. coli	04/24/18	10/24/18	53	41	15500	657
MWRA_276S	Massachusetts Water Resource Authority	Enterococci	04/24/18	10/24/18	53	10	4110	295
MWRA_276S	Massachusetts Water Resource Authority	E. coli	04/20/19	10/31/19	60	98	132000	603
MWRA_276S	Massachusetts Water Resource Authority	Enterococci	04/20/19	10/31/19	60	10	41000	295
MWRA_277S	Massachusetts Water Resource Authority	E. coli	10/16/17	10/20/17	5	262	1550	507
MWRA_277S	Massachusetts Water Resource Authority	Enterococci	10/16/17	10/20/17	5	121	199	166
MWRA_277S	Massachusetts Water Resource Authority	E. coli	04/24/18	10/24/18	53	52	17300	785
MWRA_277S	Massachusetts Water Resource Authority	Enterococci	04/24/18	10/24/18	53	10	5170	358
MWRA_277S	Massachusetts Water Resource Authority	E. coli	04/20/19	10/31/19	58	74	112000	700
MWRA_277S	Massachusetts Water Resource Authority	Enterococci	04/20/19	10/31/19	58	30	9800	336

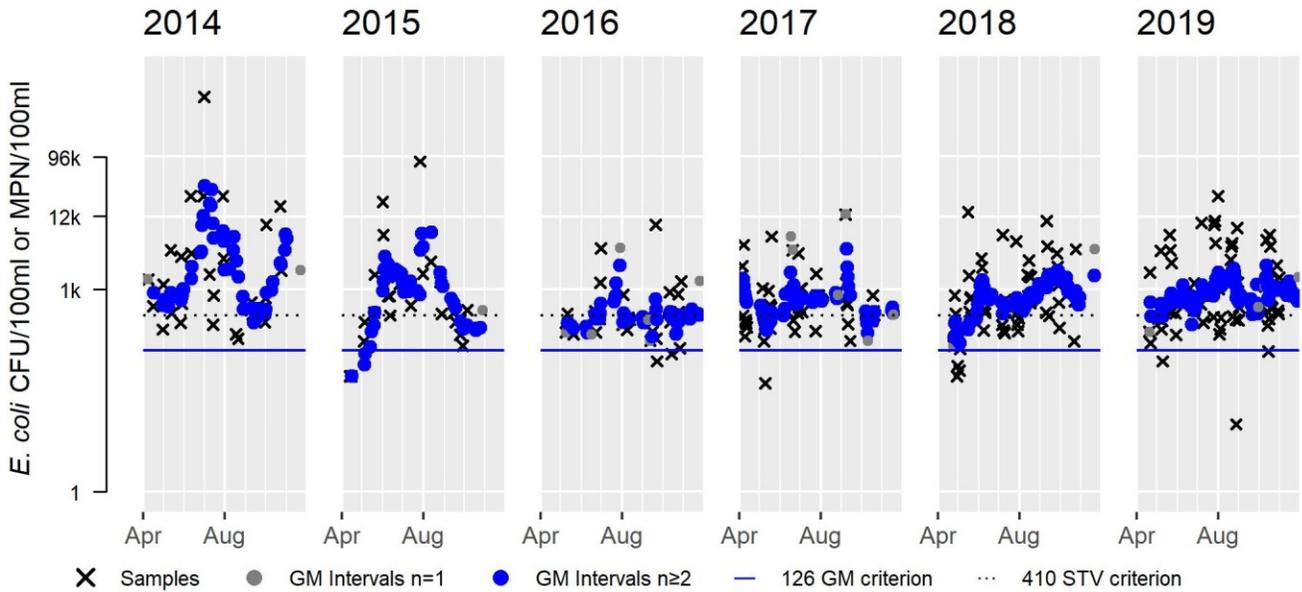
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MyRWA_ALB006	Mystic River Watershed Association	E. coli	04/20/11	10/19/11	7	218	1110	471
MyRWA_ALB006	Mystic River Watershed Association	E. coli	04/18/12	10/17/12	7	211	24200	638
MyRWA_ALB006	Mystic River Watershed Association	E. coli	04/17/13	10/16/13	7	160	2040	528
MyRWA_ALB006	Mystic River Watershed Association	E. coli	04/16/14	10/15/14	7	97	1110	223
MyRWA_ALB006	Mystic River Watershed Association	E. coli	04/15/15	10/21/15	10	134	24196	698
MyRWA_ALB006	Mystic River Watershed Association	Enterococci	09/30/15	10/02/15	3	650	24196	3451
MyRWA_ALB006	Mystic River Watershed Association	E. coli	04/20/16	10/19/16	45	24.3	4040	391
MyRWA_ALB006	Mystic River Watershed Association	Enterococci	04/26/16	09/21/16	41	35	2850	254
MyRWA_ALB006	Mystic River Watershed Association	E. coli	04/19/17	10/18/17	7	107	13000	579
MyRWA_ALB006	Mystic River Watershed Association	E. coli	04/18/18	10/17/18	7	243	24200	1854
MyRWA_ALB006	Mystic River Watershed Association	E. coli	04/17/19	10/16/19	7	691	9210	1513
MyRWA_ALBBOOM	Mystic River Watershed Association	Enterococci	09/13/13	09/13/13	1	14000	14000	14000

MWRA_070S *E. coli* (30-day Interval), Primary Contact Recreational Use Season

Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res
Samples	28	Samples	25	Samples	30	Samples	49	Samples	53	Samples	60
SeasGM	1848	SeasGM	786	SeasGM	412	SeasGM	632	SeasGM	690	SeasGM	919
#GMI	49	#GMI	44	#GMI	47	#GMI	78	#GMI	94	#GMI	101
#GMI Ex	49	#GMI Ex	41	#GMI Ex	47	#GMI Ex	78	#GMI Ex	94	#GMI Ex	101
%GMI Ex	100	%GMI Ex	93	%GMI Ex	100						
n>STV	22	n>STV	18	n>STV	10	n>STV	32	n>STV	35	n>STV	40
%n>STV	79	%n>STV	72	%n>STV	33	%n>STV	65	%n>STV	66	%n>STV	67

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	99	99

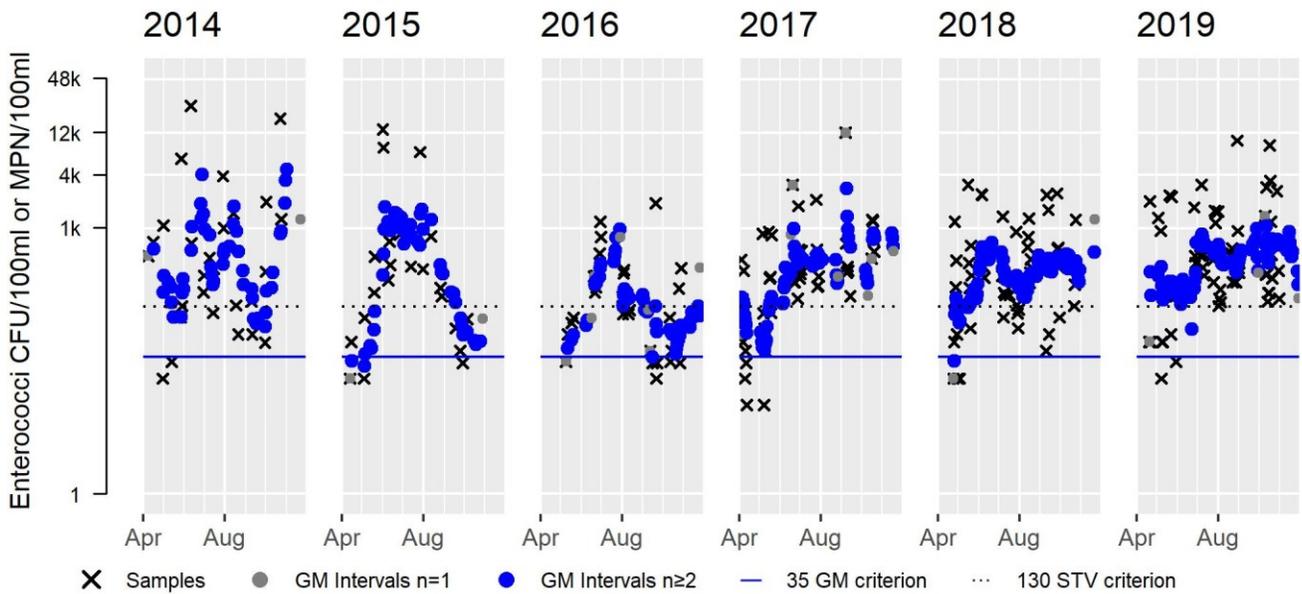


MWRA_070S Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	28	Samples	25	Samples	30	Samples	49	Samples	53	Samples	60
SeasGM	409	SeasGM	298	SeasGM	130	SeasGM	272	SeasGM	291	SeasGM	439
#GMI	49	#GMI	44	#GMI	47	#GMI	78	#GMI	94	#GMI	101
#GMI Ex	49	#GMI Ex	42	#GMI Ex	46	#GMI Ex	78	#GMI Ex	93	#GMI Ex	101
%GMI Ex	100	%GMI Ex	95	%GMI Ex	98	%GMI Ex	100	%GMI Ex	99	%GMI Ex	100
n>STV	21	n>STV	17	n>STV	14	n>STV	37	n>STV	40	n>STV	53
%n>STV	75	%n>STV	68	%n>STV	47	%n>STV	76	%n>STV	75	%n>STV	88

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	99	99

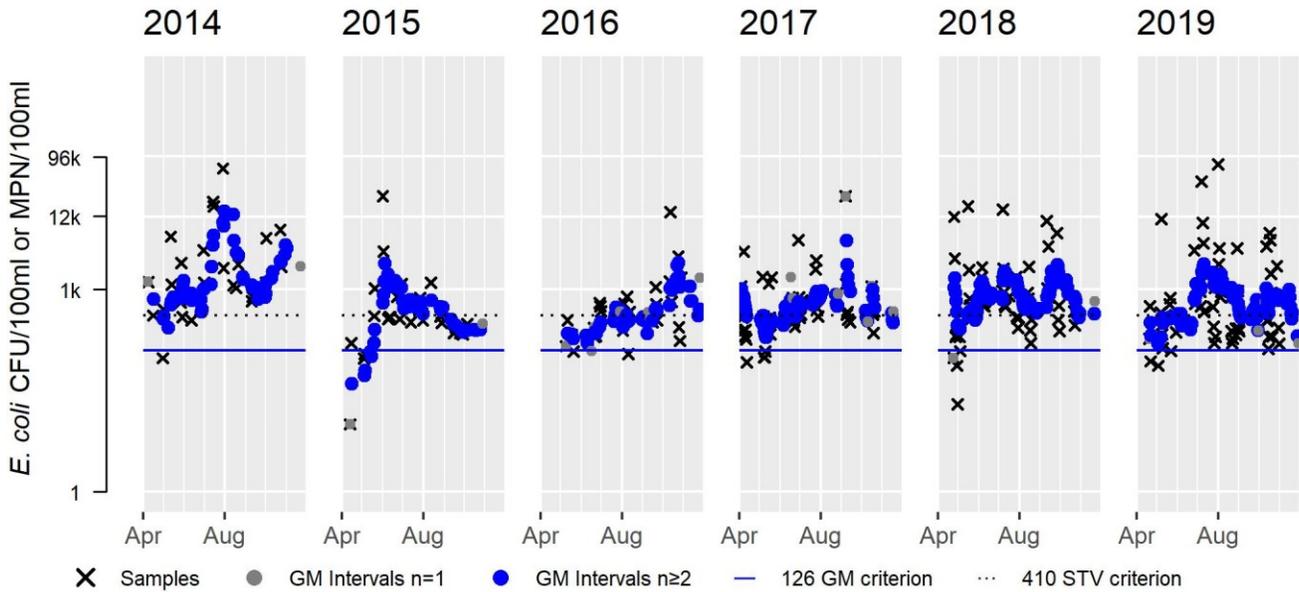


MWRA_074S *E. coli* (30-day Interval), Primary Contact Recreational Use Season

Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res
Samples	27	Samples	25	Samples	30	Samples	49	Samples	53	Samples	59
SeasGM	1674	SeasGM	406	SeasGM	446	SeasGM	555	SeasGM	716	SeasGM	684
#GMI	47	#GMI	44	#GMI	47	#GMI	78	#GMI	94	#GMI	99
#GMI Ex	47	#GMI Ex	39	#GMI Ex	47	#GMI Ex	78	#GMI Ex	94	#GMI Ex	99
%GMI Ex	100	%GMI Ex	89	%GMI Ex	100						
n>STV	24	n>STV	7	n>STV	13	n>STV	28	n>STV	35	n>STV	34
%n>STV	89	%n>STV	28	%n>STV	43	%n>STV	57	%n>STV	66	%n>STV	58

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	99	99

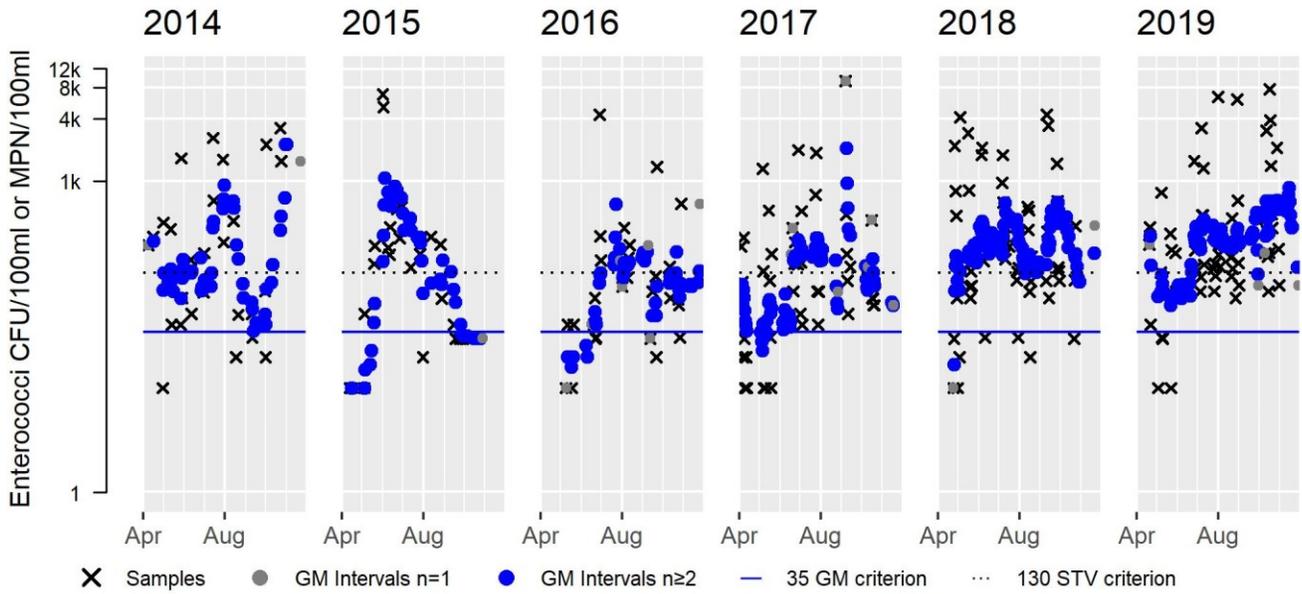


MWRA_074S Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	27	Samples	25	Samples	30	Samples	49	Samples	53	Samples	59
SeasGM	188	SeasGM	120	SeasGM	97	SeasGM	108	SeasGM	227	SeasGM	259
#GMI	47	#GMI	44	#GMI	47	#GMI	78	#GMI	94	#GMI	99
#GMI Ex	47	#GMI Ex	33	#GMI Ex	42	#GMI Ex	71	#GMI Ex	93	#GMI Ex	99
%GMI Ex	100	%GMI Ex	75	%GMI Ex	89	%GMI Ex	91	%GMI Ex	99	%GMI Ex	100
n>STV	15	n>STV	14	n>STV	11	n>STV	23	n>STV	34	n>STV	43
%n>STV	56	%n>STV	56	%n>STV	37	%n>STV	47	%n>STV	64	%n>STV	73

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	94	93

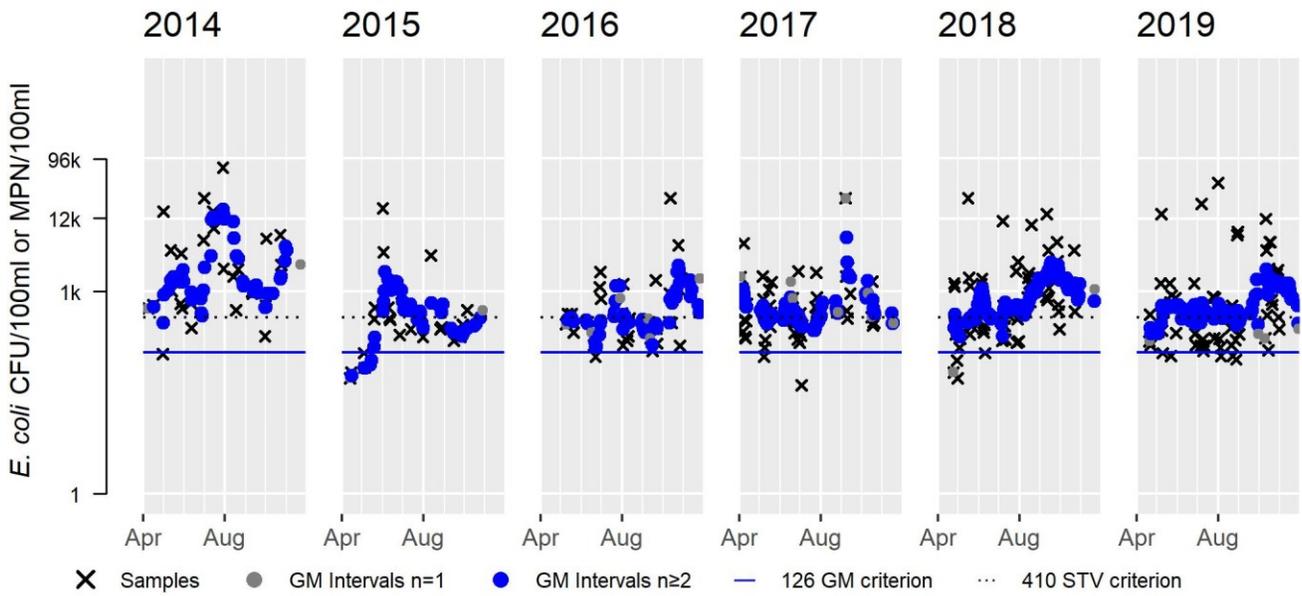


MWRA_172S *E. coli* (30-day Interval), Primary Contact Recreational Use Season

Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res
Samples	27	Samples	25	Samples	30	Samples	49	Samples	53	Samples	59
SeasGM	1927	SeasGM	403	SeasGM	476	SeasGM	541	SeasGM	716	SeasGM	597
#GMI	47	#GMI	44	#GMI	47	#GMI	78	#GMI	94	#GMI	99
#GMI Ex	47	#GMI Ex	39	#GMI Ex	47	#GMI Ex	78	#GMI Ex	94	#GMI Ex	99
%GMI Ex	100	%GMI Ex	89	%GMI Ex	100						
n>STV	24	n>STV	9	n>STV	14	n>STV	27	n>STV	31	n>STV	33
%n>STV	89	%n>STV	36	%n>STV	47	%n>STV	55	%n>STV	58	%n>STV	56

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	99	99

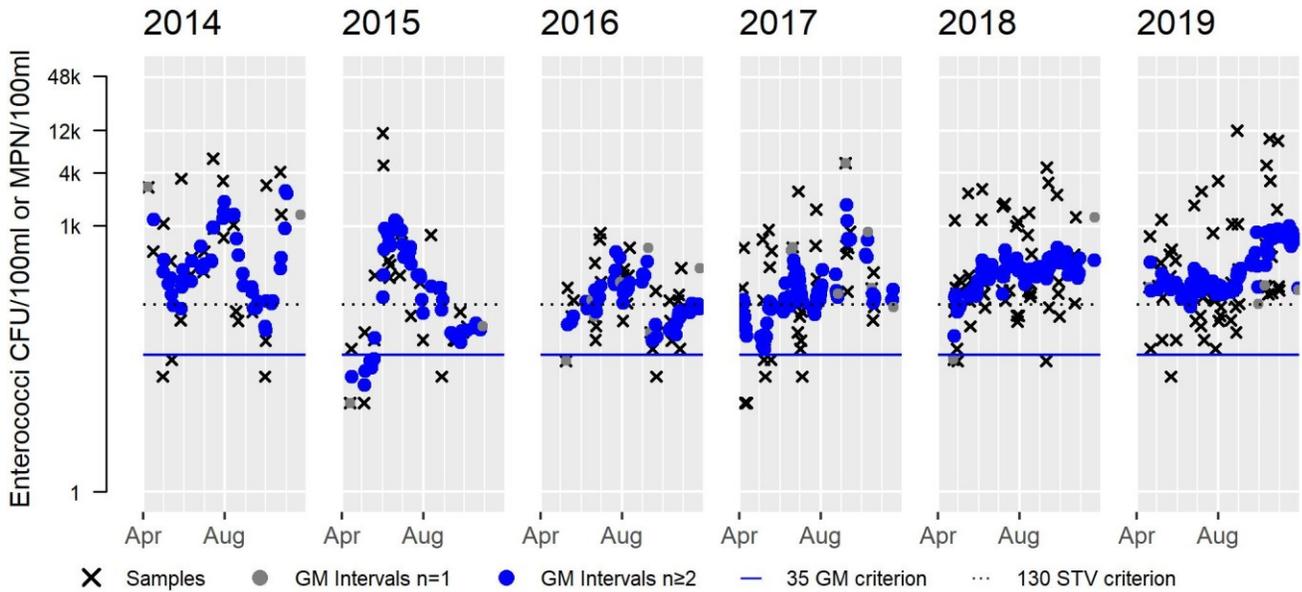


MWRA_172S Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	27	Samples	25	Samples	30	Samples	49	Samples	53	Samples	59
SeasGM	407	SeasGM	157	SeasGM	135	SeasGM	159	SeasGM	288	SeasGM	308
#GMI	47	#GMI	44	#GMI	47	#GMI	78	#GMI	94	#GMI	99
#GMI Ex	47	#GMI Ex	38	#GMI Ex	47	#GMI Ex	78	#GMI Ex	94	#GMI Ex	99
%GMI Ex	100	%GMI Ex	86	%GMI Ex	100						
n>STV	19	n>STV	12	n>STV	17	n>STV	27	n>STV	41	n>STV	44
%n>STV	70	%n>STV	48	%n>STV	57	%n>STV	55	%n>STV	77	%n>STV	75

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	99	98



MWRA_276S *E. coli* (30-day Interval), Primary Contact Recreational Use Season

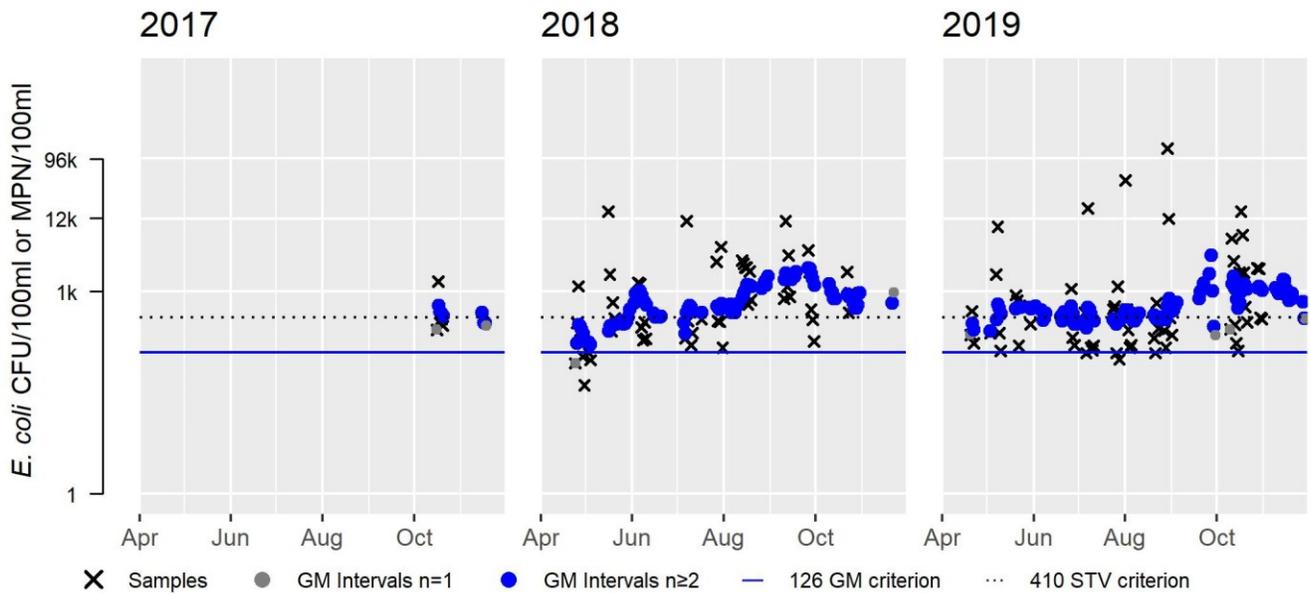
Var	Res
Samples	5
SeasGM	436
#GMI	7
#GMI Ex	7
%GMI Ex	100
n>STV	1
%n>STV	20

Var	Res
Samples	53
SeasGM	657
#GMI	94
#GMI Ex	94
%GMI Ex	100
n>STV	28
%n>STV	53

Var	Res
Samples	60
SeasGM	603
#GMI	101
#GMI Ex	101
%GMI Ex	100
n>STV	28
%n>STV	47

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

Variable	Cumulative %GMI Ex (all years)
Result	100



MWRA_276S Enterococci (30-day Interval), Primary Contact Recreational Use Season

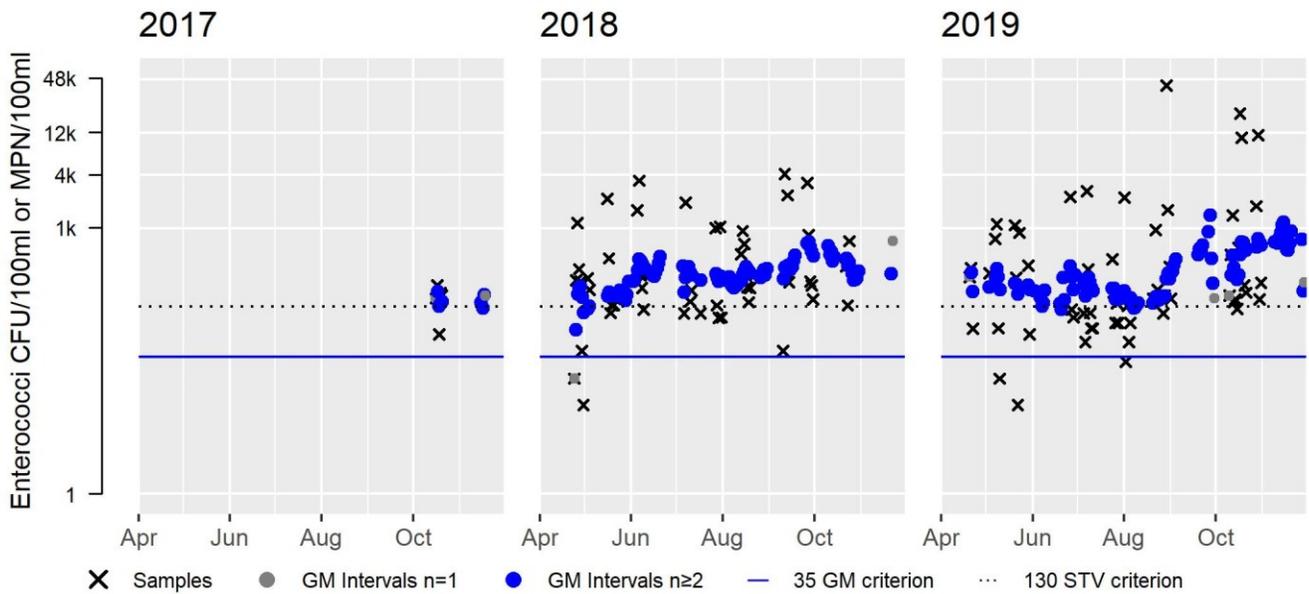
Var	Res
Samples	5
SeasGM	149
#GMI	7
#GMI Ex	7
%GMI Ex	100
n>STV	4
%n>STV	80

Var	Res
Samples	53
SeasGM	295
#GMI	94
#GMI Ex	94
%GMI Ex	100
n>STV	43
%n>STV	81

Var	Res
Samples	60
SeasGM	295
#GMI	101
#GMI Ex	101
%GMI Ex	100
n>STV	41
%n>STV	68

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

Variable	Cumulative %GMI Ex (all years)
Result	100



MWRA_277S *E. coli* (30-day Interval), Primary Contact Recreational Use Season

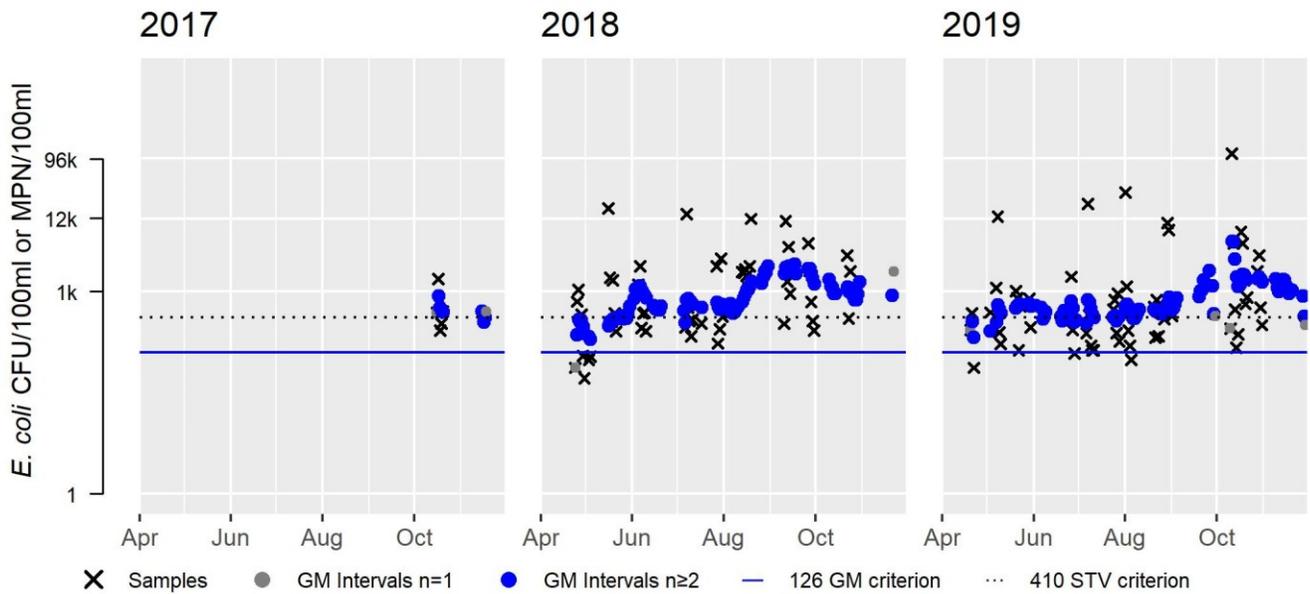
Var	Res
Samples	5
SeasGM	507
#GMI	7
#GMI Ex	7
%GMI Ex	100
n>STV	3
%n>STV	60

Var	Res
Samples	53
SeasGM	785
#GMI	94
#GMI Ex	94
%GMI Ex	100
n>STV	32
%n>STV	60

Var	Res
Samples	58
SeasGM	700
#GMI	98
#GMI Ex	98
%GMI Ex	100
n>STV	34
%n>STV	59

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

Variable	Cumulative %GMI Ex (all years)
Result	100



MWRA_277S Enterococci (30-day Interval), Primary Contact Recreational Use Season

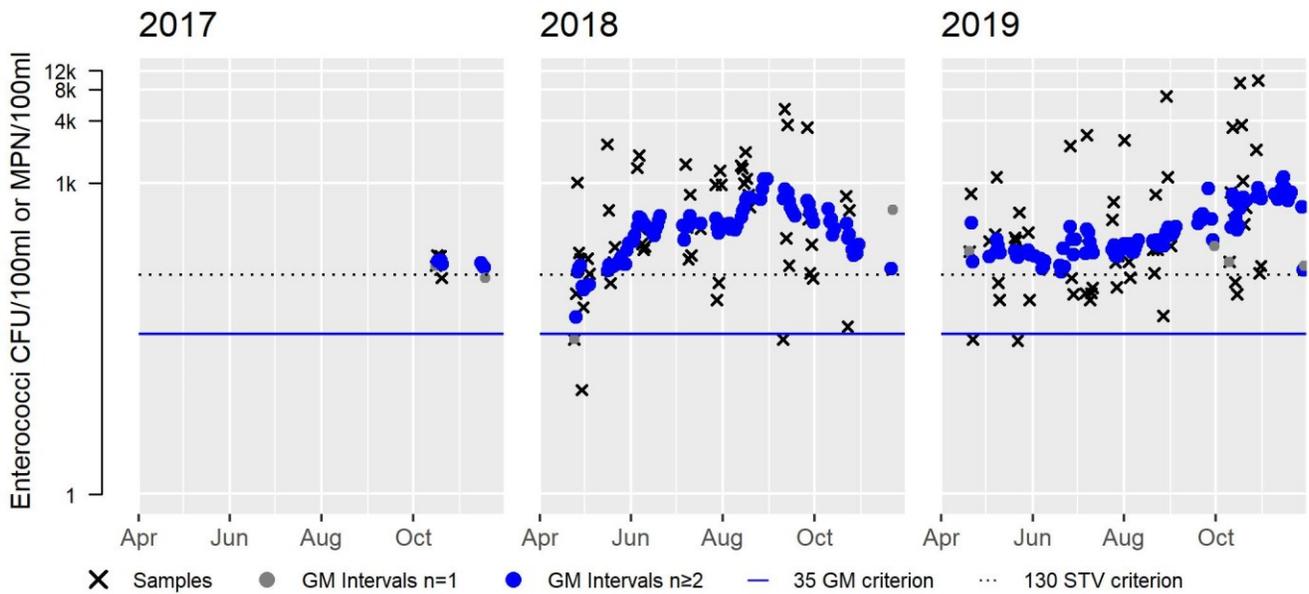
Var	Res
Samples	5
SeasGM	166
#GMI	7
#GMI Ex	7
%GMI Ex	100
n>STV	4
%n>STV	80

Var	Res
Samples	53
SeasGM	358
#GMI	94
#GMI Ex	94
%GMI Ex	100
n>STV	43
%n>STV	81

Var	Res
Samples	58
SeasGM	336
#GMI	98
#GMI Ex	98
%GMI Ex	100
n>STV	42
%n>STV	72

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

Variable	Cumulative %GMI Ex (all years)
Result	100

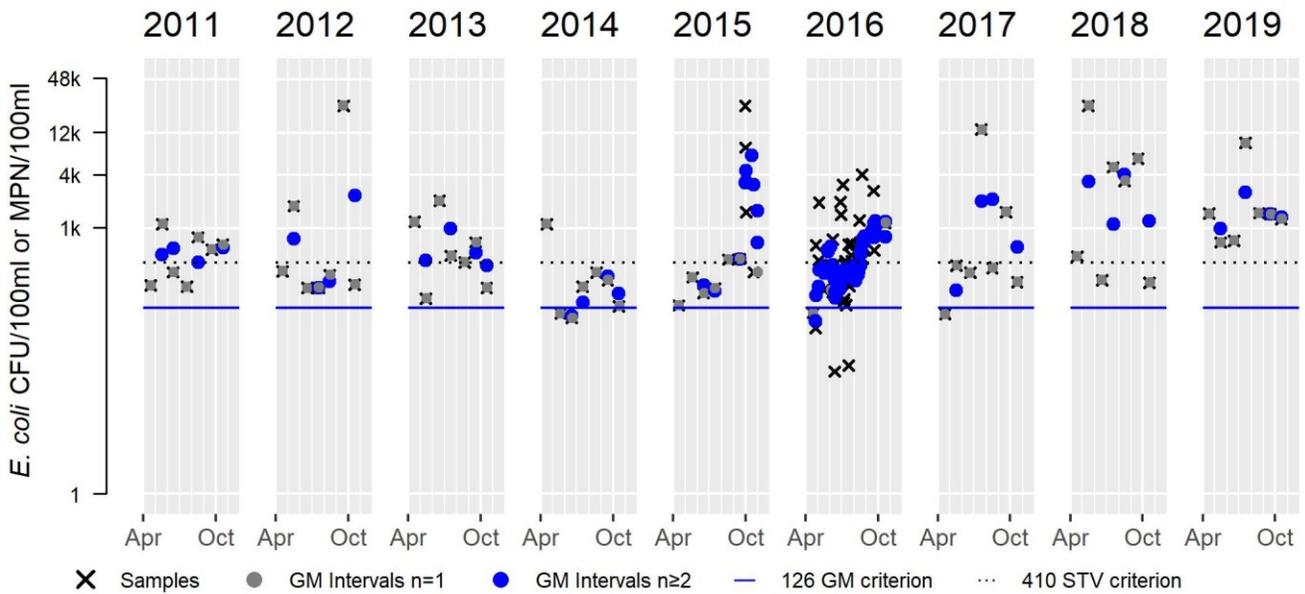


MyRWA_ALB006 *E. coli* (30-day Interval), Primary Contact Recreational Use Season

Var	Res														
Samples	7	Samples	7	Samples	7	Samples	7	Samples	10	Samples	45	Samples	7	Samples	7
SeasGM	471	SeasGM	638	SeasGM	528	SeasGM	223	SeasGM	698	SeasGM	391	SeasGM	579	SeasGM	1854
#GMI	4	#GMI	4	#GMI	4	#GMI	4	#GMI	10	#GMI	77	#GMI	4	#GMI	4
#GMI Ex	4	#GMI Ex	4	#GMI Ex	4	#GMI Ex	3	#GMI Ex	10	#GMI Ex	76	#GMI Ex	4	#GMI Ex	4
%GMI Ex	100	%GMI Ex	100	%GMI Ex	100	%GMI Ex	75	%GMI Ex	100	%GMI Ex	99	%GMI Ex	100	%GMI Ex	100
n>STV	4	n>STV	2	n>STV	5	n>STV	1	n>STV	5	n>STV	23	n>STV	2	n>STV	5
%n>STV	57	%n>STV	29	%n>STV	71	%n>STV	14	%n>STV	50	%n>STV	51	%n>STV	29	%n>STV	71

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	98	99



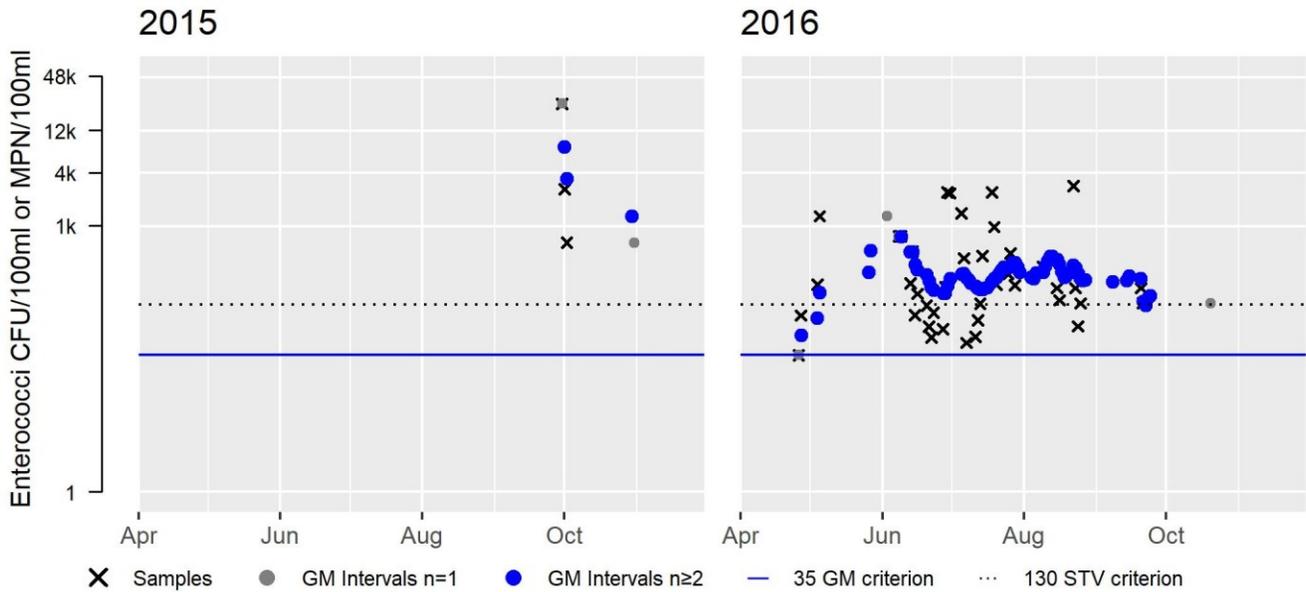
MyRWA_ALB006 Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	3
SeasGM	3451
#GMI	3
#GMI Ex	3
%GMI Ex	100
n>STV	3
%n>STV	100

Var	Res
Samples	41
SeasGM	254
#GMI	68
#GMI Ex	68
%GMI Ex	100
n>STV	29
%n>STV	71

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

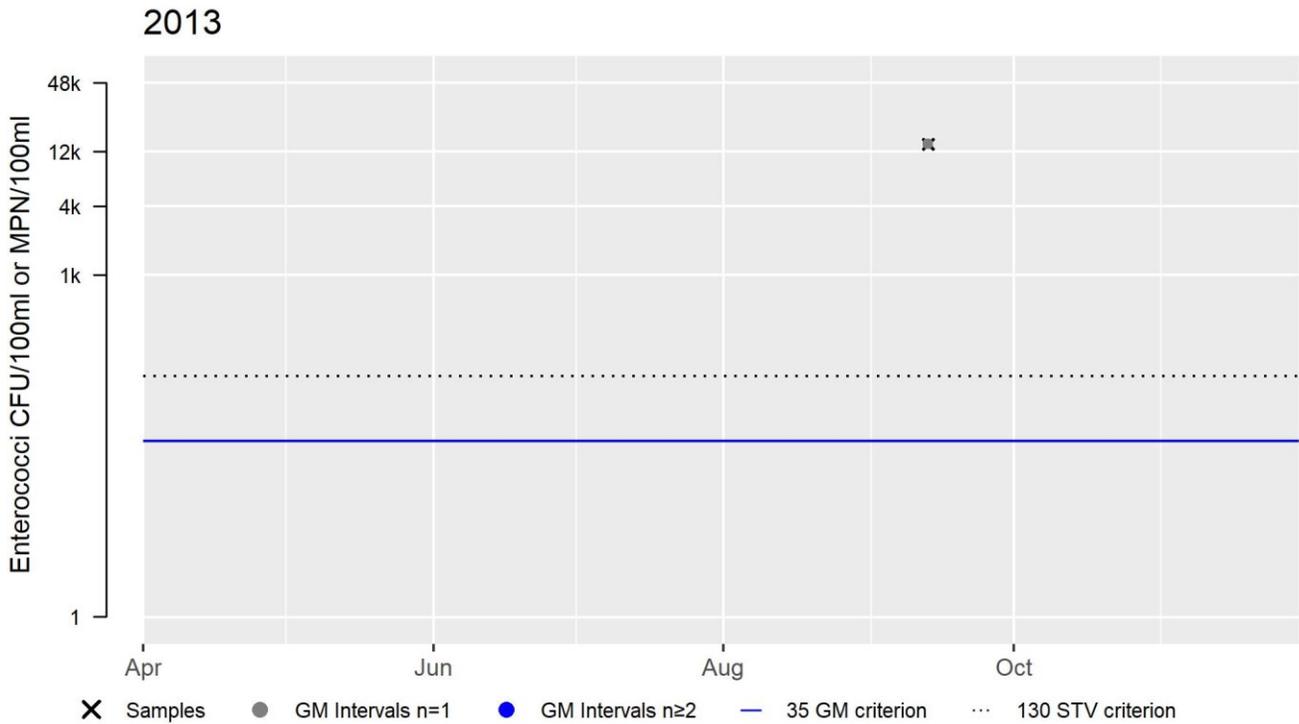
Variable	Cumulative %GMI Ex (all years)
Result	100



MyRWA_ALBBOOM Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	14000
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

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



Secondary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	

E. coli bacteria sampling was conducted by MWRA staff and MyRWA staff/volunteers throughout the years from 2011-2019 at multiple locations in Alewife Brook (MA71-20). Bacteria data collection can be summarized as follows: high frequency data (n= 26-63/yr) from 2014-2019 at MWRA_074S (near the offramp to Alewife MBTA station, downstream of MWR003 and CAM401A CSOs); moderate frequency data in 2017 (n=13) and high frequency data from 2018-2019 (n= 58-62/yr) at MWRA_277S (50 yards upstream of CAM401B CSO); high frequency data (n= 26-63/yr) from 2014-2019 at MWRA_172S (upstream side of Mass. Ave. bridge, midchannel, downstream of CAM401B CSO); moderate frequency data in 2017 (n=13) and high frequency data from 2018-2019 (n= 58-64/yr) at MWRA_276S (10 yards downstream of SOM001A); mostly moderate frequency data from 2011-2019 (n= 10-14/yr), with the exception of 2016 (n=49), at MyRWA_ALB006 (downstream of the Broadway Bridge on the bank in Somerville); and high frequency data (n= 26-64/yr) from 2014-2019 at MWRA_070S (mouth of Alewife Brook, off south side of Mystic Valley Pkwy Bridge). Analysis of the moderate frequency data indicated that in the most recent 5 years/all years of data (for stations with <5 years of data), >20% of intervals (30-100%) had GMs >630 cfu/100mL each year and the number of samples exceeding the 1260 cfu/100mL STV ranged from 2-6 per station-year. Similarly, analysis of the high frequency data indicated that >10% (13-94%) of intervals had GMs >630 cfu/100mL each year and that >10% of samples (12--38%) exceeded the 1260 cfu/100mL STV.

The MWRA and MyRWA bacteria data confirm that the Secondary Contact Recreational Use for Alewife Brook (MA71-20) should continue to be assessed as Not Supporting so the historical impairment for Escherichia Coli (*E. Coli*) will be carried forward. Additionally, the impairments related to poor aesthetic conditions (Debris, Flocculant Masses, Odor, Oil and Grease, Scum/Foam, Transparency/Clarity, and Trash) will also be carried forward.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MWRA_070S	Massachusetts Water Resource Authority	Water Quality	ALEWIFE BROOK	Alewife Brook, mouth, off south (upstream) side of Mystic Valley Pkwy Bridge	42.414428	-71.132413
MWRA_074S	Massachusetts Water Resource Authority	Water Quality	ALEWIFE BROOK	Alewife Brook, offramp to Alewife MBTA station, downstream of MWR003 and CAM401A	42.397422	-71.143511
MWRA_172S	Massachusetts Water Resource Authority	Water Quality	ALEWIFE BROOK	Alewife Brook, upstream side of Mass. Ave. bridge, midchannel, downstream of CAM401B	42.400918	-71.136386
MWRA_276S	Massachusetts Water Resource Authority	Water Quality	ALEWIFE BROOK	Alewife Brook, 10 yards downstream of SOM001A	42.402258	-71.13517
MWRA_277S	Massachusetts Water Resource Authority	Water Quality	ALEWIFE BROOK	Alewife Brook, 50 yards upstream of CAM401B	42.40065	-71.137138
MyRWA_ALB006	Mystic River Watershed Association	Water Quality	Alewife Brook	Alewife Brook at Broadway Bridge in Somerville; downstream of the bridge on the bank	42.407133	-71.133767

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MWRA 2019) (MassDEP Undated 2) (MyRWA 2019) (MassDEP Undated 2)

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

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MWRA_070S	Massachusetts Water Resource Authority	E. coli	01/15/14	12/18/14	31	185	727000	1836
MWRA_070S	Massachusetts Water Resource Authority	E. coli	04/13/15	11/12/15	26	52	79800	767
MWRA_070S	Massachusetts Water Resource Authority	E. coli	01/11/16	12/02/16	39	63	9210	518
MWRA_070S	Massachusetts Water Resource Authority	E. coli	04/03/17	12/13/17	57	41	24200	661
MWRA_070S	Massachusetts Water Resource Authority	E. coli	04/24/18	11/08/18	58	52	14100	694
MWRA_070S	Massachusetts Water Resource Authority	E. coli	04/20/19	11/22/19	64	10	24200	941
MWRA_074S	Massachusetts Water Resource Authority	E. coli	01/15/14	12/18/14	30	96	62700	1438
MWRA_074S	Massachusetts Water Resource Authority	E. coli	04/13/15	11/12/15	26	10	24200	398
MWRA_074S	Massachusetts Water Resource Authority	E. coli	01/11/16	12/02/16	39	52	14100	528
MWRA_074S	Massachusetts Water Resource Authority	E. coli	04/03/17	12/13/17	57	84	24200	560
MWRA_074S	Massachusetts Water Resource Authority	E. coli	04/24/18	11/08/18	58	20	17300	710
MWRA_074S	Massachusetts Water Resource Authority	E. coli	04/20/19	11/22/19	63	74	74800	714
MWRA_172S	Massachusetts Water Resource Authority	E. coli	01/15/14	12/18/14	30	119	68900	1698
MWRA_172S	Massachusetts Water Resource Authority	E. coli	04/13/15	11/12/15	26	52	17300	397
MWRA_172S	Massachusetts Water Resource Authority	E. coli	01/11/16	12/02/16	39	86	24200	548
MWRA_172S	Massachusetts Water Resource Authority	E. coli	04/03/17	12/13/17	57	41	24200	586
MWRA_172S	Massachusetts Water Resource Authority	E. coli	04/24/18	11/08/18	58	52	24200	701

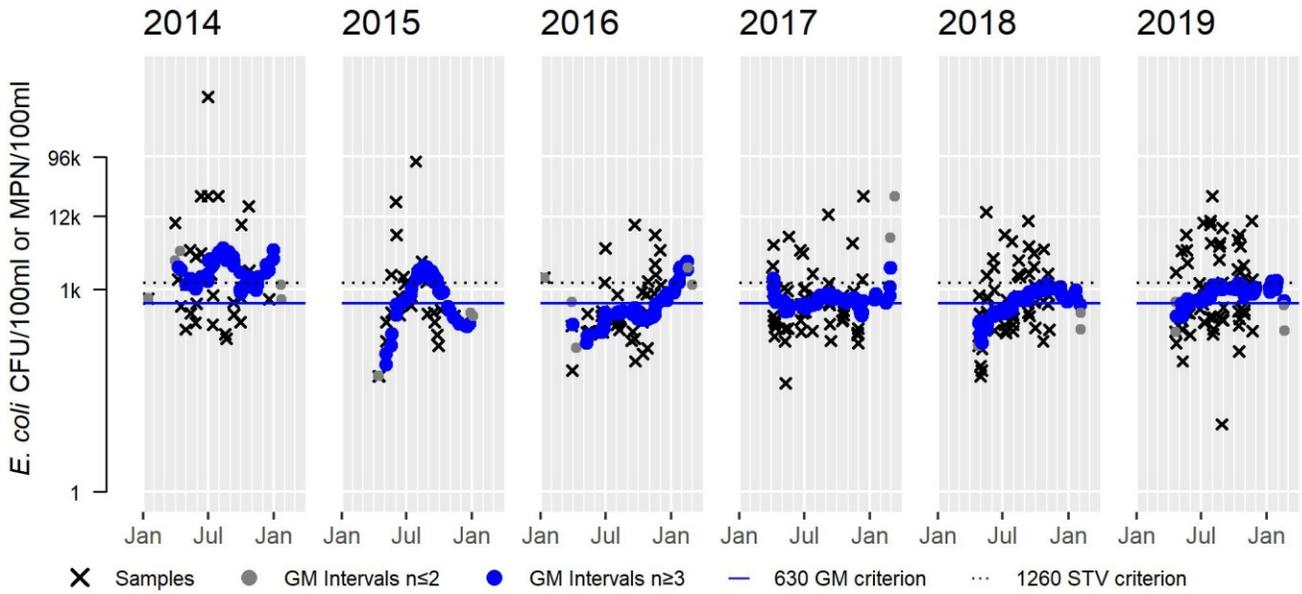
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MWRA_172S	Massachusetts Water Resource Authority	E. coli	04/20/19	11/22/19	63	98	40800	616
MWRA_276S	Massachusetts Water Resource Authority	E. coli	10/16/17	12/13/17	13	171	24200	772
MWRA_276S	Massachusetts Water Resource Authority	E. coli	04/24/18	11/08/18	58	41	15500	643
MWRA_276S	Massachusetts Water Resource Authority	E. coli	04/20/19	11/22/19	64	98	132000	633
MWRA_277S	Massachusetts Water Resource Authority	E. coli	10/16/17	12/13/17	13	185	24200	757
MWRA_277S	Massachusetts Water Resource Authority	E. coli	04/24/18	11/08/18	58	52	17300	765
MWRA_277S	Massachusetts Water Resource Authority	E. coli	04/20/19	11/22/19	62	74	112000	724
MyRWA_ALB006	Mystic River Watershed Association	E. coli	01/19/11	12/14/11	12	197	12000	596
MyRWA_ALB006	Mystic River Watershed Association	E. coli	01/18/12	12/19/12	12	211	24200	633
MyRWA_ALB006	Mystic River Watershed Association	E. coli	01/16/13	12/18/13	12	160	2040	543
MyRWA_ALB006	Mystic River Watershed Association	E. coli	01/15/14	12/17/14	14	97	2300	397
MyRWA_ALB006	Mystic River Watershed Association	E. coli	01/21/15	12/16/15	14	134	24196	570
MyRWA_ALB006	Mystic River Watershed Association	E. coli	01/20/16	12/21/16	49	24.3	4040	405
MyRWA_ALB006	Mystic River Watershed Association	E. coli	01/18/17	12/20/17	12	107	13000	535
MyRWA_ALB006	Mystic River Watershed Association	E. coli	01/17/18	12/19/18	12	243	24200	1236
MyRWA_ALB006	Mystic River Watershed Association	E. coli	01/16/19	10/16/19	10	399	24200	1589

MWRA_070S *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res
Samples	31	Samples	26	Samples	39	Samples	57	Samples	58	Samples	64
SeasGM	1836	SeasGM	767	SeasGM	518	SeasGM	661	SeasGM	694	SeasGM	941
#GMI	52	#GMI	47	#GMI	69	#GMI	105	#GMI	102	#GMI	112
#GMI Ex	52	#GMI Ex	29	#GMI Ex	17	#GMI Ex	62	#GMI Ex	69	#GMI Ex	105
%GMI Ex	100	%GMI Ex	62	%GMI Ex	25	%GMI Ex	59	%GMI Ex	68	%GMI Ex	94
n>STV	15	n>STV	8	n>STV	9	n>STV	11	n>STV	17	n>STV	24
%n>STV	48	%n>STV	31	%n>STV	23	%n>STV	19	%n>STV	29	%n>STV	38

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	69	65

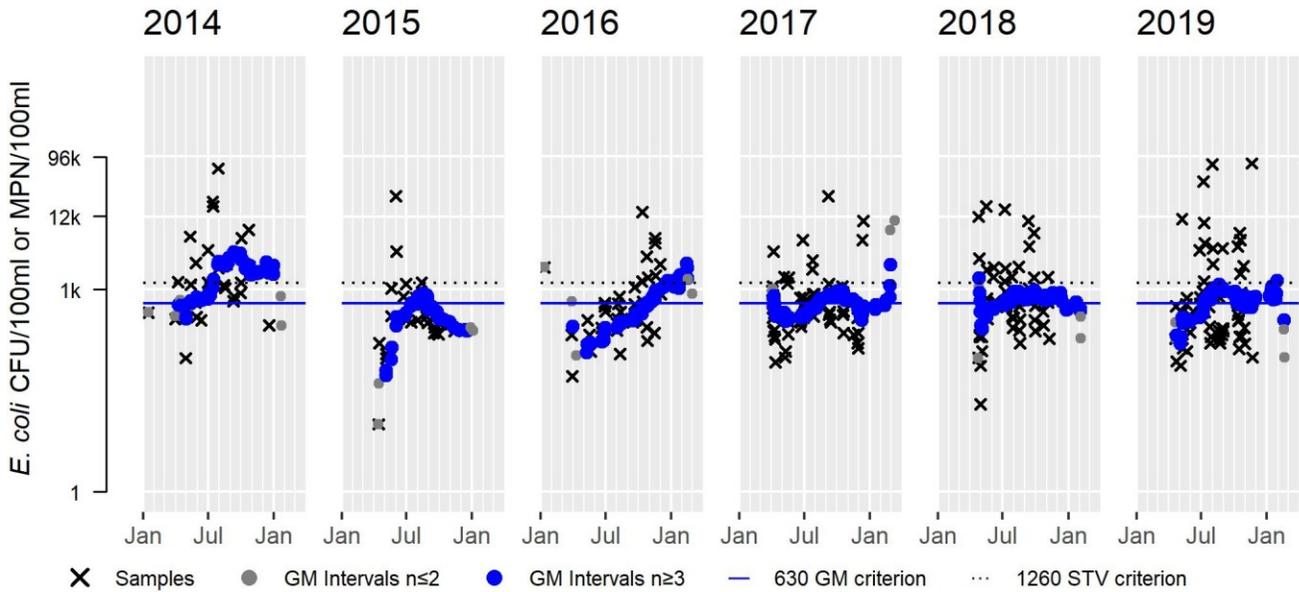


MWRA_074S *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res
Samples	30	Samples	26	Samples	39	Samples	57	Samples	58	Samples	63
SeasGM	1438	SeasGM	398	SeasGM	528	SeasGM	560	SeasGM	710	SeasGM	714
#GMI	50	#GMI	47	#GMI	69	#GMI	105	#GMI	102	#GMI	110
#GMI Ex	45	#GMI Ex	9	#GMI Ex	28	#GMI Ex	45	#GMI Ex	77	#GMI Ex	83
%GMI Ex	90	%GMI Ex	19	%GMI Ex	41	%GMI Ex	43	%GMI Ex	75	%GMI Ex	75
n>STV	12	n>STV	3	n>STV	9	n>STV	9	n>STV	16	n>STV	16
%n>STV	40	%n>STV	12	%n>STV	23	%n>STV	16	%n>STV	28	%n>STV	25

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	59	56

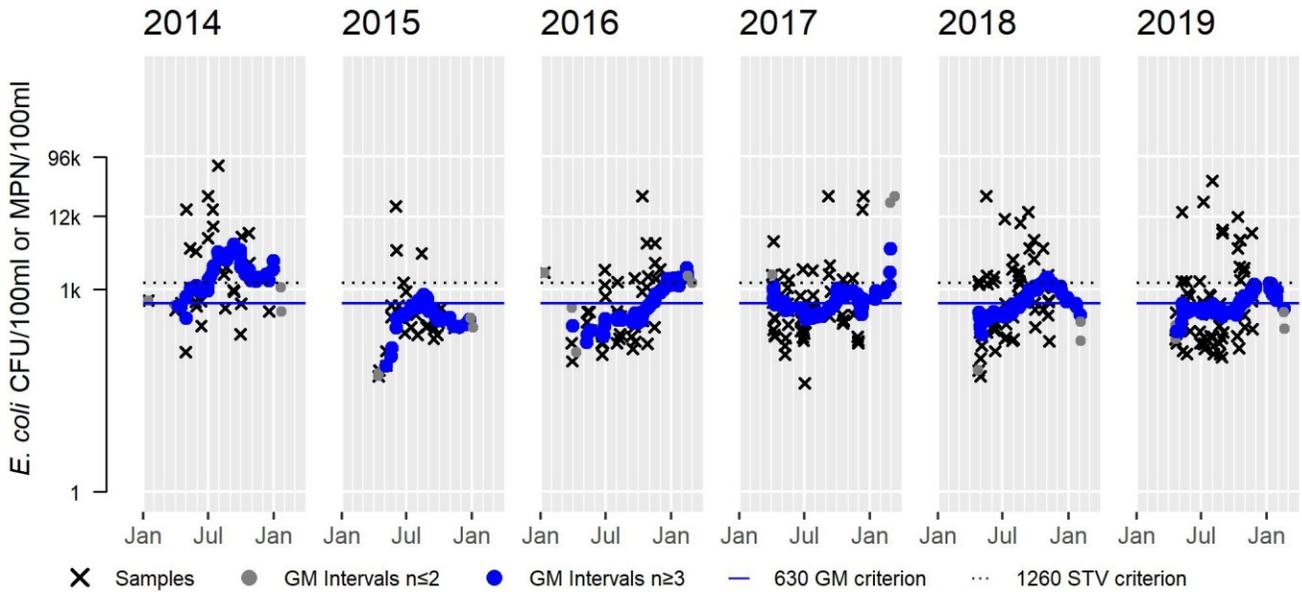


MWRA_172S *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res
Samples	30	Samples	26	Samples	39	Samples	57	Samples	58	Samples	63
SeasGM	1698	SeasGM	397	SeasGM	548	SeasGM	586	SeasGM	701	SeasGM	616
#GMI	50	#GMI	47	#GMI	69	#GMI	105	#GMI	102	#GMI	110
#GMI Ex	47	#GMI Ex	6	#GMI Ex	24	#GMI Ex	43	#GMI Ex	54	#GMI Ex	43
%GMI Ex	94	%GMI Ex	13	%GMI Ex	35	%GMI Ex	41	%GMI Ex	53	%GMI Ex	39
n>STV	14	n>STV	4	n>STV	11	n>STV	13	n>STV	18	n>STV	17
%n>STV	47	%n>STV	15	%n>STV	28	%n>STV	23	%n>STV	31	%n>STV	27

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	45	39



MWRA_276S *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

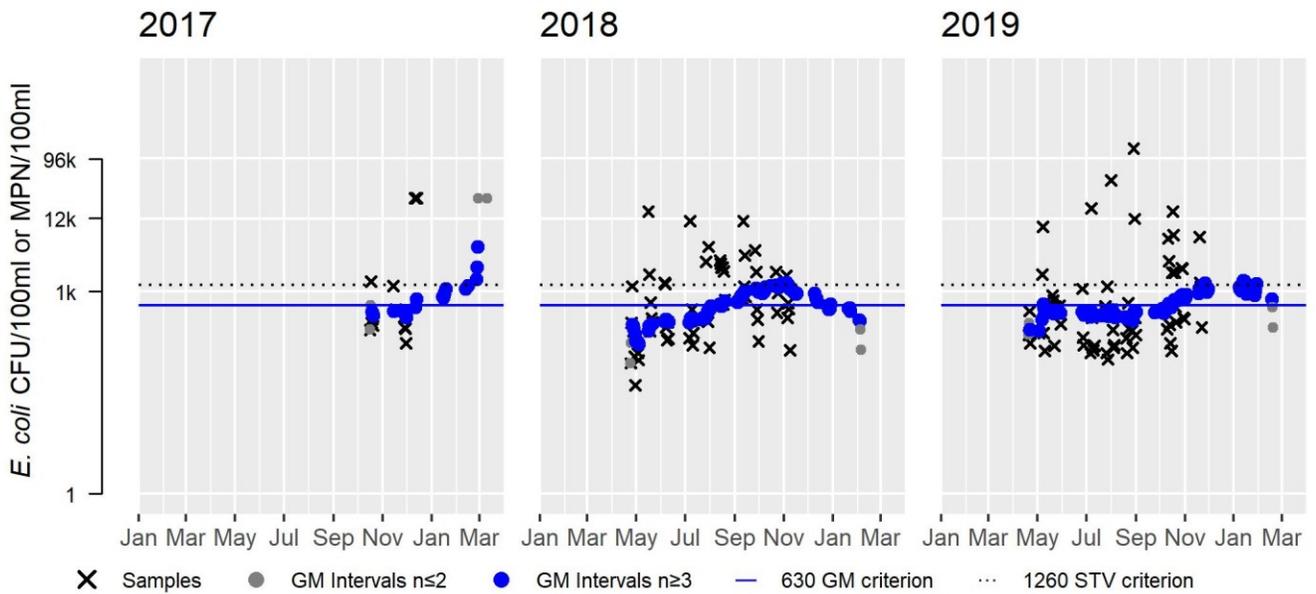
Var	Res
Samples	13
SeasGM	772
#GMI	21
#GMI Ex	11
%GMI Ex	52
n>STV	3
%n>STV	23

Var	Res
Samples	58
SeasGM	643
#GMI	102
#GMI Ex	54
%GMI Ex	53
n>STV	18
%n>STV	31

Var	Res
Samples	64
SeasGM	633
#GMI	112
#GMI Ex	48
%GMI Ex	43
n>STV	16
%n>STV	25

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

Variable	Cumulative %GMI Ex (all years)
Result	48



MWRA_277S *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

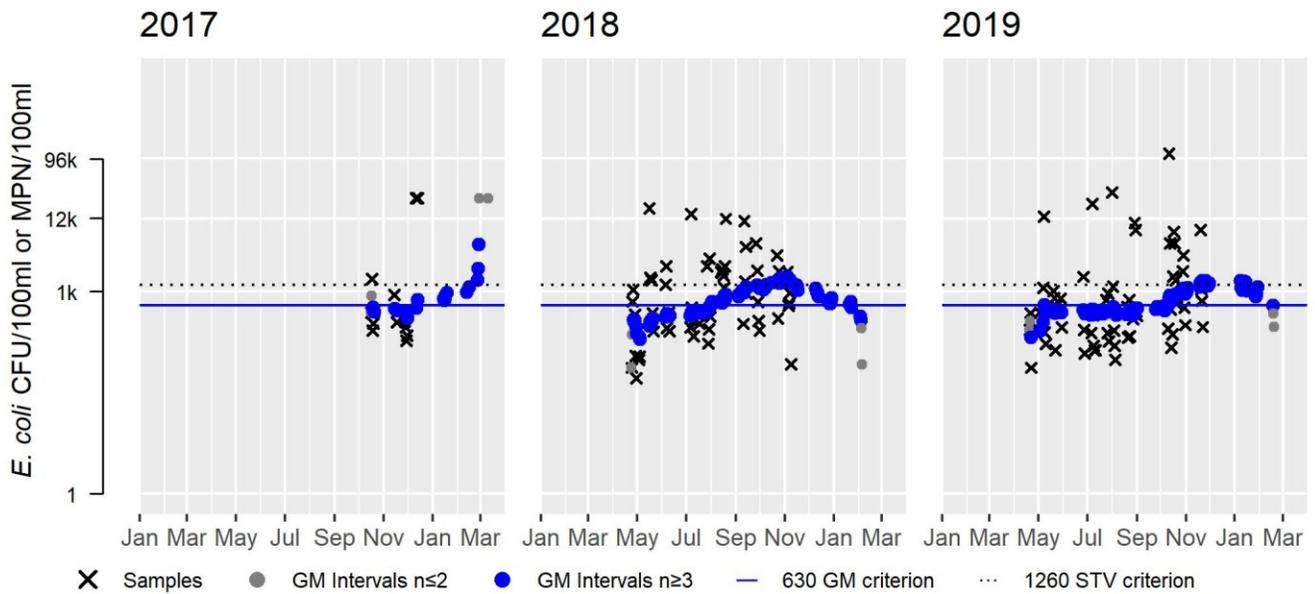
Var	Res
Samples	13
SeasGM	757
#GMI	21
#GMI Ex	11
%GMI Ex	52
n>STV	3
%n>STV	23

Var	Res
Samples	58
SeasGM	765
#GMI	102
#GMI Ex	64
%GMI Ex	63
n>STV	21
%n>STV	36

Var	Res
Samples	62
SeasGM	724
#GMI	109
#GMI Ex	52
%GMI Ex	48
n>STV	15
%n>STV	24

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

Variable	Cumulative %GMI Ex (all years)
Result	55

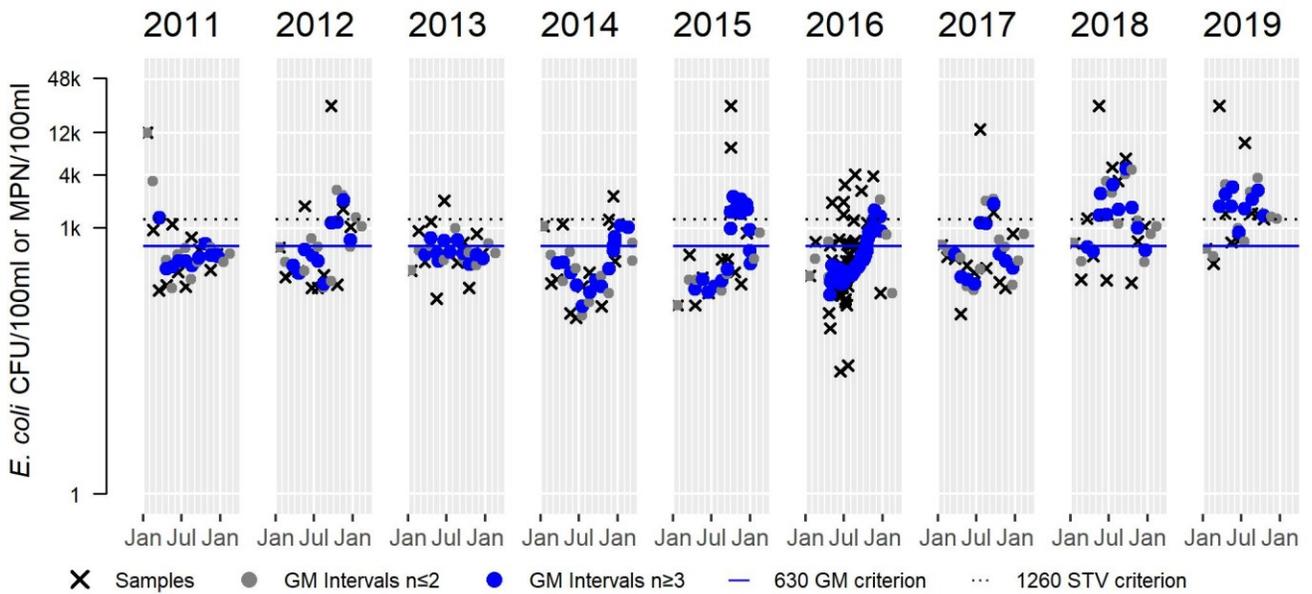


MyRWA_ALB006 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res														
Samples	12	Samples	12	Samples	12	Samples	14	Samples	14	Samples	49	Samples	12	Samples	12
SeasGM	596	SeasGM	633	SeasGM	543	SeasGM	397	SeasGM	570	SeasGM	405	SeasGM	535	SeasGM	1236
#GMI	11	#GMI	10	#GMI	11	#GMI	15	#GMI	18	#GMI	84	#GMI	10	#GMI	11
#GMI Ex	2	#GMI Ex	4	#GMI Ex	3	#GMI Ex	5	#GMI Ex	10	#GMI Ex	18	#GMI Ex	3	#GMI Ex	8
%GMI Ex	18	%GMI Ex	40	%GMI Ex	27	%GMI Ex	33	%GMI Ex	56	%GMI Ex	21	%GMI Ex	30	%GMI Ex	73
n>STV	1	n>STV	3	n>STV	1	n>STV	1	n>STV	3	n>STV	7	n>STV	2	n>STV	5
%n>STV	8	%n>STV	25	%n>STV	8	%n>STV	7	%n>STV	21	%n>STV	14	%n>STV	17	%n>STV	42

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	35	36



Belle Isle Inlet (MA71-14)

Location:	From tidegate at Bennington Street, Boston/Revere to confluence with Winthrop Bay, Boston/Winthrop.
AU Type:	ESTUARY
AU Size:	0.12 SQUARE MILES
Classification/Qualifier:	SA: ORW, SFO

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Cause Unknown [Contaminants in Fish and/or Shellfish]		Unchanged
5	5	Enterococcus	R1_MA_2019_01	Added
5	5	Fecal Coliform	R1_MA_2019_01	Unchanged
5	5	PCBs in Fish Tissue		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Shellfish Harvesting	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Cause Unknown [Contaminants in Fish and/or Shellfish]	Source Unknown (N)		X				
Enterococcus	Source Unknown (N)					X	
Fecal Coliform	Source Unknown (N)			X			
PCBs in Fish Tissue	Source Unknown (N)		X				

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent data are available, so the Aquatic Life Use of Belle Isle Inlet (MA71-14) is Not Assessed.	

Fish Consumption

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
The Fish Consumption Use of Belle Isle Inlet (MA71-14) will continue to be assessed as Not Supporting with the impairments for Cause Unknown (Contaminants in Fish and/or Shellfish) and PCBs in Fish Tissue being carried forward. As part of the broader advisory for Boston Harbor and all coastal waters that drain into it, MassDPH recommends that pregnant women, women who may become pregnant, nursing mothers, and children under 12 years old not eat lobsters, flounder, soft-shell clams and bivalves from these waters (MassDPH 2017).	

Shellfish Harvesting

2022 Use Attainment	Alert
Not Supporting	YES
2022 Use Attainment Summary	
Belle Isle Inlet (MA71-14): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.1002 sq mi (82%). The approved shellfish growing area represents 0 sq mi (0%). The prohibited shellfish growing area represents 0.1002 sq mi (82%). There is insufficient information available to assess the Shellfish Harvesting Use because the growing areas within this AU are classified as either entirely prohibited or a combination of approved and prohibited. Alert due to prohibited area \geq 0.0001 sq mi. There is insufficient information available to delist the existing Fecal Coliform impairment so the Shellfish Harvesting Use is evaluated as not supporting.	

Shellfish Growing Area Classifications

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

Area Name	Waterbody/Area Description	Classification	Area (Sq. Mi.)	Area (% of AU)
GBH5.0		Prohibited	0.00000	0.0%
GBH5.8	Belle Isle Creek	Prohibited	0.10017	82.5%

Aesthetic

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent data are available, so the Aesthetics Use of Belle Isle Inlet (MA71-14) is Not Assessed.	

Primary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
Enterococcus bacteria sampl in Belle Isle Inlet (MA71-14) by MyRWA staff/volunteers during the recreational season (Apr 1 – Oct 31). MyRWA staff/volunteers collected bacteria samples from 2012-2014 (generally, n=7/yr) at a station off Crystal Avenue in Revere (MyRWA_BEI093). Analysis of this moderate frequency dataset indicated that >20% of intervals (40-100%) had GMs >35 cfu/100mL in all years and that cumulatively, 82% of intervals exceeded the GM criterion. Additionally, 2 samples exceeded the 130 cfu/100mL STV in the first 2 years of the dataset (there was only 1 exceedance of the STV in 2014). MyRWA staff/volunteers also collected bacteria samples roughly monthly during the recreational season (generally, n=7/yr) from 2015-2019 at a site upstream of Saratoga Street in Winthrop (MyRWA_BEI001). Analysis of this moderate frequency dataset indicated that >20% of intervals (43-80%) in all 5 years of data exceeded 35 cfu/100mL. Cumulatively, 58% of intervals had GMs >35 cfu/100mL and the STV criterion was exceeded in 3 of the 5 years of data (2 exceedances each of those 3 years), while there was only 1 exceedance each of the other 2 years. The Primary Contact Recreational Use for Belle Isle Inlet (MA71-14) is assessed as Not Supporting for Enterococcus based on these MyRWA data.	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MyRWA_BEI001	Mystic River Watershed Association	Water Quality	Belle Isle Inlet	None submitted by MYRWA	42.382833	-70.994333

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MyRWA_BEI093	Mystic River Watershed Association	Water Quality	Belle Isle Inlet	Belle Isle Inlet at Crystal Avenue in Revere; sampled from end of private dock or by walking across mud to channel	42.39207	-70.98676

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MyRWA 2019) (MassDEP Undated 2)

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

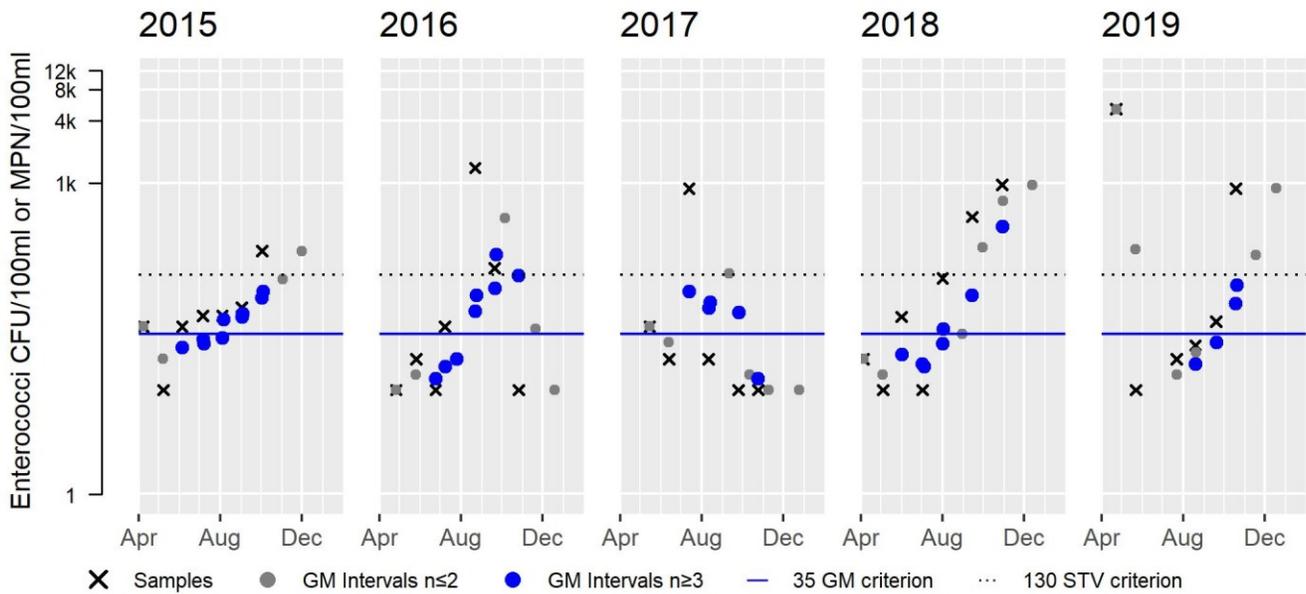
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MyRWA_BEI001	Mystic River Watershed Association	Enterococci	04/08/15	10/02/15	7	10	220	48
MyRWA_BEI001	Mystic River Watershed Association	Enterococci	04/26/16	10/26/16	7	10	1400	40
MyRWA_BEI001	Mystic River Watershed Association	Enterococci	05/15/17	10/24/17	6	10	880	34
MyRWA_BEI001	Mystic River Watershed Association	Enterococci	04/05/18	10/29/18	7	10	959.4	66
MyRWA_BEI001	Mystic River Watershed Association	Enterococci	04/23/19	10/18/19	6	10	5172.1	102
MyRWA_BEI093	Mystic River Watershed Association	Enterococci	04/10/12	10/04/12	7	63	34000	270
MyRWA_BEI093	Mystic River Watershed Association	Enterococci	04/29/13	10/09/13	6	10	1600	90
MyRWA_BEI093	Mystic River Watershed Association	Enterococci	04/03/14	10/28/14	7	10	150	35

MyRWA_BEI001 Enterococci (90-day Interval), Primary Contact Recreational Use Season

Var	Res								
Samples	7	Samples	7	Samples	6	Samples	7	Samples	6
SeasGM	48	SeasGM	40	SeasGM	34	SeasGM	66	SeasGM	102
#GMI	9	#GMI	8	#GMI	5	#GMI	7	#GMI	4
#GMI Ex	5	#GMI Ex	5	#GMI Ex	4	#GMI Ex	3	#GMI Ex	2
%GMI Ex	56	%GMI Ex	62	%GMI Ex	80	%GMI Ex	43	%GMI Ex	50
n>STV	1	n>STV	2	n>STV	1	n>STV	2	n>STV	2
%n>STV	14	%n>STV	29	%n>STV	17	%n>STV	29	%n>STV	33

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

Variable	Cumulative %GMI Ex (all years)
Result	58



MyRWA_BEI093 Enterococci (90-day Interval), Primary Contact Recreational Use Season

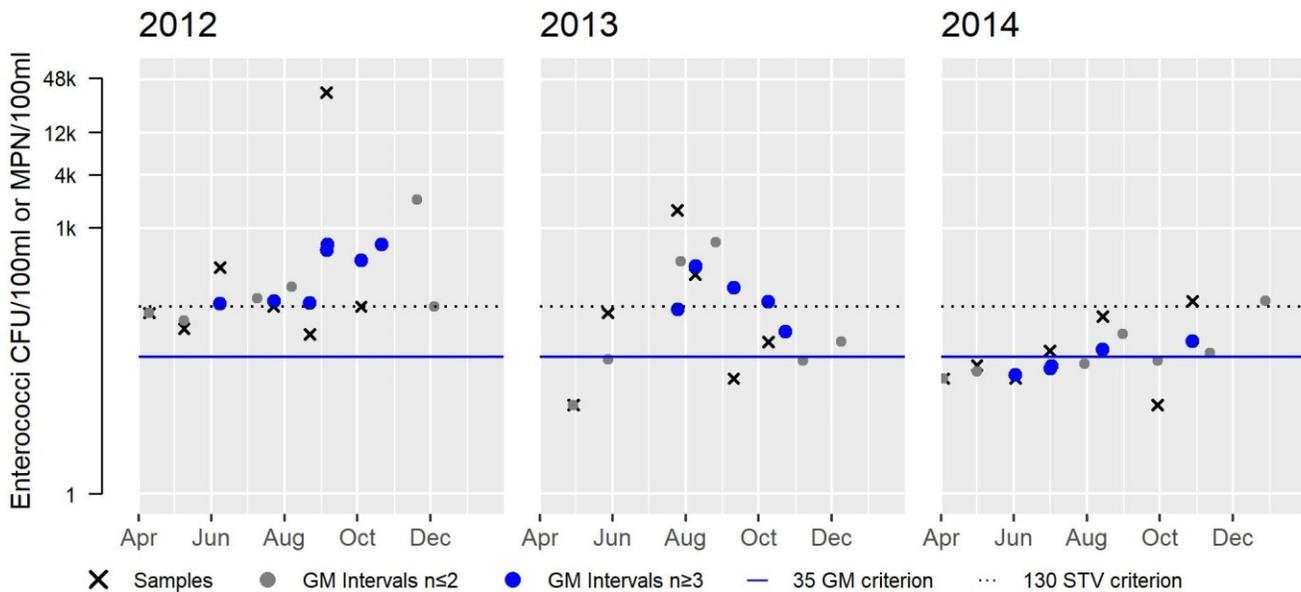
Var	Res
Samples	7
SeasGM	270
#GMI	7
#GMI Ex	7
%GMI Ex	100
n>STV	2
%n>STV	29

Var	Res
Samples	6
SeasGM	90
#GMI	5
#GMI Ex	5
%GMI Ex	100
n>STV	2
%n>STV	33

Var	Res
Samples	7
SeasGM	35
#GMI	5
#GMI Ex	2
%GMI Ex	40
n>STV	1
%n>STV	14

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

Variable	Cumulative %GMI Ex (all years)
Result	82



Shellfish Growing Area Classifications

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

Summary
Belle Isle Inlet (MA71-14): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.1002 sq mi (82%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Primary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Secondary Contact Recreation

2022 Use Attainment	Alert
Fully Supporting	NO

2022 Use Attainment Summary

Enterococcus bacteria sampling was conducted by MyRWA staff and volunteers at two locations in Belle Isle Inlet (MA71-14). MyRWA staff/volunteers collected bacteria samples from 2012-2014 (generally, n=12/yr) at a station off of Crystal Avenue in Revere (MyRWA_BEI093). Analysis of this moderate frequency dataset indicated that in only 1 of the 3 years of data were >20% of the GM intervals (62%) >175 cfu/100mL. Cumulatively, however, 29% of intervals exceeded the GM criterion. In 2 of the 3 years of data ≥ 2 samples (n=3-4) exceeded the 350 cfu/100mL STV. MyRWA staff/volunteers also collected bacteria samples roughly monthly (generally, n=11-12/yr) from 2015-2019 at a station upstream of Saratoga Street in Winthrop (MyRWA_BEI001). Analysis of this moderate frequency dataset indicated that 9% of the cumulative intervals had GMs >175 cfu/100mL and only the most recent year of data exceeded the GM interval criterion (with 33% of intervals exceeding). In 2 of the 5 years of data, ≥ 2 samples exceeded 350 cfu/100mL (n= 2-3), while there were fewer exceedances in the other 3 years (n= 0-1).

Since most bacteria metrics for Enterococcus data from two MyRWA stations were indicative of good conditions and were below the use attainment impairment thresholds (MassDEP 2022) (only the cumulative GM interval exceedances for station MyRWA_BEI093 were a negative indicator), the Secondary Contact Recreational Use for Belle Isle Inlet (MA71-14) is assessed as Fully Supporting.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MyRWA_BEI001	Mystic River Watershed Association	Water Quality	Belle Isle Inlet	None submitted by MYRWA	42.382833	-70.994333
MyRWA_BEI093	Mystic River Watershed Association	Water Quality	Belle Isle Inlet	Belle Isle Inlet at Crystal Avenue in Revere; sampled from end of private dock or by walking across mud to channel	42.39207	-70.98676

*Bacteria Data***Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MyRWA 2019)**
(MassDEP Undated 2)

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

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MyRWA_BEI001	Mystic River Watershed Association	Enterococci	01/23/15	12/16/15	11	10	220	34
MyRWA_BEI001	Mystic River Watershed Association	Enterococci	01/15/16	12/05/16	12	10	1400	30
MyRWA_BEI001	Mystic River Watershed Association	Enterococci	01/17/17	12/08/17	11	10	880	19
MyRWA_BEI001	Mystic River Watershed Association	Enterococci	01/22/18	12/13/18	12	10	959.4	47
MyRWA_BEI001	Mystic River Watershed Association	Enterococci	01/25/19	10/18/19	9	10	5172.1	128

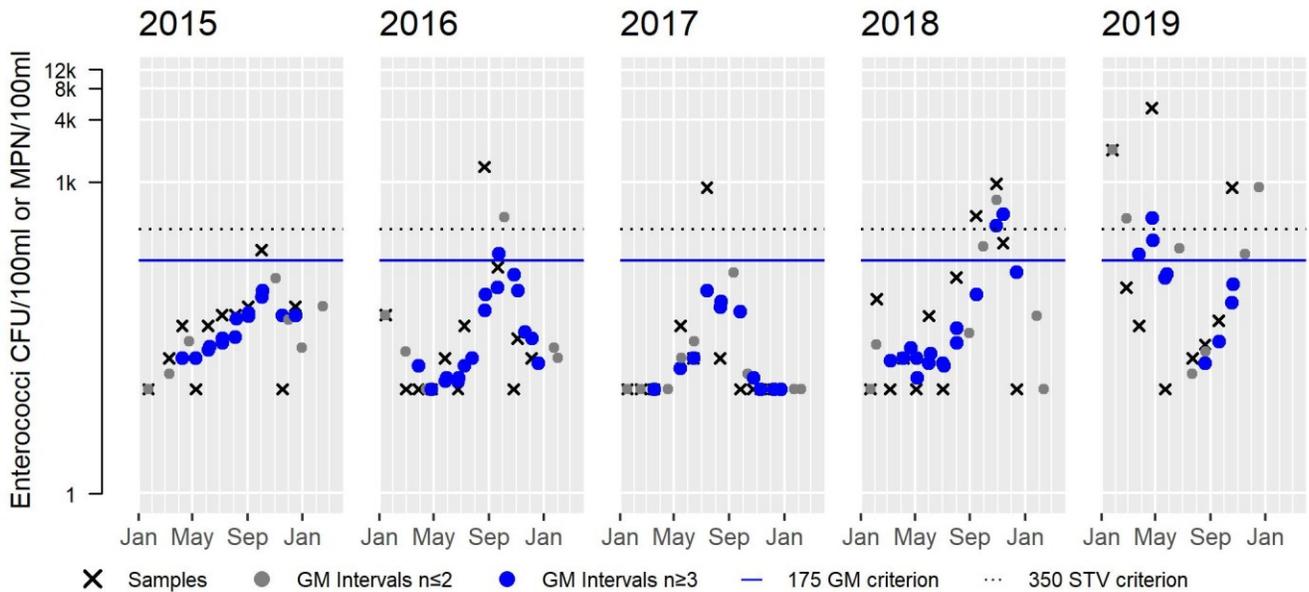
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MyRWA_BEI093	Mystic River Watershed Association	Enterococci	01/13/12	12/04/12	12	10	34000	231
MyRWA_BEI093	Mystic River Watershed Association	Enterococci	01/31/13	12/06/13	11	10	1600	113
MyRWA_BEI093	Mystic River Watershed Association	Enterococci	01/06/14	12/12/14	12	10	240	57

MyRWA_BEI001 Enterococci (90-day Interval), Secondary Contact Recreational Use Season

Var	Res								
Samples	11	Samples	12	Samples	11	Samples	12	Samples	9
SeasGM	34	SeasGM	30	SeasGM	19	SeasGM	47	SeasGM	128
#GMI	14	#GMI	17	#GMI	11	#GMI	15	#GMI	9
#GMI Ex	0	#GMI Ex	1	#GMI Ex	0	#GMI Ex	2	#GMI Ex	3
%GMI Ex	0	%GMI Ex	6	%GMI Ex	0	%GMI Ex	13	%GMI Ex	33
n>STV	0	n>STV	1	n>STV	1	n>STV	2	n>STV	3
%n>STV	0	%n>STV	8	%n>STV	9	%n>STV	17	%n>STV	33

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

Variable	Cumulative %GMI Ex (all years)
Result	9



MyRWA_BEI093 Enterococci (90-day Interval), Secondary Contact Recreational Use Season

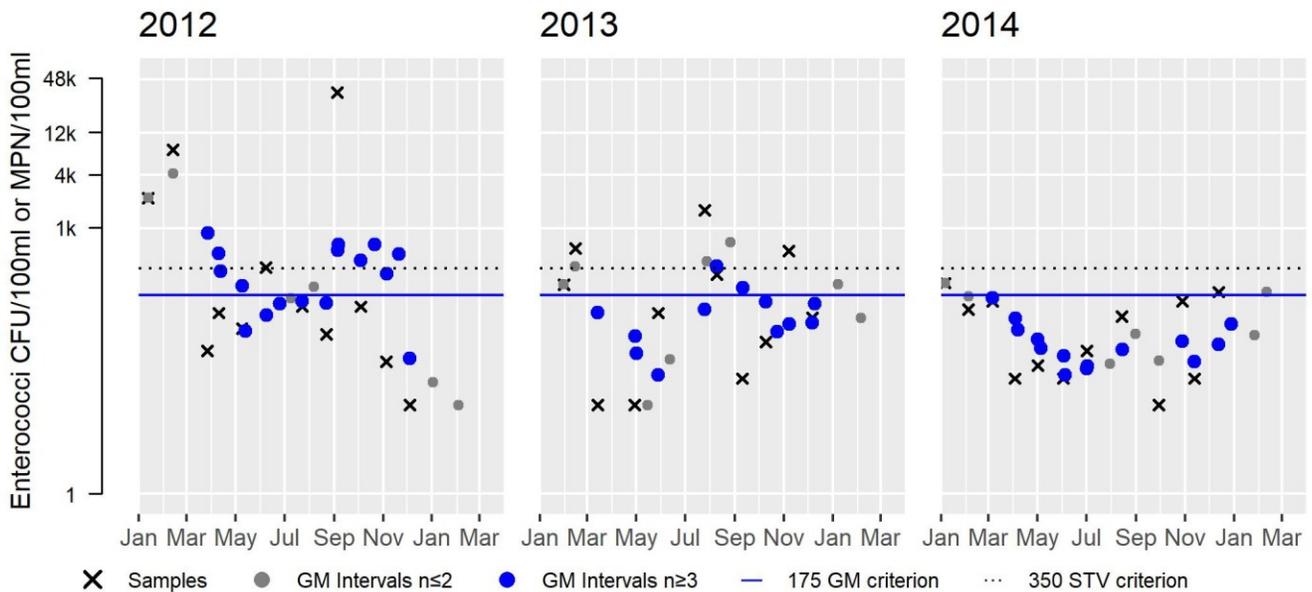
Var	Res
Samples	12
SeasGM	231
#GMI	16
#GMI Ex	10
%GMI Ex	62
n>STV	4
%n>STV	33

Var	Res
Samples	11
SeasGM	113
#GMI	12
#GMI Ex	2
%GMI Ex	17
n>STV	3
%n>STV	27

Var	Res
Samples	12
SeasGM	57
#GMI	14
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

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

Variable	Cumulative %GMI Ex (all years)
Result	29



Shellfish Growing Area Classifications

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

Summary
Belle Isle Inlet (MA71-14): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.1002 sq mi (82%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Secondary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Bellevue Pond (MA71004)

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

No usable data were available for Bellevue Pond (MA71004) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

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

Blacks Nook (MA71005)

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

No usable data were available for Blacks Nook (MA71005) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Water Chestnut*)		Unchanged
5	5	Nutrient/Eutrophication Biological Indicators		Unchanged
5	5	Transparency / Clarity		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
(Water Chestnut*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X				
Nutrient/Eutrophication Biological Indicators	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X		X	X	X
Nutrient/Eutrophication Biological Indicators	Source Unknown (N)	X		X	X	X
Nutrient/Eutrophication Biological Indicators	Unspecified Urban Stormwater (Y)	X		X	X	X
Transparency / Clarity	Source Unknown (N)			X	X	X

Chelsea River (MA71-06)

Location:	From confluence with Mill Creek, Chelsea/Revere to confluence with Boston Inner Harbor, Chelsea/East Boston.
AU Type:	ESTUARY
AU Size:	0.37 SQUARE MILES
Classification/Qualifier:	SB(CSO)

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Debris*)		Unchanged
5	5	Ammonia, Un-ionized		Unchanged
5	5	Cause Unknown [Contaminants in Fish and/or Shellfish; Sediment Screening Value (Exceedance)]		Unchanged
5	5	Fecal Coliform	R1_MA_2019_01	Unchanged
5	5	Odor		Unchanged
5	5	PCBs in Fish Tissue		Unchanged
5	5	Petroleum Hydrocarbons		Unchanged
5	5	Trash		Unchanged
5	5	Turbidity		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Shellfish Harvesting	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
(Debris*)	Combined Sewer Overflows (Y)				X	X	X
(Debris*)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)				X	X	X
(Debris*)	Industrial Point Source Discharge (Y)				X	X	X
Ammonia, Un-ionized	Combined Sewer Overflows (Y)	X					
Ammonia, Un-ionized	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X					
Ammonia, Un-ionized	Industrial Point Source Discharge (Y)	X					
Cause Unknown [Contaminants in Fish and/or Shellfish; Sediment Screening Value (Exceedance)]	Above Ground Storage Tank Leaks (Tank Farms) (Y)	X	X				
Cause Unknown [Contaminants in Fish and/or Shellfish; Sediment Screening Value (Exceedance)]	Accidental Release/Spill (Y)	X	X				
Cause Unknown [Contaminants in Fish and/or Shellfish; Sediment Screening Value (Exceedance)]	Cargo Loading/Unloading (Y)	X	X				
Cause Unknown [Contaminants in Fish and/or Shellfish; Sediment Screening Value (Exceedance)]	Contaminated Sediments (Y)	X	X				

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Shellfish Harvesting	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Cause Unknown [Contaminants in Fish and/or Shellfish; Sediment Screening Value (Exceedance)]	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	X				
Cause Unknown [Contaminants in Fish and/or Shellfish; Sediment Screening Value (Exceedance)]	Municipal (Urbanized High Density Area) (Y)	X	X				
Cause Unknown [Contaminants in Fish and/or Shellfish; Sediment Screening Value (Exceedance)]	Source Unknown (N)	X	X				
Fecal Coliform	Combined Sewer Overflows (Y)			X			
Fecal Coliform	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X			
Fecal Coliform	Source Unknown (N)			X			
Odor	Combined Sewer Overflows (Y)				X	X	X
Odor	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)				X	X	X
Odor	Industrial Point Source Discharge (Y)				X	X	X
PCBs in Fish Tissue	Contaminated Sediments (Y)		X				
PCBs in Fish Tissue	Source Unknown (N)		X				
Petroleum Hydrocarbons	Above Ground Storage Tank Leaks (Tank Farms) (Y)	X			X	X	X
Petroleum Hydrocarbons	Accidental Release/Spill (Y)	X			X	X	X
Petroleum Hydrocarbons	Cargo Loading/Unloading (Y)	X			X	X	X
Petroleum Hydrocarbons	Combined Sewer Overflows (Y)	X			X	X	X
Petroleum Hydrocarbons	Contaminated Sediments (Y)	X			X	X	X
Petroleum Hydrocarbons	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X			X	X	X
Petroleum Hydrocarbons	Industrial Point Source Discharge (Y)	X			X	X	X
Petroleum Hydrocarbons	Municipal (Urbanized High Density Area) (Y)	X			X	X	X
Trash	Combined Sewer Overflows (Y)				X	X	X
Trash	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)				X	X	X
Trash	Industrial Point Source Discharge (Y)				X	X	X
Turbidity	Combined Sewer Overflows (Y)				X	X	X
Turbidity	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)				X	X	X
Turbidity	Industrial Point Source Discharge (Y)				X	X	X

Recommendations

2022 Recommendations

ALU: As recommended in the 2018 IR cycle, a water quality survey should be conducted in the Chelsea River “with an emphasis on documenting indicators of enrichment (chlorophyll a, total phosphorus, deployment of DO probes) in the vicinity of the Condor Street Urban Wild.”

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	YES
2022 Use Attainment Summary	
No recent data are available, so the Aquatic Life Use of the Chelsea River (MA71-06) will continue to be assessed as Not Supporting with the impairments for Ammonia, Un-ionized, Cause Unknown, and Petroleum Hydrocarbons being carried forward. The former Alert for DO supersaturation (MassDEP 2021) is also being carried forward.	

Fish Consumption

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
The Fish Consumption Use for the Chelsea River (MA71-06) will continue to be assessed as Not Supporting for Cause Unknown (Contaminants in Fish and/or Shellfish) and PCBs in Fish Tissue, which are being carried forward. As part of the broader advisory for Boston Harbor and all coastal waters that drain into it, MassDPH recommends that pregnant women, women who may become pregnant, nursing mothers, and children under 12 years old not eat lobsters, flounder, soft-shell clams and bivalves from these waters (MassDPH 2017).	

Shellfish Harvesting

2022 Use Attainment	Alert
Not Supporting	YES
2022 Use Attainment Summary	
Chelsea River (MA71-06): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.3517 sq mi (94%). The sum of the approved, conditionally approved, and restricted shellfish growing areas represents 0 sq mi (0%). The prohibited shellfish growing area represents 0.3517 sq mi (94%). There is insufficient information available to assess the Shellfish Harvesting Use because the growing areas within this AU are classified as either entirely prohibited or a combination of prohibited and approved, conditionally approved, and/or restricted. Alert due to prohibited area ≥ 0.0001 sq mi. There is insufficient information available to delist the existing Fecal Coliform impairment so the Shellfish Harvesting Use is evaluated as not supporting.	

Shellfish Growing Area Classifications

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

Area Name	Waterbody/Area Description	Classification	Area (Sq. Mi.)	Area (% of AU)
GBH4.0	Boston Inner Harbor	Prohibited	0.35175	94.1%

Aesthetic

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
No recent data are available, so the Aesthetics Use of the Chelsea River (MA71-06) will continue to be assessed as Not Supporting with Debris, Odor, Petroleum Hydrocarbons, Trash, and Turbidity impairments being carried forward.	

Primary Contact Recreation

2022 Use Attainment	Alert
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Not Supporting	YES
2022 Use Attainment Summary	
<p>Enterococci bacteria sampling was conducted at multiple locations in the Chelsea River (MA71-06) by MWRA staff and MyRWA staff/volunteers during the 2012-2019 recreational seasons (Apr 1 – Oct 31). MyRWA staff/volunteers collected moderate frequency data from 2012-2019 (generally, n=7/yr) at the east side of the Condor Street Urban Wild in East Boston (MyRWA_CHR95S). Analysis of the data indicated that in three of the most recent five years of data, >20% of GM intervals (33-67%) were >35 cfu/100mL and that cumulatively, 29% of GM intervals in the most recent five years of data were >35 cfu/100mL. However, ≥2 samples (n=3) exceeded the 130 cfu/100mL STV in only one of the most recent five years. MWRA staff collected high frequency bacteria data from 2014-2019 (n=21-31/yr) at one site midchannel in the Chelsea River (just downstream of the MyRWA station), at the surface (MWRA_027S) and the bottom (MWRA_027B). For the surface data, more than 10% of GM intervals (13%) were >35 cfu/100mL in only one of the most recent five years of data (the cumulative exceedances were low at 5%) and exceedances of the 130 cfu/100mL STV were below 10% in all 5 years (maximum 8%). For the bottom data, none of the last five years of data had any intervals with GM exceedances and any STV exceedances were <10% of samples (maximum 4%). While bacteria data were collected infrequently at another MyRWA station (MyRWA_CHRWHIGH), sample size was insufficient to allow analysis of these data for use attainment decisions.</p> <p>The Primary Contact Recreational Use for the Chelsea River (MA71-06) will continue to be assessed as Not Supporting based on the aesthetic related impairments (Debris, Odor, Petroleum Hydrocarbons, Trash, and Turbidity) which are being carried forward. Since MWRA's high frequency Enterococci bacteria data collected in a representative location (mid-channel) were indicative of good conditions, the prior Fecal Coliform impairment (an old indicator of bacteria pollution) is being removed from this use (Fecal Coliform remains an impairment for Shellfish Harvesting). An Alert is being identified as a precaution because of use impairment threshold exceedances at MyRWA's sampling location by the shore at the Condor Street Urban Wild, however, these Enterococci data were of only moderate frequency and were not as representative of the river as a whole.</p>	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MWRA_027B	Massachusetts Water Resource Authority	Water Quality	CHELSEA CREEK	Inner Harbor, Chelsea Creek, midchannel	42.384	-71.029833
MWRA_027S	Massachusetts Water Resource Authority	Water Quality	CHELSEA CREEK	Inner Harbor, Chelsea Creek, midchannel	42.384	-71.029833
MyRWA_CHR95S	Mystic River Watershed Association	Water Quality	Chelsea River	Chelsea River in East Boston at Condor Street; sampled at east side of Urban Wild	42.38357	-71.02906
MyRWA_CHRWHIGH	Mystic River Watershed Association	Water Quality	Chelsea River	Marginal St, near Highland St, sampled from west (downstream) side of Highland outfall, slightly higher elevation	42.385944	-71.03139

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (30-day Interval Analysis) (MWRA 2019) (MassDEP Undated 2) (MyRWA 2019) (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
MWRA_027B	Massachusetts Water Resource Authority	Enterococci	04/30/14	10/01/14	20	10	10	10
MWRA_027B	Massachusetts Water Resource Authority	Enterococci	04/13/15	10/06/15	20	10	10	10
MWRA_027B	Massachusetts Water Resource Authority	Enterococci	05/09/16	10/12/16	25	10	10	10
MWRA_027B	Massachusetts Water Resource Authority	Enterococci	04/04/17	10/19/17	31	10	74	11
MWRA_027B	Massachusetts Water Resource Authority	Enterococci	04/25/18	10/22/18	25	10	134	12
MWRA_027B	Massachusetts Water Resource Authority	Enterococci	05/03/19	08/30/19	21	10	20	10
MWRA_027S	Massachusetts Water Resource Authority	Enterococci	04/30/14	10/24/14	21	10	882	15
MWRA_027S	Massachusetts Water Resource Authority	Enterococci	04/13/15	10/06/15	26	10	1260	20
MWRA_027S	Massachusetts Water Resource Authority	Enterococci	05/09/16	10/12/16	25	10	10	10
MWRA_027S	Massachusetts Water Resource Authority	Enterococci	04/04/17	10/19/17	31	10	1330	16
MWRA_027S	Massachusetts Water Resource Authority	Enterococci	04/25/18	10/22/18	26	10	613	15
MWRA_027S	Massachusetts Water Resource Authority	Enterococci	05/03/19	08/30/19	21	10	41	12
MyRWA_CHR95S	Mystic River Watershed Association	Enterococci	04/10/12	10/04/12	7	10	2600	55
MyRWA_CHR95S	Mystic River Watershed Association	Enterococci	04/29/13	10/09/13	6	10	110	34
MyRWA_CHR95S	Mystic River Watershed Association	Enterococci	04/03/14	10/28/14	7	1	200	13
MyRWA_CHR95S	Mystic River Watershed Association	Enterococci	04/08/15	10/02/15	7	10	41	17
MyRWA_CHR95S	Mystic River Watershed Association	Enterococci	04/26/16	10/26/16	7	10	220	28
MyRWA_CHR95S	Mystic River Watershed Association	Enterococci	05/15/17	10/24/17	6	10	4600	31
MyRWA_CHR95S	Mystic River Watershed Association	Enterococci	04/05/18	10/29/18	7	10	320	23

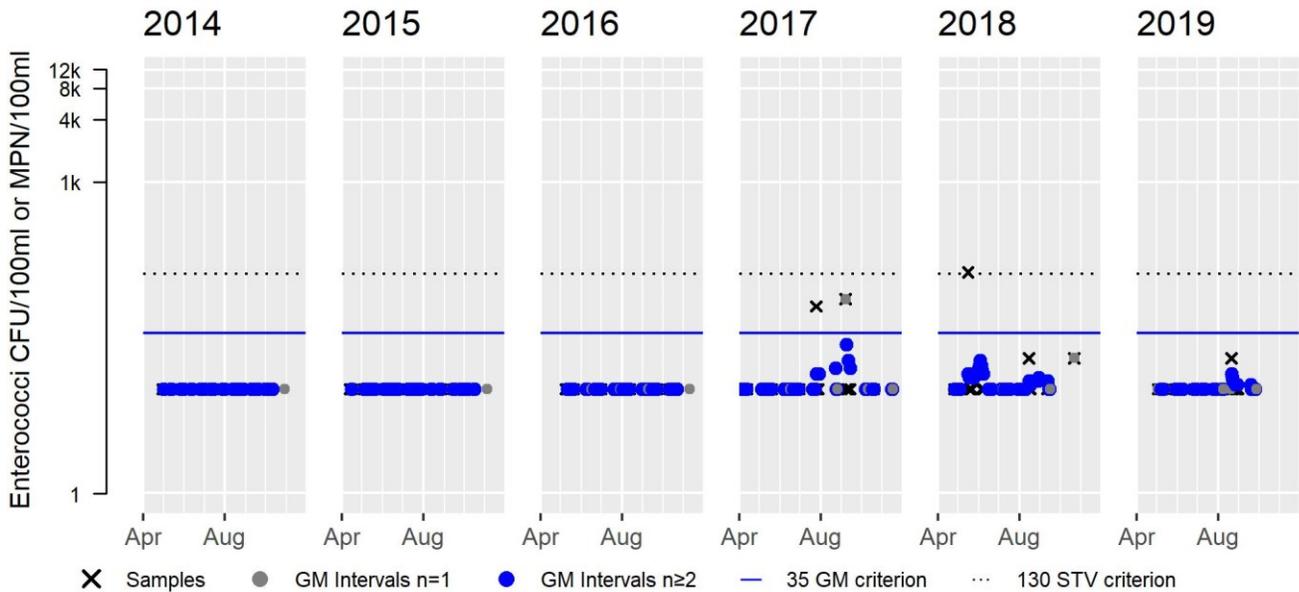
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MyRWA_CHR95S	Mystic River Watershed Association	Enterococci	04/23/19	10/18/19	7	5	364.1	40
MyRWA_CHRWHIGH	Mystic River Watershed Association	Enterococci	09/18/12	09/18/12	1	100	100	100

MWRA_027B Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	20	Samples	20	Samples	25	Samples	31	Samples	25	Samples	21
SeasGM	10	SeasGM	10	SeasGM	10	SeasGM	11	SeasGM	12	SeasGM	10
#GMI	34	#GMI	35	#GMI	37	#GMI	48	#GMI	41	#GMI	35
#GMI Ex	0										
%GMI Ex	0										
n>STV	0	n>STV	0	n>STV	0	n>STV	0	n>STV	1	n>STV	0
%n>STV	0	%n>STV	0	%n>STV	0	%n>STV	0	%n>STV	4	%n>STV	0

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	0	0

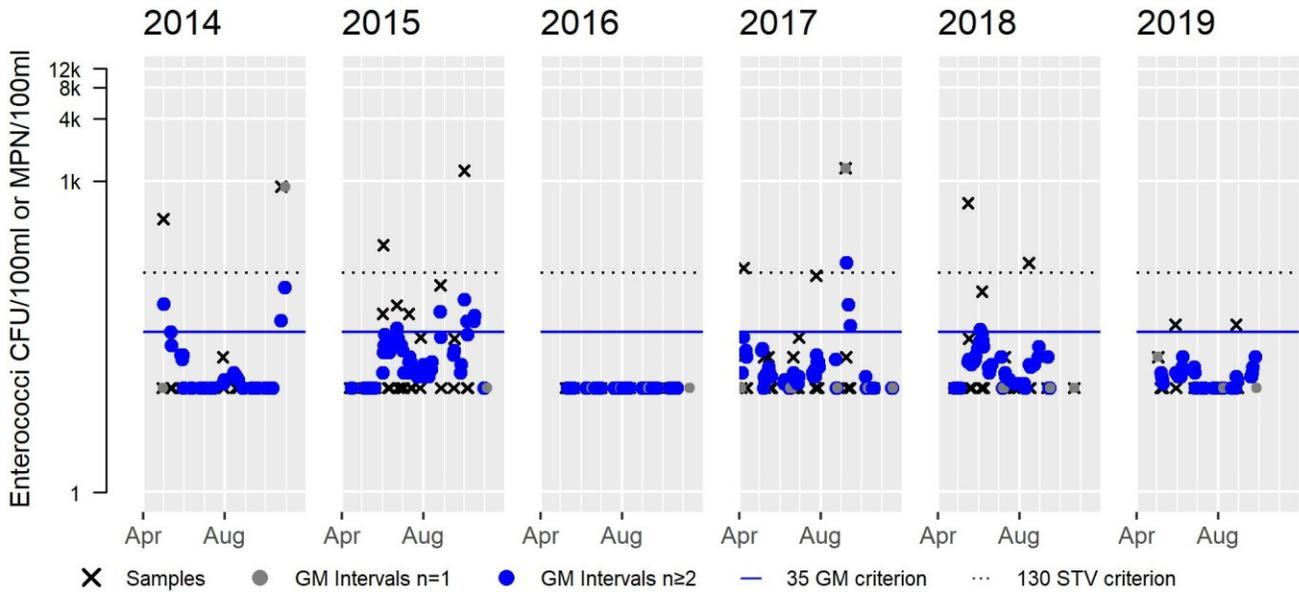


MWRA_027S Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	21	Samples	26	Samples	25	Samples	31	Samples	26	Samples	21
SeasGM	15	SeasGM	20	SeasGM	10	SeasGM	16	SeasGM	15	SeasGM	12
#GMI	36	#GMI	46	#GMI	37	#GMI	48	#GMI	43	#GMI	35
#GMI Ex	3	#GMI Ex	6	#GMI Ex	0	#GMI Ex	3	#GMI Ex	1	#GMI Ex	0
%GMI Ex	8	%GMI Ex	13	%GMI Ex	0	%GMI Ex	6	%GMI Ex	2	%GMI Ex	0
n>STV	2	n>STV	2	n>STV	0	n>STV	2	n>STV	2	n>STV	0
%n>STV	10	%n>STV	8	%n>STV	0	%n>STV	6	%n>STV	8	%n>STV	0

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	5	5

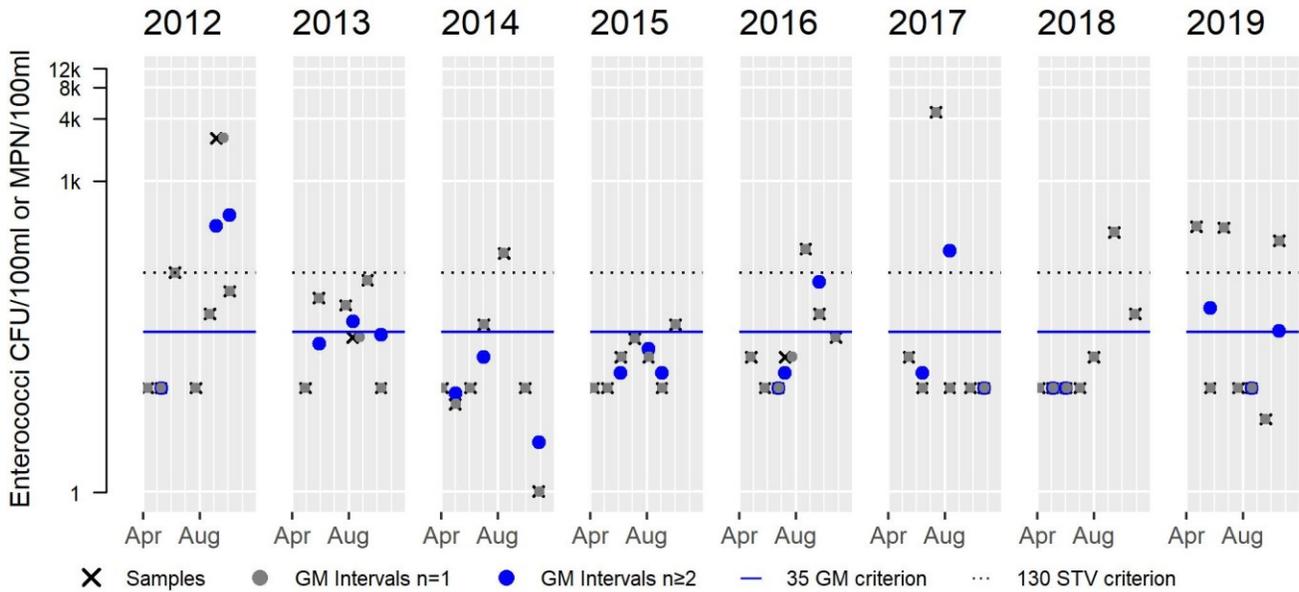


MyRWA_CHR95S Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res														
Samples	7	Samples	6	Samples	7	Samples	7	Samples	7	Samples	6	Samples	7	Samples	7
SeasGM	55	SeasGM	34	SeasGM	13	SeasGM	17	SeasGM	28	SeasGM	31	SeasGM	23	SeasGM	40
#GMI	3	#GMI	2	#GMI	3										
#GMI Ex	2	#GMI Ex	1	#GMI Ex	0	#GMI Ex	0	#GMI Ex	1	#GMI Ex	1	#GMI Ex	0	#GMI Ex	2
%GMI Ex	67	%GMI Ex	33	%GMI Ex	0	%GMI Ex	0	%GMI Ex	33	%GMI Ex	33	%GMI Ex	0	%GMI Ex	67
n>STV	1	n>STV	0	n>STV	1	n>STV	0	n>STV	1	n>STV	1	n>STV	1	n>STV	3
%n>STV	14	%n>STV	0	%n>STV	14	%n>STV	0	%n>STV	14	%n>STV	17	%n>STV	14	%n>STV	43

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

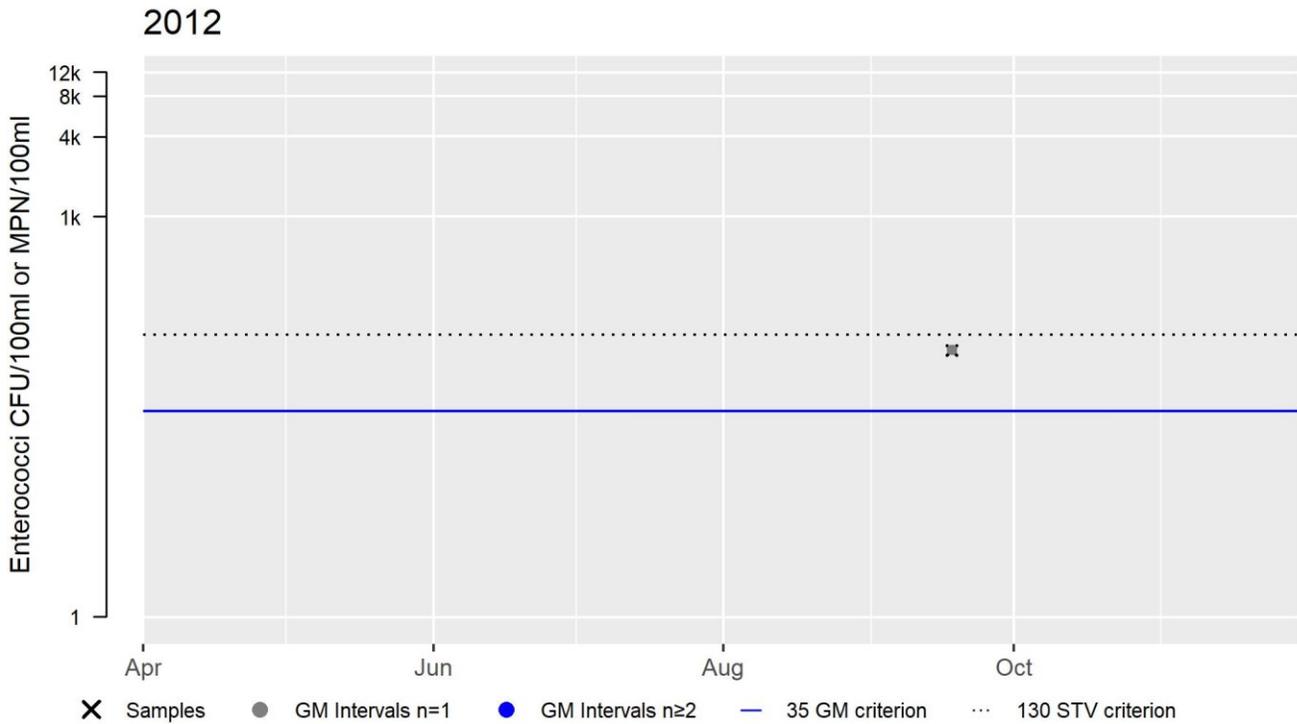
Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	30	29



MyRWA_CHRWHIGH Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	100
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

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



Shellfish Growing Area Classifications

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

Summary
Chelsea River (MA71-06): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.3517 sq mi (94%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Primary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Secondary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO

2022 Use Attainment Summary

Enterococci bacteria sampling was conducted at multiple locations in the Chelsea River (MA71-06) by MWRA staff and MyRWA staff/volunteers throughout 2012-2019. MyRWA staff/volunteers collected moderate frequency data from 2012-2019 (n=9-12/yr) at the east side of the Condor Street Urban Wild in East Boston (MyRWA_CHR95S). Analysis of the data indicated that in the most recent five years of data, none of the intervals had GMs >175 cfu/100mL and only in one year did two samples exceed the 350 cfu/100mL STV (other years had no exceedances or only one). MWRA staff collected high frequency bacteria data from 2014-2019 (n=21-31/yr) at one location midchannel in the Chelsea River, at the surface (MWRA_027S) and the bottom (MWRA_027B). Analysis of the data indicated that in the most recent 5 years of data, no intervals had GMs >175 cfu/100mL and any exceedances (at the surface) of the 350 cfu/100mL STV constituted <10% of samples for the year (maximum 4%). While bacteria data were collected infrequently at another MyRWA station (MyRWA_CHRWHIGH), sample size was insufficient to allow analysis of these data for use attainment decisions.

The Secondary Contact Recreational Use for the Chelsea River (MA71-06) will continue to be assessed as Not Supporting based on the aesthetic related impairments (Debris, Odor, Petroleum Hydrocarbons, Trash, and Turbidity) which are being carried forward. Since MWRA and MyRWA's Enterococci data were indicative of good conditions for this waterbody, the historical Fecal Coliform impairment (an old indicator of bacteria pollution) is being removed from this use (Fecal Coliform remains an impairment for Shellfish Harvesting).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MWRA_027B	Massachusetts Water Resource Authority	Water Quality	CHELSEA CREEK	Inner Harbor, Chelsea Creek, midchannel	42.384	-71.029833
MWRA_027S	Massachusetts Water Resource Authority	Water Quality	CHELSEA CREEK	Inner Harbor, Chelsea Creek, midchannel	42.384	-71.029833
MyRWA_CHR95S	Mystic River Watershed Association	Water Quality	Chelsea River	Chelsea River in East Boston at Condor Street; sampled at east side of Urban Wild	42.38357	-71.02906
MyRWA_CHRWHIGH	Mystic River Watershed Association	Water Quality	Chelsea River	Marginal St, near Highland St, sampled from west (downstream) side of Highland outfall, slightly higher elevation	42.385944	-71.03139

*Bacteria Data***Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MWRA 2019) (MassDEP Undated 2) (MyRWA 2019) (MassDEP Undated 2)**

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

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MWRA_027B	Massachusetts Water Resource Authority	Enterococci	04/30/14	10/01/14	20	10	10	10
MWRA_027B	Massachusetts Water Resource Authority	Enterococci	04/13/15	10/06/15	20	10	10	10

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MWRA_027B	Massachusetts Water Resource Authority	Enterococci	03/28/16	11/17/16	30	10	10	10
MWRA_027B	Massachusetts Water Resource Authority	Enterococci	04/04/17	10/19/17	31	10	74	11
MWRA_027B	Massachusetts Water Resource Authority	Enterococci	04/25/18	10/22/18	25	10	134	12
MWRA_027B	Massachusetts Water Resource Authority	Enterococci	05/03/19	08/30/19	21	10	20	10
MWRA_027S	Massachusetts Water Resource Authority	Enterococci	04/30/14	12/26/14	24	10	909	22
MWRA_027S	Massachusetts Water Resource Authority	Enterococci	03/27/15	10/06/15	27	10	1260	21
MWRA_027S	Massachusetts Water Resource Authority	Enterococci	03/28/16	11/18/16	31	10	132	11
MWRA_027S	Massachusetts Water Resource Authority	Enterococci	04/04/17	10/19/17	31	10	1330	16
MWRA_027S	Massachusetts Water Resource Authority	Enterococci	04/25/18	10/22/18	26	10	613	15
MWRA_027S	Massachusetts Water Resource Authority	Enterococci	05/03/19	08/30/19	21	10	41	12
MyRWA_CHR95S	Mystic River Watershed Association	Enterococci	01/13/12	12/04/12	12	10	2600	39
MyRWA_CHR95S	Mystic River Watershed Association	Enterococci	01/31/13	12/06/13	11	10	130	27
MyRWA_CHR95S	Mystic River Watershed Association	Enterococci	01/06/14	12/12/14	12	1	790	23
MyRWA_CHR95S	Mystic River Watershed Association	Enterococci	01/23/15	12/16/15	11	10	41	15
MyRWA_CHR95S	Mystic River Watershed Association	Enterococci	01/15/16	12/05/16	12	10	220	23
MyRWA_CHR95S	Mystic River Watershed Association	Enterococci	01/17/17	12/08/17	11	10	4600	21
MyRWA_CHR95S	Mystic River Watershed Association	Enterococci	01/23/18	11/13/18	11	10	320	23
MyRWA_CHR95S	Mystic River Watershed Association	Enterococci	01/25/19	10/18/19	9	5	364.1	40

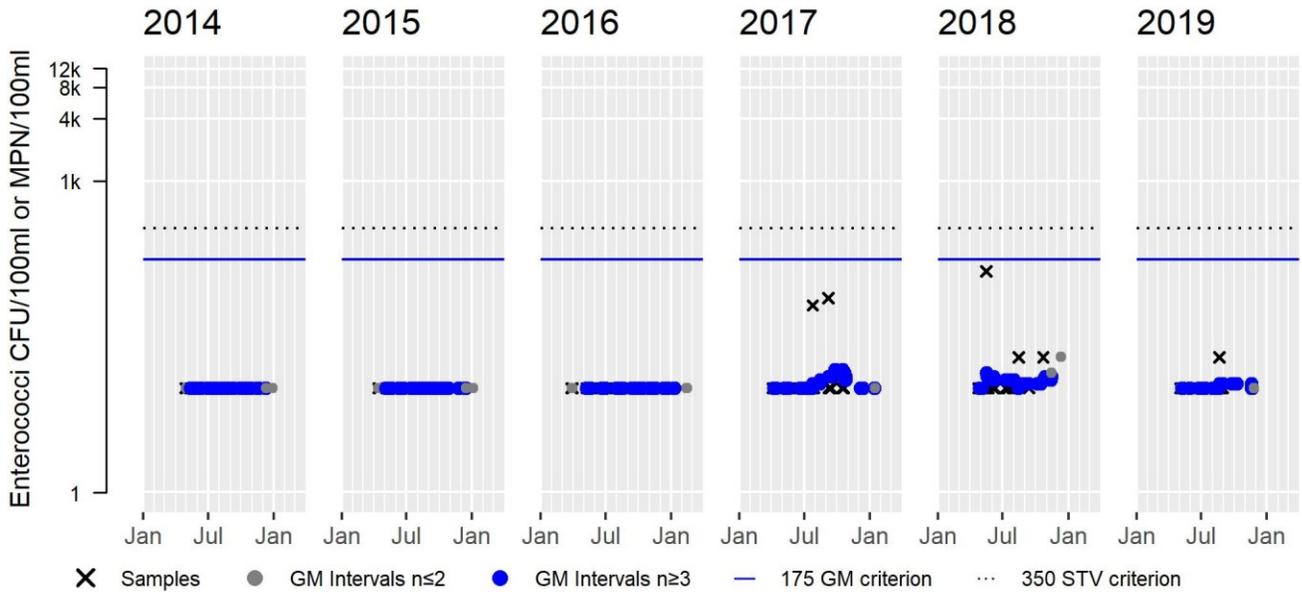
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MyRWA_CHRWHIGH	Mystic River Watershed Association	Enterococci	09/18/12	09/18/12	1	100	100	100

MWRA_027B Enterococci (90-day Interval), Secondary Contact Recreational Use Season

Var	Res										
Samples	20	Samples	20	Samples	30	Samples	31	Samples	25	Samples	21
SeasGM	10	SeasGM	10	SeasGM	10	SeasGM	11	SeasGM	12	SeasGM	10
#GMI	32	#GMI	34	#GMI	52	#GMI	57	#GMI	43	#GMI	35
#GMI Ex	0										
%GMI Ex	0										
n>STV	0										
%n>STV	0										

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	0	0

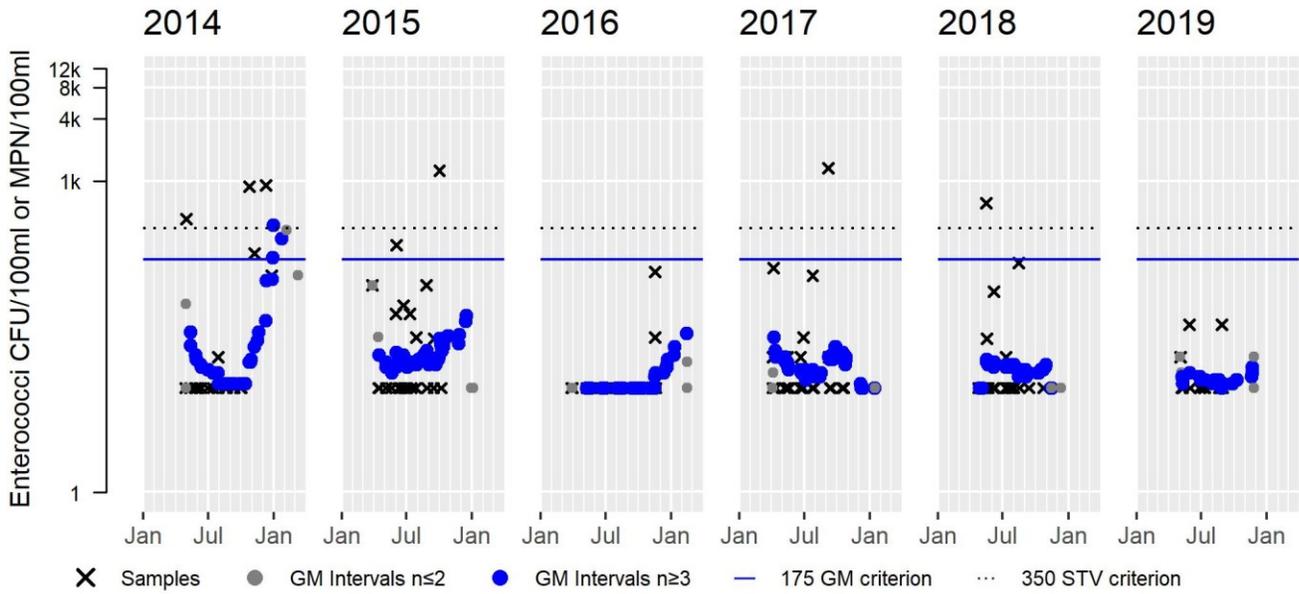


MWRA_027S Enterococci (90-day Interval), Secondary Contact Recreational Use Season

Var	Res										
Samples	24	Samples	27	Samples	31	Samples	31	Samples	26	Samples	21
SeasGM	22	SeasGM	21	SeasGM	11	SeasGM	16	SeasGM	15	SeasGM	12
#GMI	39	#GMI	48	#GMI	54	#GMI	57	#GMI	43	#GMI	35
#GMI Ex	3	#GMI Ex	0								
%GMI Ex	8	%GMI Ex	0								
n>STV	3	n>STV	1	n>STV	0	n>STV	1	n>STV	1	n>STV	0
%n>STV	12	%n>STV	4	%n>STV	0	%n>STV	3	%n>STV	4	%n>STV	0

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	1	0

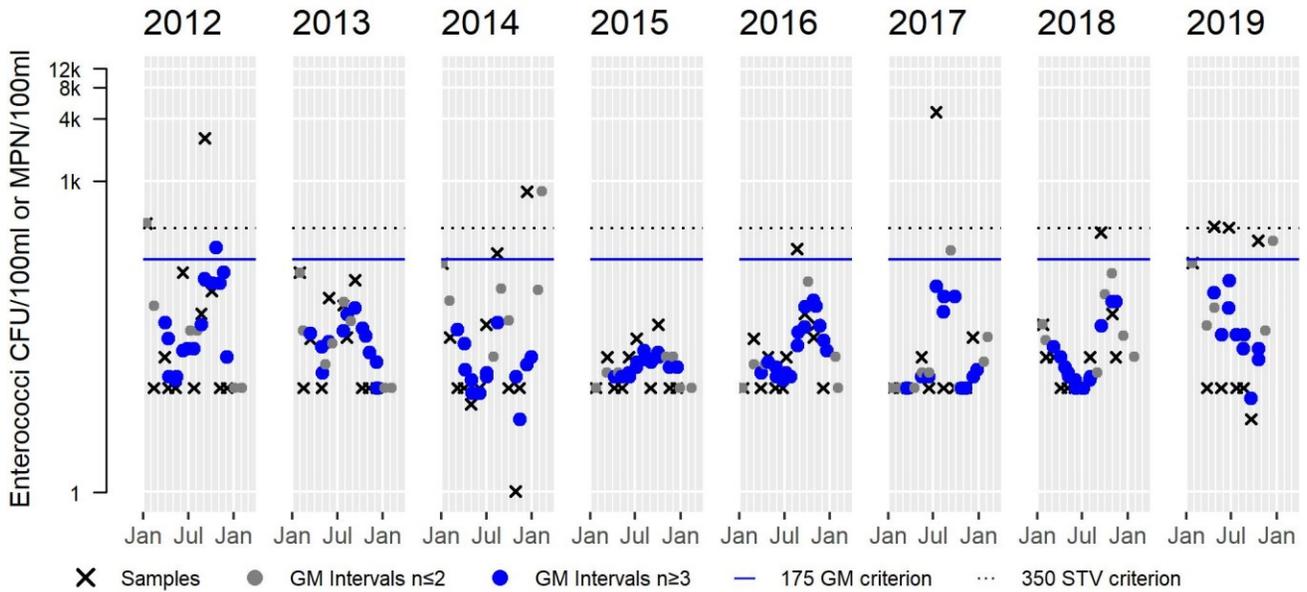


MyRWA_CHR95S Enterococci (90-day Interval), Secondary Contact Recreational Use Season

Var	Res														
Samples	12	Samples	11	Samples	12	Samples	11	Samples	12	Samples	11	Samples	11	Samples	9
SeasGM	39	SeasGM	27	SeasGM	23	SeasGM	15	SeasGM	23	SeasGM	21	SeasGM	23	SeasGM	40
#GMI	16	#GMI	12	#GMI	14	#GMI	14	#GMI	17	#GMI	11	#GMI	14	#GMI	10
#GMI Ex	1	#GMI Ex	0												
%GMI Ex	6	%GMI Ex	0												
n>STV	2	n>STV	0	n>STV	1	n>STV	0	n>STV	0	n>STV	1	n>STV	0	n>STV	2
%n>STV	17	%n>STV	0	%n>STV	8	%n>STV	0	%n>STV	0	%n>STV	9	%n>STV	0	%n>STV	22

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

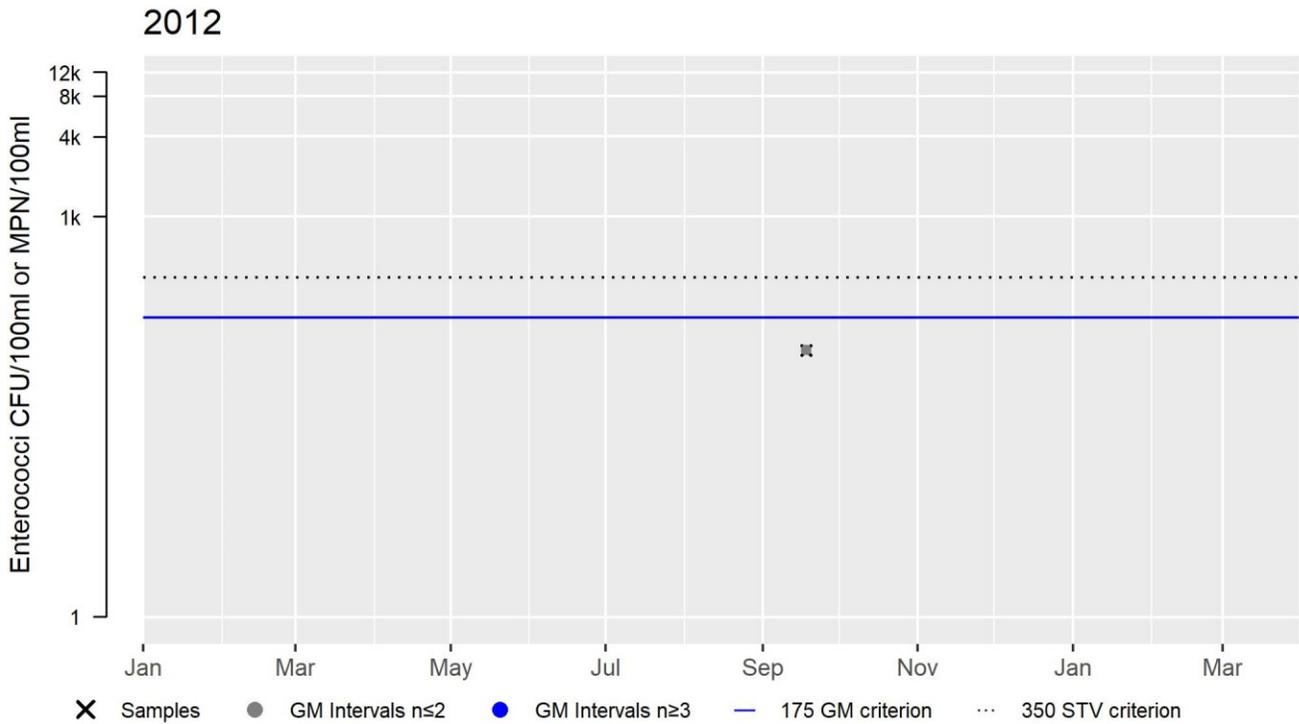
Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	1	0



MyRWA_CHRWHIGH Enterococci (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	100
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

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



Shellfish Growing Area Classifications

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

Summary
Chelsea River (MA71-06): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.3517 sq mi (94%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Secondary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Clay Pit Pond (MA71011)

Location:	Belmont.
AU Type:	FRESHWATER LAKE
AU Size:	12 ACRES
Classification/Qualifier:	B

No usable data were available for Clay Pit Pond (MA71011) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

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

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

Cummings Brook (MA71-10)

Location:	Headwaters east of Wright Street, Woburn to confluence with Fowle Brook, Woburn.
AU Type:	RIVER
AU Size:	2.1 MILES
Classification/Qualifier:	B

No usable data were available for Cummings Brook (MA71-10) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Escherichia Coli (E. Coli)		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)				X	
Escherichia Coli (E. Coli)	Source Unknown (N)				X	

EII Pond (MA71014)

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

No usable data were available for EII Pond (MA71014) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Chlorophyll-a		Unchanged
5	5	Fecal Coliform		Unchanged
5	5	Harmful Algal Blooms		Unchanged
5	5	Phosphorus, Total		Unchanged
5	5	Total Suspended Solids (TSS)		Unchanged
5	5	Transparency / Clarity		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Chlorophyll-a	Source Unknown (N)	X				
Fecal Coliform	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)				X	X
Fecal Coliform	Source Unknown (N)				X	X
Harmful Algal Blooms	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	X		X	X	X
Harmful Algal Blooms	Source Unknown (N)	X		X	X	X
Phosphorus, Total	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	X		X	X	X
Phosphorus, Total	Source Unknown (N)	X		X	X	X
Total Suspended Solids (TSS)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)			X	X	X
Total Suspended Solids (TSS)	Source Unknown (N)			X	X	X
Transparency / Clarity	Source Unknown (N)			X	X	X

Fellsmere Pond (MA71016)

Location:	Malden.
AU Type:	FRESHWATER LAKE
AU Size:	5 ACRES
Classification/Qualifier:	B

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Harmful Algal Blooms		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Harmful Algal Blooms	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	X		X	X	X
Harmful Algal Blooms	Source Unknown (N)	X		X	X	X

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
There are no recent data available for Fellsmere Pond (MA71016), so the Aquatic Life Use will continue to be assessed as Not Supporting with the Harmful Algal Blooms impairment being carried forward.	

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Fish toxics sampling has not been conducted in Fellsmere Pond (MA71016), so the Fish Consumption Use is Not Assessed.	

Aesthetic

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
There are no recent data available for Fellsmere Pond (MA71016), so the Aesthetics Use will continue to be assessed as Not Supporting with the Harmful Algal Blooms impairment being carried forward.	

Primary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
<p>MyRWA staff/volunteers collected a single bacteria sample in Fellsmere Pond in September 2011. Sample size was insufficient to allow analysis of the <i>E. coli</i> data for use attainment decisions (however, the <i>E. coli</i> concentration was low at 43 cfu/100mL).</p> <p>The Primary Contact Recreational Use of Fellsmere Pond (MA71016) will continue to be assessed as Not Supporting with the Harmful Algal Blooms impairment being carried forward.</p>	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MyRWA_FEP01	Mystic River Watershed Association	Water Quality	Fellsmere Pond	Southern end of Fellesmere Pond	42.42657	-71.086461

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MyRWA 2019) (MassDEP Undated 2)

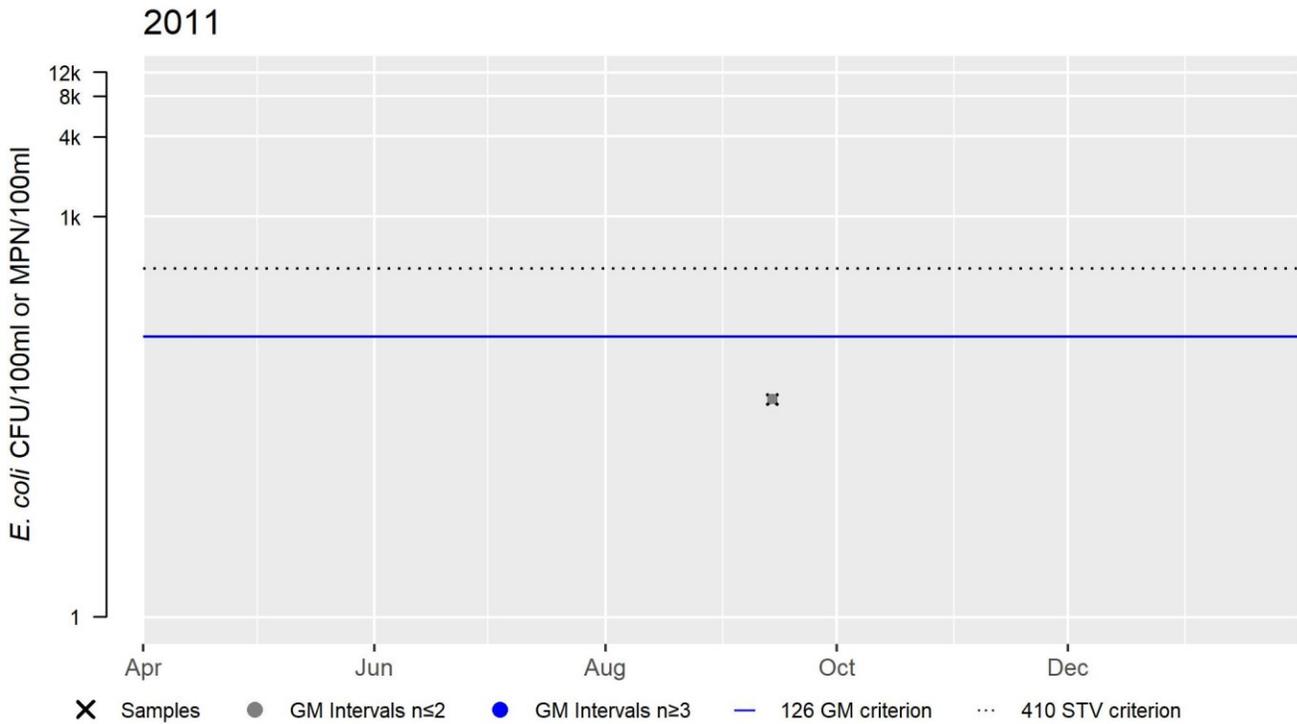
[Result units are CFU/100ml or MPN/100ml]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MyRWA_FEP01	Mystic River Watershed Association	E. coli	09/14/11	09/14/11	1	43	43	43

MyRWA_FEP01 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	43
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

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



Secondary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
<p>MyRWA staff/volunteers collected a single bacteria sample in Fellsmere Pond in September 2011. Sample size was insufficient to allow analysis of the <i>E. coli</i> data for use attainment decisions (however, the <i>E. coli</i> concentration was low at 43 cfu/100mL).</p> <p>The Secondary Contact Recreational Use of Fellsmere Pond (MA71016) will continue to be assessed as Not Supporting with the Harmful Algal Blooms impairment being carried forward.</p>	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MyRWA_FEP01	Mystic River Watershed Association	Water Quality	Fellsmere Pond	Southern end of Fellesmere Pond	42.42657	-71.086461

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MyRWA 2019) (MassDEP Undated 2)

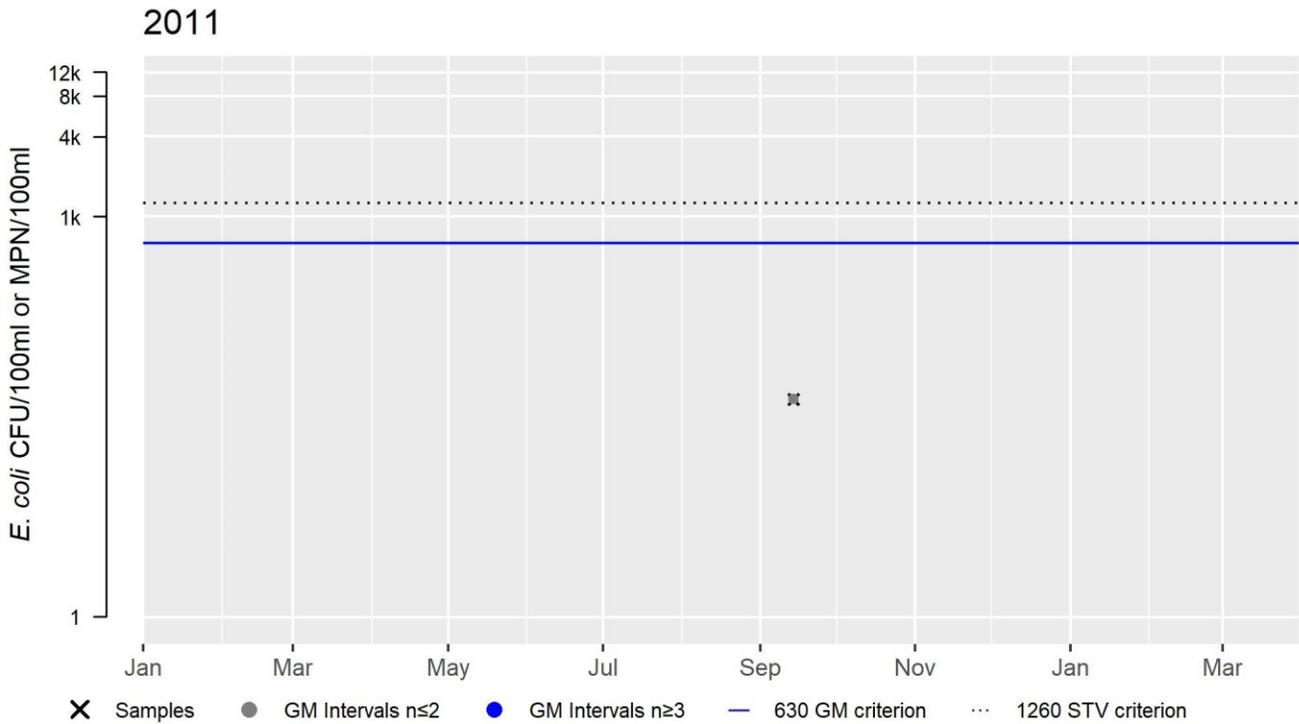
[Result units are CFU/100ml or MPN/100ml]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MyRWA_FEP01	Mystic River Watershed Association	E. coli	09/14/11	09/14/11	1	43	43	43

MyRWA_FEP01 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	43
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

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



Hills Pond (MA71018)

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

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	5	(Eurasian Water Milfoil, Myriophyllum Spicatum*)		Unchanged
4c	5	Harmful Algal Blooms		Added

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
(Eurasian Water Milfoil, Myriophyllum Spicatum*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X				
Harmful Algal Blooms	Source Unknown (N)			X	X	X

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	YES
2022 Use Attainment Summary	
C-HAB postings for Hills Pond (MA71018) were reported to MassDPH for 37 days in 2019. The Aquatic Life Use of Hills Pond will continue to be assessed as Not Supporting with the impairment for Eurasian Water Milfoil being carried forward. Although an algal bloom >20 days in length is cause for concern in this AU, there is insufficient data available with which to assess nutrient enrichment in the pond. An Alert is being identified for Harmful Algal Blooms.	

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Fish toxics sampling has not been conducted in Hills Pond (MA71018), so the Fish Consumption Use is Not Assessed.	

Aesthetic

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	

C-HAB postings for Hills Pond (MA71018) were reported to MassDPH for 37 days in 2019. The Aesthetics Use for Hills Pond is assessed as Not Supporting based on the blooms >20 days in length reported in a recent year so the Harmful Algal Blooms impairment is being added.

Algal Bloom Information

Cyanobacteria Harmful Algal Bloom (C-HAB) Summary Statements for 2015-2019 MassDPH Data (Bailey, Logan April 15, 2021) (MassDEP Undated 2)

C-HAB Summary Statement

C-HAB postings for Hill's Pond (MA71018) were reported to MassDPH for 37 days in 2019. Since blooms >20 days in length were reported in a recent year, the Primary/Secondary Contact Recreational Uses and Aesthetics Use are assessed as Not Supporting.

Cyanobacteria Harmful Algal Bloom (C-HAB) Data (2015-2019) Provided by MassDPH (Bailey, Logan April 15, 2021)

Waterbody	Sample Analysis Used in Issuing Advisory	Bloom Days, 2015	Bloom Days, 2016	Bloom Days, 2017	Bloom Days, 2018	Bloom Days, 2019	# Years with >20 Days of Closure	>1 Posting Per Year
Hill's Pond	Not issued or confirmed by sampling					37	1	no

Primary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
C-HAB postings for Hills Pond (MA71018) were reported to MassDPH for 37 days in 2019. Since blooms >20 days in length were reported in a recent year, the Primary Contact Recreational Use for Hills Pond is assessed as Not Supporting for Harmful Algal Blooms.	

Secondary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
C-HAB postings for Hills Pond (MA71018) were reported to MassDPH for 37 days in 2019. Since blooms >20 days in length were reported in a recent year, the Secondary Contact Recreational Use for Hills Pond is assessed as Not Supporting for Harmful Algal Blooms.	

Horn Pond (MA71019)

Location:	Woburn.
AU Type:	FRESHWATER LAKE
AU Size:	108 ACRES
Classification/Qualifier:	B: WWF

No usable data were available for Horn Pond (MA71019) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Curly-leaf Pondweed*)		Unchanged
5	5	(Fish Passage Barrier*)		Unchanged
5	5	DDT in Fish Tissue		Unchanged
5	5	Dissolved Oxygen		Unchanged
5	5	Harmful Algal Blooms		Unchanged
5	5	Phosphorus, Total		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X				
(Fish Passage Barrier*)	Dam or Impoundment (Y)	X				
DDT in Fish Tissue	Source Unknown (N)		X			
Dissolved Oxygen	Source Unknown (N)	X				
Harmful Algal Blooms	Source Unknown (N)	X		X	X	X
Phosphorus, Total	Source Unknown (N)	X		X	X	X

Little Pond (MA71024)

Location:	Belmont.
AU Type:	FRESHWATER LAKE
AU Size:	18 ACRES
Classification/Qualifier:	B

No usable data were available for Little Pond (MA71024) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Water Chestnut*)		Unchanged
5	5	Harmful Algal Blooms		Unchanged

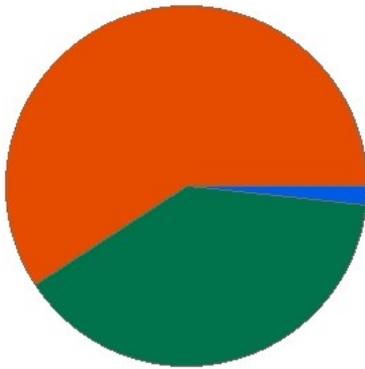
Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
(Water Chestnut*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X				
Harmful Algal Blooms	Source Unknown (N)			X	X	X

Little River (MA71-21)

Location:	Headwaters, outlet Little Pond, Belmont to MWRA CSO outfall (MWR003) approximately 150 feet upstream of mouth at the confluence with Alewife Brook, Cambridge (formerly part of 2016 segment: Alewife Brook MA71-04).
AU Type:	RIVER
AU Size:	0.8 MILES
Classification/Qualifier:	B

Little River - MA71-21

Watershed Area: 4.23 square miles



Percent Agriculture
 Percent Natural
 Percent Developed
 Percent Wetland

Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	4.23	4.23	0.39	0.39
Agriculture	0%	0%	0%	0%
Developed	59.1%	59.1%	38.6%	38.6%
Natural	39.1%	39.1%	51.5%	51.5%
Wetland	1.7%	1.7%	9.9%	9.9%
Impervious Cover	42.5%			

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Debris*)		Unchanged
5	5	(Water Chestnut*)		Unchanged
5	5	Chloride		Unchanged
5	5	Copper in Sediment		Unchanged
5	5	Dissolved Oxygen	R1_MA_2020_5a	Unchanged
5	5	Enterococcus		Added
5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Unchanged
5	5	Flocculant Masses		Unchanged
5	5	Lead in Sediment		Unchanged
5	5	Odor		Unchanged
5	5	Oil and Grease		Unchanged
5	5	PCBs in Fish Tissue		Unchanged
5	5	Phosphorus, Total	R1_MA_2020_5a	Unchanged
5	5	Scum/Foam		Unchanged
5	5	Transparency / Clarity	R1_MA_2020_5a	Changed
5	5	Trash		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
(Debris*)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X	X	X
(Water Chestnut*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X				
Chloride	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X				
Chloride	Highway/Road/Bridge Runoff (Non-construction Related) (Y)	X				
Chloride	Impervious Surface/Parking Lot Runoff (Y)	X				
Copper in Sediment	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X				
Dissolved Oxygen	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X				
Enterococcus	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)				X	
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)				X	X
Flocculant Masses	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X	X	X
Lead in Sediment	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X				
Odor	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X	X	X
Oil and Grease	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X	X	X
PCBs in Fish Tissue	Source Unknown (N)		X			
Phosphorus, Total	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X				
Scum/Foam	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X	X	X
Transparency / Clarity	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X	X	X
Trash	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X	X	X

Recommendations

2022 Recommendations
ALU: Carried over from the 2018/2020 IR cycle, surficial sediment samples should be collected in the vicinity of the 1999 Ivushkina M.S. thesis sites (Ivushkina 1999)- the focus should be on analysis of arsenic (for a potential listing), as well as copper and lead (for potential delistings).

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	YES
2022 Use Attainment Summary	
No recent data are available, so the Aquatic Life Use of the Little River (MA71-21) remains assessed as Not Supporting due to prior impairments for Chloride, Copper in Sediment, Dissolved Oxygen, Lead in Sediment, "Phosphorus, Total," and Water Chestnut. The prior Alert for Arsenic in Sediment (MassDEP 2021) is also being carried forward.	

Fish Consumption

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
No recent fish toxics data are available, so the Fish Consumption Use of the Little River (MA71-21) will continue to be assessed as Not Supporting with the PCBs in Fish Tissue impairment being carried forward. The MassDPH advisory for the Little River recommends that children younger than 12 years or age, pregnant women, women of childbearing age who may become pregnant, and nursing mothers should not eat any carp from this water body. There is an additional recommendation that the general public should limit consumption of carp caught in the Little River to two meals per month.	

Aesthetic

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
No recent data are available, so the Aesthetics Use of this Little River AU (MA71-21) will continue to be assessed as Not Supporting with the impairments for Debris, Flocculent Masses, Odor, Oil and Grease, Scum/Foam, Transparency/Clarity, and Trash being carried forward.	

Primary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
<p>Enterococcus and <i>E. coli</i> bacteria sampling was conducted by MWRA staff from 2014-2019 at one location in this Little River AU (MA71-21). The high frequency bacteria data (n= 25-58/yr) were collected throughout the recreational season (Apr 1 – Oct 31) at a sampling station 415 ft upstream of the Rt. 2 east offramp to the Alewife MBTA station, and upstream of active CSOs (MWRA_174S). Analysis of the <i>E. coli</i> dataset indicated that all of the most recent 5 years of data had >10% of GM intervals (91-100%) exceeding 126 cfu/100mL and additionally, that 43-68% of samples in each of these years exceeded the 410 cfu/100mL STV. Similarly, for the Enterococci data, >10% of intervals (89-100%) in the most recent 5 years of data had GMs >35 cfu/100mL and >10% of samples (43-78%) exceeded the 130 cfu/100mL STV in each of these years, with the percent of elevated samples increasing in recent years.</p> <p>The Primary Contact Recreational Use for this Little River AU (MA71-21) will continue to be assessed as Not Supporting based on these MWRA bacteria data. The impairment for Escherichia Coli (<i>E. Coli</i>) will be carried forward and an impairment will be added for Enterococcus. Impairments for the objectionable aesthetic conditions (Debris, Flocculent Masses, Odor, Oil and Grease, Scum/Foam, Transparency/Clarity, and Trash) are also being carried forward.</p>	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MWRA_174S	Massachusetts Water Resource Authority	Water Quality	ALEWIFE BROOK	Alewife Brook, Little River, 415 ft upstream of Rt. 2 east offramp to Alewife MBTA station, upstream of active CSOs	42.397029	-71.144994

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MWRA 2019)

(MassDEP Undated 2)

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

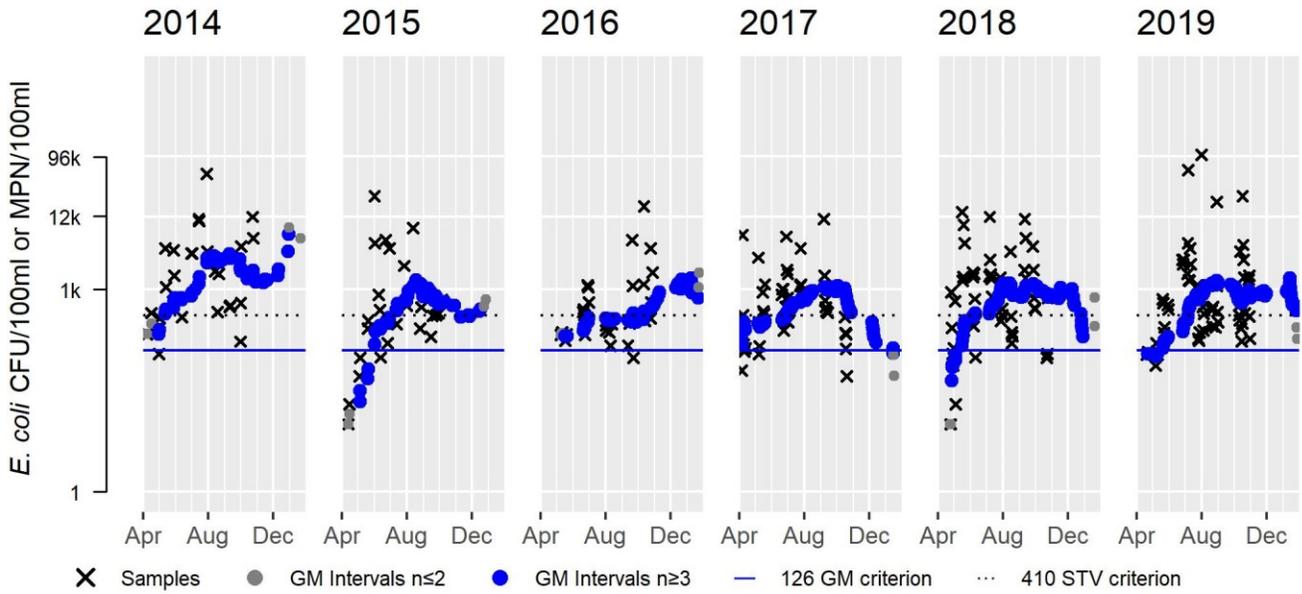
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_174S	Massachusetts Water Resource Authority	E. coli	04/08/14	10/24/14	27	110	52000	1527
MWRA_174S	Massachusetts Water Resource Authority	Enterococci	04/08/14	10/24/14	27	10	6490	253
MWRA_174S	Massachusetts Water Resource Authority	E. coli	04/13/15	10/05/15	25	10	24200	474
MWRA_174S	Massachusetts Water Resource Authority	Enterococci	04/13/15	10/05/15	25	10	7700	140
MWRA_174S	Massachusetts Water Resource Authority	E. coli	05/09/16	10/28/16	30	97	17300	494
MWRA_174S	Massachusetts Water Resource Authority	Enterococci	05/09/16	10/28/16	30	10	650	109
MWRA_174S	Massachusetts Water Resource Authority	E. coli	04/03/17	10/20/17	49	52	11200	532
MWRA_174S	Massachusetts Water Resource Authority	Enterococci	04/03/17	10/20/17	49	10	9800	146
MWRA_174S	Massachusetts Water Resource Authority	E. coli	04/24/18	10/24/18	53	10	14100	690
MWRA_174S	Massachusetts Water Resource Authority	Enterococci	04/24/18	10/24/18	53	10	3870	240
MWRA_174S	Massachusetts Water Resource Authority	E. coli	04/20/19	10/31/19	58	74	101000	730
MWRA_174S	Massachusetts Water Resource Authority	Enterococci	04/20/19	10/31/19	58	10	24200	364

MWRA_174S *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res
Samples	27	Samples	25	Samples	30	Samples	49	Samples	53	Samples	58
SeasGM	1527	SeasGM	474	SeasGM	494	SeasGM	532	SeasGM	690	SeasGM	730
#GMI	45	#GMI	45	#GMI	53	#GMI	90	#GMI	92	#GMI	104
#GMI Ex	45	#GMI Ex	41	#GMI Ex	53	#GMI Ex	89	#GMI Ex	85	#GMI Ex	98
%GMI Ex	100	%GMI Ex	91	%GMI Ex	100	%GMI Ex	99	%GMI Ex	92	%GMI Ex	94
n>STV	22	n>STV	13	n>STV	13	n>STV	29	n>STV	36	n>STV	35
%n>STV	81	%n>STV	52	%n>STV	43	%n>STV	59	%n>STV	68	%n>STV	60

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	96	95

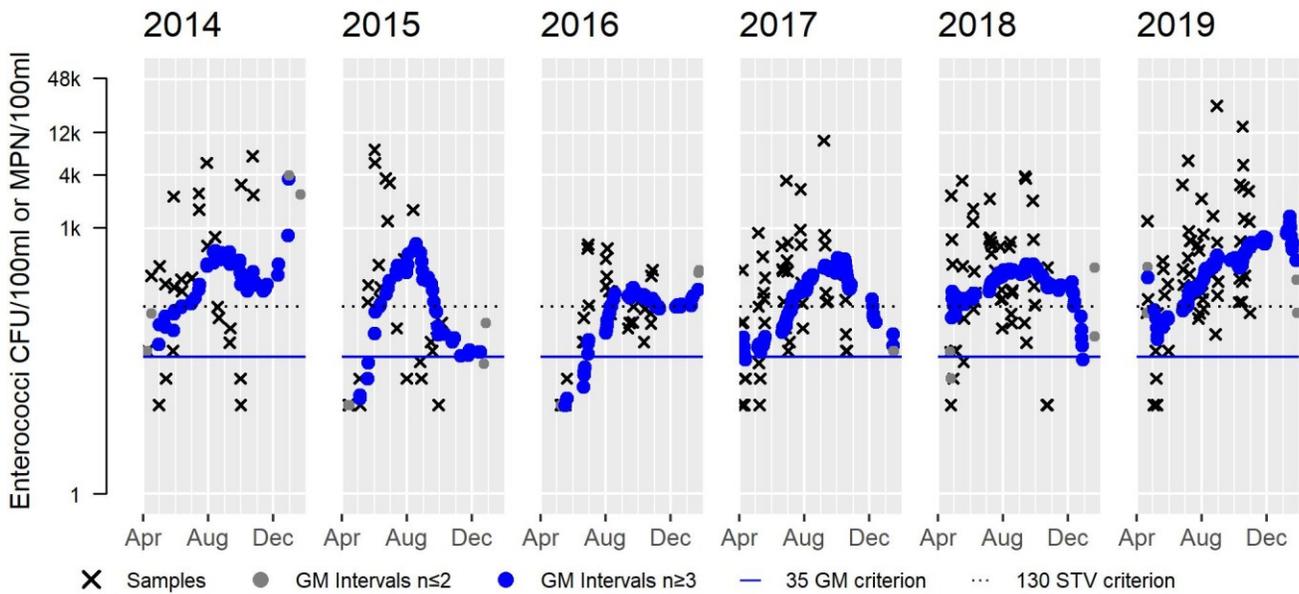


MWRA_174S Enterococci (90-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	27	Samples	25	Samples	30	Samples	49	Samples	53	Samples	58
SeasGM	253	SeasGM	140	SeasGM	109	SeasGM	146	SeasGM	240	SeasGM	364
#GMI	45	#GMI	45	#GMI	53	#GMI	90	#GMI	92	#GMI	104
#GMI Ex	45	#GMI Ex	41	#GMI Ex	47	#GMI Ex	87	#GMI Ex	91	#GMI Ex	104
%GMI Ex	100	%GMI Ex	91	%GMI Ex	89	%GMI Ex	97	%GMI Ex	99	%GMI Ex	100
n>STV	17	n>STV	12	n>STV	13	n>STV	28	n>STV	38	n>STV	45
%n>STV	63	%n>STV	48	%n>STV	43	%n>STV	57	%n>STV	72	%n>STV	78

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	97	96



Secondary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	

E. coli bacteria sampling was conducted by MyRWA staff/volunteers and MWRA staff at multiple locations in this Little River AU (MA71-21). MWRA staff collected bacteria data throughout the year (n= 26-62/yr) from 2014-2019 at a sampling station 415 ft upstream of the Rt. 2 east offramp to the Alewife MBTA station, and upstream of active CSOs (MWRA_174S). Analysis of this high frequency dataset indicated that >10% of intervals in each of the most recent 5 years of data (38-77%) had GMs >630 cfu/100mL and that >10% of samples (14-38%) in each of these years exceeded the 1260 cfu/100mL STV. While *E. coli* bacteria data were collected infrequently at several MyRWA stations (MyRWA_LIR007, MyRWA_LIR003), sample size was insufficient to allow analysis of these data for use attainment decisions. The Secondary Contact Recreational Use for this Little River AU (MA71-21) will continue to be assessed as Not Supporting based on these MWRA bacteria data so the impairment for Escherichia Coli (*E. Coli*) is being carried forward. Impairments for the objectionable aesthetic conditions (Debris, Flocculent Masses, Odor, Oil and Grease, Scum/Foam, Transparency/Clarity, and Trash) are also being carried forward.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MWRA_174S	Massachusetts Water Resource Authority	Water Quality	ALEWIFE BROOK	Alewife Brook, Little River, 415 ft upstream of Rt. 2 east offramp to Alewife MBTA station, upstream of active CSOs	42.397029	-71.144994
MyRWA_LIR003	Mystic River Watershed Association	Water Quality	Little River	None submitted by MYRWA	42.397	-71.147833
MyRWA_LIR007	Mystic River Watershed Association	Water Quality	Little River	None submitted by MYRWA	42.397667	-71.155167

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MWRA 2019)

(MassDEP Undated 2) (MyRWA 2019) (MassDEP Undated 2)

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

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MWRA_174S	Massachusetts Water Resource Authority	<i>E. coli</i>	01/15/14	10/24/14	29	110	52000	1410
MWRA_174S	Massachusetts Water Resource Authority	<i>E. coli</i>	04/13/15	11/12/15	26	10	24200	487
MWRA_174S	Massachusetts Water Resource Authority	<i>E. coli</i>	01/11/16	12/02/16	39	51	17300	548
MWRA_174S	Massachusetts Water Resource Authority	<i>E. coli</i>	04/03/17	12/13/17	57	10	11200	469
MWRA_174S	Massachusetts Water Resource Authority	<i>E. coli</i>	04/24/18	11/08/18	58	10	14100	686

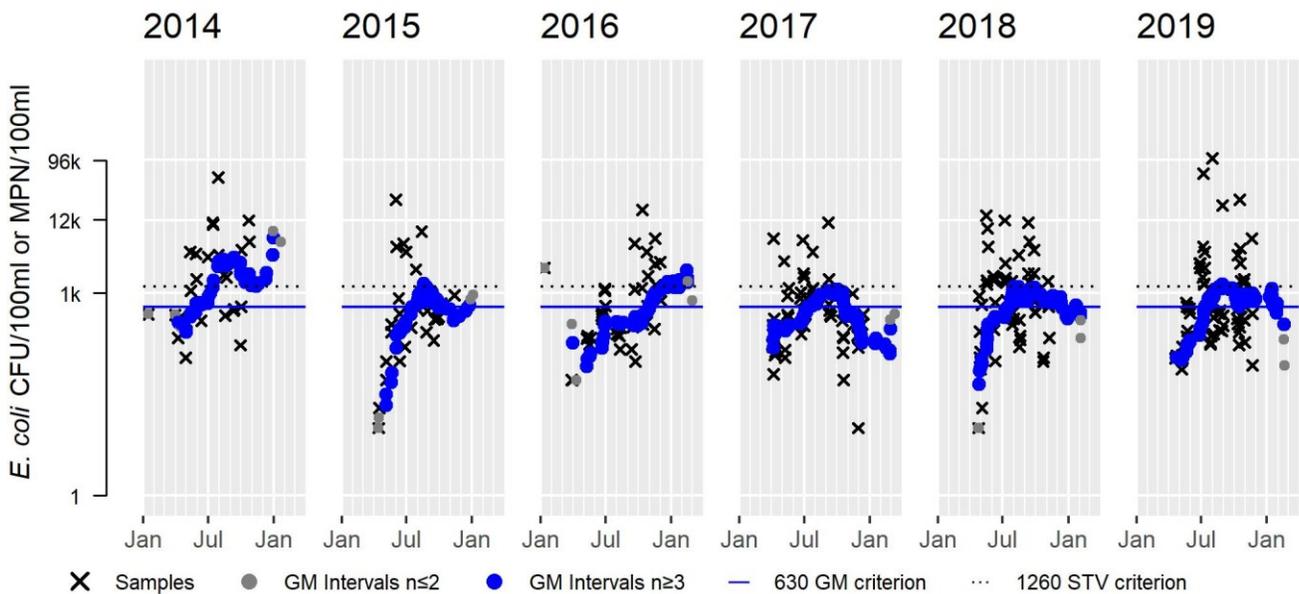
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MWRA_174S	Massachusetts Water Resource Authority	E. coli	04/20/19	11/22/19	62	74	101000	729
MyRWA_LIR003	Mystic River Watershed Association	E. coli	03/15/16	03/15/16	1	1954	1954	1954
MyRWA_LIR007	Mystic River Watershed Association	E. coli	12/13/11	12/13/11	1	69	69	69
MyRWA_LIR007	Mystic River Watershed Association	E. coli	03/29/12	03/29/12	1	68	68	68

MWRA_174S E. coli (90-day Interval), Secondary Contact Recreational Use Season

Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res
Samples	29	Samples	26	Samples	39	Samples	57	Samples	58	Samples	62
SeasGM	1410	SeasGM	487	SeasGM	548	SeasGM	469	SeasGM	686	SeasGM	729
#GMI	48	#GMI	47	#GMI	69	#GMI	105	#GMI	102	#GMI	110
#GMI Ex	41	#GMI Ex	22	#GMI Ex	26	#GMI Ex	40	#GMI Ex	66	#GMI Ex	85
%GMI Ex	85	%GMI Ex	47	%GMI Ex	38	%GMI Ex	38	%GMI Ex	65	%GMI Ex	77
n>STV	14	n>STV	6	n>STV	9	n>STV	8	n>STV	22	n>STV	20
%n>STV	48	%n>STV	23	%n>STV	23	%n>STV	14	%n>STV	38	%n>STV	32

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

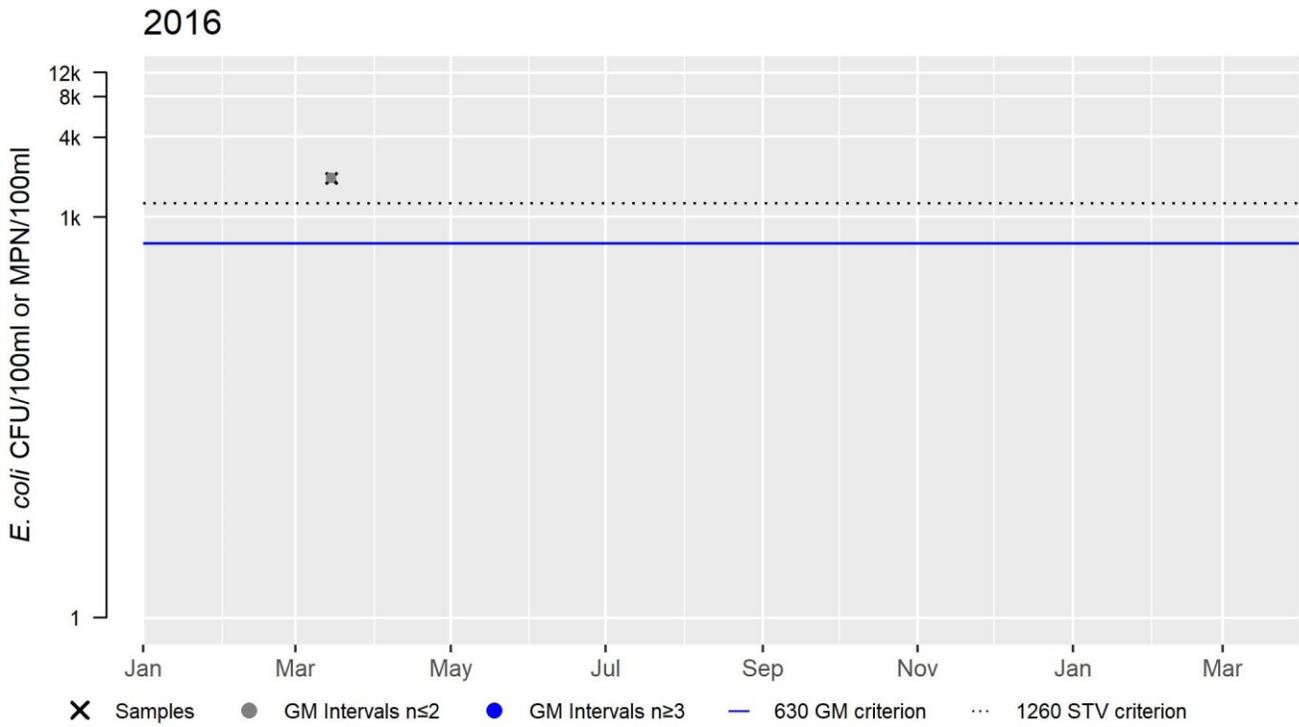
Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	58	55



MyRWA_LIR003 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	1954
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

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



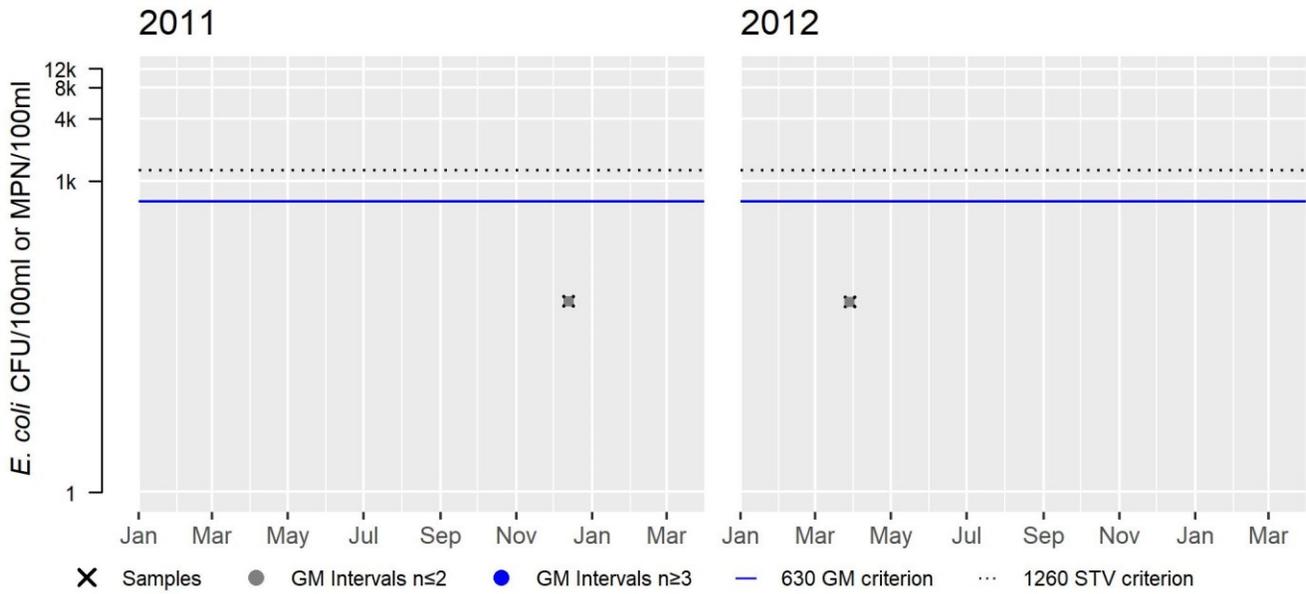
MyRWA_LIR007 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	69
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

Var	Res
Samples	1
SeasGM	68
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

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

Variable	Cumulative %GMI Ex (all years)
Result	0



Little River (MA71-22)

Location:	From MWRA CSO outfall (MWR003, approximately 150 feet upstream of mouth), Cambridge to mouth at confluence with Alewife Brook, Cambridge (formerly part of 2016 segment: Alewife Brook MA71-04).
AU Type:	RIVER
AU Size:	0.03 MILES
Classification/Qualifier:	B: WWF, CSO

No usable data were available for Little River (MA71-22) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Debris*)		Unchanged
5	5	Copper in Sediment		Unchanged
5	5	Dissolved Oxygen	R1_MA_2020_5a	Unchanged
5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Unchanged
5	5	Flocculant Masses		Unchanged
5	5	Lead in Sediment		Unchanged
5	5	Odor		Unchanged
5	5	Oil and Grease		Unchanged
5	5	PCBs in Fish Tissue		Unchanged
5	5	Phosphorus, Total	R1_MA_2020_5a	Unchanged
5	5	Scum/Foam		Unchanged
5	5	Transparency / Clarity		Unchanged
5	5	Trash		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
(Debris*)	Combined Sewer Overflows (Y)			X	X	X
(Debris*)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X	X	X
Copper in Sediment	Combined Sewer Overflows (Y)	X				
Copper in Sediment	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X				
Dissolved Oxygen	Combined Sewer Overflows (Y)	X				
Dissolved Oxygen	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X				
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
Flocculant Masses	Combined Sewer Overflows (Y)			X	X	X
Flocculant Masses	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X	X	X

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Lead in Sediment	Combined Sewer Overflows (Y)	X				
Lead in Sediment	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X				
Odor	Combined Sewer Overflows (Y)			X	X	X
Odor	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X	X	X
Oil and Grease	Combined Sewer Overflows (Y)			X	X	X
Oil and Grease	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X	X	X
PCBs in Fish Tissue	Source Unknown (N)		X			
Phosphorus, Total	Combined Sewer Overflows (Y)	X				
Phosphorus, Total	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X				
Scum/Foam	Combined Sewer Overflows (Y)			X	X	X
Scum/Foam	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X	X	X
Transparency / Clarity	Combined Sewer Overflows (Y)			X	X	X
Transparency / Clarity	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X	X	X
Trash	Combined Sewer Overflows (Y)			X	X	X
Trash	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X	X	X

Lower Mystic Lake (MA71027)

Location:	Arlington/Medford.
AU Type:	FRESHWATER LAKE
AU Size:	93 ACRES
Classification/Qualifier:	B: WWF

No usable data were available for Lower Mystic Lake (MA71027) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	DDT in Fish Tissue		Unchanged
5	5	Dissolved Oxygen	R1_MA_2020_5a	Unchanged
5	5	Hydrogen Sulfide		Unchanged
5	5	PCBs in Fish Tissue		Unchanged
5	5	Salinity		Unchanged
5	5	Sediment Bioassay [Chronic Toxicity Freshwater]		Unchanged

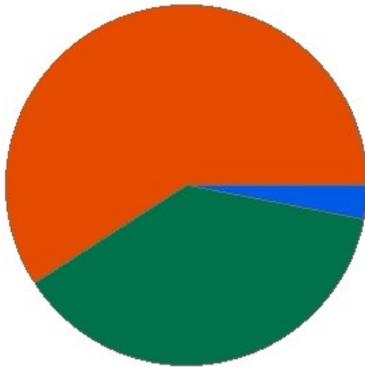
Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
DDT in Fish Tissue	Source Unknown (N)		X			
Dissolved Oxygen	Source Unknown (N)	X				
Hydrogen Sulfide	Source Unknown (N)	X				
PCBs in Fish Tissue	Source Unknown (N)		X			
Salinity	Source Unknown (N)	X				
Sediment Bioassay [Chronic Toxicity Freshwater]	Contaminated Sediments (Y)	X				
Sediment Bioassay [Chronic Toxicity Freshwater]	Source Unknown (N)	X				

Malden River (MA71-05)

Location:	From culverted portion south of Charles Street, Malden to confluence with Mystic River, Everett/Medford.
AU Type:	RIVER
AU Size:	2 MILES
Classification/Qualifier:	B: WWF

Malden River - MA71-05

Watershed Area: 10.88 square miles



Percent Agriculture
 Percent Natural
 Percent Developed
 Percent Wetland

Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	10.88	4.8	0.82	0.34
Agriculture	0%	0%	0%	0%
Developed	59.2%	79.3%	46.5%	69%
Natural	37.9%	19.4%	47.1%	26.7%
Wetland	3%	1.3%	6.4%	4.2%
Impervious Cover	45.4%			

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Debris*)		Unchanged
5	5	(Water Chestnut*)		Unchanged
5	5	Chlordane in Fish Tissue		Unchanged
5	5	DDT in Fish Tissue		Unchanged
5	5	Dissolved Oxygen	R1_MA_2020_5a	Unchanged
5	5	Dissolved Oxygen Supersaturation	R1_MA_2020_5a	Unchanged
5	5	Enterococcus		Added
5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Unchanged
5	5	Fecal Coliform		Unchanged
5	5	Flocculant Masses	R1_MA_2020_5a	Unchanged
5	5	Odor		Unchanged
5	5	Oil and Grease		Unchanged
5	5	PCBs in Fish Tissue		Unchanged
5	5	pH, High		Unchanged
5	5	Phosphorus, Total	R1_MA_2020_5a	Unchanged
5	5	Scum/Foam		Unchanged
5	5	Sediment Bioassay [Chronic Toxicity Freshwater]		Unchanged
5	5	Temperature		Unchanged
5	5	Total Suspended Solids (TSS)		Unchanged
5	5	Transparency / Clarity	R1_MA_2020_5a	Unchanged

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Trash		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
(Debris*)	Illegal Dumps or Other Inappropriate Waste Disposal (N)			X	X	X
(Water Chestnut*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X				
Chlordane in Fish Tissue	Source Unknown (N)		X			
DDT in Fish Tissue	Source Unknown (N)		X			
Dissolved Oxygen	Combined Sewer Overflows (Y)	X				
Dissolved Oxygen	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	X				
Dissolved Oxygen Supersaturation	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	X				
Enterococcus	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)				X	
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)				X	X
Fecal Coliform	Commercial Districts (Industrial Parks) (N)				X	
Fecal Coliform	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)				X	
Flocculant Masses	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)			X	X	X
Odor	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)			X	X	X
Oil and Grease	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)			X	X	X
PCBs in Fish Tissue	Source Unknown (N)		X			
pH, High	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	X				
Phosphorus, Total	Contaminated Sediments (Y)	X				
Phosphorus, Total	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	X				
Scum/Foam	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)			X	X	X
Sediment Bioassay [Chronic Toxicity Freshwater]	Contaminated Sediments (Y)	X				
Sediment Bioassay [Chronic Toxicity Freshwater]	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	X				
Temperature	Impervious Surface/Parking Lot Runoff (Y)	X				
Temperature	Source Unknown (N)	X				
Total Suspended Solids (TSS)	Combined Sewer Overflows (Y)	X				
Total Suspended Solids (TSS)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	X				

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Transparency / Clarity	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)			X	X	X
Trash	Illegal Dumps or Other Inappropriate Waste Disposal (N)			X	X	X

Recommendations

2022 Recommendations
ALU: Based on data summarized in the 2018/20 IR cycle, a macrophyte survey needs to be conducted in the Malden River to confirm whether there is a <i>Myriophyllum spicatum</i> infestation (confirmation of any non-native species should be made by a qualified state agency/taxonomist). Additionally, water quality surveys should be conducted to provide data for an updated assessment on the status of nutrient enrichment conditions in this AU.

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	YES
2022 Use Attainment Summary	
No recent data are available, so the Aquatic Life Use of the Malden River (MA71-05) will continue to be assessed as Not Supporting with the impairments for Dissolved Oxygen, Dissolved Oxygen Supersaturation, "pH, High", "Phosphorus, Total", Sediment Bioassay, Temperature, Total Suspended Solids (TSS), and Water Chestnut being carried forward. The prior Alert for a potential Eurasian water milfoil (<i>Myriophyllum spicatum</i>) infestation is also being carried forward.	

Fish Consumption

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
The Fish Consumption Use for the Malden River (MA71-05) will continue to be assessed as Not Supporting with the Chlordane in Fish Tissue, DDT in Fish Tissue, and PCBs in Fish Tissue impairments being carried forward. MassDPH's fish consumption advisory indicates that "No one should consume any fish from this water body" (MassDPH 2021).	

Aesthetic

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
No recent data are available, so the Aesthetics Use for the Malden River (MA71-05) will continue to be assessed as Not Supporting with the Debris, Flocculant Masses, Odor, Oil and Grease, Scum/Foam, Transparency/Clarity, and Trash impairments being carried forward. The prior Alert for Harmful Algal Blooms is being removed since no Malden River blooms were reported to MassDPH for the period 2015-2019 (Bailey, Logan April 15, 2021).	

Primary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
<p><i>E. coli</i> and Enterococci bacteria sampling has been conducted during the recreational season (Apr 1 – Oct 31) at multiple locations in the Malden River (MA71-05) by MyRWA staff/volunteers and MWRA staff. MyRWA staff/volunteers collected moderate frequency <i>E. coli</i> data (generally, n=7-11/yr) from 2011-2019 on the upstream side of the Medford Street bridge in Malden (MyRWA_MAR036). Analysis of these data indicates that 78-100% of intervals had GMs >126 cfu/100mL in the most recent five years and 2-7 samples exceeded the 410 cfu/100mL STV. MyRWA staff/volunteers collected bacteria samples in April and May 2016 (n=4) from a site near the HS dock (MyRWA_MARINT3). Analysis of <i>E. coli</i> data indicated that 100% of intervals had GMs >126 cfu/100mL and 3 samples exceeded the 410 cfu/100mL STV. MyRWA staff/volunteers collected bacteria data in April and May 2016 (n=3) at a site near the Tufts Pavilion (MyRWA_MARINT2). Analysis indicated that 100% of intervals had GMs >126 cfu/100mL and 2 samples exceeded the 410 cfu/100mL STV. MyRWA staff/volunteers also collected bacteria samples in April and May 2016 (n=4) near the building right before Rivers Edge (MyRWA_MARINT1). Analysis of the <i>E. coli</i> data indicated that 67% of intervals had GMs >126 cfu/100mL and 2 samples exceeded the 410 cfu/100mL STV. MWRA staff collected high frequency <i>E. coli</i> and Enterococci data in the Malden River upstream from the Rt 16 bridge (MWRA_176S) during the 2014-2019 recreational seasons (n= 19-59/yr). Analysis of <i>E. coli</i> data indicated that >10% of intervals (47-71%) had GMs >126 cfu/100mL in 4 of the most recent 5 years of data and 27-38% of samples in 4 of the last 5 years exceeded the 410 cfu/100mL STV. Similarly, analysis of Enterococci data indicated that 43-94% of intervals had GMs >35 cfu/100mL in 4 of the most recent 5 years of data and 19-29% of samples exceeded the 130 cfu/100mL STV in those years. Additionally, MyRWA staff/volunteers collected <i>E. coli</i> data during the 2015 and 2016 recreational seasons (n=37-43/yr) from a station just slightly upstream from the Rt 16 bridge (MyRWA_MAR0065). The high frequency data indicated that >10% (17 or 19%) of intervals had GMs >126 cfu/100mL and 16% of samples exceeded the 410 cfu/100mL STV in both years. While bacteria data were collected infrequently at several additional MyRWA stations (MyRWA_MARMR1, MyRWA_MAR006, MyRWA_MAR001), sample size was insufficient to allow analysis of these data for use attainment decisions. The Primary Contact Recreational Use for Malden River (MA71-05) will continue to be assessed as Not Supporting. MyRWA and MWRA bacteria data indicate that the prior impairment for Escherichia Coli (<i>E. Coli</i>) should be carried forward and an Enterococci impairment should be added. Additionally, an impairment for Fecal Coliform and the aesthetically objectionable condition impairments (Debris, Flocculant Masses, Odor, Oil and Grease, Scum/Foam, Transparency/Clarity, and Trash) are being carried forward. The prior Alert for Harmful Algal Blooms is being removed since no Malden River blooms were reported to MassDPH for the period 2015-2019 (Bailey, Logan April 15, 2021).</p>	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MWRA_176S	Massachusetts Water Resource Authority	Water Quality	MALDEN RIVER	Malden River, upstream of Rt 16 bridge	42.4053	-71.07191
MyRWA_MAR001	Mystic River Watershed Association	Water Quality	Malden River	None submitted by MYRWA	42.3968333	-71.07545

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MyRWA_MAR006	Mystic River Watershed Association	Water Quality	Malden River	None submitted by MYRWA	42.4035833	-71.07269444
MyRWA_MAR0065	Mystic River Watershed Association	Water Quality	Malden River	Center of the stream. Sample from route 16 bridge upstream side	42.403923	-71.072533
MyRWA_MAR036	Mystic River Watershed Association	Water Quality	Malden River	Malden River at Medford Street Bridge in Malden; upstream side of the bridge	42.4175	-71.073283
MyRWA_MARINT1	Mystic River Watershed Association	Water Quality	Malden River	Building before Rivers Edge	42.407096	-71.072337
MyRWA_MARINT2	Mystic River Watershed Association	Water Quality	Malden River	Tufts pavilion	42.410558	-71.073108
MyRWA_MARINT3	Mystic River Watershed Association	Water Quality	Malden River	HS dock	42.415309	-71.073103
MyRWA_MARMR1	Mystic River Watershed Association	Water Quality	Malden River	MDC deep rock tunnel near the north end of Malden River near Commercial St; Malden River near all 5 major top-end sources	42.421656	-71.072864

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MWRA 2019)

(MassDEP Undated 2) (MyRWA 2019) (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
MWRA_176S	Massachusetts Water Resource Authority	E. coli	04/30/14	10/01/14	20	10	17300	257
MWRA_176S	Massachusetts Water Resource Authority	Enterococci	04/30/14	10/01/14	19	10	1210	28
MWRA_176S	Massachusetts Water Resource Authority	E. coli	04/13/15	10/06/15	19	10	1970	51
MWRA_176S	Massachusetts Water Resource Authority	Enterococci	04/13/15	10/06/15	19	10	1140	18
MWRA_176S	Massachusetts Water Resource Authority	E. coli	05/09/16	10/26/16	28	10	9210	134
MWRA_176S	Massachusetts Water Resource Authority	Enterococci	05/09/16	10/26/16	28	10	3870	27
MWRA_176S	Massachusetts Water Resource Authority	E. coli	04/03/17	10/19/17	48	10	10500	124

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_176S	Massachusetts Water Resource Authority	Enterococci	04/03/17	10/19/17	48	10	9210	36
MWRA_176S	Massachusetts Water Resource Authority	E. coli	04/24/18	10/24/18	52	10	24200	250
MWRA_176S	Massachusetts Water Resource Authority	Enterococci	04/24/18	10/24/18	52	10	4110	70
MWRA_176S	Massachusetts Water Resource Authority	E. coli	04/20/19	10/31/19	59	10	44100	181
MWRA_176S	Massachusetts Water Resource Authority	Enterococci	04/20/19	10/31/19	59	10	14100	47
MyRWA_MAR001	Mystic River Watershed Association	E. coli	04/24/12	04/24/12	1	857	857	857
MyRWA_MAR006	Mystic River Watershed Association	E. coli	06/01/15	06/01/15	1	81640	81640	81640
MyRWA_MAR0065	Mystic River Watershed Association	E. coli	06/29/15	10/02/15	37	9.7	14136	65
MyRWA_MAR0065	Mystic River Watershed Association	E. coli	04/26/16	09/21/16	43	1	14136	72
MyRWA_MAR036	Mystic River Watershed Association	E. coli	04/20/11	10/19/11	7	203	2910	967
MyRWA_MAR036	Mystic River Watershed Association	E. coli	04/18/12	10/17/12	6	134	24200	685
MyRWA_MAR036	Mystic River Watershed Association	E. coli	04/17/13	10/16/13	7	169	3650	398
MyRWA_MAR036	Mystic River Watershed Association	E. coli	04/16/14	10/15/14	7	98	1920	326
MyRWA_MAR036	Mystic River Watershed Association	E. coli	04/15/15	10/21/15	8	63	15230	416
MyRWA_MAR036	Mystic River Watershed Association	E. coli	04/20/16	10/19/16	11	20	2419.6	364
MyRWA_MAR036	Mystic River Watershed Association	E. coli	04/19/17	10/18/17	7	52	24200	524
MyRWA_MAR036	Mystic River Watershed Association	E. coli	04/18/18	10/17/18	7	676	24200	9054
MyRWA_MAR036	Mystic River Watershed Association	E. coli	04/17/19	10/16/19	7	52	1650	234
MyRWA_MARINT1	Mystic River Watershed Association	E. coli	04/26/16	05/05/16	4	9.6	2239.8	168

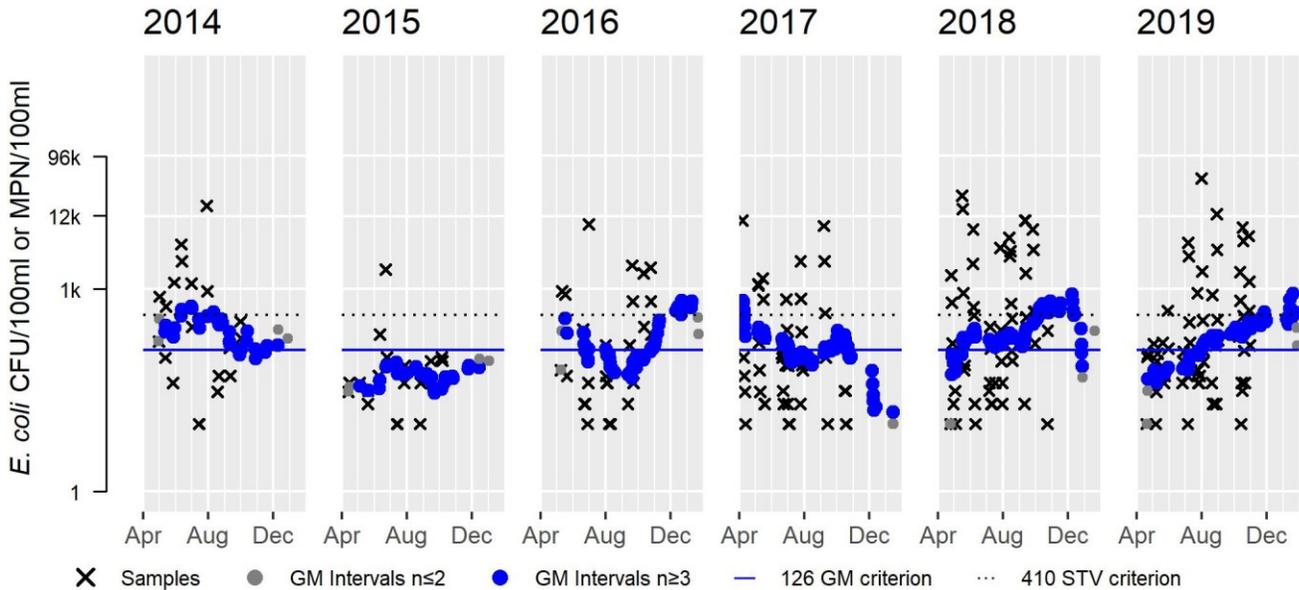
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MyRWA_MARINT2	Mystic River Watershed Association	E. coli	04/27/16	05/05/16	3	98	1553.1	611
MyRWA_MARINT3	Mystic River Watershed Association	E. coli	04/27/16	05/05/16	4	107.4	1597	701
MyRWA_MARMR1	Mystic River Watershed Association	E. coli	04/21/11	04/21/11	1	475	475	475

MWRA_176S E. coli (90-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	20	Samples	19	Samples	28	Samples	48	Samples	52	Samples	59
SeasGM	257	SeasGM	51	SeasGM	134	SeasGM	124	SeasGM	250	SeasGM	181
#GMI	32	#GMI	32	#GMI	49	#GMI	88	#GMI	90	#GMI	105
#GMI Ex	27	#GMI Ex	0	#GMI Ex	23	#GMI Ex	47	#GMI Ex	80	#GMI Ex	75
%GMI Ex	84	%GMI Ex	0	%GMI Ex	47	%GMI Ex	53	%GMI Ex	89	%GMI Ex	71
n>STV	8	n>STV	1	n>STV	8	n>STV	14	n>STV	20	n>STV	16
%n>STV	40	%n>STV	5	%n>STV	29	%n>STV	29	%n>STV	38	%n>STV	27

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	64	62

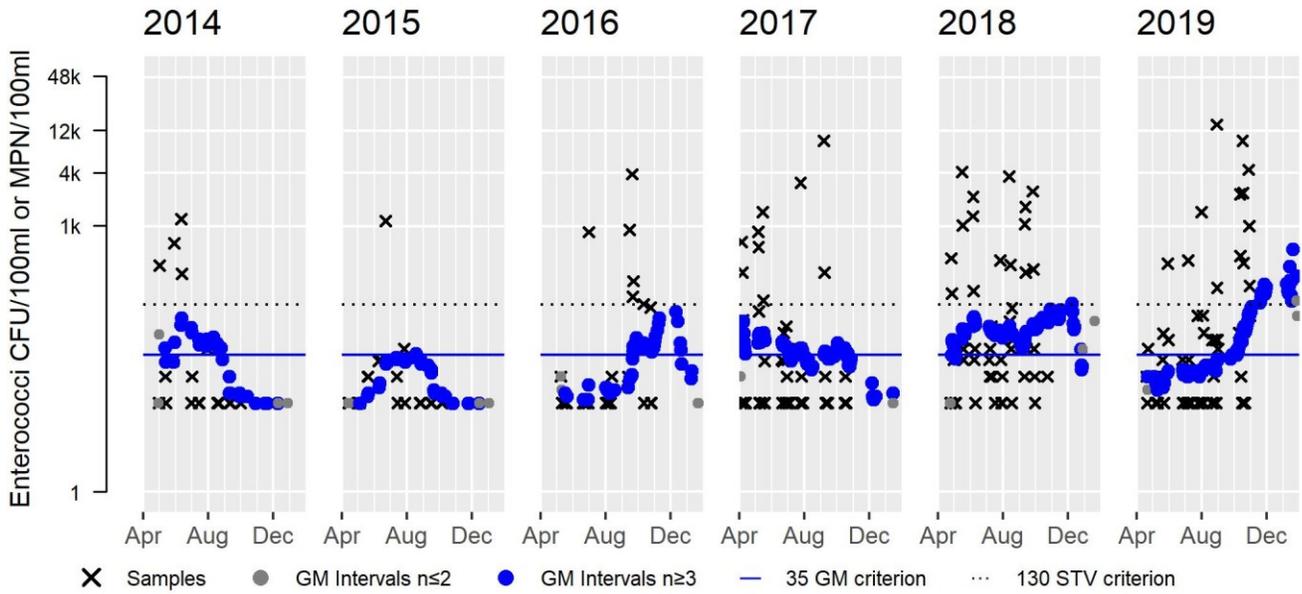


MWRA_176S Enterococci (90-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	19	Samples	19	Samples	28	Samples	48	Samples	52	Samples	59
SeasGM	28	SeasGM	18	SeasGM	27	SeasGM	36	SeasGM	70	SeasGM	47
#GMI	31	#GMI	32	#GMI	49	#GMI	88	#GMI	90	#GMI	105
#GMI Ex	15	#GMI Ex	1	#GMI Ex	21	#GMI Ex	46	#GMI Ex	85	#GMI Ex	50
%GMI Ex	48	%GMI Ex	3	%GMI Ex	43	%GMI Ex	52	%GMI Ex	94	%GMI Ex	48
n>STV	4	n>STV	1	n>STV	6	n>STV	9	n>STV	15	n>STV	13
%n>STV	21	%n>STV	5	%n>STV	21	%n>STV	19	%n>STV	29	%n>STV	22

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

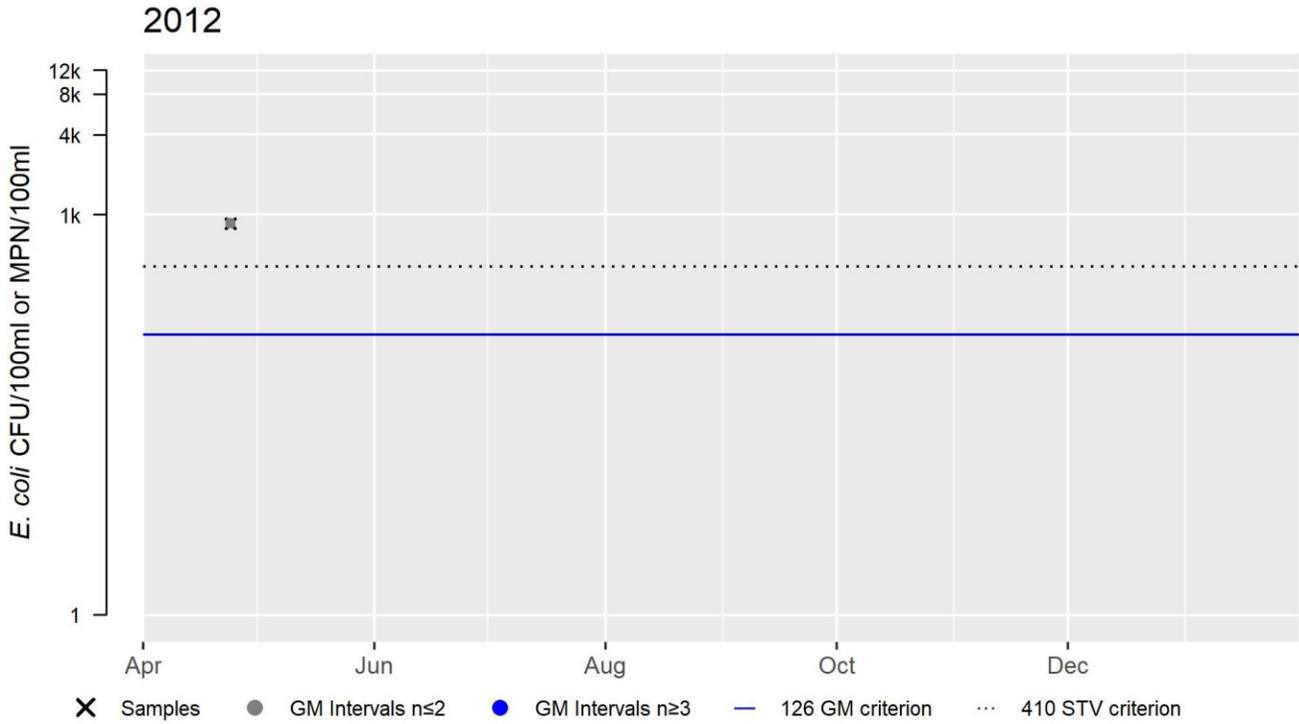
Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	55	56



MyRWA_MAR001 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	857
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

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

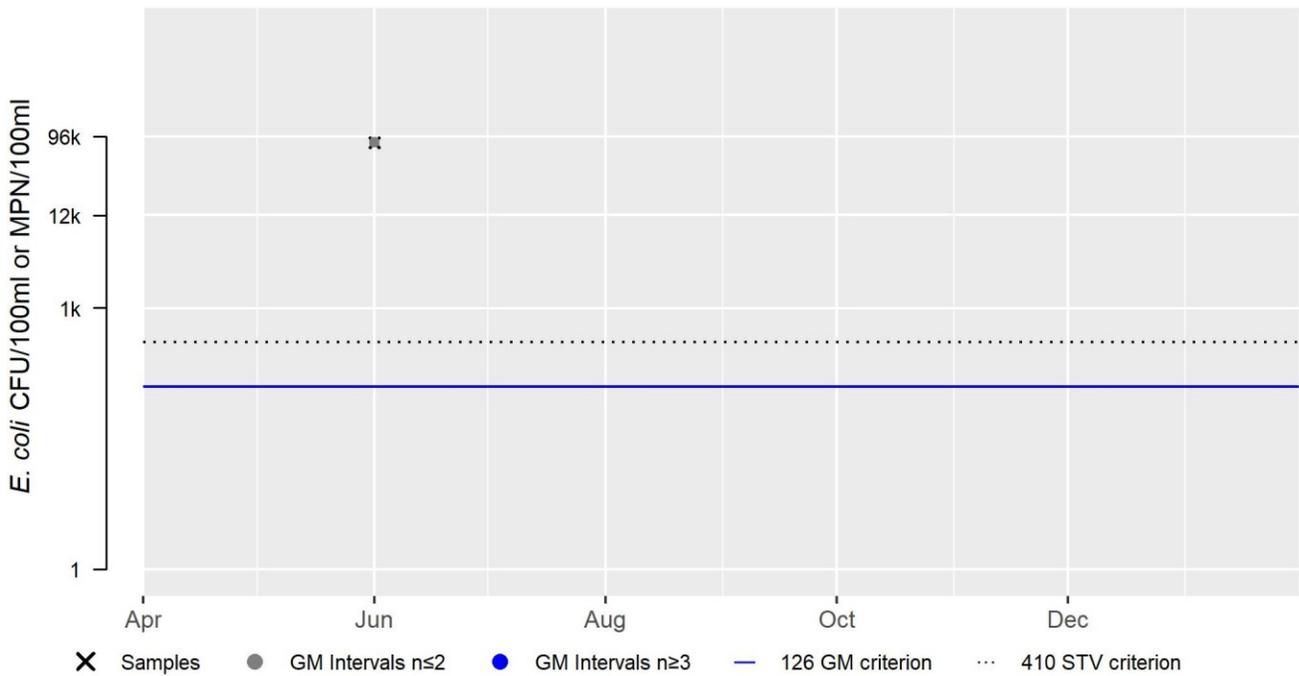


MyRWA_MAR006 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	81640
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

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

2015



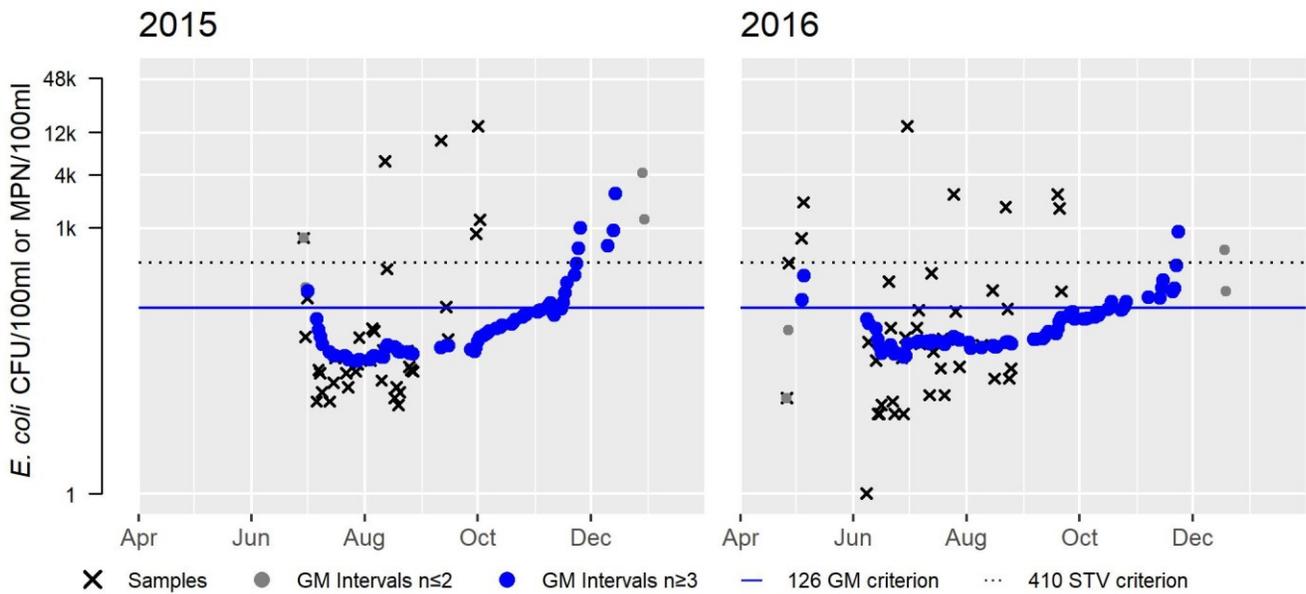
MyRWA_MAR0065 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	37
SeasGM	65
#GMI	69
#GMI Ex	13
%GMI Ex	19
n>STV	6
%n>STV	16

Var	Res
Samples	43
SeasGM	72
#GMI	76
#GMI Ex	13
%GMI Ex	17
n>STV	7
%n>STV	16

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

Variable	Cumulative %GMI Ex (all years)
Result	18

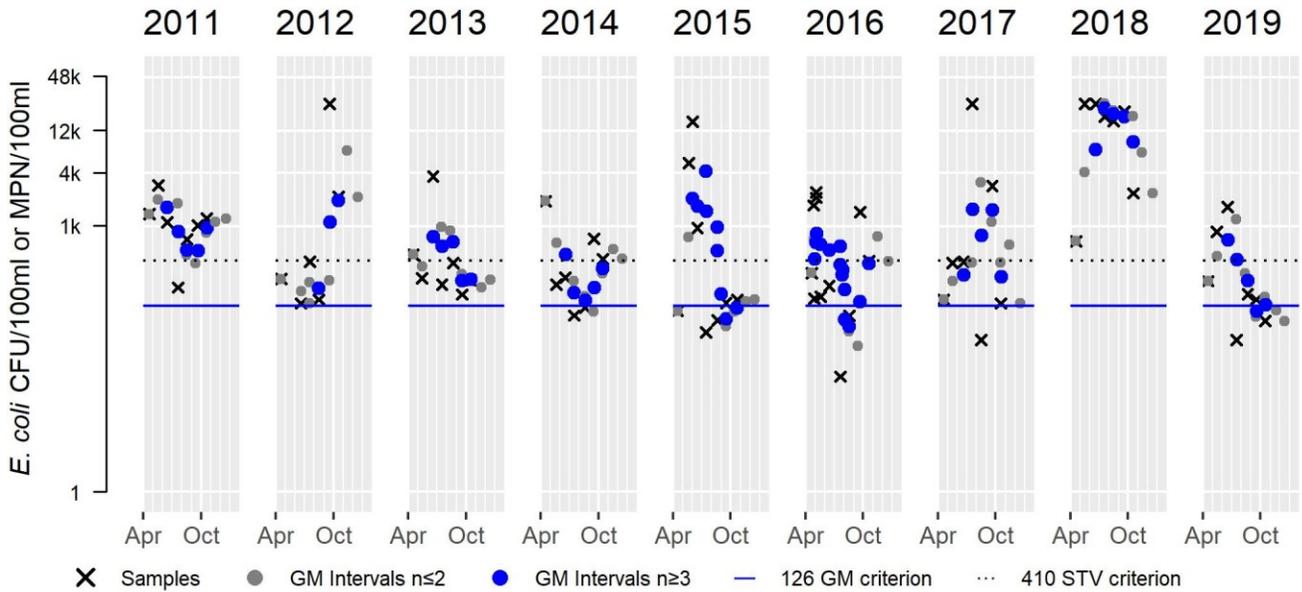


MyRWA_MAR036 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res														
Samples	7	Samples	6	Samples	7	Samples	7	Samples	8	Samples	11	Samples	7	Samples	7
SeasGM	967	SeasGM	685	SeasGM	398	SeasGM	326	SeasGM	416	SeasGM	364	SeasGM	524	SeasGM	9054
#GMI	5	#GMI	3	#GMI	5	#GMI	5	#GMI	9	#GMI	14	#GMI	5	#GMI	5
#GMI Ex	5	#GMI Ex	3	#GMI Ex	5	#GMI Ex	5	#GMI Ex	7	#GMI Ex	12	#GMI Ex	5	#GMI Ex	5
%GMI Ex	100	%GMI Ex	78	%GMI Ex	86	%GMI Ex	100	%GMI Ex	100						
n>STV	6	n>STV	2	n>STV	2	n>STV	3	n>STV	3	n>STV	4	n>STV	2	n>STV	7
%n>STV	86	%n>STV	33	%n>STV	29	%n>STV	43	%n>STV	38	%n>STV	36	%n>STV	29	%n>STV	100

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

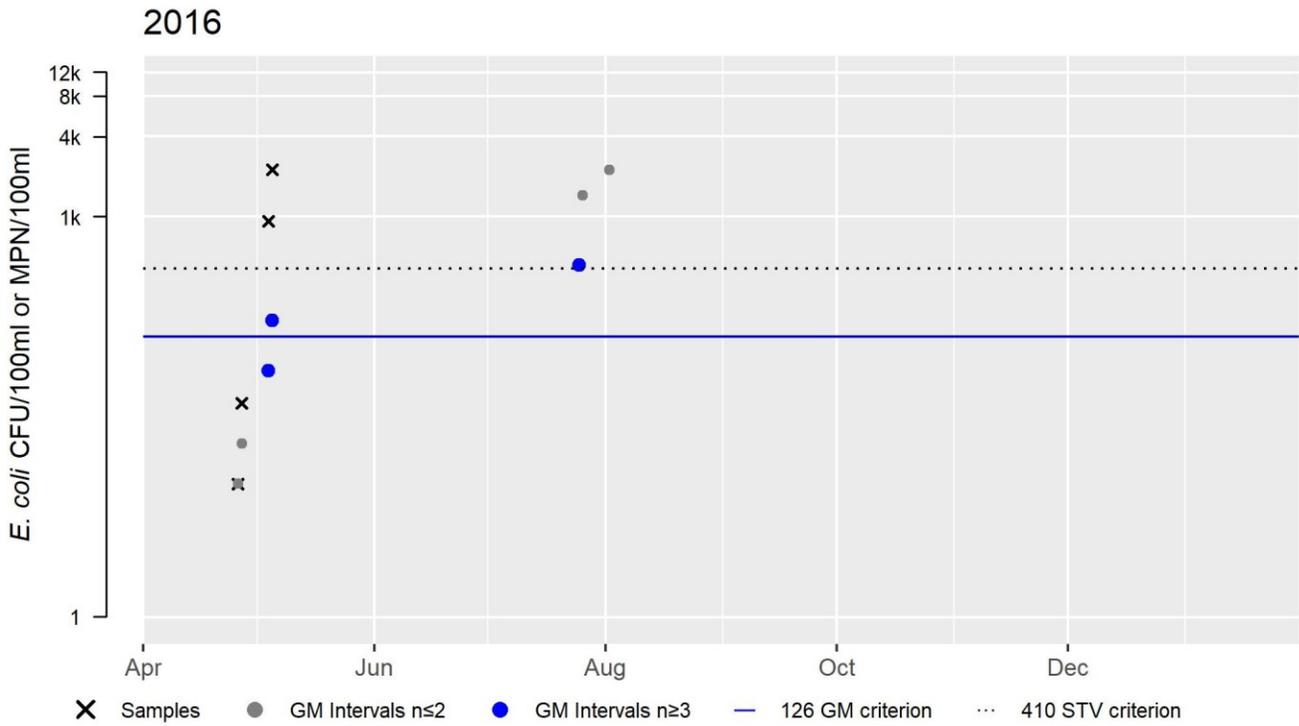
Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	91	87



MyRWA_MARINT1 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	4
SeasGM	168
#GMI	3
#GMI Ex	2
%GMI Ex	67
n>STV	2
%n>STV	50

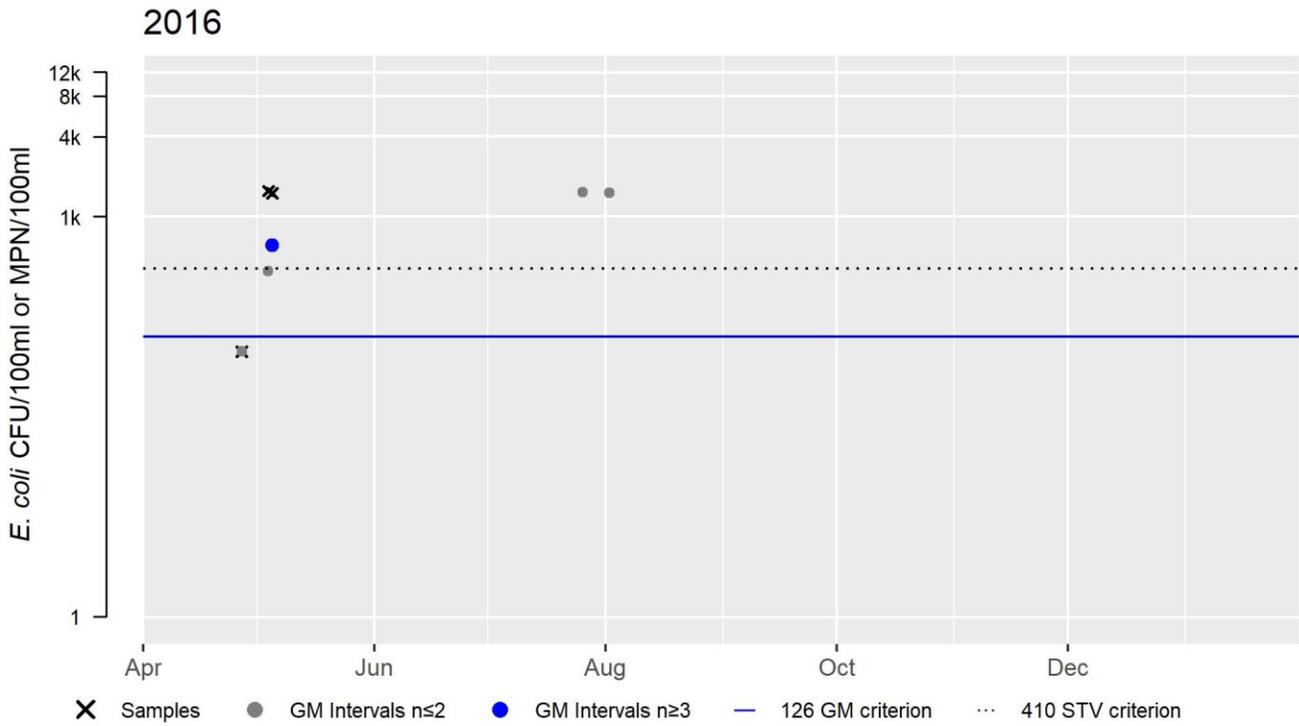
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exceedances; %GMI Ex = percent GMI Exceedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



MyRWA_MARINT2 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	3
SeasGM	611
#GMI	1
#GMI Ex	1
%GMI Ex	100
n>STV	2
%n>STV	67

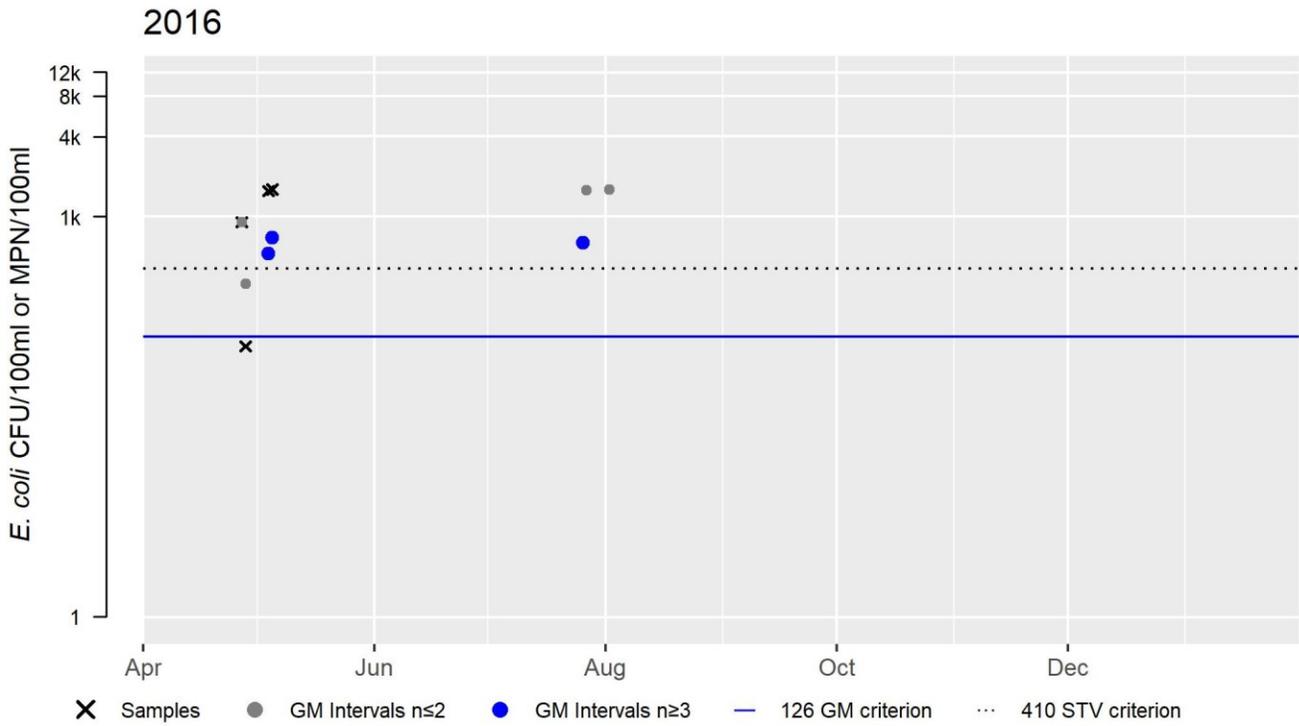
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exceedances; %GMI Ex = percent GMI Exceedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



MyRWA_MARINT3 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	4
SeasGM	701
#GMI	3
#GMI Ex	3
%GMI Ex	100
n>STV	3
%n>STV	75

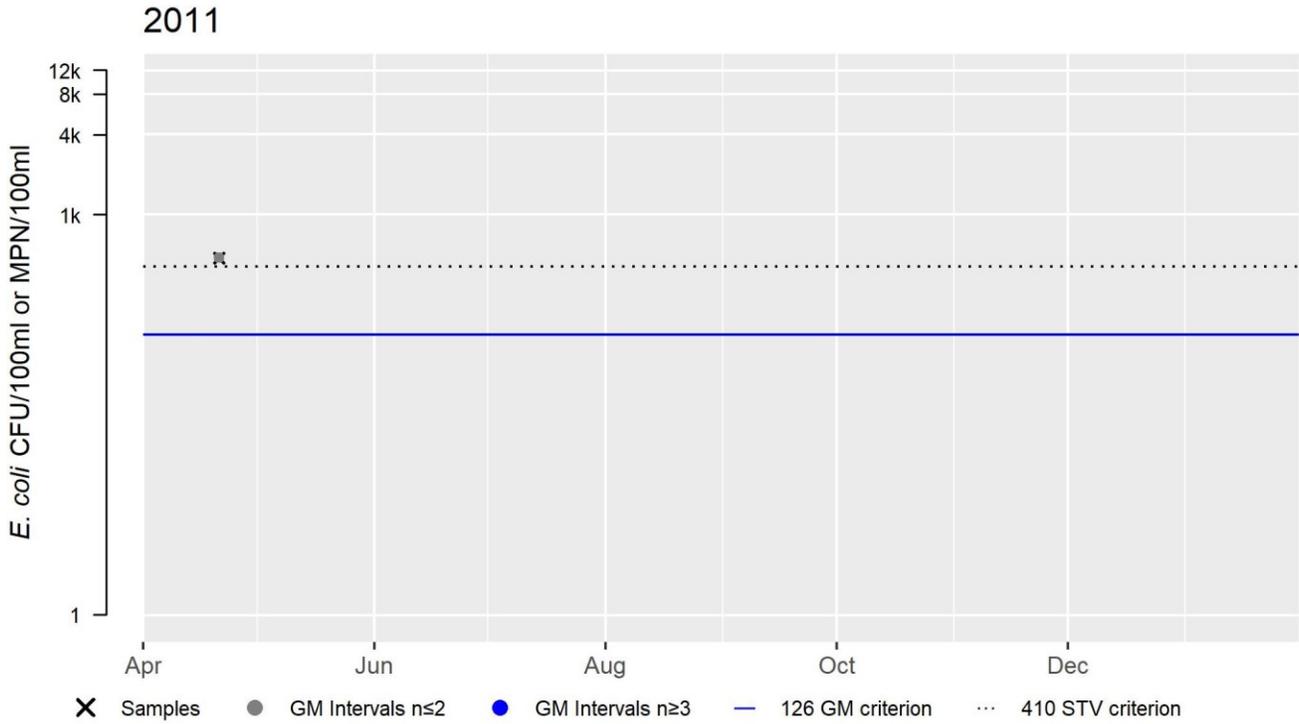
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exceedances; %GMI Ex = percent GMI Exceedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



MyRWA_MARMR1 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	475
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

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



Secondary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	

E. coli bacteria sampling was conducted at multiple locations in the Malden River (MA71-05) by MyRWA staff/volunteers and MWRA staff. MyRWA staff/volunteers collected mainly moderate frequency bacteria data (n=11-16/yr) from 2011-2019 at a station on the upstream side of the Medford Street bridge in Malden (MyRWA_MAR036). Analysis of these data indicates that in 4 of the most recent five years, 29-90% of intervals had GMs >630 cfu/100mL and 4-6 samples exceeded the 1260 cfu/100mL STV. MyRWA staff/volunteers collected bacteria samples in April and May 2016 (n=4) from a site near the HS dock (MyRWA_MARINT3). Analysis of the data indicated that 67% of intervals had GMs >630 cfu/100mL and 2 samples exceeded the 1260 cfu/100mL STV. MyRWA staff/volunteers collected bacteria data in April and May (n=3) at a site near the Tufts Pavilion (MyRWA_MARINT2). Analysis indicated that no interval had a GM >630 cfu/100mL but 2 samples exceeded the 1260 cfu/100mL STV. MyRWA staff/volunteers also collected bacteria samples in April and May 2016 (n=4) near the building right before Rivers Edge (MyRWA_MARINT1). Analysis of these data similarly indicated that no interval had a GM >630 cfu/100mL but 1 sample exceeded the 1260 cfu/100mL STV. MWRA staff collected high frequency *E. coli* data in the Malden River upstream of the Rt 16 bridge (MWRA_176S) from 2014-2019 (n= 19-63/yr). Analysis of *E. coli* data indicated that >10% of intervals (14-19%) had GMs >630 cfu/100mL in 2 of the most recent 5 years of data and >10% of samples (17-30%) in 3 of the last 5 years exceeded the 1260 cfu/100mL STV. MyRWA staff/volunteers also collected *E. coli* data in 2015 and 2016 (n=37-43/yr) from a station just slightly upstream from the Rt 16 bridge (MyRWA_MAR0065). The high frequency data indicated that <10% of intervals had GMs >630 cfu/100mL in both years and only in 2016 did >10% of samples (14%) exceed the 1260 cfu/100mL STV. While bacteria data were collected infrequently at several additional MyRWA stations (MyRWA_MARMR1, MyRWA_MAR006, MyRWA_MAR001), sample size was insufficient to allow analysis of these data for use attainment decisions. The Secondary Contact Recreational Use for Malden River (MA71-05) will continue to be assessed as Not Supporting. Recent MWRA (Station MWRA_176S) and MyRWA bacteria data (Stations MAR036, MARINT3) indicate that an Escherichia Coli (*E. Coli*) impairment should be added to this AU. Additionally, the impairments related to objectionable conditions (Debris, Flocculant Masses, Odor, Oil and Grease, Scum/Foam, Transparency/Clarity, and Trash) are being carried forward. The prior Alert for Harmful Algal Blooms is being removed since no Malden River blooms were reported to MassDPH for the period 2015-2019 (Bailey, Logan April 15, 2021).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MWRA_176S	Massachusetts Water Resource Authority	Water Quality	MALDEN RIVER	Malden River, upstream of Rt 16 bridge	42.4053	-71.07191
MyRWA_MAR001	Mystic River Watershed Association	Water Quality	Malden River	None submitted by MYRWA	42.3968333	-71.07545
MyRWA_MAR006	Mystic River Watershed Association	Water Quality	Malden River	None submitted by MYRWA	42.4035833	-71.07269444
MyRWA_MAR0065	Mystic River Watershed Association	Water Quality	Malden River	Center of the stream. Sample from route 16 bridge upstream side	42.403923	-71.072533
MyRWA_MAR036	Mystic River Watershed Association	Water Quality	Malden River	Malden River at Medford Street Bridge in Malden; upstream side of the bridge	42.4175	-71.073283

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MyRWA_MARINT1	Mystic River Watershed Association	Water Quality	Malden River	Building before Rivers Edge	42.407096	-71.072337
MyRWA_MARINT2	Mystic River Watershed Association	Water Quality	Malden River	Tufts pavilion	42.410558	-71.073108
MyRWA_MARINT3	Mystic River Watershed Association	Water Quality	Malden River	HS dock	42.415309	-71.073103
MyRWA_MARMR1	Mystic River Watershed Association	Water Quality	Malden River	MDC deep rock tunnel near the north end of Malden River near Commercial St; Malden River near all 5 major top-end sources	42.421656	-71.072864

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MWRA 2019)

(MassDEP Undated 2) (MyRWA 2019) (MassDEP Undated 2)

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

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MWRA_176S	Massachusetts Water Resource Authority	E. coli	04/30/14	12/10/14	21	10	17300	300
MWRA_176S	Massachusetts Water Resource Authority	E. coli	04/13/15	10/06/15	19	10	1970	51
MWRA_176S	Massachusetts Water Resource Authority	E. coli	03/28/16	12/01/16	35	10	9210	184
MWRA_176S	Massachusetts Water Resource Authority	E. coli	04/03/17	11/29/17	51	10	10500	113
MWRA_176S	Massachusetts Water Resource Authority	E. coli	04/24/18	11/08/18	57	10	24200	281
MWRA_176S	Massachusetts Water Resource Authority	E. coli	04/20/19	11/22/19	63	10	44100	184
MyRWA_MAR001	Mystic River Watershed Association	E. coli	04/24/12	04/24/12	1	857	857	857
MyRWA_MAR006	Mystic River Watershed Association	E. coli	06/01/15	06/01/15	1	81640	81640	81640
MyRWA_MAR0065	Mystic River Watershed Association	E. coli	06/29/15	10/02/15	37	9.7	14136	65
MyRWA_MAR0065	Mystic River Watershed Association	E. coli	04/26/16	09/21/16	43	1	14136	72

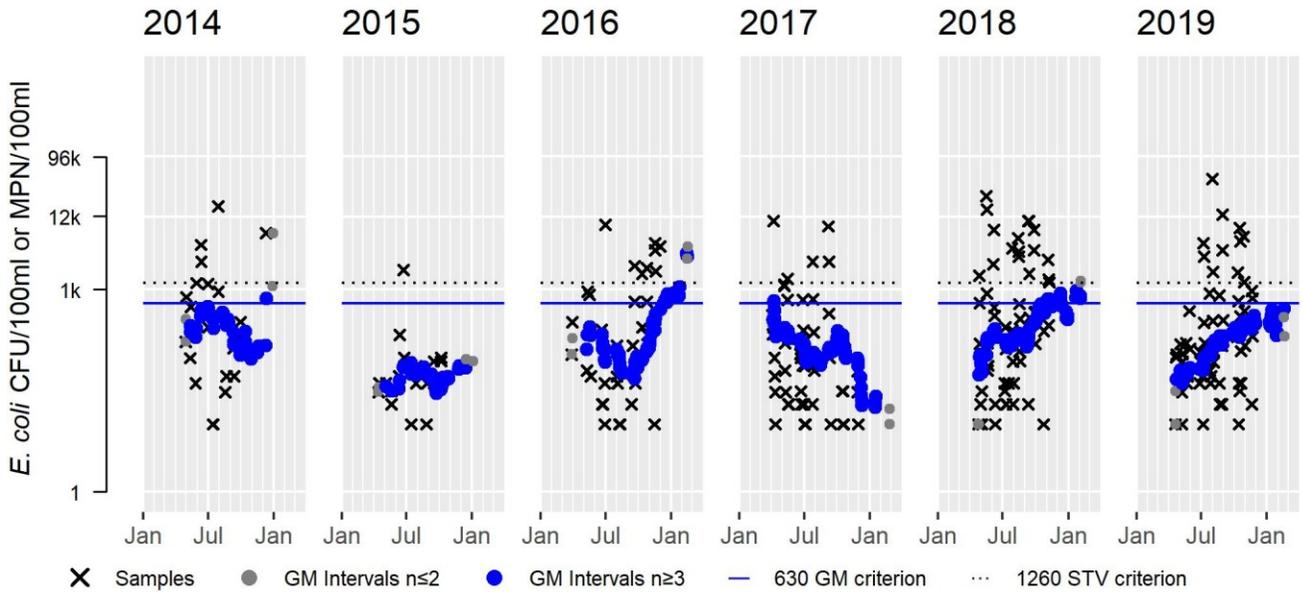
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MyRWA_MAR036	Mystic River Watershed Association	E. coli	01/19/11	12/14/11	12	203	9210	1377
MyRWA_MAR036	Mystic River Watershed Association	E. coli	01/18/12	12/19/12	11	41	24200	716
MyRWA_MAR036	Mystic River Watershed Association	E. coli	01/16/13	11/20/13	11	169	3650	631
MyRWA_MAR036	Mystic River Watershed Association	E. coli	01/15/14	12/17/14	13	98	16000	977
MyRWA_MAR036	Mystic River Watershed Association	E. coli	01/21/15	12/16/15	12	63	15230	574
MyRWA_MAR036	Mystic River Watershed Association	E. coli	01/20/16	12/21/16	16	20	11200	556
MyRWA_MAR036	Mystic River Watershed Association	E. coli	01/18/17	12/20/17	11	52	24200	620
MyRWA_MAR036	Mystic River Watershed Association	E. coli	02/21/18	12/19/18	11	134	24200	3216
MyRWA_MAR036	Mystic River Watershed Association	E. coli	03/20/19	10/16/19	8	52	1650	223
MyRWA_MARINT1	Mystic River Watershed Association	E. coli	04/26/16	05/05/16	4	9.6	2239.8	168
MyRWA_MARINT2	Mystic River Watershed Association	E. coli	04/27/16	05/05/16	3	98	1553.1	611
MyRWA_MARINT3	Mystic River Watershed Association	E. coli	04/27/16	05/05/16	4	107.4	1597	701
MyRWA_MARMR1	Mystic River Watershed Association	E. coli	04/21/11	04/21/11	1	475	475	475

MWRA_176S *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res										
Samples	21	Samples	19	Samples	35	Samples	51	Samples	57	Samples	63
SeasGM	300	SeasGM	51	SeasGM	184	SeasGM	113	SeasGM	281	SeasGM	184
#GMI	33	#GMI	32	#GMI	62	#GMI	94	#GMI	100	#GMI	110
#GMI Ex	1	#GMI Ex	0	#GMI Ex	12	#GMI Ex	2	#GMI Ex	14	#GMI Ex	0
%GMI Ex	3	%GMI Ex	0	%GMI Ex	19	%GMI Ex	2	%GMI Ex	14	%GMI Ex	0
n>STV	4	n>STV	1	n>STV	8	n>STV	5	n>STV	17	n>STV	11
%n>STV	19	%n>STV	5	%n>STV	23	%n>STV	10	%n>STV	30	%n>STV	17

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

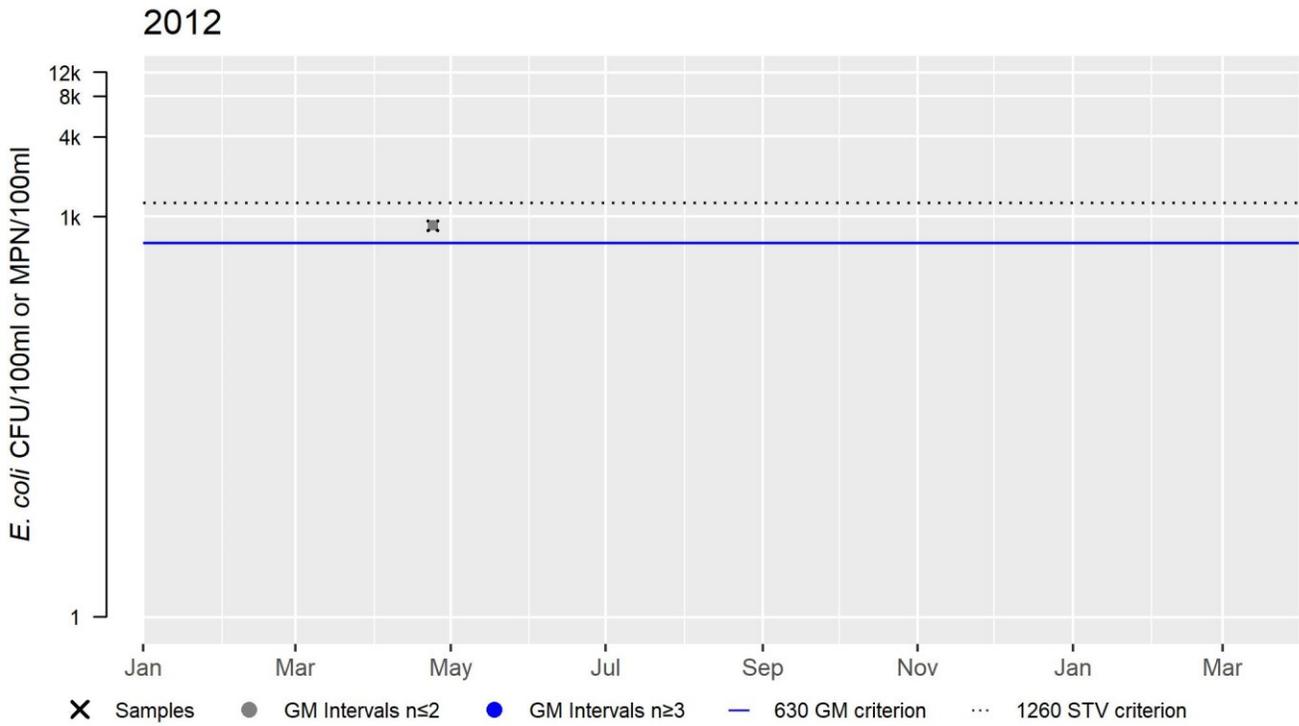
Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	7	7



MyRWA_MAR001 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	857
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

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

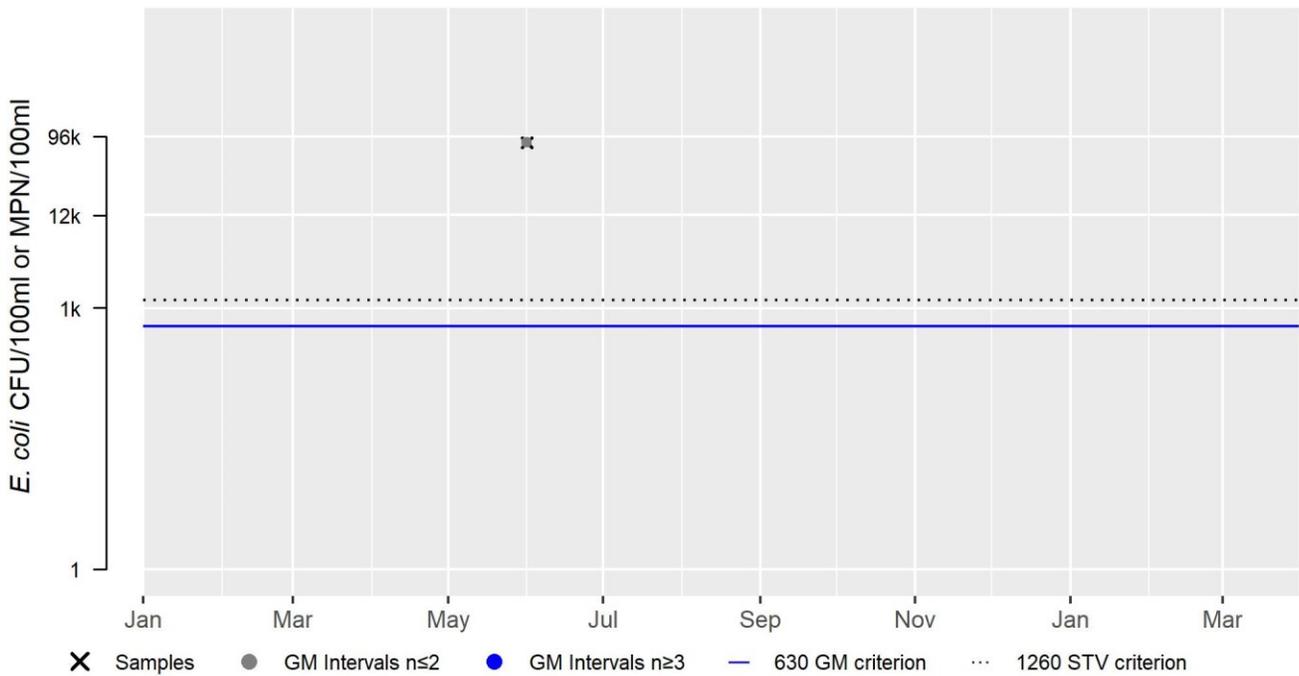


MyRWA_MAR006 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	81640
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

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

2015



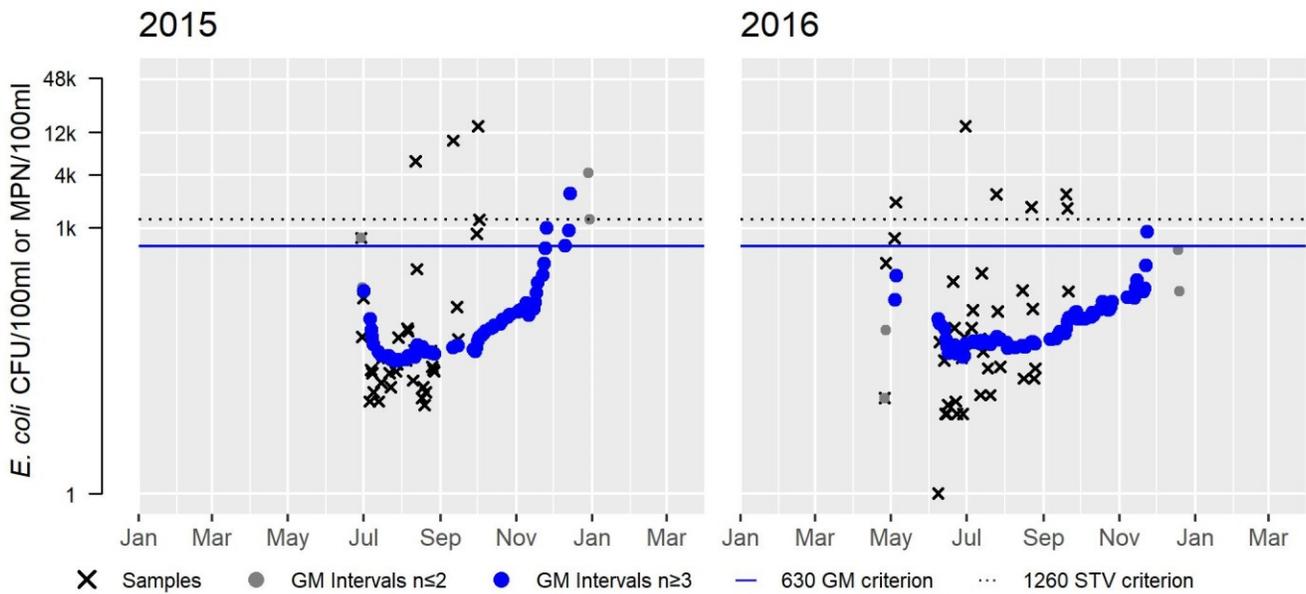
MyRWA_MAR0065 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	37
SeasGM	65
#GMI	69
#GMI Ex	4
%GMI Ex	6
n>STV	3
%n>STV	8

Var	Res
Samples	43
SeasGM	72
#GMI	76
#GMI Ex	1
%GMI Ex	1
n>STV	6
%n>STV	14

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

Variable	Cumulative %GMI Ex (all years)
Result	3

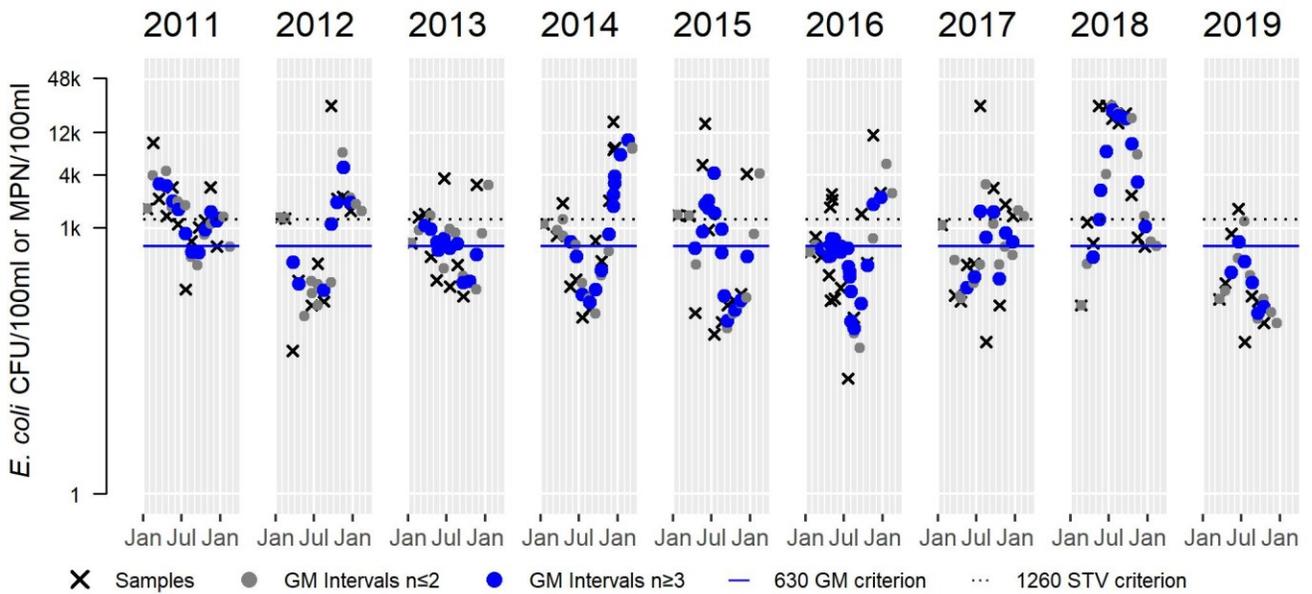


MyRWA_MAR036 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res
Samples	12	Samples	11	Samples	11	Samples	13	Samples	12	Samples	16	Samples	11	Samples	11
SeasGM	1377	SeasGM	716	SeasGM	631	SeasGM	977	SeasGM	574	SeasGM	556	SeasGM	620	SeasGM	3216
#GMI	11	#GMI	7	#GMI	10	#GMI	13	#GMI	14	#GMI	21	#GMI	8	#GMI	10
#GMI Ex	9	#GMI Ex	4	#GMI Ex	5	#GMI Ex	8	#GMI Ex	7	#GMI Ex	6	#GMI Ex	5	#GMI Ex	9
%GMI Ex	82	%GMI Ex	57	%GMI Ex	50	%GMI Ex	62	%GMI Ex	50	%GMI Ex	29	%GMI Ex	62	%GMI Ex	90
n>STV	6	n>STV	6	n>STV	4	n>STV	5	n>STV	5	n>STV	6	n>STV	4	n>STV	6
%n>STV	50	%n>STV	55	%n>STV	36	%n>STV	38	%n>STV	42	%n>STV	38	%n>STV	36	%n>STV	55

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

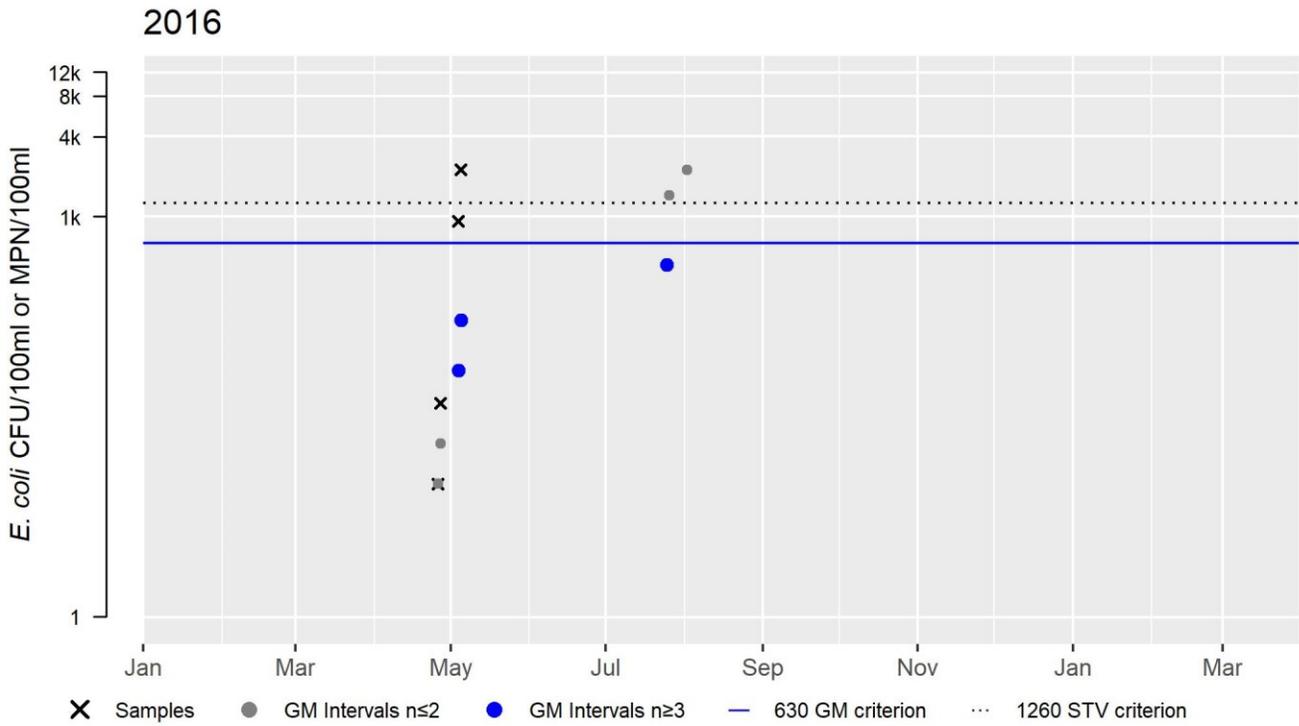
Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	54	47



MyRWA_MARINT1 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	4
SeasGM	168
#GMI	3
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	25

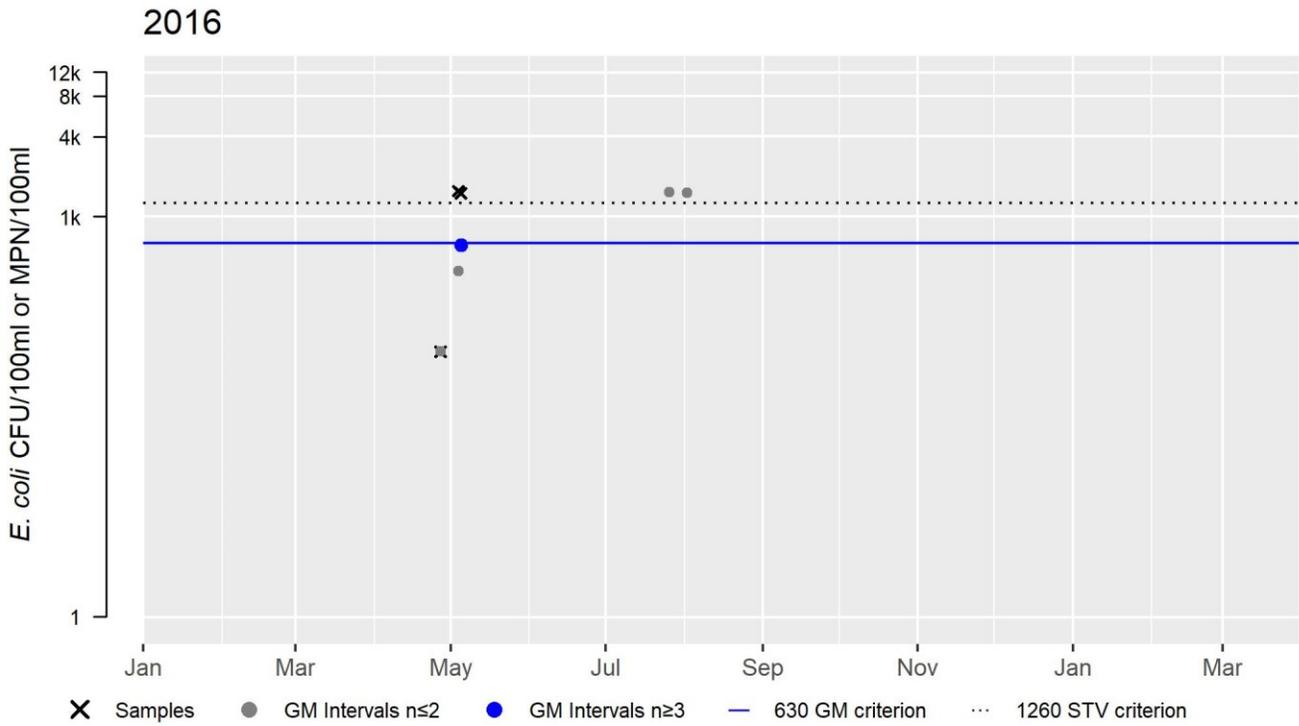
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exceedances; %GMI Ex = percent GMI Exceedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



MyRWA_MARINT2 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	3
SeasGM	611
#GMI	1
#GMI Ex	0
%GMI Ex	0
n>STV	2
%n>STV	67

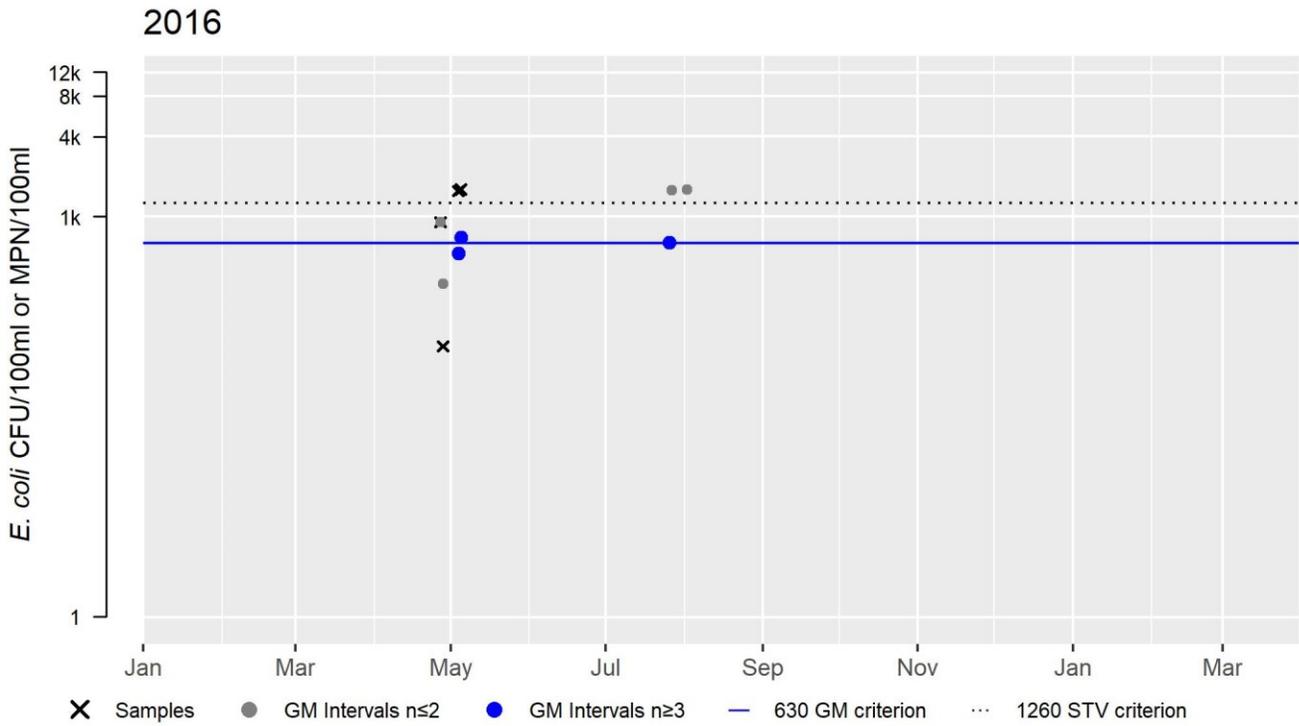
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exceedances; %GMI Ex = percent GMI Exceedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



MyRWA_MARINT3 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	4
SeasGM	701
#GMI	3
#GMI Ex	2
%GMI Ex	67
n>STV	2
%n>STV	50

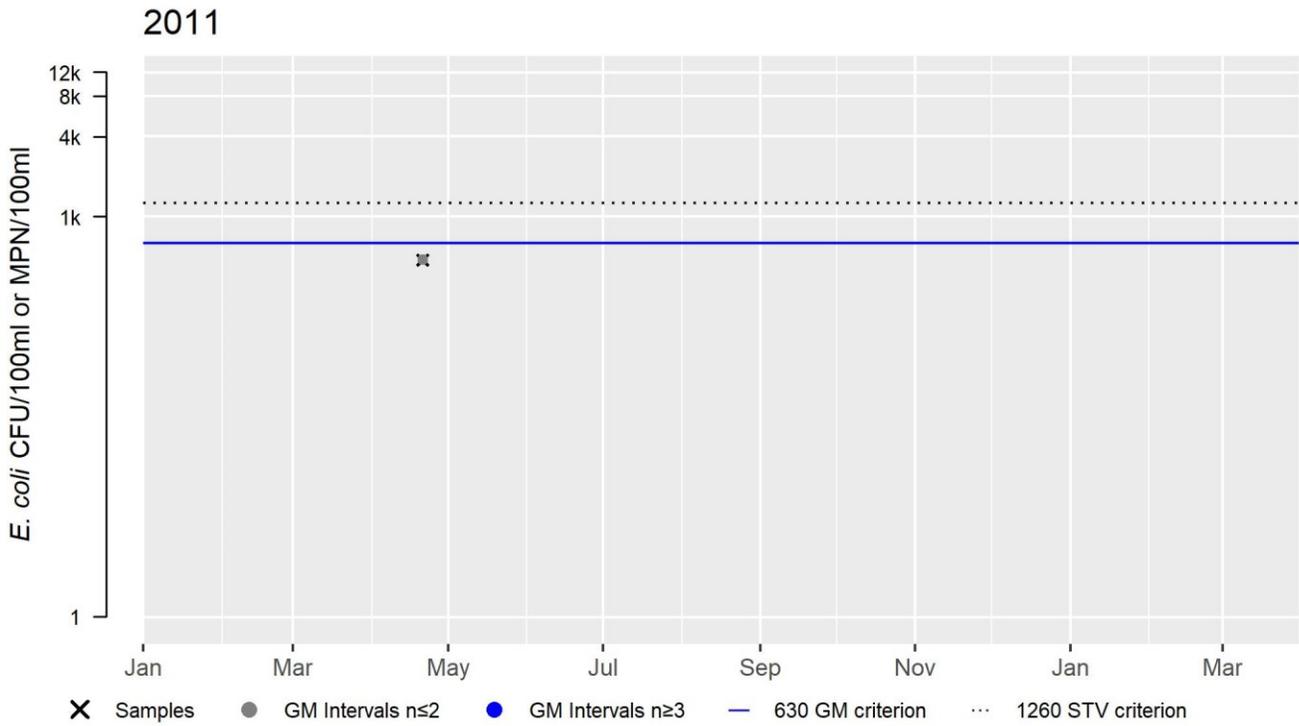
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exceedances; %GMI Ex = percent GMI Exceedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



MyRWA_MARMR1 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	475
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

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

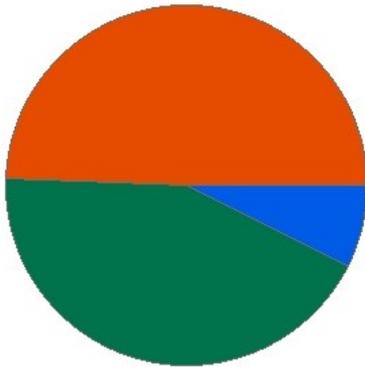


Mill Brook (MA71-07)

Location:	Headwaters south of Massachusetts Avenue, Lexington to inlet of Lower Mystic Lake, Arlington (portions culverted underground).
AU Type:	RIVER
AU Size:	3.9 MILES
Classification/Qualifier:	B

Mill Brook - MA71-07

Watershed Area: 5.47 square miles



Percent Agriculture
 Percent Natural
 Percent Developed
 Percent Wetland

Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	5.47	4.58	1.25	1.05
Agriculture	1%	1%	3.5%	3.6%
Developed	48.9%	51.3%	36.4%	39%
Natural	42.8%	41.5%	37.3%	37.7%
Wetland	7.3%	6.2%	22.7%	19.7%
Impervious Cover	34.2%			

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Physical Substrate Habitat Alterations*)		Unchanged
5	5	Benthic Macroinvertebrates		Unchanged
5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Unchanged
5	5	Fish Bioassessments		Added

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
(Physical Substrate Habitat Alterations*)	Unspecified Urban Stormwater (Y)	X				
Benthic Macroinvertebrates	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
Fish Bioassessments	Source Unknown (N)	X				

Recommendations

2022 Recommendations
ALU: Additional chloride data and continuous specific conductance data should be collected in Mill Brook (MA71-07) to track chloride trends. Given the regional trend of increasing chloride, the use of de-icing products containing chloride should be minimized by all parties (i.e., highways/roads, municipalities, businesses, residences) in the Mill Brook sub-watershed. Separately, further clean metals sampling should be conducted in the vicinity of the Brattle St crossing and potentially elsewhere in the subwatershed to better evaluate lead concentrations in the water column.

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	YES
2022 Use Attainment Summary	
<p>MassDEP staff conducted fish (Sample ID 5071), benthic (B0859), and water quality (W2401) surveys in Mill Brook roughly 45 ft downstream of the Brattle St crossing (Arlington) during summer 2013. The fish sample, collected in September, contained 102 American eel, but no fluvial or intolerant/moderately tolerant macrohabitat generalists. The July benthic sample IBI score was 32, indicating that conditions were severely degraded for a high gradient location. Some water quality data were indicative of good conditions in this WWF and can be summarized as follows: 3 short-term continuous probe deploys (total day count of 12) measured a minimum DO of 7.5 mg/L with a maximum diel shift of 0.8 mg/L; long-term continuous temperature data (67 days in the Summer Index period) had a maximum of 25.6 °C (short-term probe data had a maximum of 22.9 °C); pH ranged from 7.3-7.4 S.U. (n=3); maximum Total Ammonia Nitrogen was 0.140 mg/L (n=3); there were generally no exceedances among 3 clean metals samples or 3 aluminum samples (because dissolved Al data were compared to the total recoverable Al criteria, exceedances cannot be ruled out, however). Of concern, 2 of 3 lead measurements exceeded the CCC (chronic criterion) with toxic units of 1.4 and 2.4. Chloride ranged from 170-250 mg/L and specific conductance measurements ranged from 709-957 µs/cm (n=3 each), with the maxima exceeding the chronic criteria for chloride and estimated chloride, respectively. Although the seasonal average for total phosphorus was elevated at 0.068 mg/L (n=4), there was no other indication of nutrient enrichment (no observations of dense/very dense algae, maximum DO saturation 100%, maximum pH and DO diel shift good, as mentioned above).</p> <p>The Aquatic Life Use of Mill Brook (MA71-07) will continue to be assessed as Not Supporting. Data collected by MassDEP in 2013 supports the retention of the Benthic Macroinvertebrates impairment and the Alert for chronic chloride toxicity. The prior impairment for Physical Substrate Habitat Alterations is also being carried forward. New for this cycle, a Fish Bioassessments impairment is being added since only American eel were collected (lack of any fluvial or intolerant/moderately tolerant macrohabitat generalist species) and an Alert is being identified for lead (2 of 3 samples exceeded the chronic criterion).</p>	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
5071	MassDEP	Fish Community	Mill Brook	~45 ft DS/E of Brattle St, between Brattle Court and Laurel St.	42.42164	-71.16978
B0859	MassDEP	Benthic	Mill Brook/	[approximately 15 meters downstream/east from Brattle Street, Arlington, MA]	42.421301	-71.169094
W2401	MassDEP	Water Quality	Mill Brook	[approximately 45 feet downstream/east from Brattle Street, Arlington]	42.421301	-71.169094

Biological Monitoring Information

Benthic Macroinvertebrate Data

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

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

Station Code	Collection Date	Collection Method	Index Type	Organism Count	Index Score	Index Biological Condition Class
B0859	07/29/13	RBP kicknet	Central_Hills_300ct	292	32	SD

Fish Community Data and DELTS

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

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

Sample ID	Sample Date	Method	Sample Type	Gradient	Total Taxa	Total Ind	Cold Ind %	Fluvial Taxa	Fluvial Ind %	Intol Ind %	I/MT MG Taxa	I/MT MG Ind %	Notables	CFR	Species List
5071	09/18/13	NS	TP		1	102	0%	0	0%	0%	0	0%	No	No	AE,

Physico-chemical Water Quality Information

DO, pH, Temperature

MassDEP Short-term Continuous Dissolved Oxygen Data (2011-2018). (MassDEP Undated 7) (MassDEP Undated 4)

[Note: Most deploys 3-5 days in length; Day Count= total # of days over all deploys; XDADMin= 3-5 Day Average of the Daily Minima, XDADA= 3-5 Day Average of the Daily Average, CW= Coldwater, WW= Warmwater]

Station Code	Data Year	Deploys Count	Day Count	DO Min (mg/L)	Min XDADMin (mg/L)	Min XDADA (mg/L)	Delta DO Max (mg/L)	Count CW XDADMin <6.0	Count CW 1Day Min <5.0	Count WW Early Life Stages XDADA <6.5	Count WW Early Life Stages 1Day Min <5.0	Count WW Other Life Stages XDADMin <5.0	Count WW Other Life Stages 1Day Min <4.0
W2401	2013	3	12	7.5	7.7	7.9	0.8	0	0	0	0	0	0

MassDEP Discrete Dissolved Oxygen Data (2011-2018). (MassDEP Undated 7) (MassDEP Undated 4)

[CW= Coldwater, WW= Warmwater]

Station Code	Start Date	End Date	DO Count	DO Min (mg/L)	DO Avg (mg/L)	Count CW <5.0	Count WW Early Life Stages <5.0	Count WW Other Life Stages <4.0
W2401	05/29/13	09/25/13	3	8.2	8.5	0	0	0

MassDEP Long-term Continuous Temperature Data (Summer Index 2011-2018). (MassDEP Undated 7) (MassDEP Undated 4)

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

Station Code	Start Date	End Date	Index Count	7day Count	Max Daily Mean (°C)	Max Temp (°C)	Max 7DADM (°C)	Max 7DADA (°C)	Count CWTier1 7DADM >20	Count CWTier1 Daily Mean >23.5	Count CWTier2 7DADA >21	Count CWTier2 Daily Mean >24.1	Count WW 7DADM >27.7	Count WW Daily Mean >28.3
W2401	06/01/13	08/06/13	67	63	24.1	25.6	24.3	23.3	50	3	39	0	0	0

MassDEP Short-term Continuous Temperature Data (Summer Index 2011-2018). (MassDEP Undated 7) (MassDEP Undated 4)

[Summer Index is June 1 – Sept 15; Most Deploys 3-5 Days in Length; Day Count= total # of days over all deploys; Max Daily Mean= Maximum 24-Hour Average, XDADM= 3-5 Day Average of the Daily Maxima, XDADA= 3-5 Day Average of the Daily Average, CW= Coldwater, WW= Warmwater]

Station Code	Data Year	Deploys Count	Day Count	Max Daily Mean (°C)	Max Temp (°C)	Max XDADM (°C)	Max XDADA (°C)	Count CWTier1 XDADM >20	Count CWTier1 Daily Mean >23.5	Count CWTier2 XDADA >21	Count CWTier2 Daily Mean >24.1	Count WW XDADM >27.7	Count WW Daily Mean >28.3
W2401	2013	3	12	22.1	22.9	22.5	21.5	3	0	1	0	0	0

24-hour Rolling Average Calculations for MassDEP Short- and Long-term Continuous Temperature Data (Summer Index 2011-2018). (MassDEP Undated 7) (MassDEP Undated 4)

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

Station Code	Start Date	End Date	Count Days Deployed	24hr Rolling Count	Max 24hr Avg Rolling Temp (°C)	Count CWTier1 24hr Avg Rolling >23.5 °C	Count CWTier2 24hr Avg Rolling >24.1 °C	Count WW 24hr Avg Rolling >28.3 °C
W2401	06/01/13	08/06/13	67	3216	24.3	197	47	0
W2401	06/27/13	09/03/13	68	579	22.4	0	0	0

MassDEP Discrete Temperature Data (2011-2018). (MassDEP Undated 7) (MassDEP Undated 4)

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

Station Code	Start Date	End Date	Temp Count	Index Count	Temp Max (°C)	Temp Avg (°C)	Count CW >20	Count CW >22	Count WW >28.3	Count WW >30.3
W2401	05/29/13	09/25/13	5	3	22.4	18.0	2	1	0	0

MassDEP Discrete pH Data (2011-2018). (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Start Date	End Date	pH Count	pH Min (SU)	pH Max (SU)	pH Count <6.5 & >8.3	pH Count <6.0 & >8.8
W2401	05/29/13	09/25/13	3	7.3	7.4	0	0

Nutrients (Primary Producer Screening, Physico-chemical Screening)

MassDEP Nutrient Enrichment Indicator Data (2011-2018). (MassDEP Undated 7) (MassDEP Undated 4)

[Summer seasonal total phosphorus data collected May-Sept]

Station Code	Data Year	Seasonal TP Count	Seasonal TP Min (mg/L)	Seasonal TP Max (mg/L)	Seasonal TP Avg (mg/L)	Delta DO Max (mg/L)	Delta DO Avg (mg/L)	DO Sat Max (%)	pH Max (SU)	Count Algal Obsv.	Dense/V. Dense Film/Fila. Algae
W2401	2013	4	0.04	0.110	0.068	0.8	0.6	100.3	7.4	6	0

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

MassDEP Clean Metals Water Column Data (2011-2018), Acute Criteria Violations. (MassDEP Undated 7) (MassDEP Undated 4)

[CMC= Criterion Maximum Concentration, TU= Toxic Unit]

Station Code	Data Year	Metals Count	As CMC TU >1	Cd CMC TU >1	Cr III CMC TU >1	Cu CMC TU >1	Pb CMC TU >1	Ni CMC TU >1	Ag CMC TU >1	Zn CMC TU >1
W2401	2013	3	0	0	0	0	0	0	0	0

MassDEP Clean Metals Water Column Data (2011-2018), Chronic Criteria Violations. (MassDEP Undated 7) (MassDEP Undated 4)

[CCC= Criterion Continuous Concentration, TU= Toxic Unit]

Station Code	Data Year	Metals Count	As CCC TU >1	Cd CCC TU >1	Cr III CCC TU >1	Cu CCC TU >1	Pb CCC TU >1	Ni CCC TU >1	Se CCC TU >1	Zn CCC TU >1
W2401	2013	3	0	0	0	0	2	0	0	0

MassDEP Clean Metals Water Column Data (2011-2018), Selected TU Calculations. (MassDEP Undated 7) (MassDEP Undated 4)

[CMC= Criterion Maximum Concentration, CCC= Criterion Continuous Concentration, TU= Toxic Unit]

Station Code	Sample Date	Cd CMC TU	Cd CCC TU	Cu CMC TU	Cu CCC TU	Pb CMC TU	Pb CCC TU
W2401	06/14/13	0.2	0.5	0.5	0.73	0.1	2.4
W2401	07/26/13	0.2	0.5	0.6	0.85	0.1	1.4
W2401	09/20/13	0.1	0.3	0.2	0.29	0.0	0.1

MassDEP Dissolved Aluminum Water Column Data (2011-2018). (MassDEP Undated 7) (MassDEP Undated 4)

[Since only dissolved aluminum data were available, these data were compared to the default freshwater criteria for total recoverable aluminum (TRA), presented in Appendix E of MassDEP's 2022 CALM. As dissolved Al is a fraction of TRA, an exceedance count of 0 does not rule out violations of the TRA criteria. CMC= Criterion Maximum Concentration, CCC= Criterion Continuous Concentration, TU= Toxic Unit]

Station Code	Data Year	Dissolved Al Count	Al Min (mg/L)	Al Max (mg/L)	Al Avg (mg/L)	Al CMC TU Max	Al CCC TU Max	Al CMC TU >1	Al CCC TU >1
W2401	2013	3	0.005	0.055	0.027	0.1	0.1	0	0

MassDEP Total Ammonia Nitrogen (TAN) Data (2011-2018). (MassDEP Undated 7) (MassDEP Undated 4)

[TAN= NH3 + NH4+]

Station Code	Data Year	TAN Count	TAN Min (mg/L)	TAN Max (mg/L)	TAN Avg (mg/L)	Count TAN >Chronic	Count TAN >Acute
W2401	2013	3	0.090	0.140	0.117	0	0

MassDEP Chloride Data (2011-2018). (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Chloride Count	Chloride Min (mg/L)	Chloride Max (mg/L)	Chloride Avg (mg/L)	Count Chloride >230	Count Chloride >860
W2401	2013	3	170	250	207	1	0

MassDEP Discrete Specific Conductance Data (2011-2018) Compared to Estimated Chloride Criteria. (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Start Date	End Date	SpCond Count	SpCond Min ($\mu\text{S}/\text{cm}$)	SpCond Max ($\mu\text{S}/\text{cm}$)	Count SpCond >904	Count SpCond >994	Count SpCond >3193	Count SpCond >3512	Consecutive sets >904	Consecutive sets >994
W2401	05/29/13	09/25/13	3	709	957	1	0	0	0	0	0

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Fish toxics sampling has not been conducted in Mill Brook (MA71-07), so the Fish Consumption Use is Not Assessed.	

Aesthetic

2022 Use Attainment	Alert
Fully Supporting	YES
2022 Use Attainment Summary	
The Aesthetics Use for Mill Brook (MA71-07) is assessed as Fully Supporting based on observations (generally no odors, growths, or turbidity) by MassDEP staff during field surveys at station W2401/MAP2-414 (approximately 45 feet downstream/east from Brattle Street, Arlington) in summer 2013 (n=8). However, the use is identified with an Alert due to observations of objectionable deposits (i.e., trash) during all site visits.	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2401	MassDEP	Water Quality	Mill Brook	[approximately 45 feet downstream/east from Brattle Street, Arlington]	42.421301	-71.169094

Aesthetic Observations

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

Station Code	Waterbody	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2401	Mill Brook	2013	8	The Aesthetics use for Mill Brook (MA71-07) is assessed as Fully Supporting based on observations (generally no odors, growths, or turbidity) by MassDEP staff during field surveys at station W2401/MAP2-414 in summer 2013 (n=8). However, the use is identified with an Alert status due to observations of objectionable deposits (i.e., trash) during all site visits.

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2018) (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
W2401	2013	8	6	0

MassDEP Aesthetics Observations (2011-2018) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2401	Mill Brook	2013	Color	Greyish	1	8
W2401	Mill Brook	2013	Color	Light Yellow/Tan	5	8
W2401	Mill Brook	2013	Color	None	1	8
W2401	Mill Brook	2013	Color	NR	1	8
W2401	Mill Brook	2013	Objectionable Deposits	Yes	8	8
W2401	Mill Brook	2013	Odor	Chlorine	1	8
W2401	Mill Brook	2013	Odor	Effluent (Treated)	1	8
W2401	Mill Brook	2013	Odor	Musty (Basement)	1	8
W2401	Mill Brook	2013	Odor	None	5	8
W2401	Mill Brook	2013	Scum	No	6	8
W2401	Mill Brook	2013	Scum	Yes	2	8
W2401	Mill Brook	2013	Turbidity	None	5	8
W2401	Mill Brook	2013	Turbidity	Slightly Turbid	3	8

Primary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	

E. coli bacteria sampling was conducted by MassDEP staff and MyRWA staff/volunteers during the recreational season (Apr 1 – Oct 31) at multiple locations in Mill Brook (MA71-07). MassDEP staff collected bacteria samples between May and September 2013 (n=5) from a station 45 feet downstream of Brattle Street in Arlington (W2401). Analysis of the low frequency data indicated that 100% of intervals had GMs >126 cfu/100mL and all 5 samples exceeded the 410 cfu/100mL STV. MyRWA staff/volunteers collected bacteria samples roughly monthly during the recreational season (generally, n=7/yr) from 2011-2019 at a site near the mouth of Mill Brook at Mt. Pleasant Cemetery in Arlington, upstream of a dam (MyRWA_MIB001). Analysis of the moderate frequency data indicated that 100% of intervals in the most recent five years had GMs >126 cfu/100mL and 5-7 samples each year exceeded the 410 cfu/100mL STV. While bacteria data were collected infrequently at several additional MyRWA stations (MyRWA_SIBFRM, MyRWA_MIB11-6, MyRWA_MIB005), sample size was insufficient to allow analysis of these data for use attainment decisions. The Primary Contact Recreational Use for Mill Brook (MA71-07) will continue to be assessed as Not Supporting since the recent MyRWA and MassDEP bacteria data indicate that the prior impairment for Escherichia Coli (*E. Coli*) should be carried forward.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2401	MassDEP	Water Quality	Mill Brook	[approximately 45 feet downstream/east from Brattle Street, Arlington]	42.421301	-71.169094
MyRWA_MIB001	Mystic River Watershed Association	Water Quality	Mill Brook	Mill Brook at Mt. Pleasant Cemetery in Arlington; upstream of the dam	42.422342	-71.149475
MyRWA_MIB005	Mystic River Watershed Association	Water Quality	Mill Brook	None submitted by MYRWA	42.4184861	-71.15253611
MyRWA_MIB11-6	Mystic River Watershed Association	Water Quality	Mill Brook	Centerline near OF 11-6, under Fottler Ave culvert	42.428287	-71.19674
MyRWA_SIBFRM	Mystic River Watershed Association	Water Quality	Sickle Brook	DS from Mass Ave, where brook crosses road, near Wilson Farms	42.427735	-71.204993

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MassDEP Undated 7) (MassDEP Undated 4) (MyRWA 2019) (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
W2401	MassDEP	<i>E. coli</i>	05/30/13	09/25/13	5	990	2990	1883
MyRWA_MIB001	Mystic River Watershed Association	<i>E. coli</i>	04/20/11	10/19/11	7	480	2010	976
MyRWA_MIB001	Mystic River Watershed Association	<i>E. coli</i>	04/18/12	10/17/12	7	364	24200	1190
MyRWA_MIB001	Mystic River Watershed Association	<i>E. coli</i>	04/17/13	10/16/13	7	86	1720	776
MyRWA_MIB001	Mystic River Watershed Association	<i>E. coli</i>	04/16/14	10/15/14	7	228	8160	945

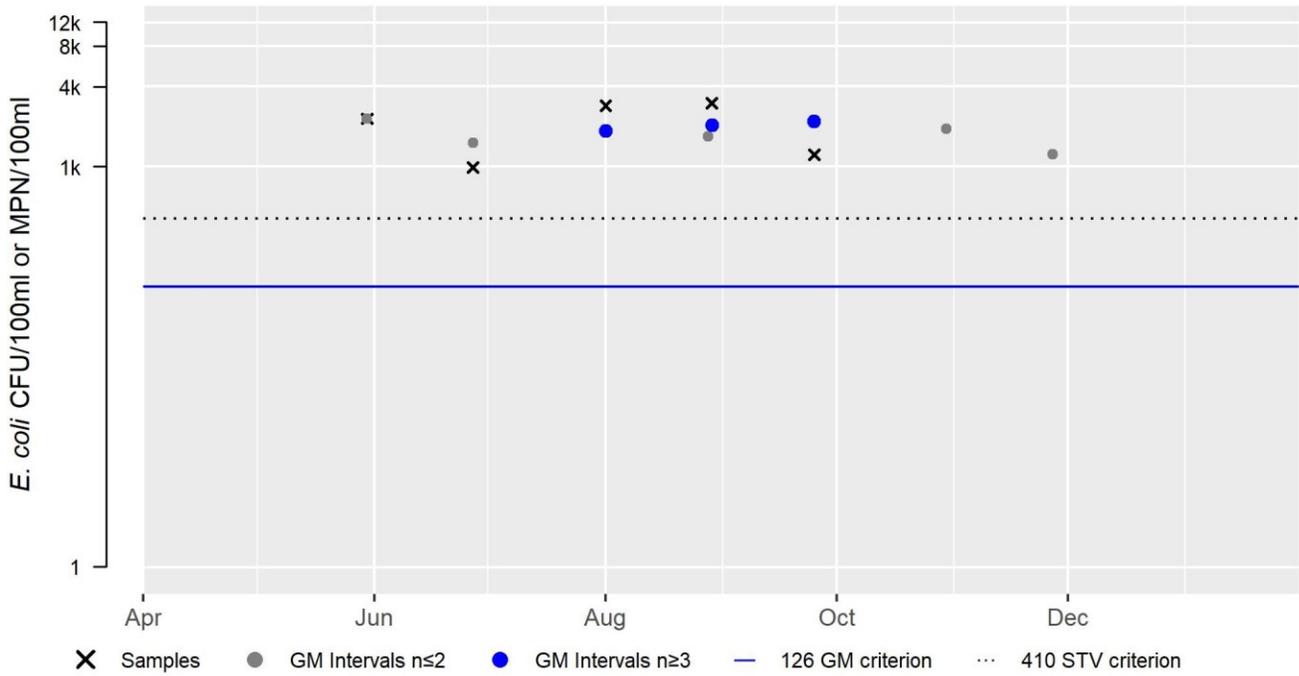
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MyRWA_MIB001	Mystic River Watershed Association	E. coli	04/15/15	10/21/15	6	189	1380	649
MyRWA_MIB001	Mystic River Watershed Association	E. coli	04/20/16	10/19/16	7	30	1190	448
MyRWA_MIB001	Mystic River Watershed Association	E. coli	04/19/17	10/18/17	7	171	4350	840
MyRWA_MIB001	Mystic River Watershed Association	E. coli	04/18/18	10/17/18	7	464	9800	1888
MyRWA_MIB001	Mystic River Watershed Association	E. coli	04/17/19	10/16/19	7	480	884	662
MyRWA_MIB005	Mystic River Watershed Association	E. coli	10/24/12	10/24/12	1	291	291	291
MyRWA_MIB11-6	Mystic River Watershed Association	E. coli	10/24/12	10/24/12	1	21	21	21
MyRWA_SIBFRM	Mystic River Watershed Association	E. coli	10/24/12	10/24/12	1	34	34	34

W2401 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	5
SeasGM	1883
#GMI	3
#GMI Ex	3
%GMI Ex	100
n>STV	5
%n>STV	100

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

2013

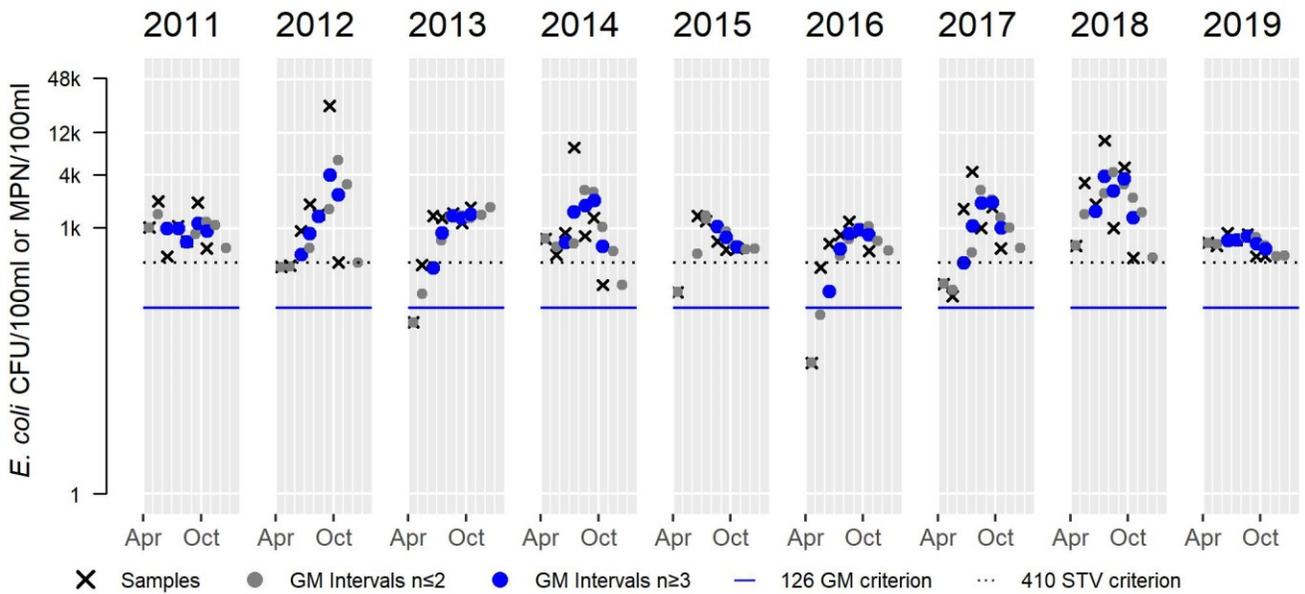


MyRWA_MIB001 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res
Samples	7	Samples	7	Samples	7	Samples	7	Samples	6	Samples	7	Samples	7	Samples	7
SeasGM	976	SeasGM	1190	SeasGM	776	SeasGM	945	SeasGM	649	SeasGM	448	SeasGM	840	SeasGM	1888
#GMI	5	#GMI	5	#GMI	5	#GMI	5	#GMI	3	#GMI	5	#GMI	5	#GMI	5
#GMI Ex	5	#GMI Ex	5	#GMI Ex	5	#GMI Ex	5	#GMI Ex	3	#GMI Ex	5	#GMI Ex	5	#GMI Ex	5
%GMI Ex	100	%GMI Ex	100	%GMI Ex	100	%GMI Ex	100	%GMI Ex	100	%GMI Ex	100	%GMI Ex	100	%GMI Ex	100
n>STV	7	n>STV	4	n>STV	5	n>STV	6	n>STV	5	n>STV	5	n>STV	5	n>STV	7
%n>STV	100	%n>STV	57	%n>STV	71	%n>STV	86	%n>STV	83	%n>STV	71	%n>STV	71	%n>STV	100

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

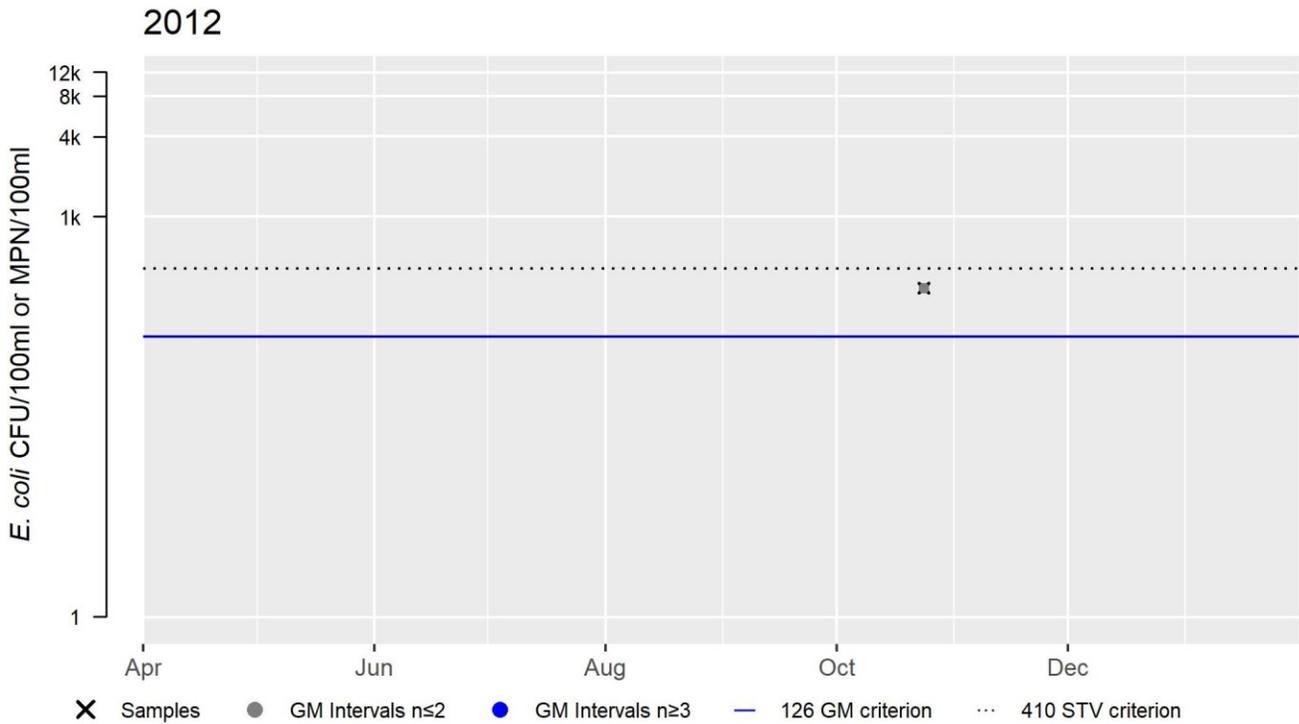
Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	100	100



MyRWA_MIB005 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	291
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

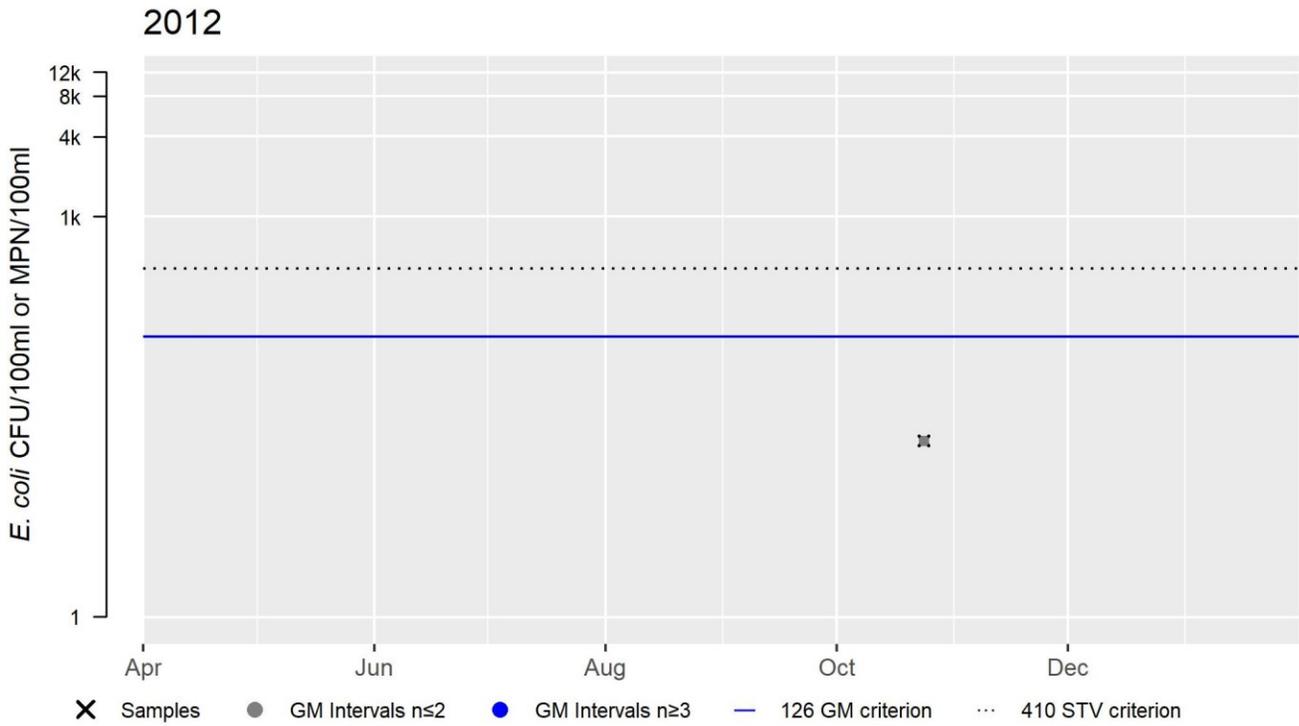
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exceedances; %GMI Ex = percent GMI Exceedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



MyRWA_MIB11-6 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	21
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

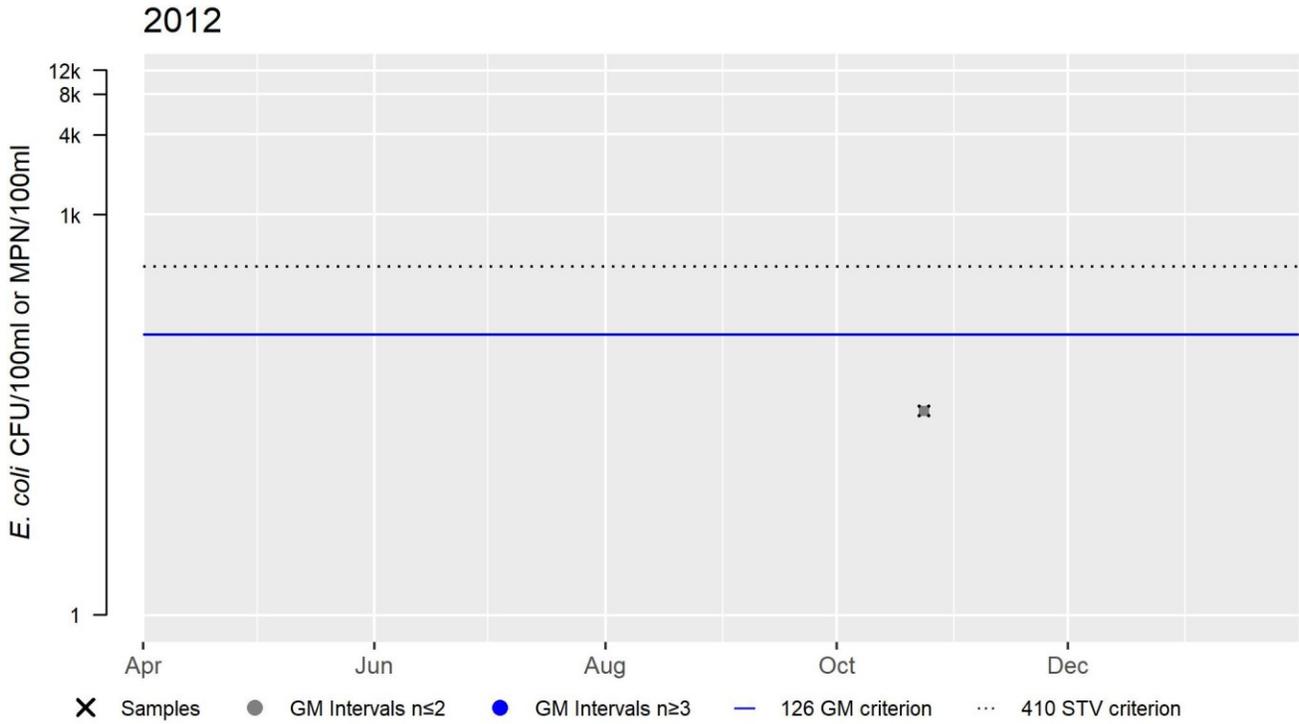
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exceedances; %GMI Ex = percent GMI Exceedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



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

Var	Res
Samples	1
SeasGM	34
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

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



Secondary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	

E. coli bacteria sampling was conducted by MassDEP staff and MyRWA staff/volunteers at multiple locations in Mill Brook (MA71-07). MassDEP staff collected bacteria samples between May and September 2013 (n=5) from a station 45 feet downstream of Brattle Street in Arlington (W2401). Analysis of the low frequency data indicated that 100% of intervals had GMs >630 cfu/100mL and 3 samples exceeded the 1260 cfu/100mL STV. MyRWA staff/volunteers collected bacteria samples roughly monthly (n=10-12/yr) from 2011-2019 at a site near the mouth of Mill Brook at Mt. Pleasant Cemetery in Arlington, upstream of a dam (MyRWA_MIB001). Analysis of the moderate frequency data indicated that >20% of intervals (33-60%) in each of the most recent 5 years of data had GMs >630 cfu/100mL and that cumulatively, 48% of intervals in the most recent 5 years exceeded the GM criterion; these metrics are indicative of an impaired condition, according to the 2022 CALM. Note that 4 samples exceeded the 1260 cfu/100mL STV in 2 of the most recent 5 years, while there were fewer exceedances (n= 0-1) in the other 3 years. While bacteria data were collected infrequently at several additional MyRWA stations (MyRWA_SIBFRM, MyRWA_MIB11-6, MyRWA_MIB005), sample size was insufficient to allow analysis of these data for use attainment decisions. The Secondary Contact Recreational Use for Mill Brook (MA71-07) will continue to be assessed as Not Supporting since the MyRWA and MassDEP bacteria data indicate that the prior impairment for Escherichia Coli (*E. Coli*) should be carried forward.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2401	MassDEP	Water Quality	Mill Brook	[approximately 45 feet downstream/east from Brattle Street, Arlington]	42.421301	-71.169094
MyRWA_MIB001	Mystic River Watershed Association	Water Quality	Mill Brook	Mill Brook at Mt. Pleasant Cemetery in Arlington; upstream of the dam	42.422342	-71.149475
MyRWA_MIB005	Mystic River Watershed Association	Water Quality	Mill Brook	None submitted by MYRWA	42.4184861	-71.15253611
MyRWA_MIB11-6	Mystic River Watershed Association	Water Quality	Mill Brook	Centerline near OF 11-6, under Fottler Ave culvert	42.428287	-71.19674
MyRWA_SIBFRM	Mystic River Watershed Association	Water Quality	Sickle Brook	DS from Mass Ave, where brook crosses road, near Wilson Farms	42.427735	-71.204993

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MassDEP Undated 7) (MassDEP Undated 4) (MyRWA 2019) (MassDEP Undated 2)

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

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
W2401	MassDEP	<i>E. coli</i>	05/30/13	09/25/13	5	990	2990	1883
MyRWA_MIB001	Mystic River Watershed Association	<i>E. coli</i>	01/19/11	12/14/11	12	31	2010	486

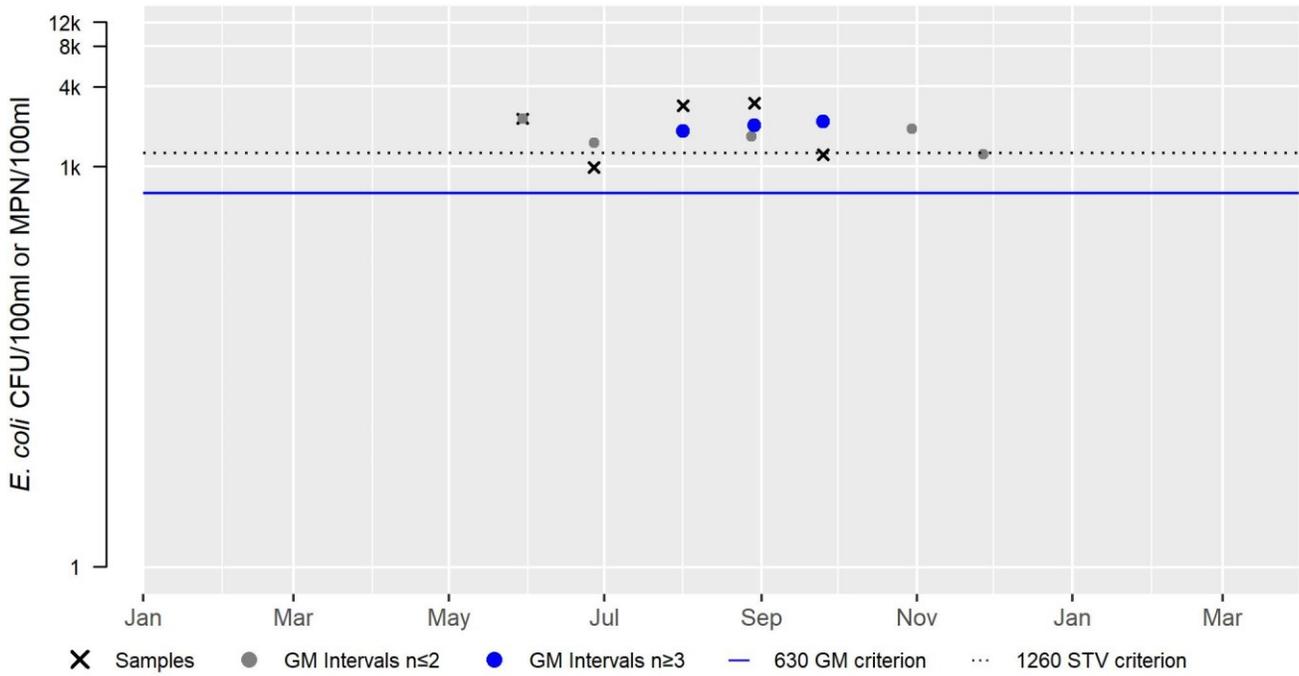
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MyRWA_MIB001	Mystic River Watershed Association	E. coli	01/18/12	12/19/12	12	20	24200	574
MyRWA_MIB001	Mystic River Watershed Association	E. coli	01/16/13	11/20/13	11	86	1720	616
MyRWA_MIB001	Mystic River Watershed Association	E. coli	01/15/14	12/17/14	12	228	8160	971
MyRWA_MIB001	Mystic River Watershed Association	E. coli	01/21/15	12/16/15	10	173	1380	441
MyRWA_MIB001	Mystic River Watershed Association	E. coli	01/20/16	12/21/16	12	30	1480	409
MyRWA_MIB001	Mystic River Watershed Association	E. coli	01/18/17	12/20/17	12	97	4350	632
MyRWA_MIB001	Mystic River Watershed Association	E. coli	01/17/18	12/19/18	12	74	9800	775
MyRWA_MIB001	Mystic River Watershed Association	E. coli	01/16/19	10/16/19	10	121	884	457
MyRWA_MIB005	Mystic River Watershed Association	E. coli	10/24/12	10/24/12	1	291	291	291
MyRWA_MIB11-6	Mystic River Watershed Association	E. coli	10/24/12	10/24/12	1	21	21	21
MyRWA_SIBFRM	Mystic River Watershed Association	E. coli	10/24/12	10/24/12	1	34	34	34

W2401 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	5
SeasGM	1883
#GMI	3
#GMI Ex	3
%GMI Ex	100
n>STV	3
%n>STV	60

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

2013

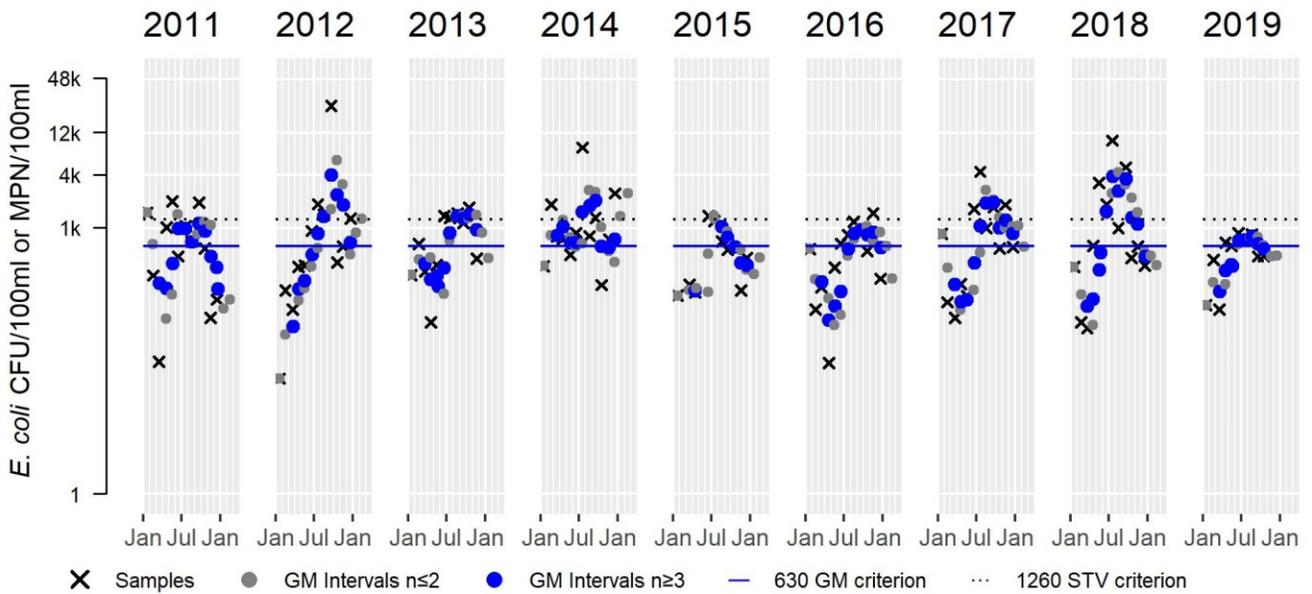


MyRWA_MIB001 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res														
Samples	12	Samples	12	Samples	11	Samples	12	Samples	10	Samples	12	Samples	12	Samples	10
SeasGM	486	SeasGM	574	SeasGM	616	SeasGM	971	SeasGM	441	SeasGM	409	SeasGM	632	SeasGM	775
#GMI	11	#GMI	10	#GMI	10	#GMI	10	#GMI	6	#GMI	10	#GMI	10	#GMI	11
#GMI Ex	5	#GMI Ex	6	#GMI Ex	5	#GMI Ex	8	#GMI Ex	2	#GMI Ex	4	#GMI Ex	6	#GMI Ex	6
%GMI Ex	45	%GMI Ex	60	%GMI Ex	50	%GMI Ex	80	%GMI Ex	33	%GMI Ex	40	%GMI Ex	60	%GMI Ex	55
n>STV	3	n>STV	4	n>STV	4	n>STV	4	n>STV	1	n>STV	1	n>STV	4	n>STV	4
%n>STV	25	%n>STV	33	%n>STV	36	%n>STV	33	%n>STV	10	%n>STV	8	%n>STV	33	%n>STV	33

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

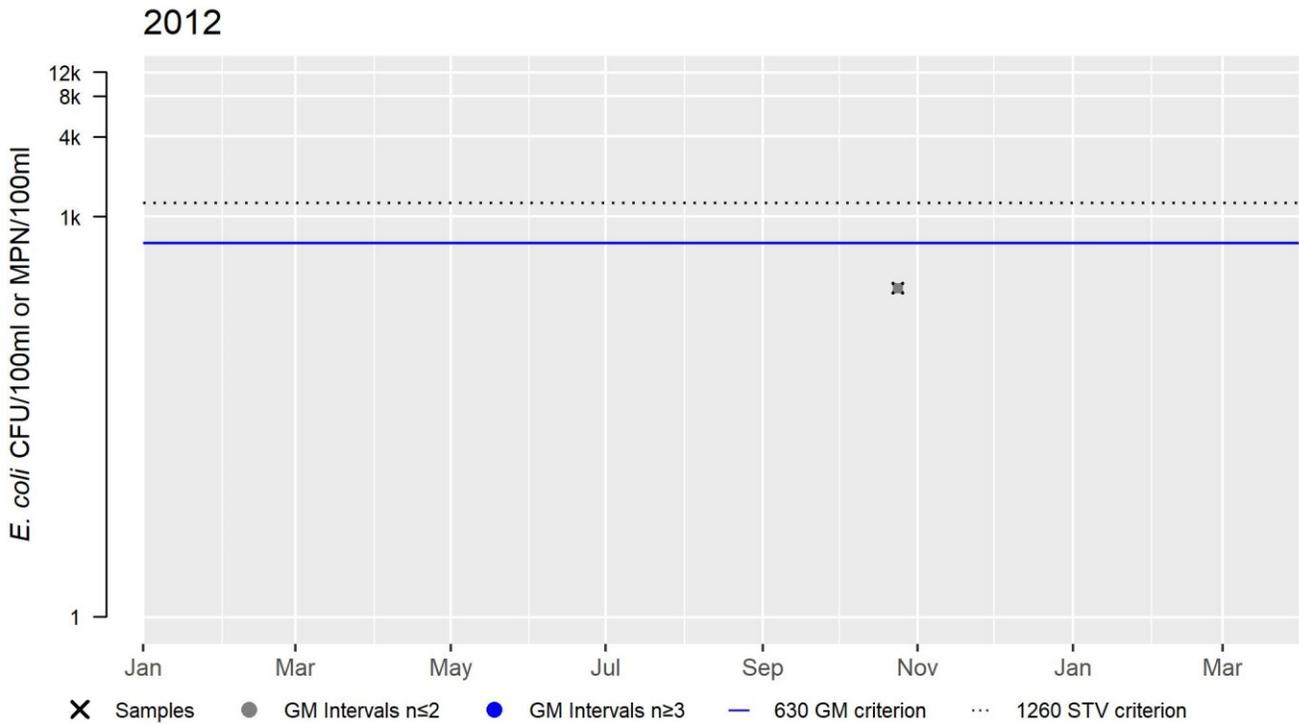
Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	53	48



MyRWA_MIB005 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	291
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

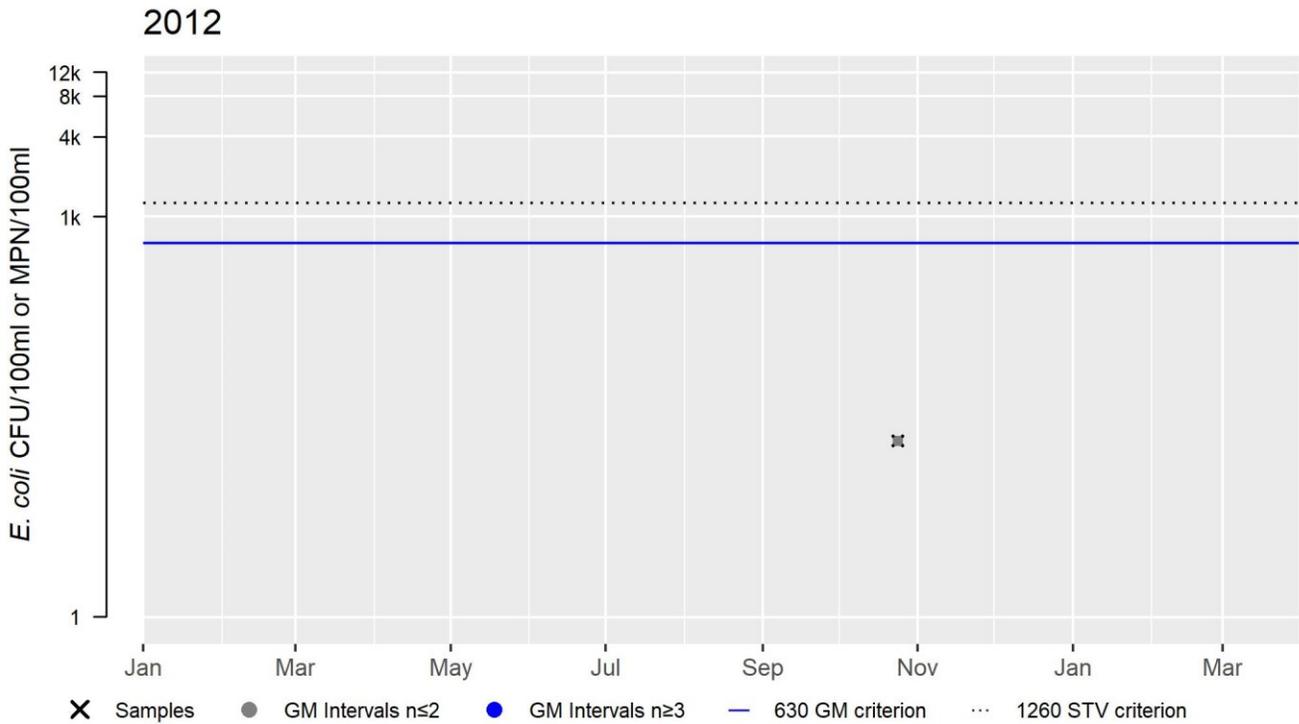
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exceedances; %GMI Ex = percent GMI Exceedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



MyRWA_MIB11-6 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	21
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

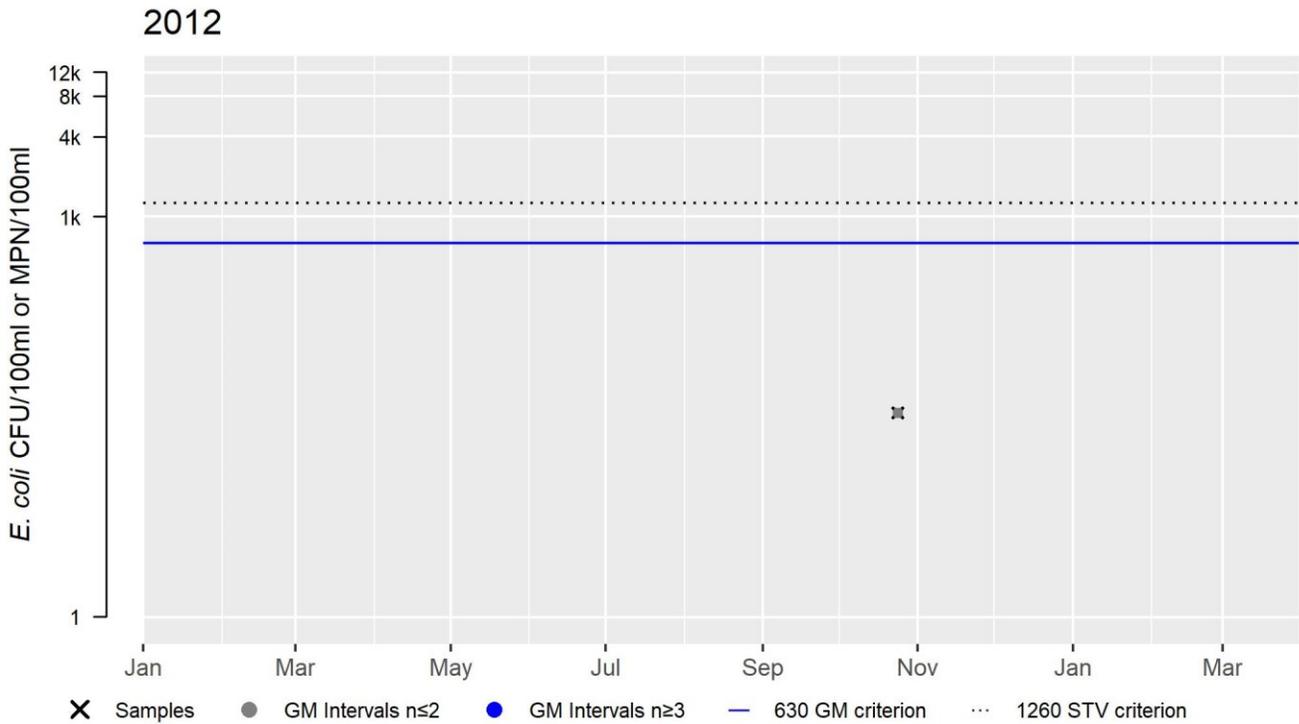
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exceedances; %GMI Ex = percent GMI Exceedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



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

Var	Res
Samples	1
SeasGM	34
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

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



Mill Creek (MA71-08)

Location:	From Route 1, Chelsea/Revere to confluence with Chelsea River, Chelsea/Revere.
AU Type:	ESTUARY
AU Size:	0.02 SQUARE MILES
Classification/Qualifier:	SB: SFR

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Cause Unknown [Contaminants in Fish and/or Shellfish]		Unchanged
5	5	Enterococcus	R1_MA_2019_01	Added
5	5	Fecal Coliform	R1_MA_2019_01	Unchanged
5	5	PCBs in Fish Tissue		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Shellfish Harvesting	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Cause Unknown [Contaminants in Fish and/or Shellfish]	Source Unknown (N)		X				
Enterococcus	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)					X	X
Enterococcus	Source Unknown (N)					X	X
Fecal Coliform	Source Unknown (N)			X			
PCBs in Fish Tissue	Source Unknown (N)		X				

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Assessed	YES
2022 Use Attainment Summary	
No recent data are available for Mill Creek (MA71-08), so the Aquatic Life Use is Not Assessed. The historical Alert for low DO (Carr 2010) is being carried forward.	

Fish Consumption

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
The Fish Consumption Use for Mill Creek (MA71-08) will continue to be assessed as Not Supporting with the Cause Unknown (Contaminants in Fish and/or Shellfish) and PCBs in Fish Tissue impairments being carried forward. As part of the broader advisory for Boston Harbor and all coastal waters that drain into it, MassDPH recommends that pregnant women, women who may become pregnant, nursing mothers, and children under 12 years old not eat lobsters, flounder, soft-shell clams and bivalves from these waters (MassDPH 2017).	

Shellfish Harvesting

2022 Use Attainment	Alert
Not Supporting	YES
2022 Use Attainment Summary	
<p>Mill Creek (MA71-08): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.01 sq mi (49%). The sum of the approved, conditionally approved, and restricted shellfish growing areas represents 0 sq mi (0%). The prohibited shellfish growing area represents 0.01 sq mi (49%). There is insufficient information available to assess the Shellfish Harvesting Use because the growing areas within this AU are classified as either entirely prohibited or a combination of prohibited and approved, conditionally approved, and/or restricted. Alert due to prohibited area \geq 0.0001 sq mi. There is insufficient information available to delist the existing Fecal Coliform impairment for Mill Creek (MA71-08) so the Shellfish Harvesting Use is evaluated as not supporting.</p>	

Shellfish Growing Area Classifications

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

Area Name	Waterbody/Area Description	Classification	Area (Sq. Mi.)	Area (% of AU)
GBH4.0	Boston Inner Harbor	Prohibited	0.00997	48.6%

Aesthetic

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent data are available for Mill Creek (MA71-08), so the Aesthetics Use is Not Assessed.	

Primary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
<p>MyRWA staff/volunteers collected Enterococci bacteria samples in Mill Creek (MA71-08) from the southeast side of the Broadway bridge (Chelsea/Revere, Sample ID MyRWA_MIC004). The low/moderate frequency bacteria data (n= 6-8/yr) were collected during the 2012-2019 recreational seasons (Apr 1 – Oct 31). Analysis of the data indicated that in all the most recent 5 years of data, 100% of GM intervals exceeded 35 cfu/100mL and that 3-6 samples in each of these years exceeded the 130 cfu/100mL STV.</p> <p>The Primary Contact Recreational Use of Mill Creek (MA71-08) is assessed as Not Supporting. An Enterococcus impairment is being added based on the data provided by MyRWA.</p>	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MyRWA_MIC004	Mystic River Watershed Association	Water Quality	Mill Creek	Mill Creek at Broadway Bridge on Chelsea/Revere line; sampled from south east side of Broadway bridge	42.40334	-71.01803

*Bacteria Data***Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MyRWA 2019)**
(MassDEP Undated 2)

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

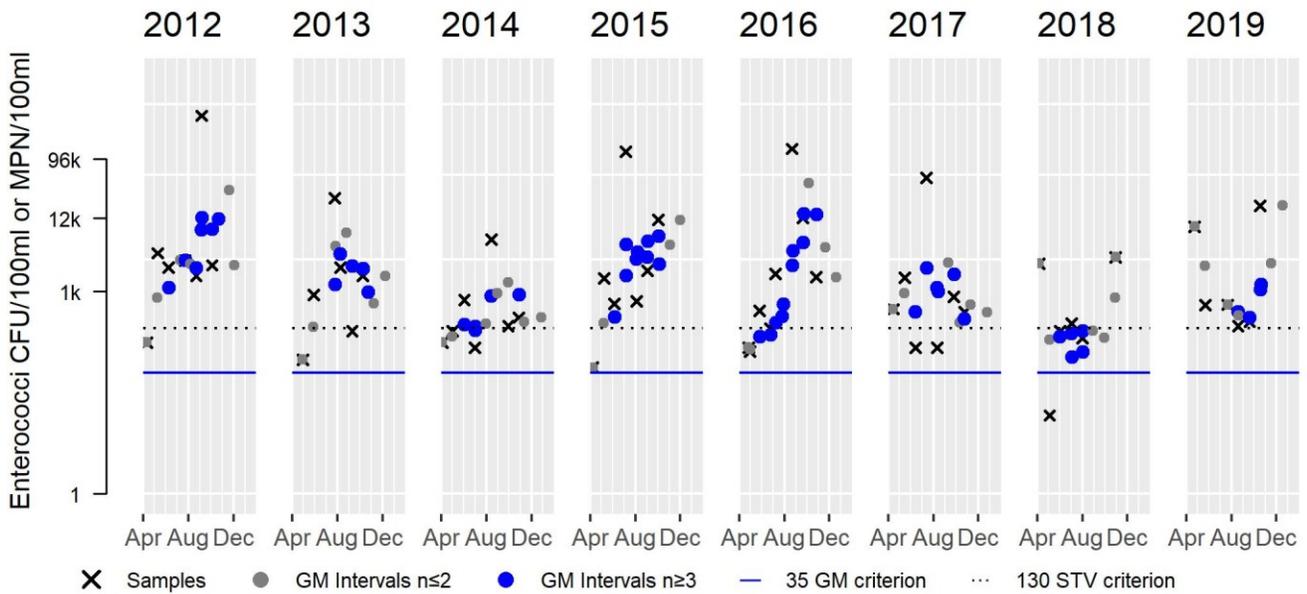
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MyRWA_MIC004	Mystic River Watershed Association	Enterococci	04/10/12	10/04/12	7	86	69000	1159
MyRWA_MIC004	Mystic River Watershed Association	Enterococci	04/29/13	10/09/13	6	52	6100	430
MyRWA_MIC004	Mystic River Watershed Association	Enterococci	04/03/14	10/28/14	7	74	1800	194
MyRWA_MIC004	Mystic River Watershed Association	Enterococci	04/08/15	10/02/15	7	41	24000	721
MyRWA_MIC004	Mystic River Watershed Association	Enterococci	04/26/16	10/26/16	8	66.3	26000	512
MyRWA_MIC004	Mystic River Watershed Association	Enterococci	04/14/17	10/24/17	7	74	11000	343
MyRWA_MIC004	Mystic River Watershed Association	Enterococci	04/05/18	10/29/18	6	10	1067	160
MyRWA_MIC004	Mystic River Watershed Association	Enterococci	04/23/19	10/18/19	6	140	4884.4	518

MyRWA_MIC004 Enterococci (90-day Interval), Primary Contact Recreational Use Season

Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res
Samples	7	Samples	6	Samples	7	Samples	7	Samples	8	Samples	7	Samples	6	Samples	6
SeasGM	1159	SeasGM	430	SeasGM	194	SeasGM	721	SeasGM	512	SeasGM	343	SeasGM	160	SeasGM	518
#GMI	7	#GMI	5	#GMI	5	#GMI	9	#GMI	10	#GMI	6	#GMI	5	#GMI	4
#GMI Ex	7	#GMI Ex	5	#GMI Ex	5	#GMI Ex	9	#GMI Ex	10	#GMI Ex	6	#GMI Ex	5	#GMI Ex	4
%GMI Ex	100	%GMI Ex	100	%GMI Ex	100	%GMI Ex	100	%GMI Ex	100	%GMI Ex	100	%GMI Ex	100	%GMI Ex	100
n>STV	6	n>STV	4	n>STV	4	n>STV	6	n>STV	5	n>STV	5	n>STV	3	n>STV	6
%n>STV	86	%n>STV	67	%n>STV	57	%n>STV	86	%n>STV	62	%n>STV	71	%n>STV	50	%n>STV	100

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	100	100



Shellfish Growing Area Classifications

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

Summary
Mill Creek (MA71-08): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.01 sq mi (49%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Primary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Secondary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO

2022 Use Attainment Summary

MyRWA staff/volunteers collected Enterococci bacteria samples in Mill Creek (MA71-08) from the southeast side of the Broadway bridge (Chelsea/Revere, Sample ID MyRWA_MIC004). The moderate frequency bacteria data (n= 9-13/yr) were collected throughout the year from 2012-2019. Analysis of the data indicated that in all the most recent 5 years of data, >20% of GM intervals (33-93%) exceeded 175 cfu/100mL and that 4-8 samples in each of these years exceeded the 350 cfu/100mL STV.

The Secondary Contact Recreational Use of Mill Creek (MA71-08) is assessed as Not Supporting. An Enterococcus impairment is being added based on data provided by MyRWA.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MyRWA_MIC004	Mystic River Watershed Association	Water Quality	Mill Creek	Mill Creek at Broadway Bridge on Chelsea/Revere line; sampled from south east side of Broadway bridge	42.40334	-71.01803

*Bacteria Data***Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MyRWA 2019)**

(MassDEP Undated 2)

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

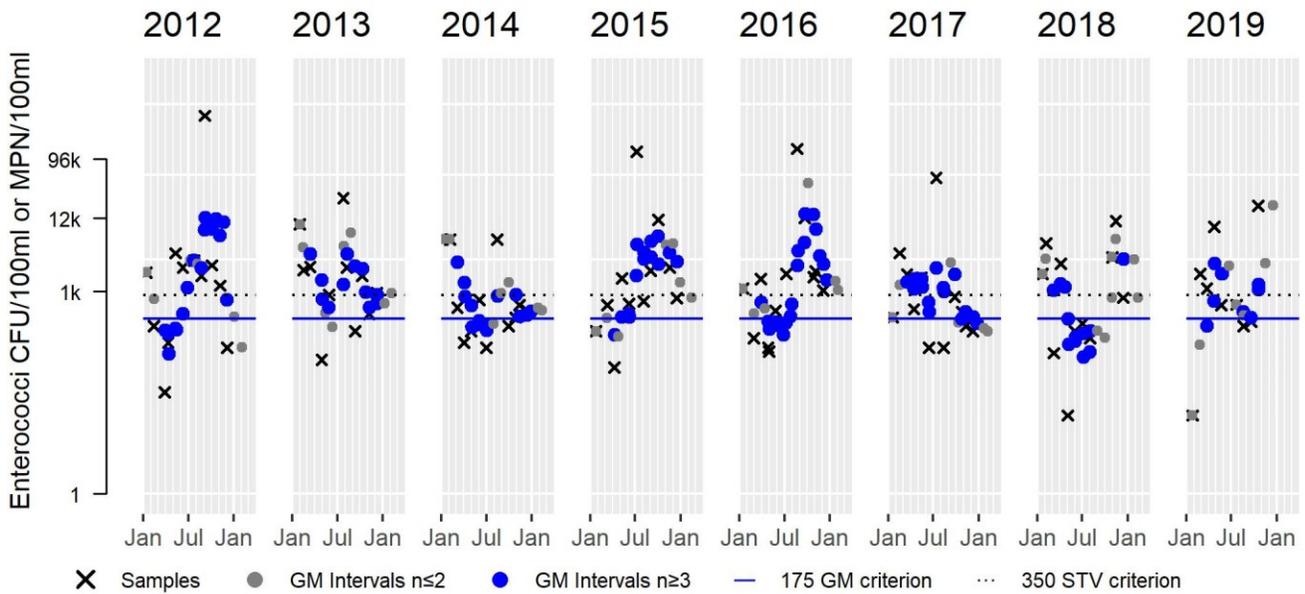
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MyRWA_MIC004	Mystic River Watershed Association	Enterococci	01/13/12	12/04/12	12	20	69000	488
MyRWA_MIC004	Mystic River Watershed Association	Enterococci	01/31/13	12/06/13	11	52	6100	521
MyRWA_MIC004	Mystic River Watershed Association	Enterococci	01/06/14	12/12/14	12	74	1800	297
MyRWA_MIC004	Mystic River Watershed Association	Enterococci	01/23/15	12/16/15	11	41	24000	523
MyRWA_MIC004	Mystic River Watershed Association	Enterococci	01/15/16	12/05/16	13	66.3	26000	450
MyRWA_MIC004	Mystic River Watershed Association	Enterococci	01/17/17	12/08/17	12	74	11000	323
MyRWA_MIC004	Mystic River Watershed Association	Enterococci	01/22/18	12/13/18	11	10	3075.9	287
MyRWA_MIC004	Mystic River Watershed Association	Enterococci	01/25/19	10/18/19	9	10	4884.4	335

MyRWA_MIC004 Enterococci (90-day Interval), Secondary Contact Recreational Use Season

Var	Res														
Samples	12	Samples	11	Samples	12	Samples	11	Samples	13	Samples	12	Samples	11	Samples	9
SeasGM	488	SeasGM	521	SeasGM	297	SeasGM	523	SeasGM	450	SeasGM	323	SeasGM	287	SeasGM	335
#GMI	16	#GMI	12	#GMI	14	#GMI	14	#GMI	19	#GMI	15	#GMI	12	#GMI	9
#GMI Ex	11	#GMI Ex	12	#GMI Ex	9	#GMI Ex	13	#GMI Ex	12	#GMI Ex	13	#GMI Ex	4	#GMI Ex	8
%GMI Ex	69	%GMI Ex	100	%GMI Ex	64	%GMI Ex	93	%GMI Ex	63	%GMI Ex	87	%GMI Ex	33	%GMI Ex	89
n>STV	8	n>STV	7	n>STV	3	n>STV	5	n>STV	8	n>STV	4	n>STV	5	n>STV	4
%n>STV	67	%n>STV	64	%n>STV	25	%n>STV	45	%n>STV	62	%n>STV	33	%n>STV	45	%n>STV	44

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	74	72



Shellfish Growing Area Classifications

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

Summary
Mill Creek (MA71-08): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.01 sq mi (49%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Secondary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Munroe Brook (MA71-15)

Location:	Headwaters, north of Solomon Pierce Road, Lexington to the mouth at inlet Arlington Reservoir, Lexington (includes culverted portion).
AU Type:	RIVER
AU Size:	1.8 MILES
Classification/Qualifier:	B

No usable data were available for Munroe Brook (MA71-15) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Escherichia Coli (E. Coli)		Unchanged

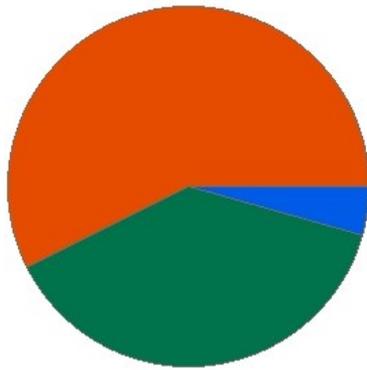
Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)				X	
Escherichia Coli (E. Coli)	Source Unknown (N)				X	

Mystic River (MA71-02)

Location:	Outlet Lower Mystic Lake, Arlington/Medford to Amelia Earhart Dam, Somerville/Everett.
AU Type:	RIVER
AU Size:	5 MILES
Classification/Qualifier:	B: WWF, CSO

Mystic River - MA71-02

Watershed Area: 62.57 square miles



Percent Agriculture
 Percent Natural
 Percent Developed
 Percent Wetland

Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	62.57	11.73	10.11	1.05
Agriculture	0.2%	0%	0.5%	0%
Developed	57.3%	81.4%	40.3%	60%
Natural	38.1%	17.7%	45.5%	36%
Wetland	4.4%	0.9%	13.6%	4%
Impervious Cover	41%			

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Eurasian Water Milfoil, Myriophyllum Spicatum*)		Unchanged
5	5	(Non-Native Aquatic Plants*)		Removed
5	5	(Water Chestnut*)		Unchanged
5	5	Arsenic		Unchanged
5	5	Chlordane in Fish Tissue		Unchanged
5	5	Chlorophyll-a	R1_MA_2020_5a	Unchanged
5	5	DDT in Fish Tissue		Unchanged
5	5	Dissolved Oxygen	R1_MA_2020_5a	Unchanged
5	5	Dissolved Oxygen Supersaturation	R1_MA_2020_5a	Unchanged
5	5	Enterococcus		Added
5	5	Escherichia Coli (E. Coli)	R1_MA_2019_01	Unchanged
5	5	Harmful Algal Blooms		Added
5	5	PCBs in Fish Tissue		Unchanged
5	5	pH, High		Unchanged
5	5	Phosphorus, Total	R1_MA_2020_5a	Unchanged
5	5	Sediment Bioassay [Chronic Toxicity Freshwater]		Unchanged
5	5	Transparency / Clarity	R1_MA_2020_5a	Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
(Eurasian Water Milfoil, Myriophyllum Spicatum*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X				
(Water Chestnut*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X		X	X	X
Arsenic	Source Unknown (N)	X				
Chlordane in Fish Tissue	Source Unknown (N)		X			
Chlorophyll-a	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X				
DDT in Fish Tissue	Source Unknown (N)		X			
Dissolved Oxygen	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X				
Dissolved Oxygen Supersaturation	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X				
Enterococcus	Combined Sewer Overflows (Y)				X	
Enterococcus	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)				X	
Escherichia Coli (E. Coli)	Combined Sewer Overflows (Y)				X	
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)				X	
Harmful Algal Blooms	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X		X	X	X
PCBs in Fish Tissue	Source Unknown (N)		X			
pH, High	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X				
Phosphorus, Total	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X				
Sediment Bioassay [Chronic Toxicity Freshwater]	Contaminated Sediments (Y)	X				
Sediment Bioassay [Chronic Toxicity Freshwater]	Source Unknown (N)	X				
Transparency / Clarity	Combined Sewer Overflows (Y)			X	X	X
Transparency / Clarity	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X	X	X

Supporting Information for Removed Impairments

2018/20 Removed Impairment	Removal Reason	Removal Comment
Non-Native Aquatic Plants	Clarification of listing cause	The Non-Native Aquatic Plants impairment was applied to the Aesthetics, Primary Contact Recreational, and Secondary Contact Recreational uses for this freshwater Mystic River AU (MA71-02) in the 2016 IR cycle due to dense growth of water chestnut (<i>Trapa natans</i>) observed by DEP staff in field surveys conducted in 2009 (MassDEP Undated 6). The generic Non-Native Aquatic Plants impairment is being removed and replaced with the specific Water Chestnut impairment.

Non-Native Aquatic Plants

The Non-Native Aquatic Plants impairment was applied to the Aesthetics, Primary Contact Recreational, and Secondary Contact Recreational uses for the freshwater Mystic River AU (MA71-02) in the 2016 IR cycle due to dense growth of water chestnut (*Trapa natans*) observed by DEP staff in field surveys conducted in 2009 (MassDEP Undated 6). The generic Non-Native Aquatic Plants impairment is being removed and replaced with the specific Water Chestnut impairment.

Recommendations

2022 Recommendations
ALU: As noted in the 2018/2020 IR cycle (MassDEP 2021), chloride sampling needs to be conducted in this freshwater Mystic River AU (MA71-02) to determine whether there is chloride toxicity or whether elevated specific conductance data should be attributed to tidal influence. Additionally, an aquatic macrophyte survey should be conducted to confirm whether there is a <i>Potamogeton crispus</i> infestation (confirmation of any non-native species should be made by a qualified state agency/taxonomist).; MISC: Continue to track C-HAB records for this Mystic River AU (MA71-02) to better evaluate the extent of the Harmful Algal Blooms impairment (blooms were previously reported each year from 2015-2017 but not in 2018 or 2019).

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	YES
2022 Use Attainment Summary	
<p>MA DFG biologists conducted boat electrofishing at four locations along this Mystic River AU (MA71-02) in August 2018. From upstream to downstream, samples were collected roughly 2200 ft downstream of the Lower Mystic Lake outlet in Arlington/Medford (Sample #7585), in the vicinity of the Boston Ave bridge on the Medford/Arlington/Somerville town lines (Sample #7586), in the vicinity of the I-93 bridge in Medford (Sample #7587), and in the vicinity of the Rt 16 bridge in Medford (Sample #7588). The samples ranged in size from 11-29 individuals and generally did not contain fluvial species but did contain 9-70% intolerant/moderately tolerant macrohabitat generalists, a good indicator in this warmwater fishery.</p> <p>C-HAB postings were reported to MassDPH for 37 days in 2015 (sampling was conducted by MyRWA), 20 days in 2016 and 30 days in 2017 in the vicinity of the Blessing of the Bay Boathouse dock (the advisories were confirmed based on sample analysis).</p> <p>The Aquatic Life Use of this Mystic River AU (MA71-02) will continue to be assessed as Not Supporting with the Arsenic, Chlorophyll a, Dissolved Oxygen, Dissolved Oxygen Supersaturation, 'pH, High', 'Phosphorus, Total', and Sediment Bioassay (Chronic Toxicity Freshwater), 'Eurasian Water Milfoil, Myriophyllum Spicatum', and Water Chestnut impairments being carried forward. A Harmful Algal Blooms impairment is being added due to documented C-HABs in 2015, 2016, and 2017 (the 2015 and 2017 blooms were >20 days in duration). The prior Alerts for potential chloride toxicity and potential presence of the non-native aquatic macrophyte, Curly-leaf pondweed (<i>Potamogeton crispus</i>), will also be carried forward (MassDEP 2021).</p>	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
7585	MassDFG	Fish Community	Mystic River	Downstream outlet of lower mystic lake. Site #1, Arlington/Medford	42.41787	-71.14103
7586	MassDFG	Fish Community	Mystic River	End at Boston Ave bridge (on town lines). Site #2, Medford/Arlington/Somerville	42.41686	-71.13113

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
7587	MassDFG	Fish Community	Mystic River	End at 93 bridge. Site #3, Medford	42.41474	-71.10449
7588	MassDFG	Fish Community	Mystic River	End at Rt. 16 bridge. Site #4, Medford	42.40592	-71.09701

Biological Monitoring Information

Fish Community Data and DELTS

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

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

[Species List: A = Alewife, AE = American Eel, B = Bluegill, BB = Brown Bullhead, C = Common Carp, GS = Golden Shiner, LMB = Largemouth Bass, P = Pumpkinseed, WS = White Sucker, YB = Yellow Bullhead, YP = Yellow Perch]

Sample ID	Sample Date	Method	Sample Type	Gradient	Total Taxa	Total Ind	Cold Ind %	Fluvial Taxa	Fluvial Ind %	Intol Ind %	I/MT MG Taxa	I/MT MG Ind %	Notables	CFR	Species List
7585	08/29/18	BT	TP		8	29	0%	1	3%	0%	4	69%	No	No	A, AE, B, GS, LMB, P, WS, YP,
7586	08/29/18	BT	TP		5	27	0%	0	0%	0%	4	70%	No	No	A, GS, LMB, P, YP,
7587	08/29/18	BT	TP		5	11	0%	0	0%	0%	1	9%	No	No	B, C, GS, LMB, YB,
7588	08/29/18	BT	TP		7	13	0%	0	0%	0%	3	38%	Yes	No	A, AE, B, BB, GS, LMB, P,

Fish Consumption

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
While no recent fish toxics data are available, the Fish Consumption Use of this Mystic River AU (MA71-02) will continue to be assessed as Not Supporting for the Chlordane in Fish Tissue, DDT in Fish Tissue, and PCBs in Fish Tissue impairments which are being carried forward. MassDPH recommends that no one consume any fish from this waterbody (MassDPH 2021).	

Aesthetic

2022 Use Attainment	Alert
Not Supporting	YES
2022 Use Attainment Summary	

C-HAB postings for the Mystic River (MA71-02) were reported to MassDPH for 37 days in 2015 (sampling was conducted by MyRWA), 20 days in 2016 and 30 days in 2017 in the vicinity of the Blessing of the Bay Boathouse dock (the advisories were confirmed based on sample analysis).

The Aesthetics Use of this Mystic River AU (MA71-02) will continue to be assessed as Not Supporting with the Transparency/Clarity impairment being carried forward. A Harmful Algal Blooms impairment is being added due to documented C-HABs in 2015, 2016, and 2017 (the 2015 and 2017 blooms were >20 days in duration). The prior generic Non-Native Aquatic Plants impairment is being removed and replaced with the specific Water Chestnut impairment. The historical Alerts for Oily Sheen, Objectionable Deposits, and Dense Macrophytes in aggregate are being carried forward (MassDEP Undated 6).

Algal Bloom Information

Cyanobacteria Harmful Algal Bloom (C-HAB) Summary Statements for 2015-2019 MassDPH Data (Bailey, Logan April 15, 2021) (MassDEP Undated 2)

C-HAB Summary Statement
C-HAB postings for the Mystic River (MA71-02) were reported to MassDPH for 37 days in 2015 (sampling was conducted by MyRWA), 20 days in 2016 and 30 days in 2017 in the vicinity of the Blessing of the Bay Boathouse dock (the advisories were confirmed based on sample analysis). Since blooms ≥20 days in length were reported in two years, the Primary/Secondary Contact Recreational Uses and Aesthetics Use are assessed as Not Supporting. However, this AU should be reevaluated in a future reporting cycle to determine whether there is a true cessation of blooms (no blooms were reported in 2018 and 2019).

Cyanobacteria Harmful Algal Bloom (C-HAB) Data (2015-2019) Provided by MassDPH (Bailey, Logan April 15, 2021)

Waterbody	Sample Analysis Used in Issuing Advisory	Bloom Days, 2015	Bloom Days, 2016	Bloom Days, 2017	Bloom Days, 2018	Bloom Days, 2019	# Years with >20 Days of Closure	>1 Posting Per Year
Mystic River	Not issued or confirmed by sampling	37					1	no
Mystic River	Advisory confirmed by sample analysis			30			1	no
Mystic River	Advisory confirmed by sample analysis		20				0	no

Primary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	YES
2022 Use Attainment Summary	

Enterococci and *E. coli* bacteria sampling was conducted by MWRA staff and MyRWA staff/volunteers at multiple locations in this Mystic River AU (MA71-02) during the 2011-2019 recreational seasons (Apr 1 – Oct 31). Data collection timing/frequency and locations are described from upstream to downstream in the AU as follows: MyRWA moderate frequency *E. coli* (EC) data (n=7/yr) collected from 2011-2019 on the upstream side of the High Street bridge in Medford, at the outlet from Lower Mystic Lake (MyRWA_MYR071); MWRA high frequency EC/Enterococci (Ent.) data (n= 35-75/yr/indicator) collected from 2014-2019 upstream of the confluence of the Mystic River and Alewife Brook (MWRA_083S); MWRA high frequency EC/Ent. data (n= 20-59/yr/indicator) collected from 2014-2019 at the confluence of the Mystic River and Alewife Brook (MWRA_057S); MWRA mainly high frequency EC/Ent. data (n= 14-16/yr/indicator) collected from 2014-2019 at the Boston Ave. bridge (MWRA_066S); MWRA high frequency EC/Ent. data (n= 20-59/yr/indicator) collected from 2014-2019 100m upstream of Rt. 93 (MWRA_056S); MyRWA high frequency *E. coli* data (n= 38-43/yr) collected from 2015-2016 on the downstream side of the Rt. 16 bridge (MyRWA_MYR0435); MWRA mainly high frequency EC/Ent. data (n= 14-16/yr/indicator) collected from 2014-2019, midchannel, on the downstream side of the Rt. 16 bridge (MWRA_177S); MyRWA high frequency EC/Ent. data (n= 33-43/yr/indicator) collected from 2015-2016 from the furthest dock at the Blessing of the Bay Boathouse (MyRWA_MYRBOBDOCK); MWRA high frequency EC/Ent. data (n= 20-59/yr/indicator) collected from 2014-2019 from the Rt. 28 bridge, near the SOM007A/MWR205A CSO (MWRA_067S); MWRA high frequency EC/Ent. data (n= 20-31/yr/indicator) collected from 2014-2019 at the confluence of the Mystic and Malden Rivers (MWRA_059S); MWRA high frequency EC/Ent. data (n= 16-55/yr/indicator) collected from 2014-2019 on the upstream side of the Amelia Earhart Dam (MWRA_167S). While bacteria data were collected infrequently at two other MyRWA stations (MyRWA_MWRA177, MyRWA_MWRA060), sample size was insufficient to allow analysis of these data for use attainment decisions. Data for both indicator organisms from all stations were indicative of impaired water quality conditions. The percentage of intervals with GMs exceeding the applicable criterion satisfied the impairment threshold in two or more years of the last five years for all stations/indicator organisms, and this was true when analyzed cumulatively over the last five years as well (this satisfies two of the three impairment conditions, as laid out in the 2022 CALM (MassDEP 2022)). The applicable STV impairment condition was not satisfied for either organism at some stations, was satisfied for both organisms at some stations, and was satisfied for one or the other organism at other stations.

C-HAB postings for this Mystic River AU (MA71-02) were reported to MassDPH for 37 days in 2015 (sampling was conducted by MyRWA), 20 days in 2016 and 30 days in 2017 in the vicinity of the Blessing of the Bay Boathouse dock (the advisories were confirmed based on sample analysis).

The Primary Contact Recreational Use for this Mystic River AU (MA71-02) will continue to be assessed as Not Supporting. Based on extensive MWRA and MyRWA bacteria datasets, the prior impairment for Escherichia Coli (*E. Coli*) will be carried forward and an impairment will be added for Enterococcus. The historical impairment for Transparency/Clarity will also be carried forward. A Harmful Algal Blooms impairment is being added due to documented C-HABs in 2015, 2016, and 2017. The generic impairment for Non-Native Aquatic Plants is being removed and replaced with the specific Water Chestnut. The historical Alerts for Oily Sheen, Objectionable Deposits, and Dense Macrophytes in aggregate are being carried forward (MassDEP Undated 6).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MWRA_056S	Massachusetts Water Resource Authority	Water Quality	UPPER MYSTIC	Mystic River, 100m upstream of Rt. 93	42.414769	-71.105322
MWRA_057S	Massachusetts Water Resource Authority	Water Quality	UPPER MYSTIC	Mystic River, confluence of Mystic River and Alewife Brook	42.415224	-71.132393

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MWRA_059S	Massachusetts Water Resource Authority	Water Quality	LOWER MYSTIC BASIN	Mystic River, confluence of Mystic and Malden Rivers	42.396667	-71.077
MWRA_066S	Massachusetts Water Resource Authority	Water Quality	UPPER MYSTIC	Mystic River, Boston Ave. bridge	42.417263	-71.130664
MWRA_067S	Massachusetts Water Resource Authority	Water Quality	LOWER MYSTIC BASIN	Mystic River, Route 28 bridge, near SOM007A/MWR205A	42.399765	-71.082831
MWRA_083S	Massachusetts Water Resource Authority	Water Quality	UPPER MYSTIC	Mystic River, upstream of confluence of Mystic River and Alewife Brook	42.415203	-71.137041
MWRA_167S	Massachusetts Water Resource Authority	Water Quality	LOWER MYSTIC BASIN	Mystic River, Amelia Earhart Dam, upstream side	42.395	-71.075833
MWRA_177S	Massachusetts Water Resource Authority	Water Quality	LOWER MYSTIC BASIN	Mystic River, Rt 16 bridge, midchannel, downstream side	42.405722	-71.096351
MyRWA_MWRA060	Mystic River Watershed Association	Water Quality	Mystic River (Fresh)	MYSTIC, MDC SAILING DOCK	42.3986999	-71.0904612
MyRWA_MWRA177	Mystic River Watershed Association	Water Quality	Mystic River (Fresh)	MYSTIC RIVER, RT 16 BRIDGE MIDCHANNEL DOWNSTREAM SIDE	42.405722	-71.096351
MyRWA_MYR0435	Mystic River Watershed Association	Water Quality	Mystic River (Fresh)	Center of the stream. Sample from route 16 bridge, downstream side	42.405722	-71.096351
MyRWA_MYR071	Mystic River Watershed Association	Water Quality	Mystic River (Fresh)	Mystic River at High Street Bridge in Medford; outlet from Lower Mystic Lake, upstream side of the bridge	42.420647	-71.142906
MyRWA_MYRBOBDOCK	Mystic River Watershed Association	Water Quality	Mystic River (Fresh)	From Blessing of the Bay Boathouse furthest dock	42.3987	-71.090461

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (30-day Interval Analysis) (MWRA 2019)

(MassDEP Undated 2) (MyRWA 2019) (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
MWRA_056S	Massachusetts Water Resource Authority	E. coli	04/30/14	10/01/14	20	52	6130	382

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_056S	Massachusetts Water Resource Authority	Enterococci	04/30/14	10/01/14	20	10	3450	46
MWRA_056S	Massachusetts Water Resource Authority	E. coli	04/13/15	10/06/15	20	20	2100	191
MWRA_056S	Massachusetts Water Resource Authority	Enterococci	04/13/15	10/06/15	20	10	301	23
MWRA_056S	Massachusetts Water Resource Authority	E. coli	05/09/16	10/28/16	29	10	2600	115
MWRA_056S	Massachusetts Water Resource Authority	Enterococci	05/09/16	10/28/16	29	10	571	17
MWRA_056S	Massachusetts Water Resource Authority	E. coli	04/03/17	10/19/17	48	31	7700	190
MWRA_056S	Massachusetts Water Resource Authority	Enterococci	04/03/17	10/19/17	48	10	4350	36
MWRA_056S	Massachusetts Water Resource Authority	E. coli	04/24/18	10/24/18	52	31	17300	327
MWRA_056S	Massachusetts Water Resource Authority	Enterococci	04/24/18	10/24/18	52	10	3870	95
MWRA_056S	Massachusetts Water Resource Authority	E. coli	04/20/19	10/31/19	59	20	72700	321
MWRA_056S	Massachusetts Water Resource Authority	Enterococci	04/20/19	10/31/19	59	10	15500	83
MWRA_057S	Massachusetts Water Resource Authority	E. coli	04/30/14	10/01/14	20	10	1310	186
MWRA_057S	Massachusetts Water Resource Authority	Enterococci	04/30/14	10/01/14	20	10	749	62
MWRA_057S	Massachusetts Water Resource Authority	E. coli	04/13/15	10/06/15	20	10	2850	125
MWRA_057S	Massachusetts Water Resource Authority	Enterococci	04/13/15	10/06/15	20	10	613	50
MWRA_057S	Massachusetts Water Resource Authority	E. coli	05/09/16	10/28/16	29	10	496	68
MWRA_057S	Massachusetts Water Resource Authority	Enterococci	05/09/16	10/28/16	29	10	145	20
MWRA_057S	Massachusetts Water Resource Authority	E. coli	04/03/17	10/19/17	48	10	5790	115
MWRA_057S	Massachusetts Water Resource Authority	Enterococci	04/03/17	10/19/17	48	10	19900	52

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_057S	Massachusetts Water Resource Authority	E. coli	04/24/18	10/24/18	53	10	2100	174
MWRA_057S	Massachusetts Water Resource Authority	Enterococci	04/24/18	10/24/18	53	10	2010	91
MWRA_057S	Massachusetts Water Resource Authority	E. coli	04/20/19	10/31/19	59	20	4610	154
MWRA_057S	Massachusetts Water Resource Authority	Enterococci	04/20/19	10/31/19	59	10	11200	95
MWRA_059S	Massachusetts Water Resource Authority	E. coli	04/30/14	10/01/14	20	10	6870	45
MWRA_059S	Massachusetts Water Resource Authority	Enterococci	04/30/14	10/01/14	20	10	884	15
MWRA_059S	Massachusetts Water Resource Authority	E. coli	04/13/15	10/06/15	20	10	122	25
MWRA_059S	Massachusetts Water Resource Authority	Enterococci	04/13/15	10/06/15	20	10	86	14
MWRA_059S	Massachusetts Water Resource Authority	E. coli	05/09/16	10/26/16	28	10	857	46
MWRA_059S	Massachusetts Water Resource Authority	Enterococci	05/09/16	10/26/16	28	10	3260	22
MWRA_059S	Massachusetts Water Resource Authority	E. coli	04/04/17	10/19/17	31	10	4350	70
MWRA_059S	Massachusetts Water Resource Authority	Enterococci	04/04/17	10/19/17	31	10	933	19
MWRA_059S	Massachusetts Water Resource Authority	E. coli	04/25/18	09/12/18	24	10	3260	87
MWRA_059S	Massachusetts Water Resource Authority	Enterococci	04/25/18	09/12/18	24	10	350	21
MWRA_059S	Massachusetts Water Resource Authority	E. coli	05/03/19	08/30/19	21	10	759	43
MWRA_059S	Massachusetts Water Resource Authority	Enterococci	05/03/19	08/30/19	21	10	31	12
MWRA_066S	Massachusetts Water Resource Authority	E. coli	04/01/14	10/27/14	16	31	784	130
MWRA_066S	Massachusetts Water Resource Authority	Enterococci	04/01/14	10/27/14	16	10	546	31
MWRA_066S	Massachusetts Water Resource Authority	E. coli	04/16/15	10/27/15	15	10	299	85

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_066S	Massachusetts Water Resource Authority	Enterococci	04/16/15	10/27/15	15	10	121	25
MWRA_066S	Massachusetts Water Resource Authority	E. coli	04/11/16	10/27/16	15	20	2250	110
MWRA_066S	Massachusetts Water Resource Authority	Enterococci	04/11/16	10/27/16	15	10	2010	30
MWRA_066S	Massachusetts Water Resource Authority	E. coli	04/14/17	10/24/17	15	10	617	86
MWRA_066S	Massachusetts Water Resource Authority	Enterococci	04/14/17	10/24/17	15	10	364	53
MWRA_066S	Massachusetts Water Resource Authority	E. coli	04/12/18	10/18/18	14	20	776	126
MWRA_066S	Massachusetts Water Resource Authority	Enterococci	04/12/18	10/18/18	14	10	310	53
MWRA_066S	Massachusetts Water Resource Authority	E. coli	04/01/19	10/22/19	16	31	933	168
MWRA_066S	Massachusetts Water Resource Authority	Enterococci	04/01/19	10/22/19	16	10	399	78
MWRA_067S	Massachusetts Water Resource Authority	E. coli	04/30/14	10/01/14	20	10	3260	102
MWRA_067S	Massachusetts Water Resource Authority	Enterococci	04/30/14	10/01/14	20	10	388	14
MWRA_067S	Massachusetts Water Resource Authority	E. coli	04/13/15	10/06/15	20	10	384	33
MWRA_067S	Massachusetts Water Resource Authority	Enterococci	04/13/15	10/06/15	20	10	161	14
MWRA_067S	Massachusetts Water Resource Authority	E. coli	05/09/16	10/28/16	29	10	906	55
MWRA_067S	Massachusetts Water Resource Authority	Enterococci	05/09/16	10/28/16	29	10	2250	20
MWRA_067S	Massachusetts Water Resource Authority	E. coli	04/03/17	10/19/17	48	10	6870	76
MWRA_067S	Massachusetts Water Resource Authority	Enterococci	04/03/17	10/19/17	48	10	620	19
MWRA_067S	Massachusetts Water Resource Authority	E. coli	04/24/18	10/24/18	52	10	24200	117
MWRA_067S	Massachusetts Water Resource Authority	Enterococci	04/24/18	10/24/18	52	10	591	28

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_067S	Massachusetts Water Resource Authority	E. coli	04/20/19	10/31/19	59	10	3450	69
MWRA_067S	Massachusetts Water Resource Authority	Enterococci	04/20/19	10/31/19	59	10	3450	22
MWRA_083S	Massachusetts Water Resource Authority	E. coli	04/01/14	10/27/14	36	10	1610	124
MWRA_083S	Massachusetts Water Resource Authority	Enterococci	04/01/14	10/27/14	36	10	496	42
MWRA_083S	Massachusetts Water Resource Authority	E. coli	04/13/15	10/27/15	35	10	364	69
MWRA_083S	Massachusetts Water Resource Authority	Enterococci	04/13/15	10/27/15	35	10	301	24
MWRA_083S	Massachusetts Water Resource Authority	E. coli	04/11/16	10/28/16	43	10	4610	90
MWRA_083S	Massachusetts Water Resource Authority	Enterococci	04/11/16	10/28/16	43	10	5480	24
MWRA_083S	Massachusetts Water Resource Authority	E. coli	04/03/17	10/24/17	63	10	2600	116
MWRA_083S	Massachusetts Water Resource Authority	Enterococci	04/03/17	10/24/17	63	10	3260	54
MWRA_083S	Massachusetts Water Resource Authority	E. coli	04/12/18	10/24/18	67	10	8660	128
MWRA_083S	Massachusetts Water Resource Authority	Enterococci	04/12/18	10/24/18	67	10	4110	73
MWRA_083S	Massachusetts Water Resource Authority	E. coli	04/01/19	10/31/19	75	20	2490	134
MWRA_083S	Massachusetts Water Resource Authority	Enterococci	04/01/19	10/31/19	75	10	3650	81
MWRA_167S	Massachusetts Water Resource Authority	E. coli	04/01/14	10/27/14	16	10	1330	46
MWRA_167S	Massachusetts Water Resource Authority	Enterococci	04/01/14	10/27/14	16	10	41	13
MWRA_167S	Massachusetts Water Resource Authority	E. coli	04/10/15	10/29/15	24	10	4350	58
MWRA_167S	Massachusetts Water Resource Authority	Enterococci	04/10/15	10/29/15	24	10	576	17
MWRA_167S	Massachusetts Water Resource Authority	E. coli	04/11/16	10/28/16	16	10	288	53

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_167S	Massachusetts Water Resource Authority	Enterococci	04/11/16	10/28/16	16	10	160	16
MWRA_167S	Massachusetts Water Resource Authority	E. coli	04/03/17	10/24/17	32	10	419	46
MWRA_167S	Massachusetts Water Resource Authority	Enterococci	04/03/17	10/24/17	32	10	216	16
MWRA_167S	Massachusetts Water Resource Authority	E. coli	04/12/18	10/24/18	42	10	2910	65
MWRA_167S	Massachusetts Water Resource Authority	Enterococci	04/12/18	10/24/18	42	10	595	24
MWRA_167S	Massachusetts Water Resource Authority	E. coli	04/01/19	10/31/19	55	10	2910	72
MWRA_167S	Massachusetts Water Resource Authority	Enterococci	04/01/19	10/31/19	55	10	2010	30
MWRA_177S	Massachusetts Water Resource Authority	E. coli	04/01/14	10/27/14	16	20	3650	236
MWRA_177S	Massachusetts Water Resource Authority	Enterococci	04/01/14	10/27/14	16	10	677	25
MWRA_177S	Massachusetts Water Resource Authority	E. coli	04/16/15	10/27/15	15	20	712	118
MWRA_177S	Massachusetts Water Resource Authority	Enterococci	04/16/15	10/27/15	15	10	52	14
MWRA_177S	Massachusetts Water Resource Authority	E. coli	04/11/16	10/27/16	15	10	2700	78
MWRA_177S	Massachusetts Water Resource Authority	Enterococci	04/11/16	10/27/16	15	10	1600	14
MWRA_177S	Massachusetts Water Resource Authority	E. coli	04/14/17	10/24/17	15	10	233	57
MWRA_177S	Massachusetts Water Resource Authority	Enterococci	04/14/17	10/24/17	15	10	148	16
MWRA_177S	Massachusetts Water Resource Authority	E. coli	04/12/18	10/18/18	14	30	282	119
MWRA_177S	Massachusetts Water Resource Authority	Enterococci	04/12/18	10/18/18	14	10	74	25
MWRA_177S	Massachusetts Water Resource Authority	E. coli	04/01/19	10/22/19	16	51	13000	380
MWRA_177S	Massachusetts Water Resource Authority	Enterococci	04/01/19	10/22/19	16	10	2380	43

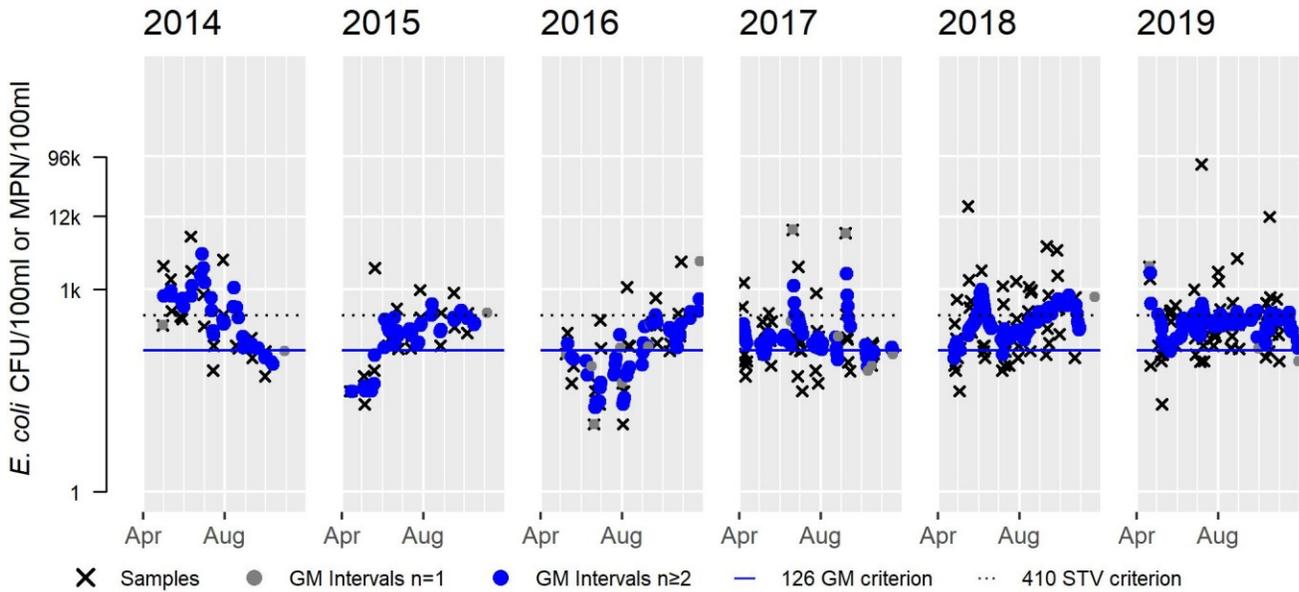
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MyRWA_MWRA060	Mystic River Watershed Association	E. coli	06/01/15	06/01/15	1	1089	1089	1089
MyRWA_MWRA177	Mystic River Watershed Association	E. coli	06/01/15	06/01/15	1	13140	13140	13140
MyRWA_MYR0435	Mystic River Watershed Association	E. coli	06/29/15	10/02/15	38	14.6	12997	199
MyRWA_MYR0435	Mystic River Watershed Association	E. coli	04/26/16	09/21/16	43	7.4	19863	93
MyRWA_MYR071	Mystic River Watershed Association	E. coli	04/20/11	10/19/11	7	41	218	88
MyRWA_MYR071	Mystic River Watershed Association	E. coli	04/18/12	10/17/12	7	10	275	60
MyRWA_MYR071	Mystic River Watershed Association	E. coli	04/17/13	10/16/13	7	10	160	39
MyRWA_MYR071	Mystic River Watershed Association	E. coli	04/16/14	10/15/14	7	31	189	74
MyRWA_MYR071	Mystic River Watershed Association	E. coli	04/15/15	10/21/15	7	10	350	67
MyRWA_MYR071	Mystic River Watershed Association	E. coli	04/20/16	10/19/16	7	10	97	48
MyRWA_MYR071	Mystic River Watershed Association	E. coli	04/19/17	10/18/17	7	10	1350	126
MyRWA_MYR071	Mystic River Watershed Association	E. coli	04/18/18	10/17/18	7	30	1940	302
MyRWA_MYR071	Mystic River Watershed Association	E. coli	04/17/19	10/16/19	7	10	683	103
MyRWA_MYRBOBDOCK	Mystic River Watershed Association	E. coli	06/29/15	10/02/15	37	1	24196	116
MyRWA_MYRBOBDOCK	Mystic River Watershed Association	Enterococci	06/29/15	10/02/15	33	10	24196	87
MyRWA_MYRBOBDOCK	Mystic River Watershed Association	E. coli	04/26/16	09/21/16	43	1	6867	160
MyRWA_MYRBOBDOCK	Mystic River Watershed Association	Enterococci	04/26/16	09/21/16	43	1	2419.6	64

MWRA_056S *E. coli* (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	20	Samples	20	Samples	29	Samples	48	Samples	52	Samples	59
SeasGM	382	SeasGM	191	SeasGM	115	SeasGM	190	SeasGM	327	SeasGM	321
#GMI	34	#GMI	35	#GMI	45	#GMI	76	#GMI	92	#GMI	99
#GMI Ex	30	#GMI Ex	28	#GMI Ex	23	#GMI Ex	64	#GMI Ex	89	#GMI Ex	98
%GMI Ex	88	%GMI Ex	80	%GMI Ex	51	%GMI Ex	84	%GMI Ex	97	%GMI Ex	99
n>STV	8	n>STV	6	n>STV	4	n>STV	8	n>STV	21	n>STV	21
%n>STV	40	%n>STV	30	%n>STV	14	%n>STV	17	%n>STV	40	%n>STV	36

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	87	87

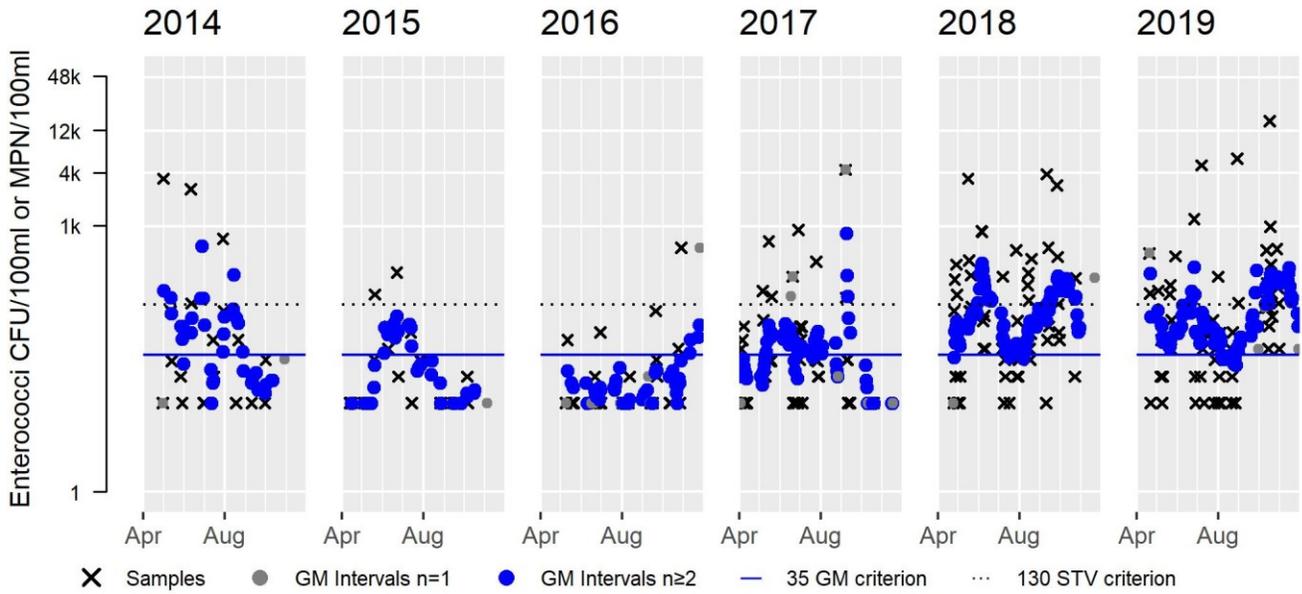


MWRA_056S Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	20	Samples	20	Samples	29	Samples	48	Samples	52	Samples	59
SeasGM	46	SeasGM	23	SeasGM	17	SeasGM	36	SeasGM	95	SeasGM	83
#GMI	34	#GMI	35	#GMI	45	#GMI	76	#GMI	92	#GMI	99
#GMI Ex	20	#GMI Ex	12	#GMI Ex	4	#GMI Ex	43	#GMI Ex	88	#GMI Ex	85
%GMI Ex	59	%GMI Ex	34	%GMI Ex	9	%GMI Ex	57	%GMI Ex	96	%GMI Ex	86
n>STV	4	n>STV	2	n>STV	1	n>STV	8	n>STV	20	n>STV	21
%n>STV	20	%n>STV	10	%n>STV	3	%n>STV	17	%n>STV	38	%n>STV	36

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	66	67

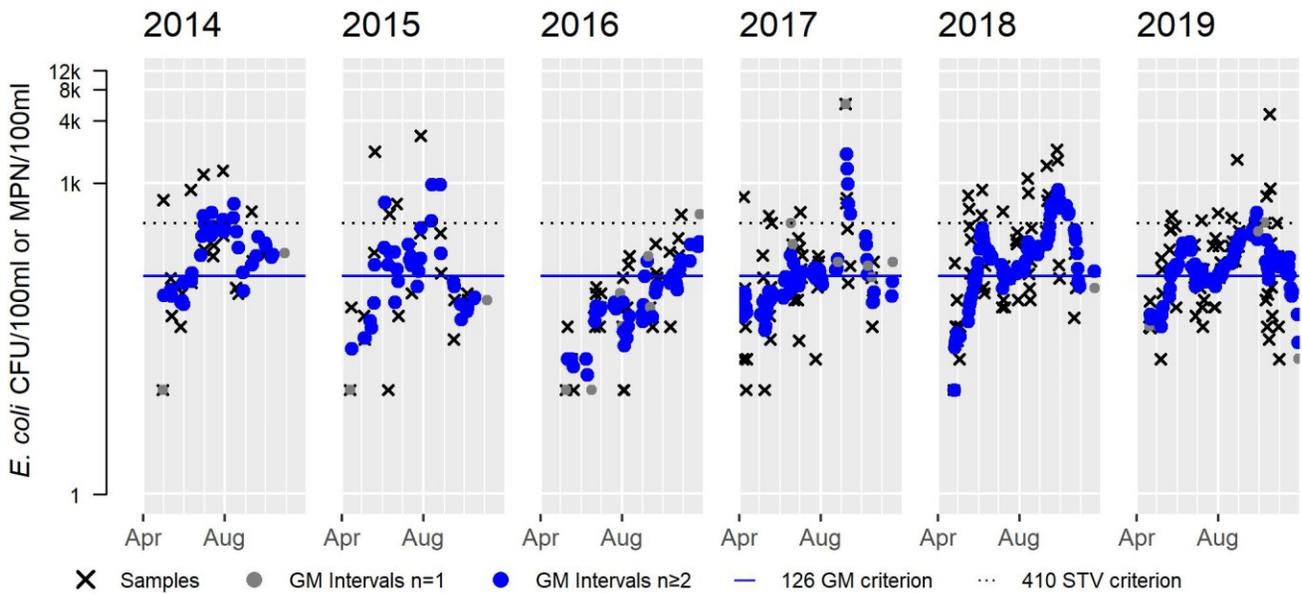


MWRA_057S *E. coli* (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	20	Samples	20	Samples	29	Samples	48	Samples	53	Samples	59
SeasGM	186	SeasGM	125	SeasGM	68	SeasGM	115	SeasGM	174	SeasGM	154
#GMI	34	#GMI	35	#GMI	45	#GMI	76	#GMI	94	#GMI	99
#GMI Ex	25	#GMI Ex	18	#GMI Ex	10	#GMI Ex	27	#GMI Ex	69	#GMI Ex	71
%GMI Ex	74	%GMI Ex	51	%GMI Ex	22	%GMI Ex	36	%GMI Ex	73	%GMI Ex	72
n>STV	5	n>STV	4	n>STV	1	n>STV	6	n>STV	13	n>STV	10
%n>STV	25	%n>STV	20	%n>STV	3	%n>STV	12	%n>STV	25	%n>STV	17

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	57	56

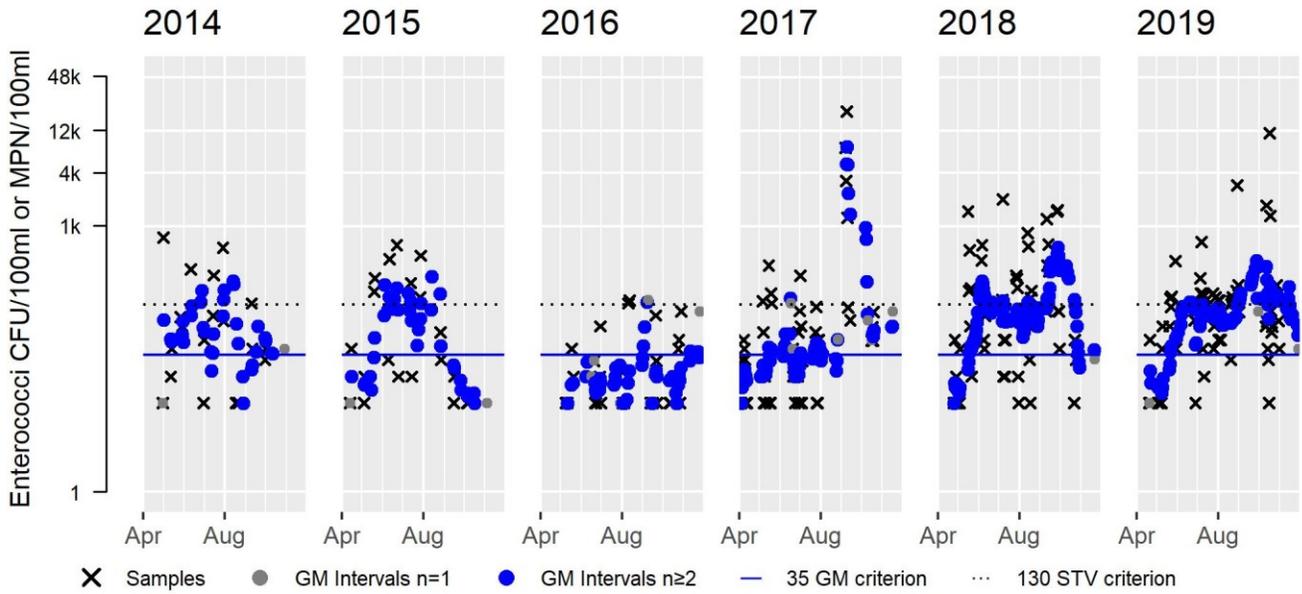


MWRA_057S Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	20	Samples	20	Samples	29	Samples	48	Samples	53	Samples	59
SeasGM	62	SeasGM	50	SeasGM	20	SeasGM	52	SeasGM	91	SeasGM	95
#GMI	34	#GMI	35	#GMI	45	#GMI	76	#GMI	94	#GMI	99
#GMI Ex	29	#GMI Ex	21	#GMI Ex	5	#GMI Ex	35	#GMI Ex	82	#GMI Ex	90
%GMI Ex	85	%GMI Ex	60	%GMI Ex	11	%GMI Ex	46	%GMI Ex	87	%GMI Ex	91
n>STV	5	n>STV	7	n>STV	2	n>STV	9	n>STV	22	n>STV	26
%n>STV	25	%n>STV	35	%n>STV	7	%n>STV	19	%n>STV	42	%n>STV	44

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	68	67

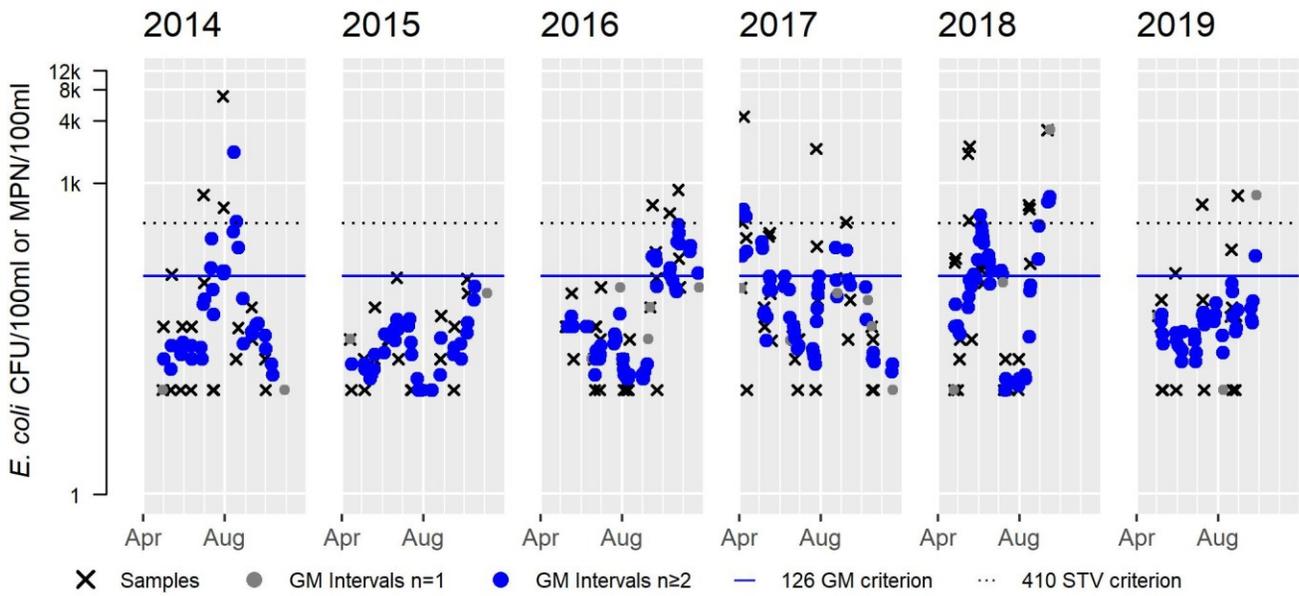


MWRA_059S *E. coli* (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	20	Samples	20	Samples	28	Samples	31	Samples	24	Samples	21
SeasGM	45	SeasGM	25	SeasGM	46	SeasGM	70	SeasGM	87	SeasGM	43
#GMI	34	#GMI	35	#GMI	43	#GMI	48	#GMI	41	#GMI	35
#GMI Ex	9	#GMI Ex	0	#GMI Ex	12	#GMI Ex	10	#GMI Ex	19	#GMI Ex	1
%GMI Ex	26	%GMI Ex	0	%GMI Ex	28	%GMI Ex	21	%GMI Ex	46	%GMI Ex	3
n>STV	3	n>STV	0	n>STV	3	n>STV	3	n>STV	6	n>STV	2
%n>STV	15	%n>STV	0	%n>STV	11	%n>STV	10	%n>STV	25	%n>STV	10

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	22	21

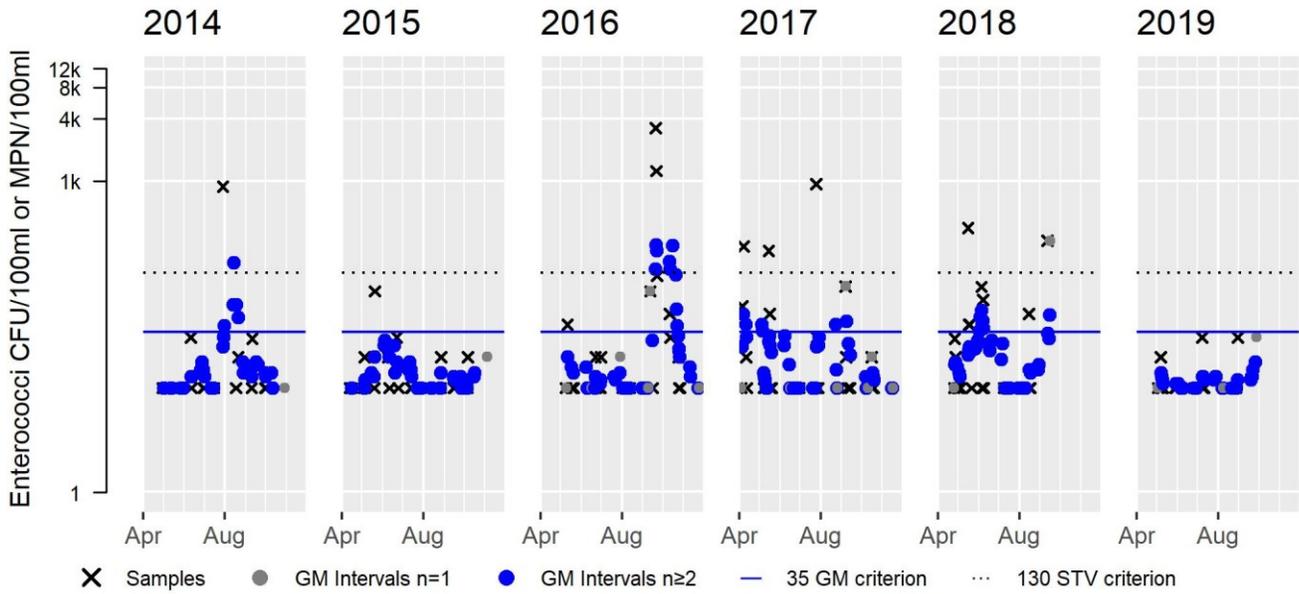


MWRA_059S Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	20	Samples	20	Samples	28	Samples	31	Samples	24	Samples	21
SeasGM	15	SeasGM	14	SeasGM	22	SeasGM	19	SeasGM	21	SeasGM	12
#GMI	34	#GMI	35	#GMI	43	#GMI	48	#GMI	41	#GMI	35
#GMI Ex	5	#GMI Ex	0	#GMI Ex	9	#GMI Ex	6	#GMI Ex	7	#GMI Ex	0
%GMI Ex	15	%GMI Ex	0	%GMI Ex	21	%GMI Ex	12	%GMI Ex	17	%GMI Ex	0
n>STV	1	n>STV	0	n>STV	2	n>STV	3	n>STV	2	n>STV	0
%n>STV	5	%n>STV	0	%n>STV	7	%n>STV	10	%n>STV	8	%n>STV	0

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	11	11

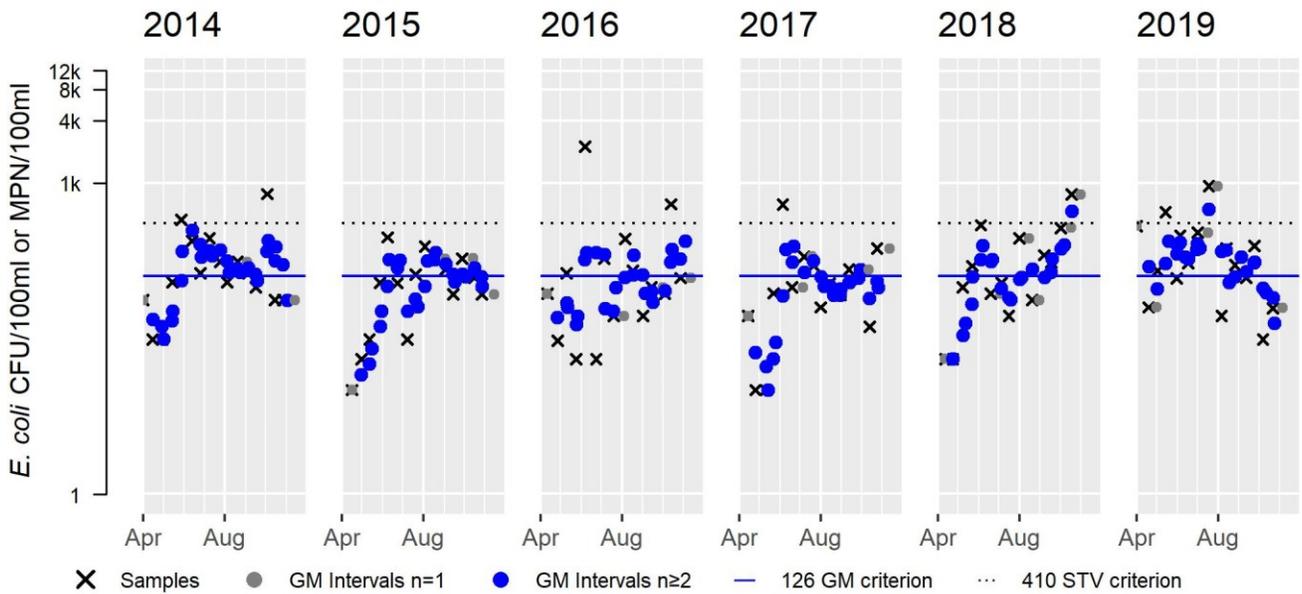


MWRA_066S *E. coli* (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	16	Samples	15	Samples	15	Samples	15	Samples	14	Samples	16
SeasGM	130	SeasGM	85	SeasGM	110	SeasGM	86	SeasGM	126	SeasGM	168
#GMI	26	#GMI	24	#GMI	24	#GMI	24	#GMI	21	#GMI	25
#GMI Ex	18	#GMI Ex	10	#GMI Ex	11	#GMI Ex	6	#GMI Ex	10	#GMI Ex	18
%GMI Ex	69	%GMI Ex	42	%GMI Ex	46	%GMI Ex	25	%GMI Ex	48	%GMI Ex	72
n>STV	2	n>STV	0	n>STV	2	n>STV	1	n>STV	1	n>STV	2
%n>STV	12	%n>STV	0	%n>STV	13	%n>STV	7	%n>STV	7	%n>STV	12

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	51	47

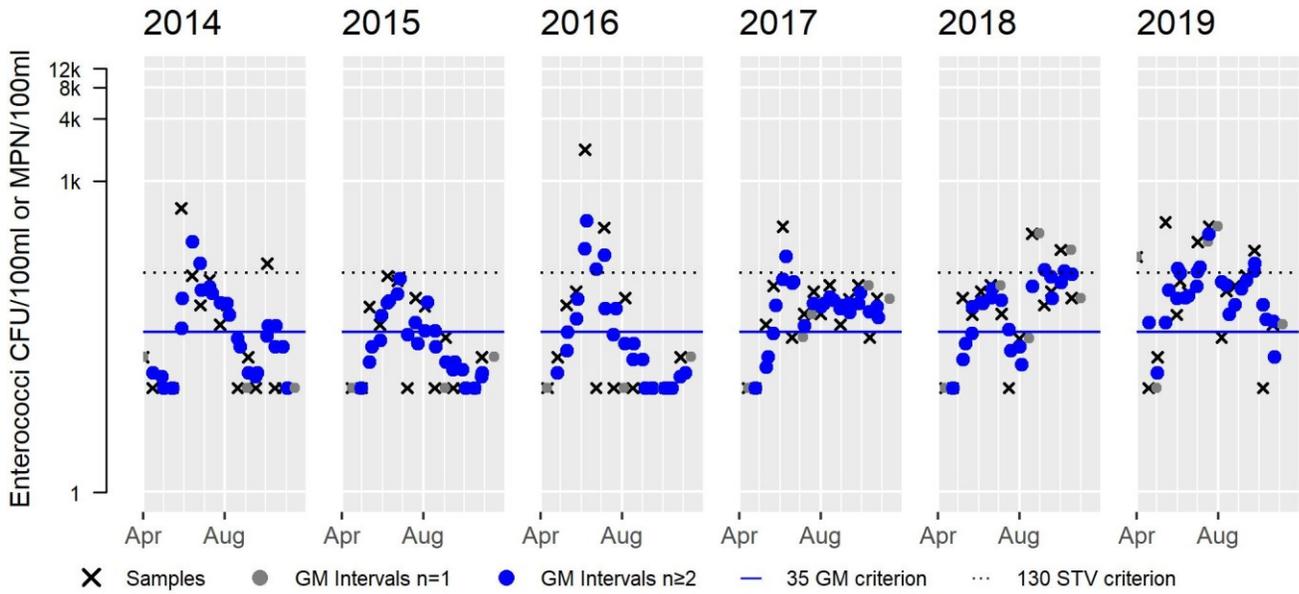


MWRA_066S Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	16	Samples	15	Samples	15	Samples	15	Samples	14	Samples	16
SeasGM	31	SeasGM	25	SeasGM	30	SeasGM	53	SeasGM	53	SeasGM	78
#GMI	26	#GMI	24	#GMI	24	#GMI	24	#GMI	21	#GMI	25
#GMI Ex	12	#GMI Ex	9	#GMI Ex	8	#GMI Ex	20	#GMI Ex	14	#GMI Ex	23
%GMI Ex	46	%GMI Ex	38	%GMI Ex	33	%GMI Ex	83	%GMI Ex	67	%GMI Ex	92
n>STV	2	n>STV	0	n>STV	2	n>STV	1	n>STV	2	n>STV	5
%n>STV	12	%n>STV	0	%n>STV	13	%n>STV	7	%n>STV	14	%n>STV	31

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	60	63

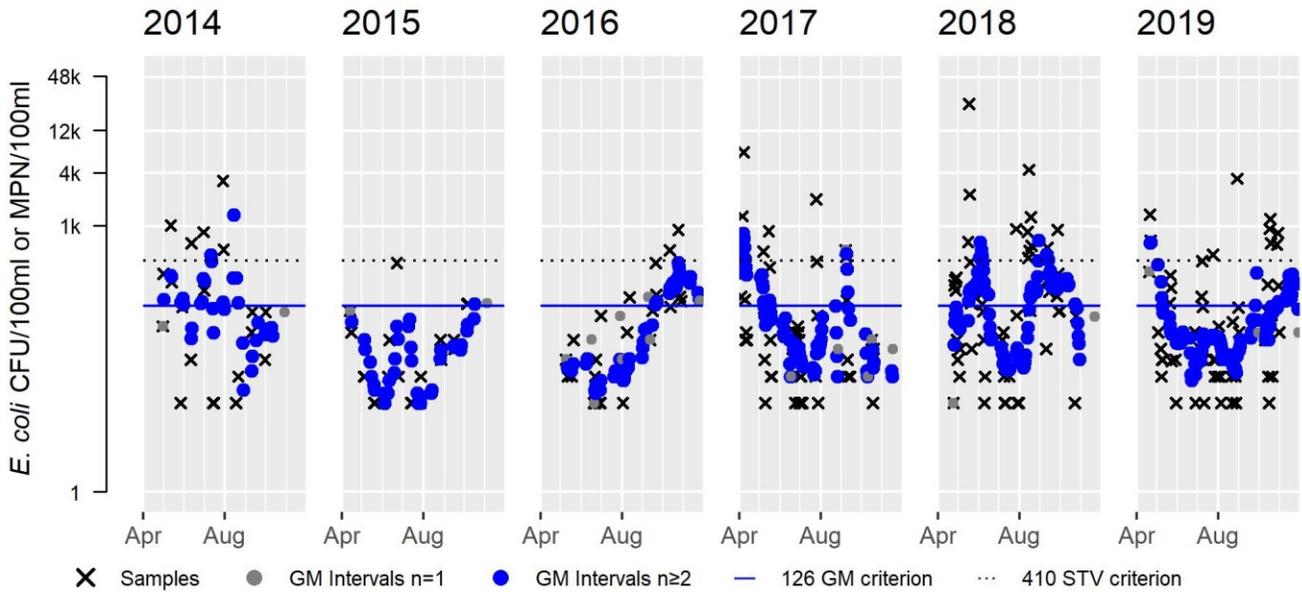


MWRA_067S *E. coli* (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	20	Samples	20	Samples	29	Samples	48	Samples	52	Samples	59
SeasGM	102	SeasGM	33	SeasGM	55	SeasGM	76	SeasGM	117	SeasGM	69
#GMI	34	#GMI	35	#GMI	45	#GMI	76	#GMI	92	#GMI	99
#GMI Ex	19	#GMI Ex	1	#GMI Ex	17	#GMI Ex	20	#GMI Ex	50	#GMI Ex	23
%GMI Ex	56	%GMI Ex	3	%GMI Ex	38	%GMI Ex	26	%GMI Ex	54	%GMI Ex	23
n>STV	5	n>STV	0	n>STV	2	n>STV	9	n>STV	12	n>STV	9
%n>STV	25	%n>STV	0	%n>STV	7	%n>STV	19	%n>STV	23	%n>STV	15

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	34	32

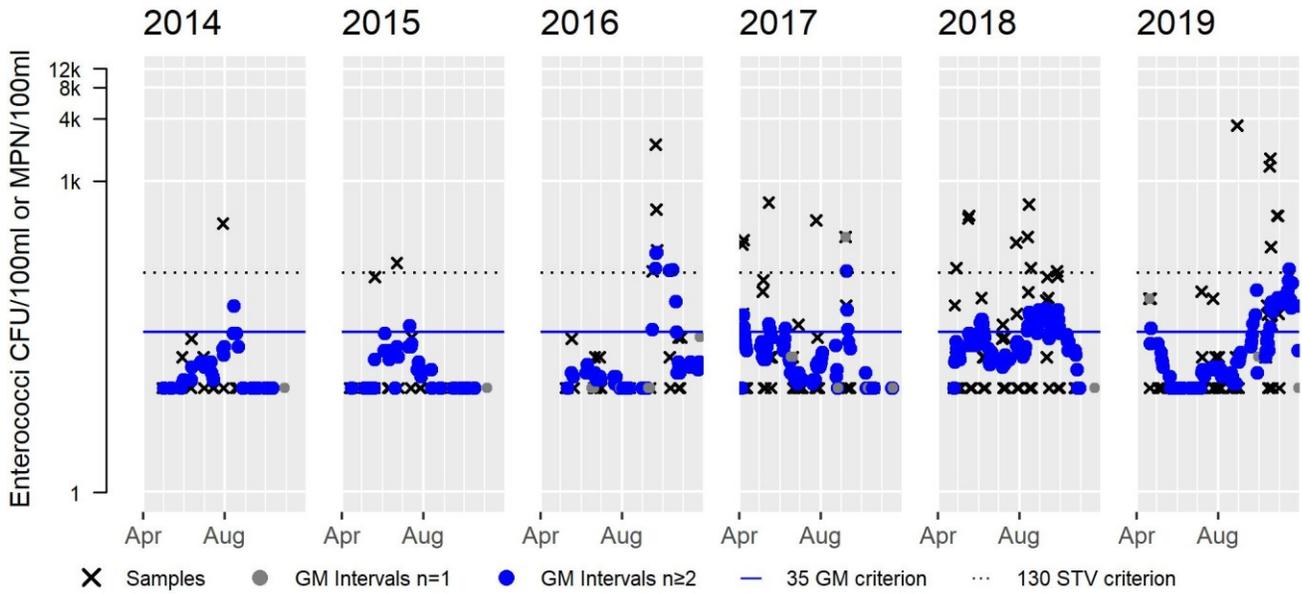


MWRA_067S Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	20	Samples	20	Samples	29	Samples	48	Samples	52	Samples	59
SeasGM	14	SeasGM	14	SeasGM	20	SeasGM	19	SeasGM	28	SeasGM	22
#GMI	34	#GMI	35	#GMI	45	#GMI	76	#GMI	92	#GMI	99
#GMI Ex	1	#GMI Ex	1	#GMI Ex	8	#GMI Ex	9	#GMI Ex	25	#GMI Ex	26
%GMI Ex	3	%GMI Ex	3	%GMI Ex	18	%GMI Ex	12	%GMI Ex	27	%GMI Ex	26
n>STV	1	n>STV	1	n>STV	4	n>STV	5	n>STV	8	n>STV	6
%n>STV	5	%n>STV	5	%n>STV	14	%n>STV	10	%n>STV	15	%n>STV	10

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	18	20

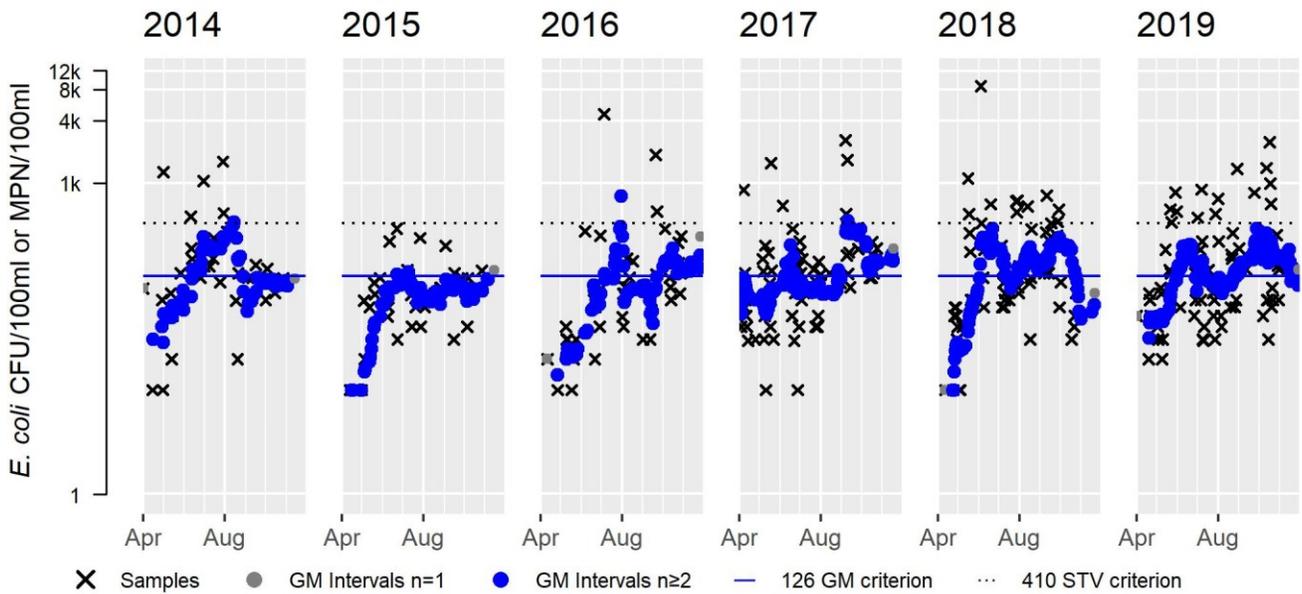


MWRA_083S *E. coli* (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	36	Samples	35	Samples	43	Samples	63	Samples	67	Samples	75
SeasGM	124	SeasGM	69	SeasGM	90	SeasGM	116	SeasGM	128	SeasGM	134
#GMI	62	#GMI	62	#GMI	78	#GMI	110	#GMI	117	#GMI	129
#GMI Ex	26	#GMI Ex	2	#GMI Ex	32	#GMI Ex	40	#GMI Ex	75	#GMI Ex	77
%GMI Ex	42	%GMI Ex	3	%GMI Ex	41	%GMI Ex	36	%GMI Ex	64	%GMI Ex	60
n>STV	5	n>STV	0	n>STV	3	n>STV	6	n>STV	11	n>STV	14
%n>STV	14	%n>STV	0	%n>STV	7	%n>STV	10	%n>STV	16	%n>STV	19

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	45	46

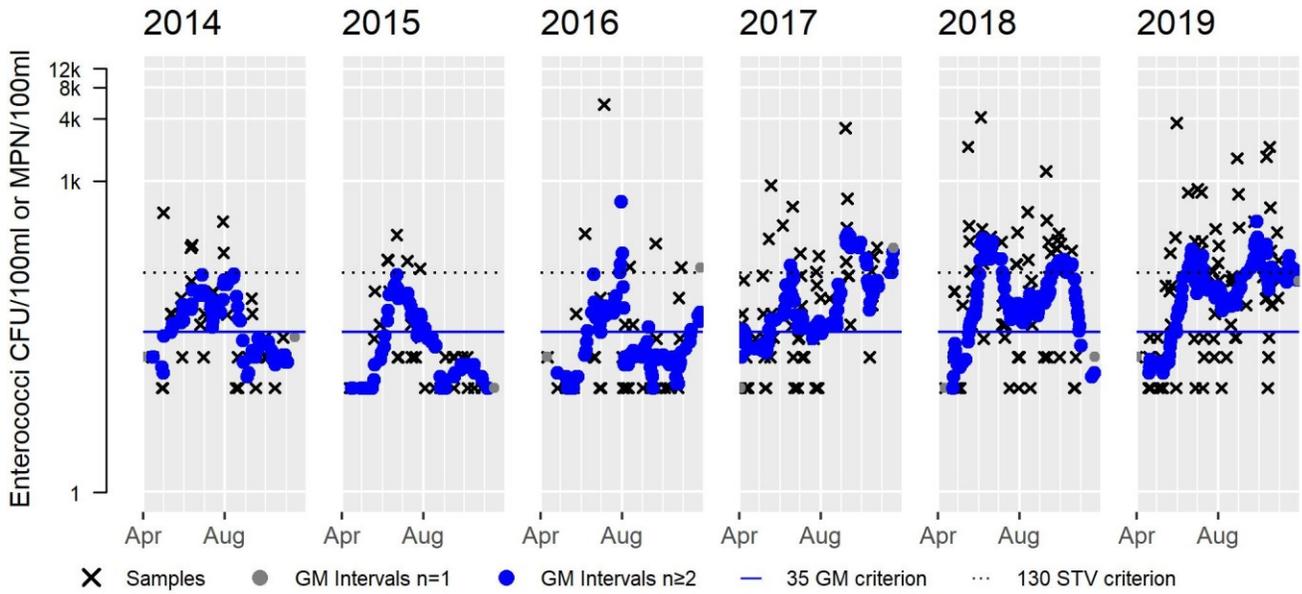


MWRA_083S Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	36	Samples	35	Samples	43	Samples	63	Samples	67	Samples	75
SeasGM	42	SeasGM	24	SeasGM	24	SeasGM	54	SeasGM	73	SeasGM	81
#GMI	62	#GMI	62	#GMI	78	#GMI	110	#GMI	117	#GMI	129
#GMI Ex	35	#GMI Ex	19	#GMI Ex	27	#GMI Ex	84	#GMI Ex	100	#GMI Ex	111
%GMI Ex	56	%GMI Ex	31	%GMI Ex	35	%GMI Ex	76	%GMI Ex	85	%GMI Ex	86
n>STV	5	n>STV	5	n>STV	5	n>STV	15	n>STV	28	n>STV	26
%n>STV	14	%n>STV	14	%n>STV	12	%n>STV	24	%n>STV	42	%n>STV	35

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	67	69

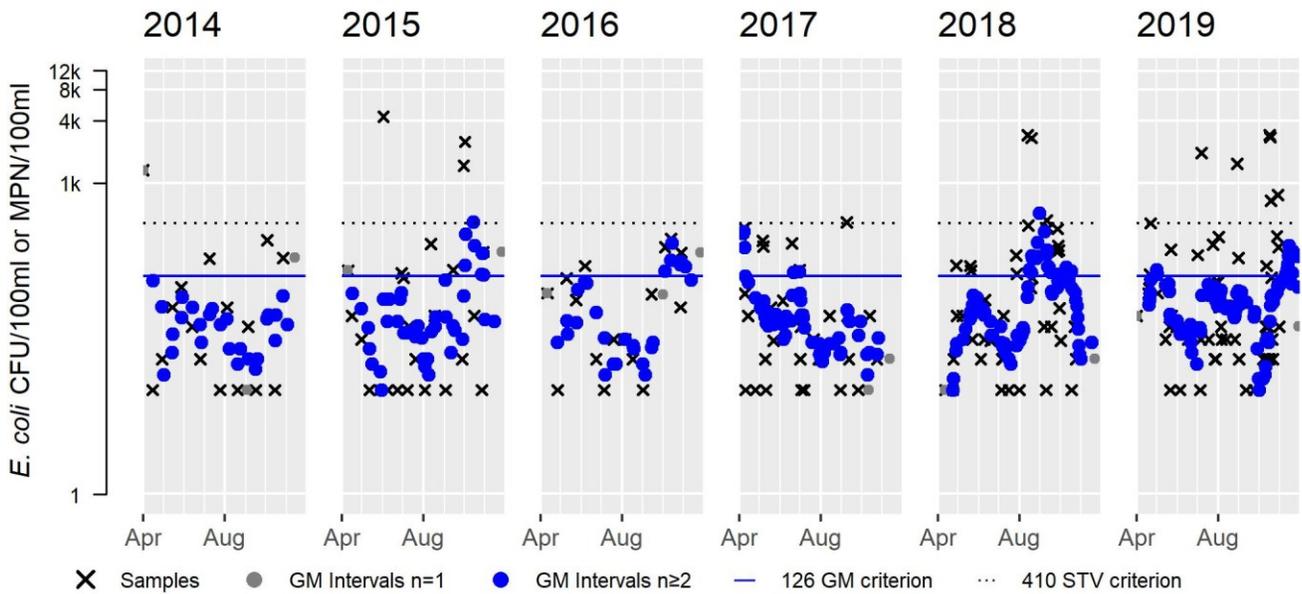


MWRA_167S *E. coli* (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	16	Samples	24	Samples	16	Samples	32	Samples	42	Samples	55
SeasGM	46	SeasGM	58	SeasGM	53	SeasGM	46	SeasGM	65	SeasGM	72
#GMI	26	#GMI	43	#GMI	26	#GMI	56	#GMI	78	#GMI	95
#GMI Ex	0	#GMI Ex	8	#GMI Ex	6	#GMI Ex	6	#GMI Ex	19	#GMI Ex	13
%GMI Ex	0	%GMI Ex	19	%GMI Ex	23	%GMI Ex	11	%GMI Ex	24	%GMI Ex	14
n>STV	1	n>STV	3	n>STV	0	n>STV	1	n>STV	3	n>STV	6
%n>STV	6	%n>STV	12	%n>STV	0	%n>STV	3	%n>STV	7	%n>STV	11

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	16	17

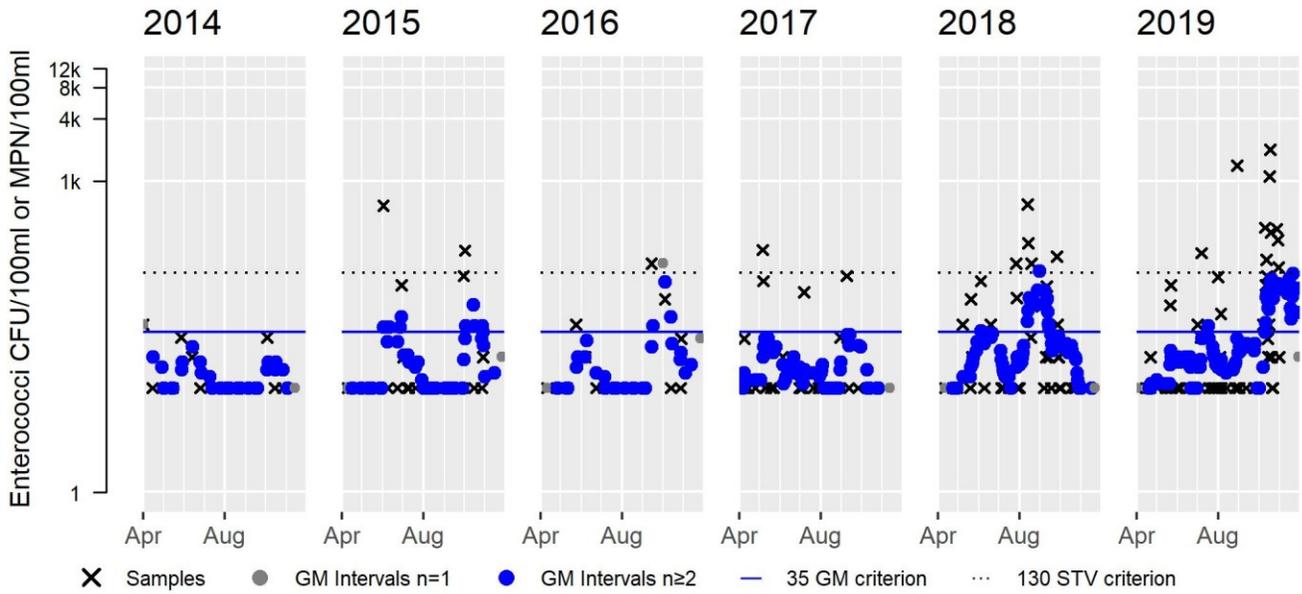


MWRA_167S Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	16	Samples	24	Samples	16	Samples	32	Samples	42	Samples	55
SeasGM	13	SeasGM	17	SeasGM	16	SeasGM	16	SeasGM	24	SeasGM	30
#GMI	26	#GMI	43	#GMI	26	#GMI	56	#GMI	78	#GMI	95
#GMI Ex	0	#GMI Ex	8	#GMI Ex	3	#GMI Ex	0	#GMI Ex	17	#GMI Ex	34
%GMI Ex	0	%GMI Ex	19	%GMI Ex	12	%GMI Ex	0	%GMI Ex	22	%GMI Ex	36
n>STV	0	n>STV	2	n>STV	1	n>STV	1	n>STV	5	n>STV	10
%n>STV	0	%n>STV	8	%n>STV	6	%n>STV	3	%n>STV	12	%n>STV	18

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	19	21

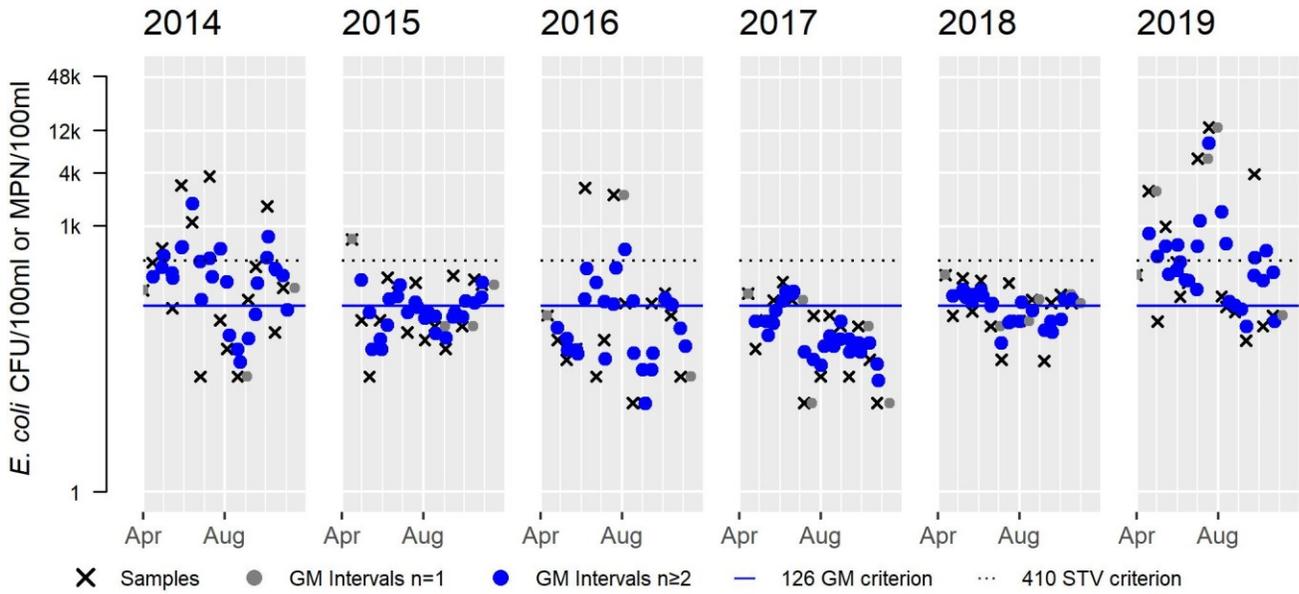


MWRA_177S *E. coli* (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	16	Samples	15	Samples	15	Samples	15	Samples	14	Samples	16
SeasGM	236	SeasGM	118	SeasGM	78	SeasGM	57	SeasGM	119	SeasGM	380
#GMI	26	#GMI	24	#GMI	24	#GMI	24	#GMI	21	#GMI	25
#GMI Ex	20	#GMI Ex	9	#GMI Ex	11	#GMI Ex	4	#GMI Ex	11	#GMI Ex	22
%GMI Ex	77	%GMI Ex	38	%GMI Ex	46	%GMI Ex	17	%GMI Ex	52	%GMI Ex	88
n>STV	5	n>STV	1	n>STV	2	n>STV	0	n>STV	0	n>STV	5
%n>STV	31	%n>STV	7	%n>STV	13	%n>STV	0	%n>STV	0	%n>STV	31

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	53	48

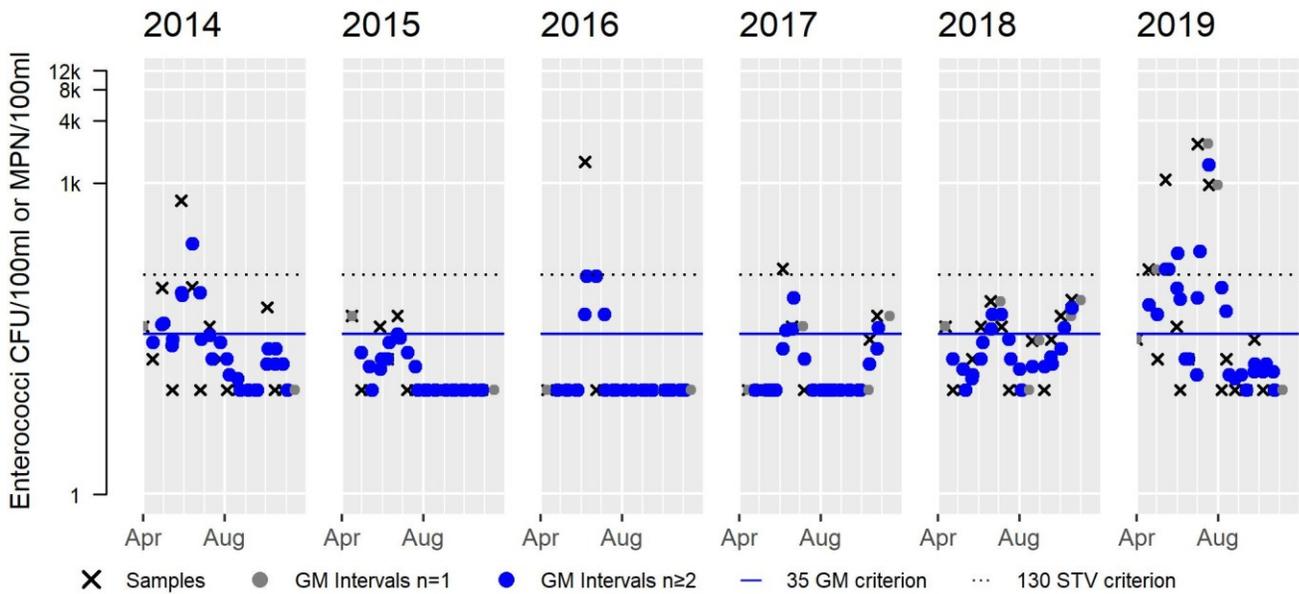


MWRA_177S Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	16	Samples	15	Samples	15	Samples	15	Samples	14	Samples	16
SeasGM	25	SeasGM	14	SeasGM	14	SeasGM	16	SeasGM	25	SeasGM	43
#GMI	26	#GMI	24	#GMI	24	#GMI	24	#GMI	21	#GMI	25
#GMI Ex	6	#GMI Ex	0	#GMI Ex	4	#GMI Ex	4	#GMI Ex	5	#GMI Ex	12
%GMI Ex	23	%GMI Ex	0	%GMI Ex	17	%GMI Ex	17	%GMI Ex	24	%GMI Ex	48
n>STV	1	n>STV	0	n>STV	1	n>STV	1	n>STV	0	n>STV	4
%n>STV	6	%n>STV	0	%n>STV	7	%n>STV	7	%n>STV	0	%n>STV	25

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

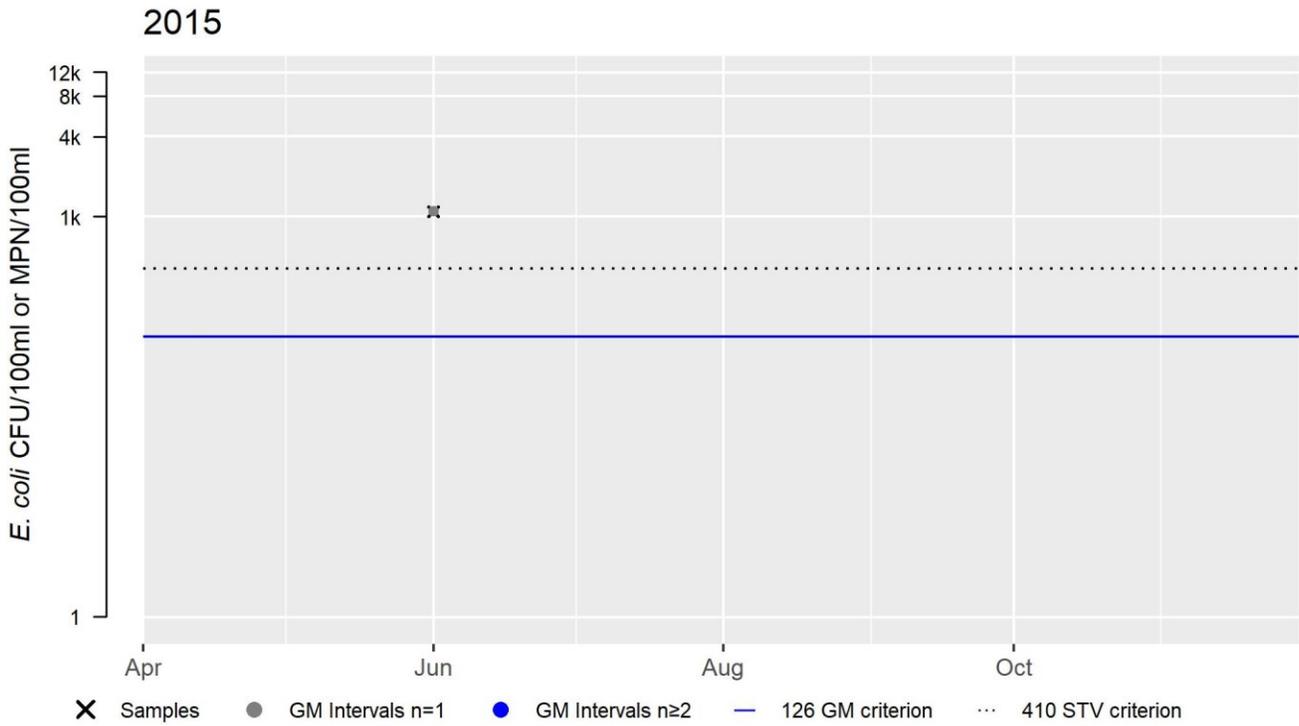
Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	22	21



MyRWA_MWRA060 *E. coli* (30-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	1089
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

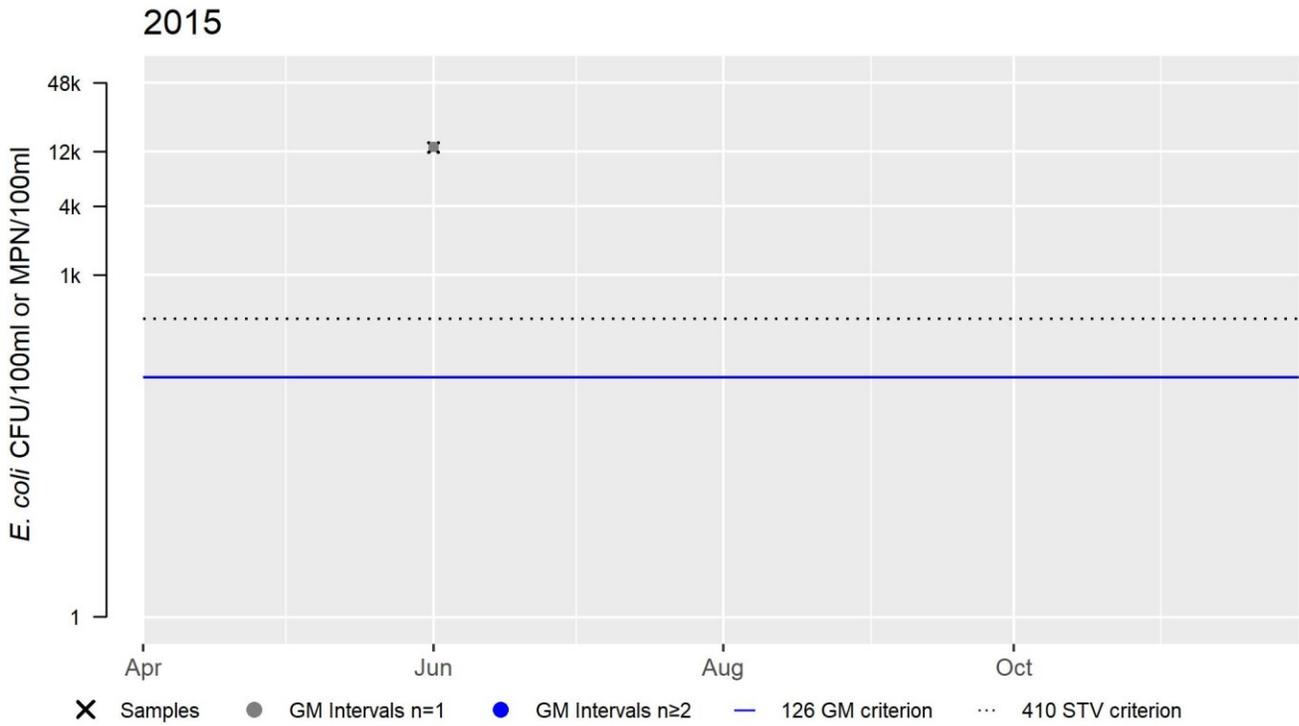
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exceedances; %GMI Ex = percent GMI Exceedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



MyRWA_MWRA177 *E. coli* (30-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	13140
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

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



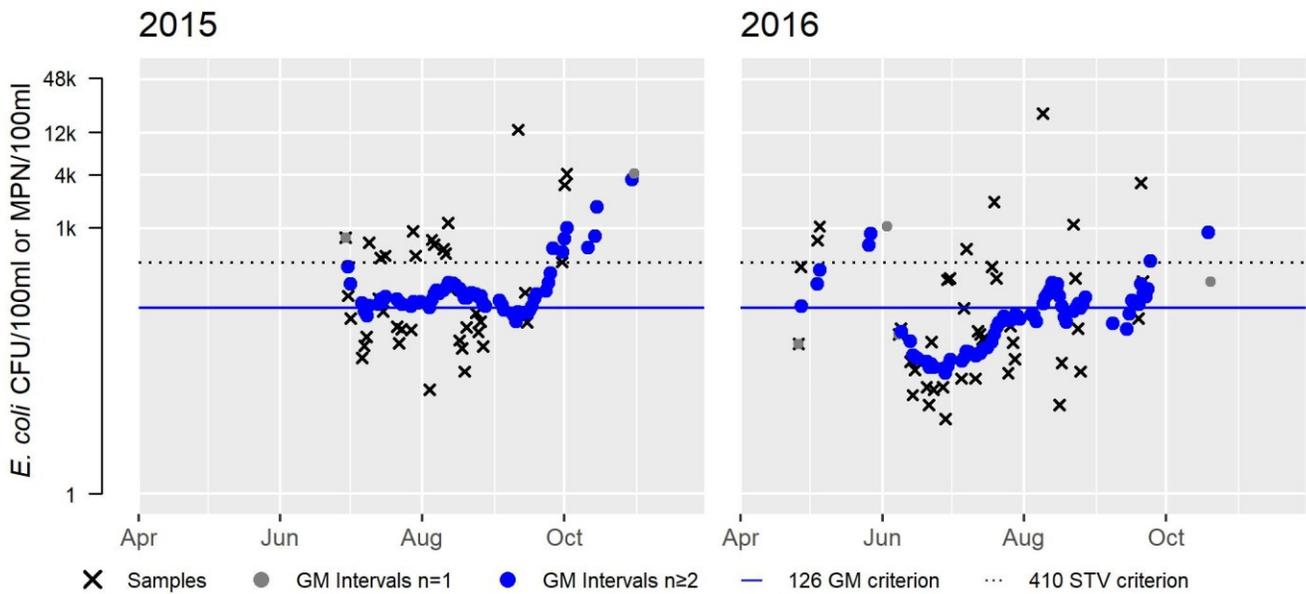
MyRWA_MYR0435 *E. coli* (30-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	38
SeasGM	199
#GMI	64
#GMI Ex	54
%GMI Ex	84
n>STV	15
%n>STV	39

Var	Res
Samples	43
SeasGM	93
#GMI	71
#GMI Ex	24
%GMI Ex	34
n>STV	7
%n>STV	16

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

Variable	Cumulative %GMI Ex (all years)
Result	58

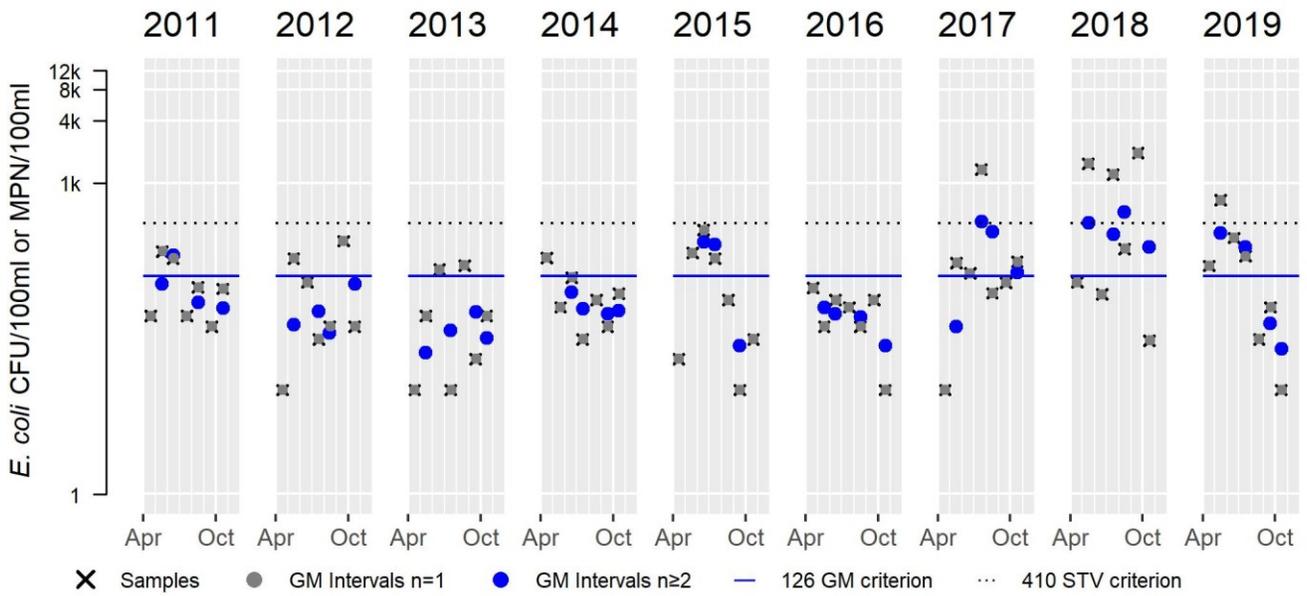


MyRWA_MYR071 *E. coli* (30-day Interval), Primary Contact Recreational Use Season

Var	Res														
Samples	7														
SeasGM	88	SeasGM	60	SeasGM	39	SeasGM	74	SeasGM	67	SeasGM	48	SeasGM	126	SeasGM	302
#GMI	4	#GMI	4	#GMI	4	#GMI	4	#GMI	3	#GMI	4	#GMI	4	#GMI	4
#GMI Ex	1	#GMI Ex	0	#GMI Ex	0	#GMI Ex	0	#GMI Ex	2	#GMI Ex	0	#GMI Ex	3	#GMI Ex	4
%GMI Ex	25	%GMI Ex	0	%GMI Ex	0	%GMI Ex	0	%GMI Ex	67	%GMI Ex	0	%GMI Ex	75	%GMI Ex	100
n>STV	0	n>STV	1	n>STV	3										
%n>STV	0	%n>STV	14	%n>STV	43										

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	34	58



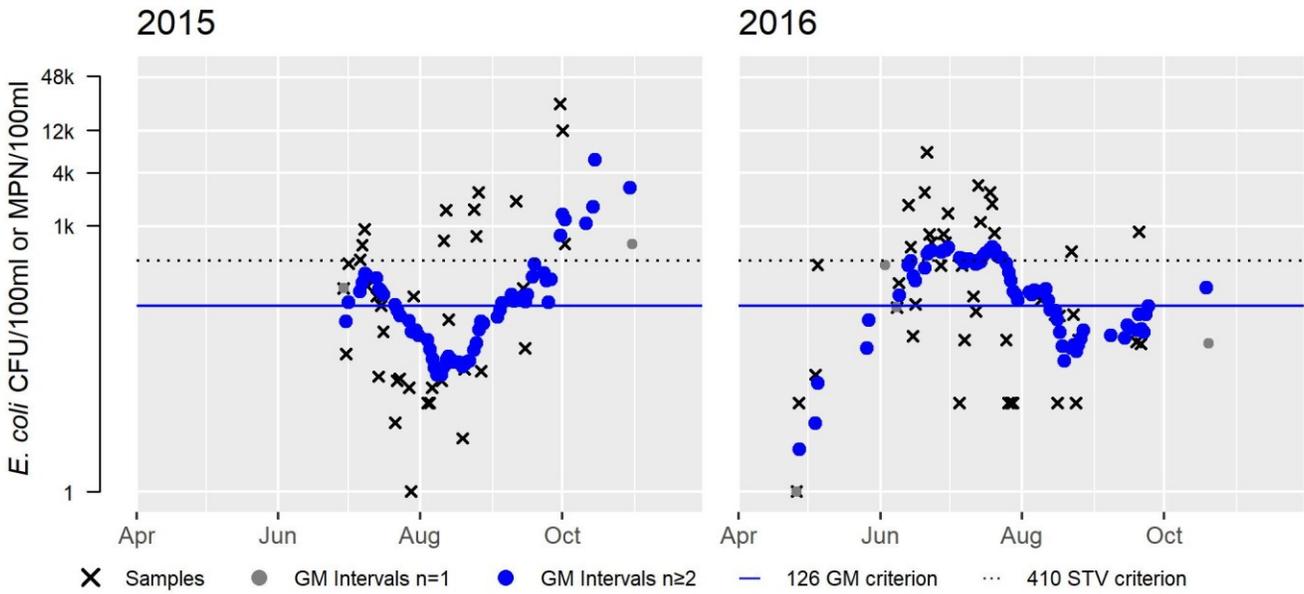
MyRWA_MYRBOBDOCK *E. coli* (30-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	37
SeasGM	116
#GMI	62
#GMI Ex	31
%GMI Ex	50
n>STV	12
%n>STV	32

Var	Res
Samples	43
SeasGM	160
#GMI	71
#GMI Ex	44
%GMI Ex	62
n>STV	16
%n>STV	37

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

Variable	Cumulative %GMI Ex (all years)
Result	56



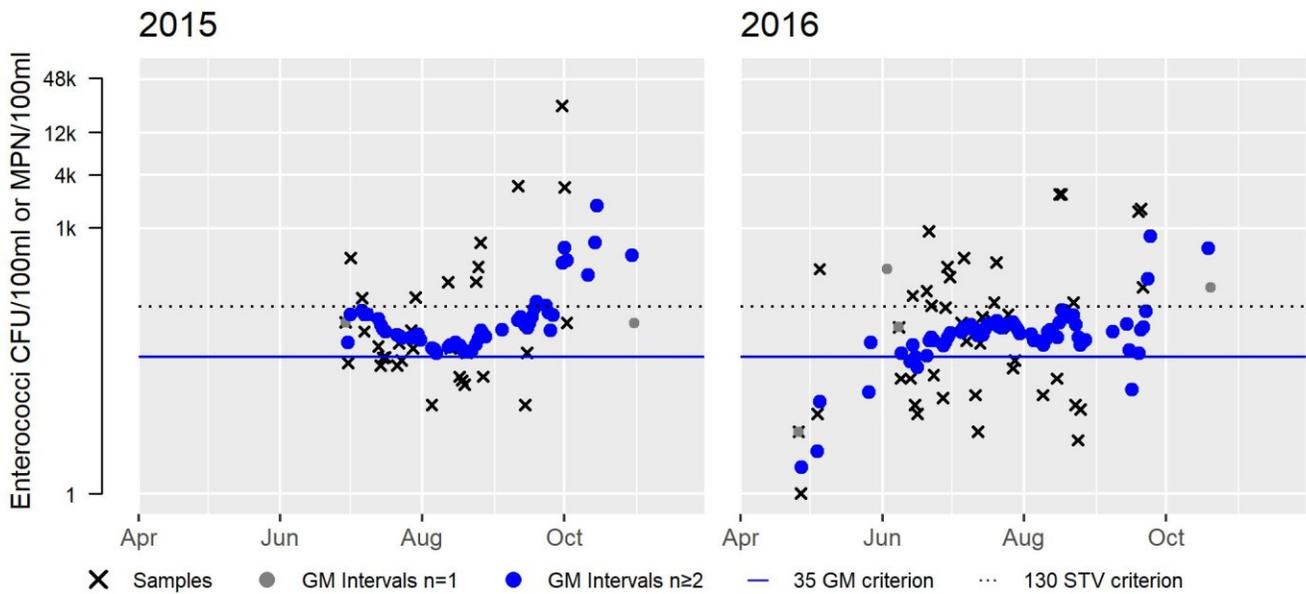
MyRWA_MYRBOBDOCK Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	33
SeasGM	87
#GMI	55
#GMI Ex	55
%GMI Ex	100
n>STV	10
%n>STV	30

Var	Res
Samples	43
SeasGM	64
#GMI	71
#GMI Ex	63
%GMI Ex	89
n>STV	16
%n>STV	37

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

Variable	Cumulative %GMI Ex (all years)
Result	94



Secondary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	YES
2022 Use Attainment Summary	

E. coli bacteria sampling was conducted by MWRA staff and MyRWA staff/volunteers from 2011-2019 at multiple locations in this Mystic River AU (MA71-02). Data collection timing/frequency and locations are described from upstream to downstream in the AU as follows: MyRWA moderate frequency data (n= 10-13/yr) collected from 2011-2019 on the upstream side of the High Street bridge in Medford, at the outlet from Lower Mystic Lake (MyRWA_MYR071); MWRA high frequency data (n= 41-87/yr) collected from 2014-2019 upstream of the confluence of the Mystic River and Alewife Brook (MWRA_083S); MWRA high frequency data (n= 20-63/yr) collected from 2014-2019 at the confluence of the Mystic River and Alewife Brook (MWRA_057S); MWRA high frequency data (n= 25-26/yr) collected from 2014-2019 at the Boston Ave. bridge (MWRA_066S); MWRA high frequency data (n= 20-63/yr) collected from 2014-2019 100m upstream of Rt. 93 (MWRA_056S); MyRWA high frequency data (n= 38-43/yr) collected from 2015-2016 on the downstream side of the Rt. 16 bridge (MyRWA_MYR0435); MWRA high frequency data (n= 22-25/yr) collected from 2014-2019, midchannel, on the downstream side of the Rt. 16 bridge (MWRA_177S); MyRWA high frequency data (n= 37-43/yr) collected from 2015-2016 from the furthest dock at the Blessing of the Bay Boathouse (MyRWA_MYRBOBDOCK); MWRA high frequency data (n= 20-63/yr) collected from 2014-2019 from the Rt. 28 bridge, near the SOM007A/MWR205A CSO (MWRA_067S); MWRA high frequency data (n= 20-35/yr) collected from 2014-2019 at the confluence of the Mystic and Malden Rivers (MWRA_059S); MWRA high frequency data (n= 21-66/yr) collected from 2014-2019 on the upstream side of the Amelia Earhart Dam (MWRA_167S). While bacteria data were collected infrequently at several other MyRWA stations (MyRWA_MWRA056, MyRWA_MWRA177, MyRWA_MWRA060), sample size was insufficient to allow analysis of these data for use attainment decisions. Per 2022 CALM guidance (MassDEP 2022), multi-year bacteria data are evaluated for use impairment by considering three conditions (with some differences based on sampling frequency, which in this AU was moderate or high frequency): the percentage of sampling intervals with GMs exceeding the criterion in two or more years out of the most recent five years of data, the cumulative percentage of intervals with GM exceedances over the most recent five years of data, and the number or percentage (for moderate or high frequency data, respectively) of samples exceeding the STV in more than two of the five years of data (or two years if it is a 2-year dataset). Among the large amount of data collected in this AU, the first two use impairment conditions were not met at any of the sampling locations, and the third condition (regarding the STV criterion) was met only at one MyRWA location (MyRWA_MYRBOBDOCK). Even for this site, the data were not considered to be indicative of an impaired condition since at least two of the three use impairment conditions were not met. C-HAB postings for this Mystic River AU (MA71-02) were reported to MassDPH for 37 days in 2015 (sampling was conducted by MyRWA), 20 days in 2016 and 30 days in 2017 in the vicinity of the Blessing of the Bay Boathouse dock (the advisories were confirmed based on sample analysis).

The Secondary Contact Recreational Use for this Mystic River AU (MA71-02) will continue to be assessed as Not Supporting with the Transparency/Clarity impairment being carried forward. Based on extensive MWRA and MyRWA bacteria data indicative of good conditions, the prior impairment for Escherichia Coli (E. Coli) will be removed. A Harmful Algal Blooms impairment is being added due to documented C-HABs in 2015, 2016, and 2017. The generic Non-Native Aquatic Plants impairment is being removed and replaced with the specific Water Chestnut impairment. The historical Alerts for Oily Sheen, Objectionable Deposits, and Dense Macrophytes in aggregate are being carried forward (MassDEP Undated 6).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MWRA_056S	Massachusetts Water Resource Authority	Water Quality	UPPER MYSTIC	Mystic River, 100m upstream of Rt. 93	42.414769	-71.105322
MWRA_057S	Massachusetts Water Resource Authority	Water Quality	UPPER MYSTIC	Mystic River, confluence of Mystic River and Alewife Brook	42.415224	-71.132393

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MWRA_059S	Massachusetts Water Resource Authority	Water Quality	LOWER MYSTIC BASIN	Mystic River, confluence of Mystic and Malden Rivers	42.396667	-71.077
MWRA_066S	Massachusetts Water Resource Authority	Water Quality	UPPER MYSTIC	Mystic River, Boston Ave. bridge	42.417263	-71.130664
MWRA_067S	Massachusetts Water Resource Authority	Water Quality	LOWER MYSTIC BASIN	Mystic River, Route 28 bridge, near SOM007A/MWR205A	42.399765	-71.082831
MWRA_083S	Massachusetts Water Resource Authority	Water Quality	UPPER MYSTIC	Mystic River, upstream of confluence of Mystic River and Alewife Brook	42.415203	-71.137041
MWRA_167S	Massachusetts Water Resource Authority	Water Quality	LOWER MYSTIC BASIN	Mystic River, Amelia Earhart Dam, upstream side	42.395	-71.075833
MWRA_177S	Massachusetts Water Resource Authority	Water Quality	LOWER MYSTIC BASIN	Mystic River, Rt 16 bridge, midchannel, downstream side	42.405722	-71.096351
MyRWA_MWRA056	Mystic River Watershed Association	Water Quality	Mystic River (Fresh)	MYSTIC, 100M UPSTREAM OF RT. 93	42.4147689	-71.1053218
MyRWA_MWRA060	Mystic River Watershed Association	Water Quality	Mystic River (Fresh)	MYSTIC, MDC SAILING DOCK	42.3986999	-71.0904612
MyRWA_MWRA177	Mystic River Watershed Association	Water Quality	Mystic River (Fresh)	MYSTIC RIVER, RT 16 BRIDGE MIDCHANNEL DOWNSTREAM SIDE	42.405722	-71.096351
MyRWA_MYR0435	Mystic River Watershed Association	Water Quality	Mystic River (Fresh)	Center of the stream. Sample from route 16 bridge, downstram side	42.405722	-71.096351
MyRWA_MYR071	Mystic River Watershed Association	Water Quality	Mystic River (Fresh)	Mystic River at High Street Bridge in Medford; outlet from Lower Mystic Lake, upstream side of the bridge	42.420647	-71.142906
MyRWA_MYRBOBDOCK	Mystic River Watershed Association	Water Quality	Mystic River (Fresh)	From Blessing of the Bay Boathouse furthest dock	42.3987	-71.090461

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MWRA 2019)

(MassDEP Undated 2) (MyRWA 2019) (MassDEP Undated 2)

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

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MWRA_056S	Massachusetts Water Resource Authority	E. coli	04/30/14	10/01/14	20	52	6130	382
MWRA_056S	Massachusetts Water Resource Authority	E. coli	04/13/15	10/06/15	20	20	2100	191
MWRA_056S	Massachusetts Water Resource Authority	E. coli	03/28/16	12/02/16	37	10	5170	148
MWRA_056S	Massachusetts Water Resource Authority	E. coli	04/03/17	11/29/17	51	31	7700	183
MWRA_056S	Massachusetts Water Resource Authority	E. coli	04/24/18	11/08/18	57	31	17300	317
MWRA_056S	Massachusetts Water Resource Authority	E. coli	04/20/19	11/22/19	63	20	72700	318
MWRA_057S	Massachusetts Water Resource Authority	E. coli	04/30/14	10/01/14	20	10	1310	186
MWRA_057S	Massachusetts Water Resource Authority	E. coli	04/13/15	10/06/15	20	10	2850	125
MWRA_057S	Massachusetts Water Resource Authority	E. coli	03/28/16	12/02/16	37	10	3080	85
MWRA_057S	Massachusetts Water Resource Authority	E. coli	04/03/17	11/29/17	51	10	5790	113
MWRA_057S	Massachusetts Water Resource Authority	E. coli	04/24/18	11/08/18	58	10	2100	163
MWRA_057S	Massachusetts Water Resource Authority	E. coli	04/20/19	11/22/19	63	20	4610	164
MWRA_059S	Massachusetts Water Resource Authority	E. coli	04/30/14	10/01/14	20	10	6870	45
MWRA_059S	Massachusetts Water Resource Authority	E. coli	04/13/15	10/06/15	20	10	122	25
MWRA_059S	Massachusetts Water Resource Authority	E. coli	03/28/16	12/01/16	35	10	960	60
MWRA_059S	Massachusetts Water Resource Authority	E. coli	04/04/17	10/19/17	31	10	4350	70
MWRA_059S	Massachusetts Water Resource Authority	E. coli	04/25/18	09/12/18	24	10	3260	87
MWRA_059S	Massachusetts Water Resource Authority	E. coli	05/03/19	08/30/19	21	10	759	43

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MWRA_066S	Massachusetts Water Resource Authority	E. coli	01/06/14	12/22/14	26	10	3260	138
MWRA_066S	Massachusetts Water Resource Authority	E. coli	01/07/15	12/21/15	25	10	327	86
MWRA_066S	Massachusetts Water Resource Authority	E. coli	01/04/16	12/20/16	26	20	2250	108
MWRA_066S	Massachusetts Water Resource Authority	E. coli	01/03/17	12/20/17	26	10	617	92
MWRA_066S	Massachusetts Water Resource Authority	E. coli	01/18/18	12/26/18	25	20	3610	140
MWRA_066S	Massachusetts Water Resource Authority	E. coli	01/07/19	12/16/19	26	31	933	145
MWRA_067S	Massachusetts Water Resource Authority	E. coli	04/30/14	10/01/14	20	10	3260	102
MWRA_067S	Massachusetts Water Resource Authority	E. coli	04/13/15	10/06/15	20	10	384	33
MWRA_067S	Massachusetts Water Resource Authority	E. coli	03/28/16	12/02/16	37	10	1240	73
MWRA_067S	Massachusetts Water Resource Authority	E. coli	04/03/17	11/29/17	50	10	6870	75
MWRA_067S	Massachusetts Water Resource Authority	E. coli	04/24/18	11/08/18	57	10	24200	130
MWRA_067S	Massachusetts Water Resource Authority	E. coli	04/20/19	11/22/19	63	10	3450	74
MWRA_083S	Massachusetts Water Resource Authority	E. coli	01/06/14	12/22/14	44	10	1610	102
MWRA_083S	Massachusetts Water Resource Authority	E. coli	01/20/15	12/21/15	41	10	364	66
MWRA_083S	Massachusetts Water Resource Authority	E. coli	01/04/16	12/06/16	61	10	4610	74
MWRA_083S	Massachusetts Water Resource Authority	E. coli	01/03/17	12/20/17	76	10	2600	97
MWRA_083S	Massachusetts Water Resource Authority	E. coli	01/18/18	12/10/18	82	10	8660	116
MWRA_083S	Massachusetts Water Resource Authority	E. coli	01/07/19	12/16/19	87	10	2490	130

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MWRA_167S	Massachusetts Water Resource Authority	E. coli	03/18/14	12/22/14	21	10	1330	55
MWRA_167S	Massachusetts Water Resource Authority	E. coli	03/30/15	12/21/15	30	10	4350	75
MWRA_167S	Massachusetts Water Resource Authority	E. coli	01/04/16	12/06/16	27	10	1050	66
MWRA_167S	Massachusetts Water Resource Authority	E. coli	01/03/17	12/04/17	43	10	419	47
MWRA_167S	Massachusetts Water Resource Authority	E. coli	01/29/18	11/27/18	55	10	2910	90
MWRA_167S	Massachusetts Water Resource Authority	E. coli	01/07/19	12/16/19	66	10	2910	80
MWRA_177S	Massachusetts Water Resource Authority	E. coli	02/21/14	12/22/14	24	20	13000	338
MWRA_177S	Massachusetts Water Resource Authority	E. coli	01/20/15	12/21/15	22	20	1450	169
MWRA_177S	Massachusetts Water Resource Authority	E. coli	01/21/16	12/20/16	25	10	2700	137
MWRA_177S	Massachusetts Water Resource Authority	E. coli	01/03/17	12/20/17	25	10	1920	90
MWRA_177S	Massachusetts Water Resource Authority	E. coli	01/18/18	12/26/18	25	30	1720	155
MWRA_177S	Massachusetts Water Resource Authority	E. coli	01/07/19	12/16/19	23	51	13000	324
MyRWA_MWRA056	Mystic River Watershed Association	E. coli	12/10/14	12/11/14	2	1800	2900	2285
MyRWA_MWRA060	Mystic River Watershed Association	E. coli	12/10/14	12/11/14	2	3200	12000	6197
MyRWA_MWRA060	Mystic River Watershed Association	E. coli	06/01/15	06/01/15	1	1089	1089	1089
MyRWA_MWRA177	Mystic River Watershed Association	E. coli	06/01/15	06/01/15	1	13140	13140	13140
MyRWA_MYR0435	Mystic River Watershed Association	E. coli	06/29/15	10/02/15	38	14.6	12997	199
MyRWA_MYR0435	Mystic River Watershed Association	E. coli	04/26/16	09/21/16	43	7.4	19863	93

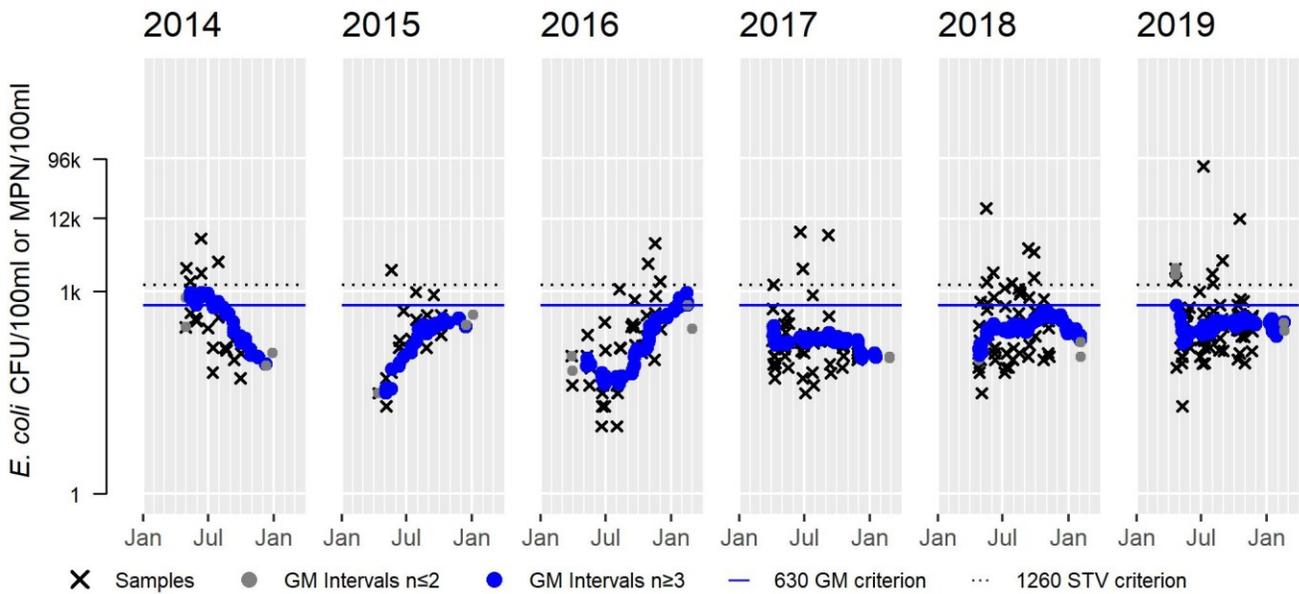
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MyRWA_MYR071	Mystic River Watershed Association	E. coli	01/19/11	12/14/11	12	10	218	51
MyRWA_MYR071	Mystic River Watershed Association	E. coli	01/18/12	12/19/12	12	10	419	60
MyRWA_MYR071	Mystic River Watershed Association	E. coli	01/16/13	12/18/13	12	10	160	35
MyRWA_MYR071	Mystic River Watershed Association	E. coli	01/15/14	12/17/14	13	31	1700	147
MyRWA_MYR071	Mystic River Watershed Association	E. coli	01/21/15	12/16/15	11	10	496	56
MyRWA_MYR071	Mystic River Watershed Association	E. coli	01/20/16	12/21/16	12	10	450	48
MyRWA_MYR071	Mystic River Watershed Association	E. coli	01/18/17	12/20/17	12	10	1350	48
MyRWA_MYR071	Mystic River Watershed Association	E. coli	01/17/18	12/19/18	12	10	1940	135
MyRWA_MYR071	Mystic River Watershed Association	E. coli	01/16/19	10/16/19	10	10	683	67
MyRWA_MYRBOBDOCK	Mystic River Watershed Association	E. coli	06/29/15	10/02/15	37	1	24196	116
MyRWA_MYRBOBDOCK	Mystic River Watershed Association	E. coli	04/26/16	09/21/16	43	1	6867	160

MWRA_056S *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res										
Samples	20	Samples	20	Samples	37	Samples	51	Samples	57	Samples	63
SeasGM	382	SeasGM	191	SeasGM	148	SeasGM	183	SeasGM	317	SeasGM	318
#GMI	32	#GMI	34	#GMI	66	#GMI	94	#GMI	100	#GMI	110
#GMI Ex	10	#GMI Ex	0	#GMI Ex	6	#GMI Ex	0	#GMI Ex	0	#GMI Ex	0
%GMI Ex	31	%GMI Ex	0	%GMI Ex	9	%GMI Ex	0	%GMI Ex	0	%GMI Ex	0
n>STV	5	n>STV	1	n>STV	3	n>STV	3	n>STV	7	n>STV	7
%n>STV	25	%n>STV	5	%n>STV	8	%n>STV	6	%n>STV	12	%n>STV	11

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	4	1

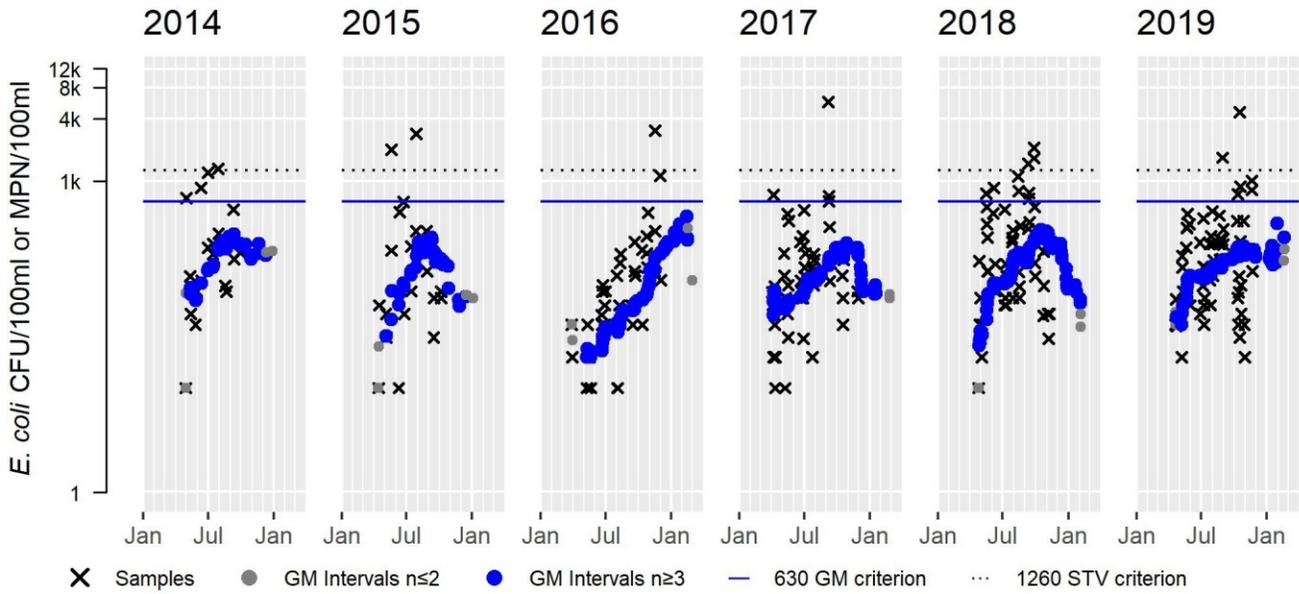


MWRA_057S *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res										
Samples	20	Samples	20	Samples	37	Samples	51	Samples	58	Samples	63
SeasGM	186	SeasGM	125	SeasGM	85	SeasGM	113	SeasGM	163	SeasGM	164
#GMI	32	#GMI	34	#GMI	66	#GMI	94	#GMI	102	#GMI	110
#GMI Ex	0										
%GMI Ex	0										
n>STV	1	n>STV	2	n>STV	1	n>STV	1	n>STV	3	n>STV	2
%n>STV	5	%n>STV	10	%n>STV	3	%n>STV	2	%n>STV	5	%n>STV	3

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	0	0

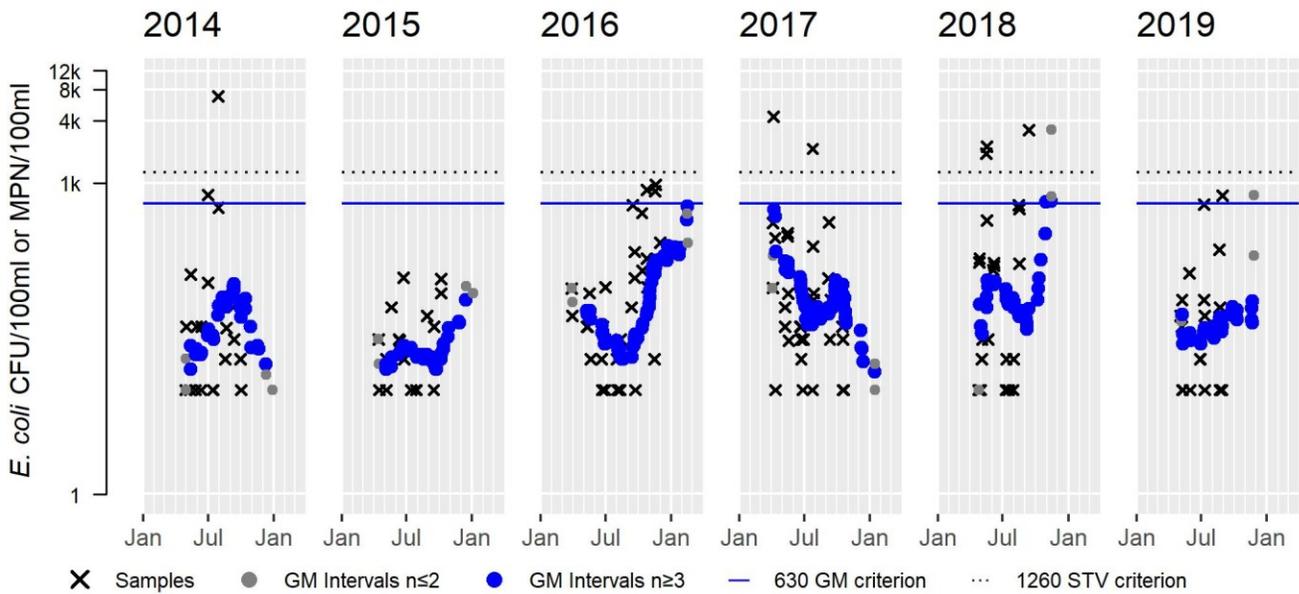


MWRA_059S *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res										
Samples	20	Samples	20	Samples	35	Samples	31	Samples	24	Samples	21
SeasGM	45	SeasGM	25	SeasGM	60	SeasGM	70	SeasGM	87	SeasGM	43
#GMI	32	#GMI	34	#GMI	62	#GMI	57	#GMI	41	#GMI	35
#GMI Ex	0	#GMI Ex	2	#GMI Ex	0						
%GMI Ex	0	%GMI Ex	5	%GMI Ex	0						
n>STV	1	n>STV	0	n>STV	0	n>STV	2	n>STV	3	n>STV	0
%n>STV	5	%n>STV	0	%n>STV	0	%n>STV	6	%n>STV	12	%n>STV	0

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	1	1

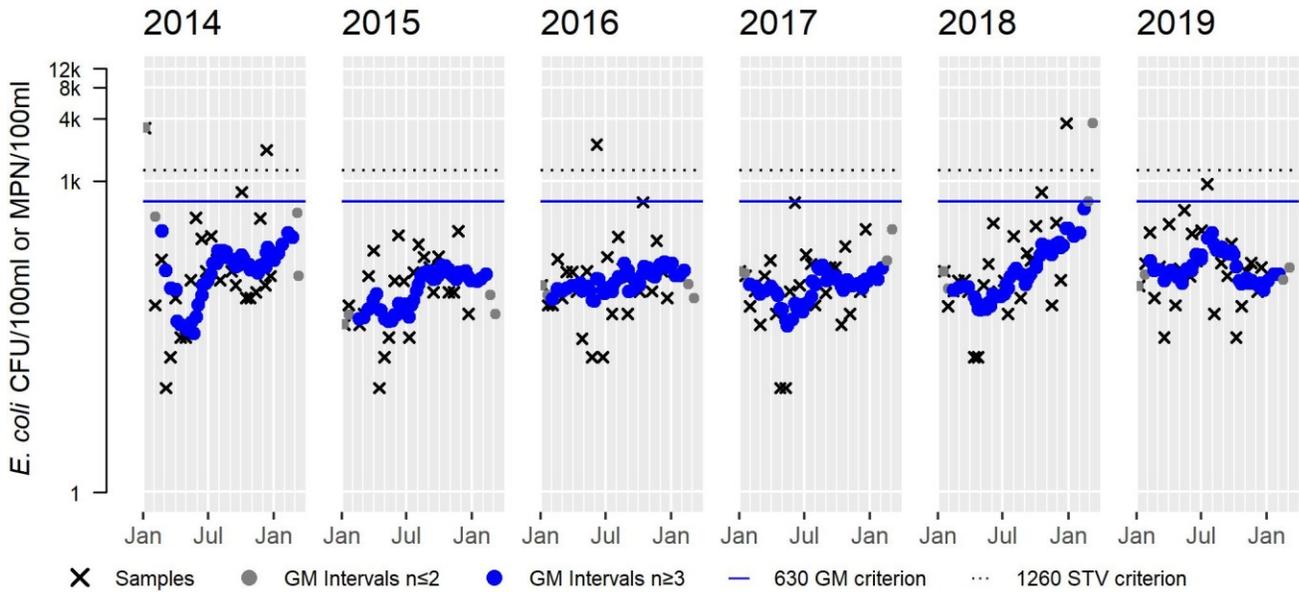


MWRA_066S *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res										
Samples	26	Samples	25	Samples	26	Samples	26	Samples	25	Samples	26
SeasGM	138	SeasGM	86	SeasGM	108	SeasGM	92	SeasGM	140	SeasGM	145
#GMI	47	#GMI	45	#GMI	47	#GMI	47	#GMI	43	#GMI	45
#GMI Ex	0										
%GMI Ex	0										
n>STV	2	n>STV	0	n>STV	1	n>STV	0	n>STV	1	n>STV	0
%n>STV	8	%n>STV	0	%n>STV	4	%n>STV	0	%n>STV	4	%n>STV	0

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	0	0

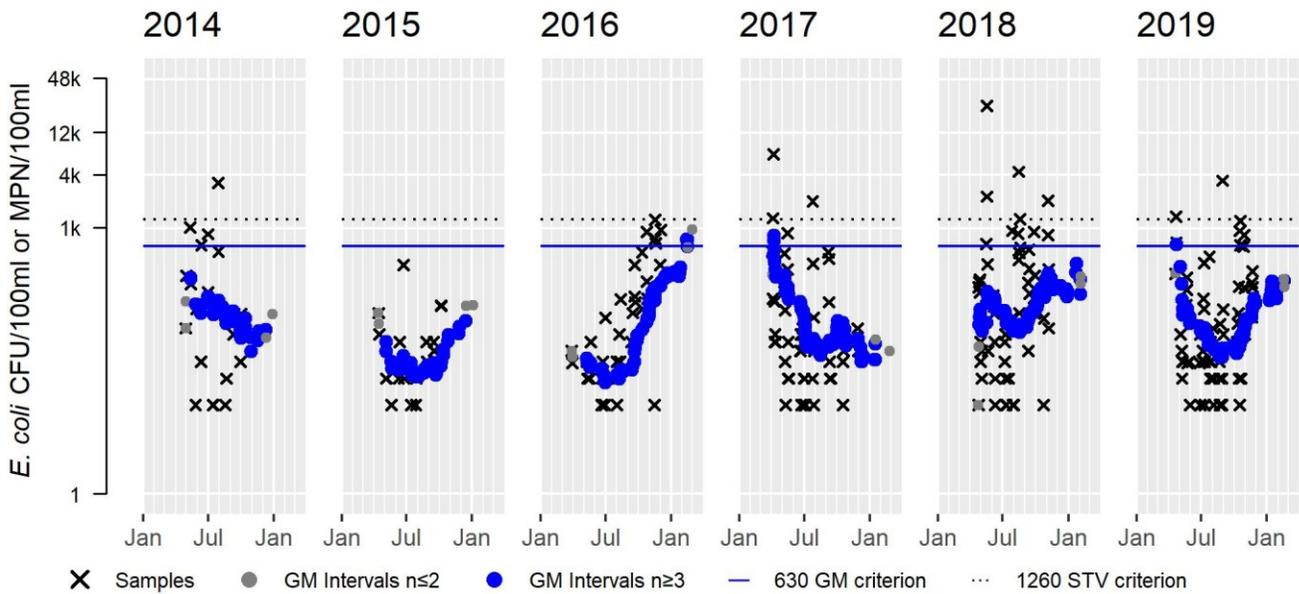


MWRA_067S *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res										
Samples	20	Samples	20	Samples	37	Samples	50	Samples	57	Samples	63
SeasGM	102	SeasGM	33	SeasGM	73	SeasGM	75	SeasGM	130	SeasGM	74
#GMI	32	#GMI	34	#GMI	66	#GMI	92	#GMI	100	#GMI	110
#GMI Ex	0	#GMI Ex	0	#GMI Ex	2	#GMI Ex	2	#GMI Ex	0	#GMI Ex	1
%GMI Ex	0	%GMI Ex	0	%GMI Ex	3	%GMI Ex	2	%GMI Ex	0	%GMI Ex	1
n>STV	1	n>STV	0	n>STV	0	n>STV	3	n>STV	4	n>STV	2
%n>STV	5	%n>STV	0	%n>STV	0	%n>STV	6	%n>STV	7	%n>STV	3

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	1	1

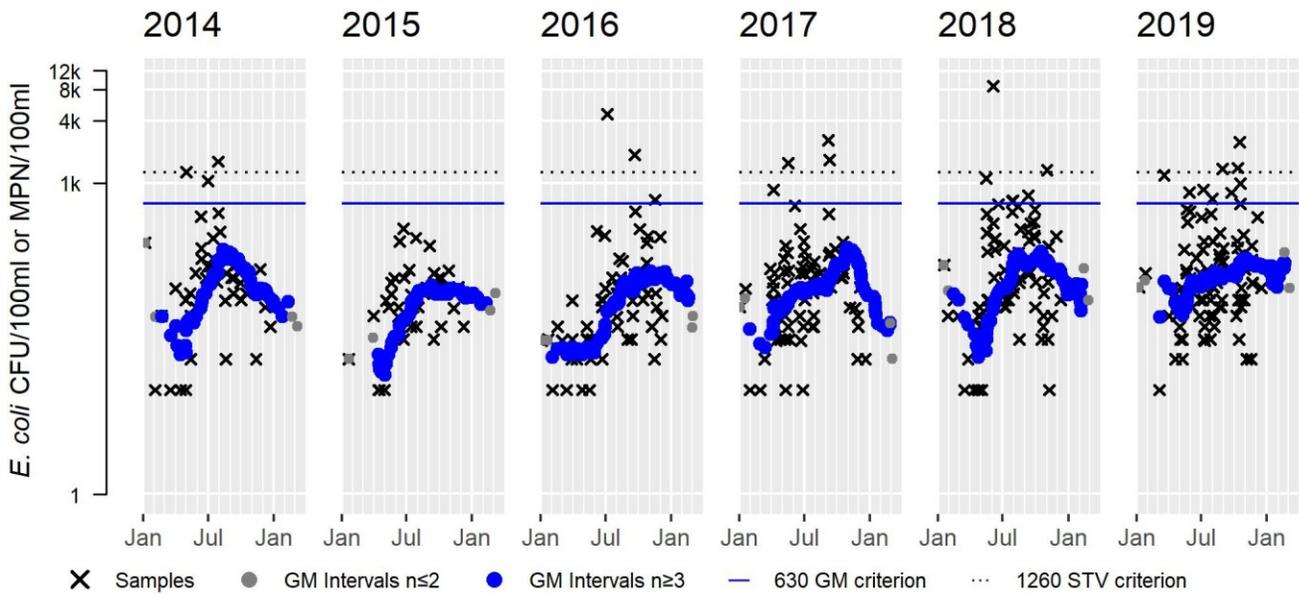


MWRA_083S *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res										
Samples	44	Samples	41	Samples	61	Samples	76	Samples	82	Samples	87
SeasGM	102	SeasGM	66	SeasGM	74	SeasGM	97	SeasGM	116	SeasGM	130
#GMI	76	#GMI	72	#GMI	110	#GMI	135	#GMI	142	#GMI	149
#GMI Ex	0										
%GMI Ex	0										
n>STV	2	n>STV	0	n>STV	2	n>STV	3	n>STV	2	n>STV	3
%n>STV	5	%n>STV	0	%n>STV	3	%n>STV	4	%n>STV	2	%n>STV	3

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	0	0

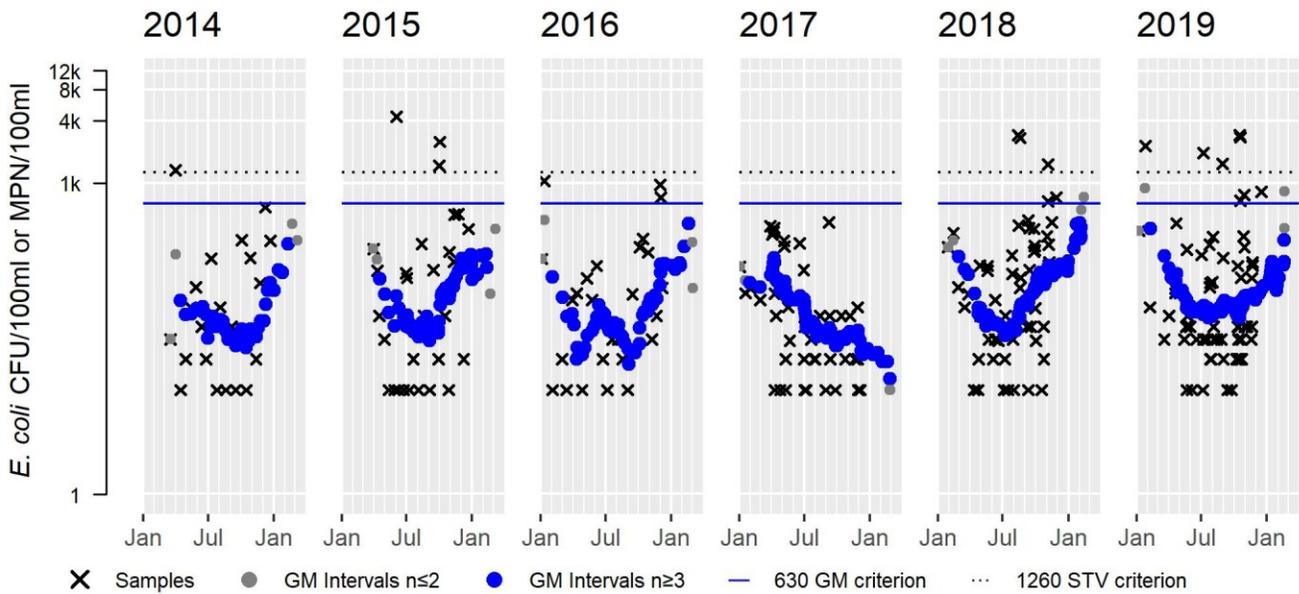


MWRA_167S *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res										
Samples	21	Samples	30	Samples	27	Samples	43	Samples	55	Samples	66
SeasGM	55	SeasGM	75	SeasGM	66	SeasGM	47	SeasGM	90	SeasGM	80
#GMI	37	#GMI	53	#GMI	49	#GMI	77	#GMI	98	#GMI	120
#GMI Ex	0										
%GMI Ex	0										
n>STV	1	n>STV	3	n>STV	0	n>STV	0	n>STV	3	n>STV	5
%n>STV	5	%n>STV	10	%n>STV	0	%n>STV	0	%n>STV	5	%n>STV	8

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	0	0

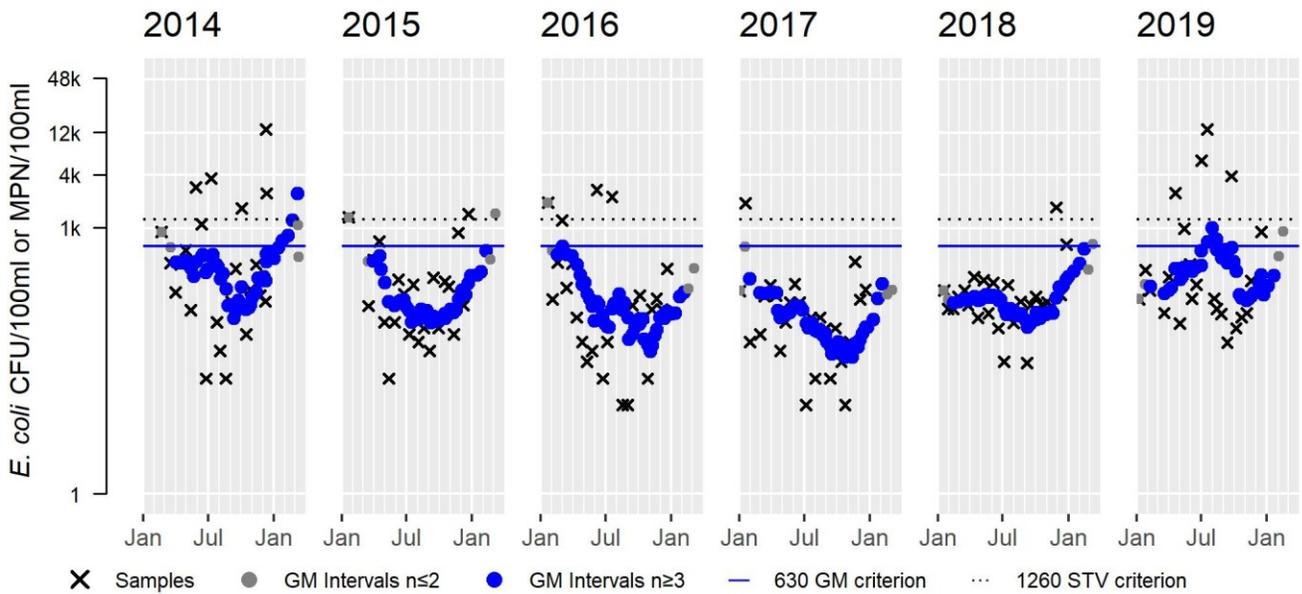


MWRA_177S *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res										
Samples	24	Samples	22	Samples	25	Samples	25	Samples	25	Samples	23
SeasGM	338	SeasGM	169	SeasGM	137	SeasGM	90	SeasGM	155	SeasGM	324
#GMI	43	#GMI	39	#GMI	45	#GMI	45	#GMI	43	#GMI	39
#GMI Ex	4	#GMI Ex	0	#GMI Ex	4						
%GMI Ex	9	%GMI Ex	0	%GMI Ex	10						
n>STV	5	n>STV	2	n>STV	3	n>STV	1	n>STV	1	n>STV	4
%n>STV	21	%n>STV	9	%n>STV	12	%n>STV	4	%n>STV	4	%n>STV	17

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

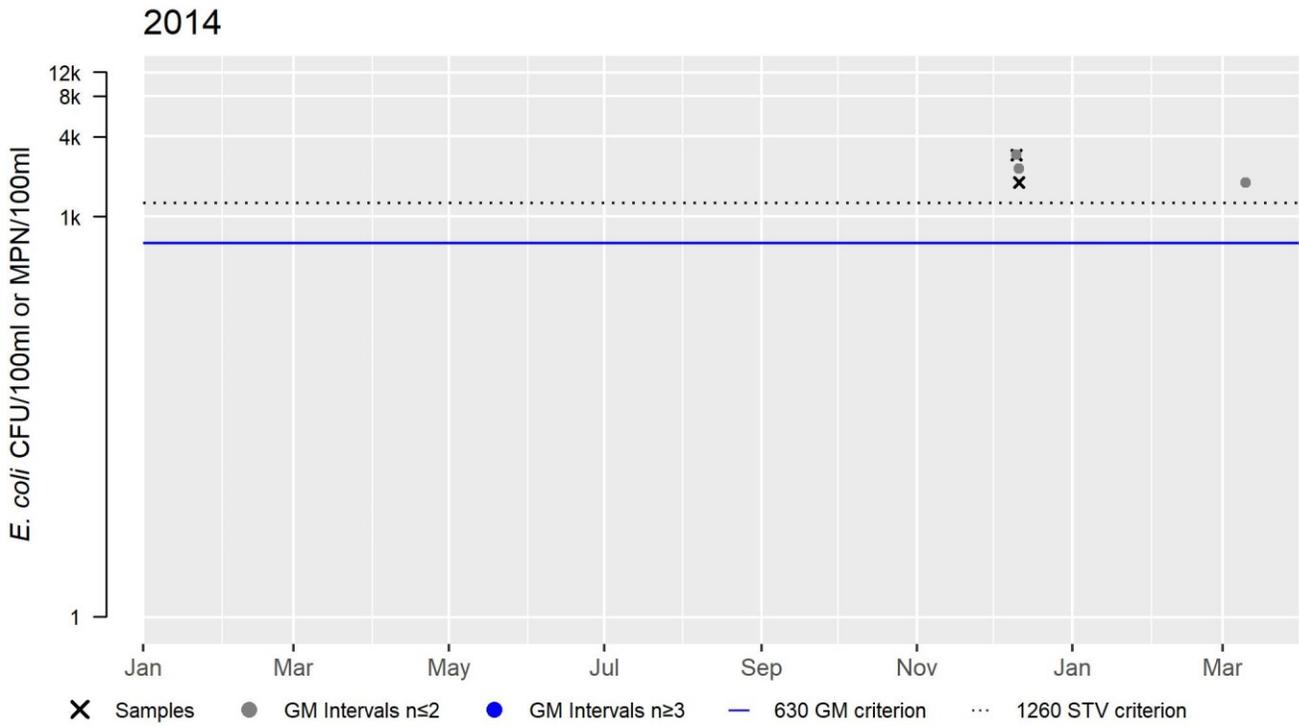
Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	3	2



MyRWA_MWRA056 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	2
SeasGM	2285
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	2
%n>STV	100

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



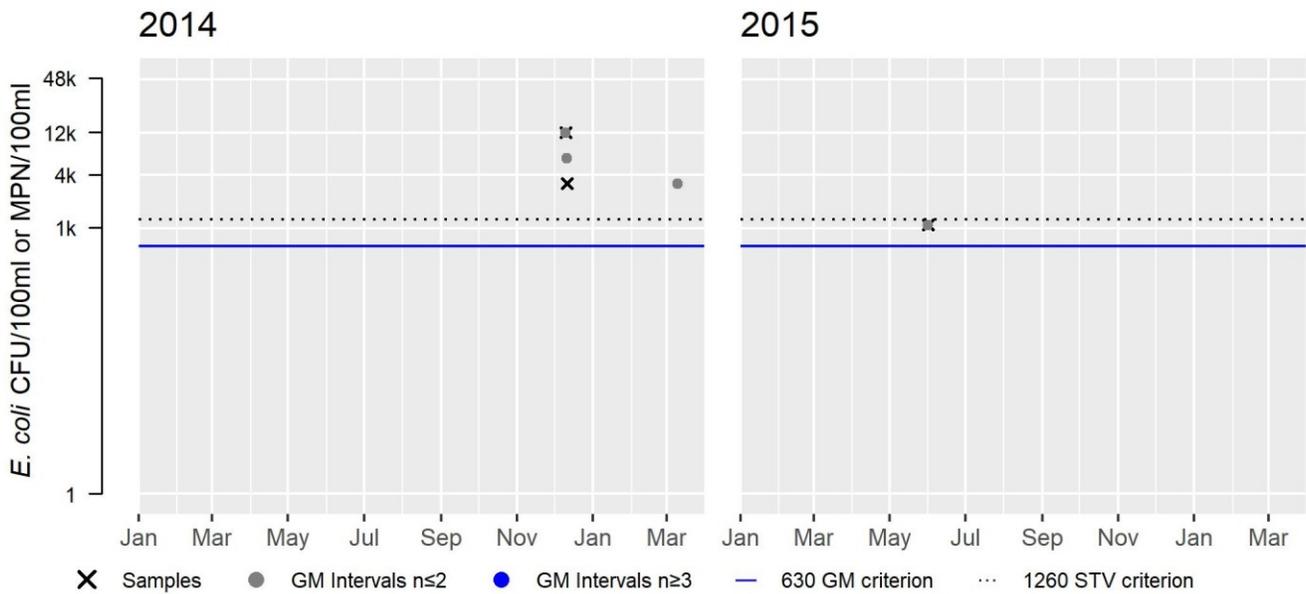
MyRWA_MWRA060 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	2
SeasGM	6197
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	2
%n>STV	100

Var	Res
Samples	1
SeasGM	1089
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

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

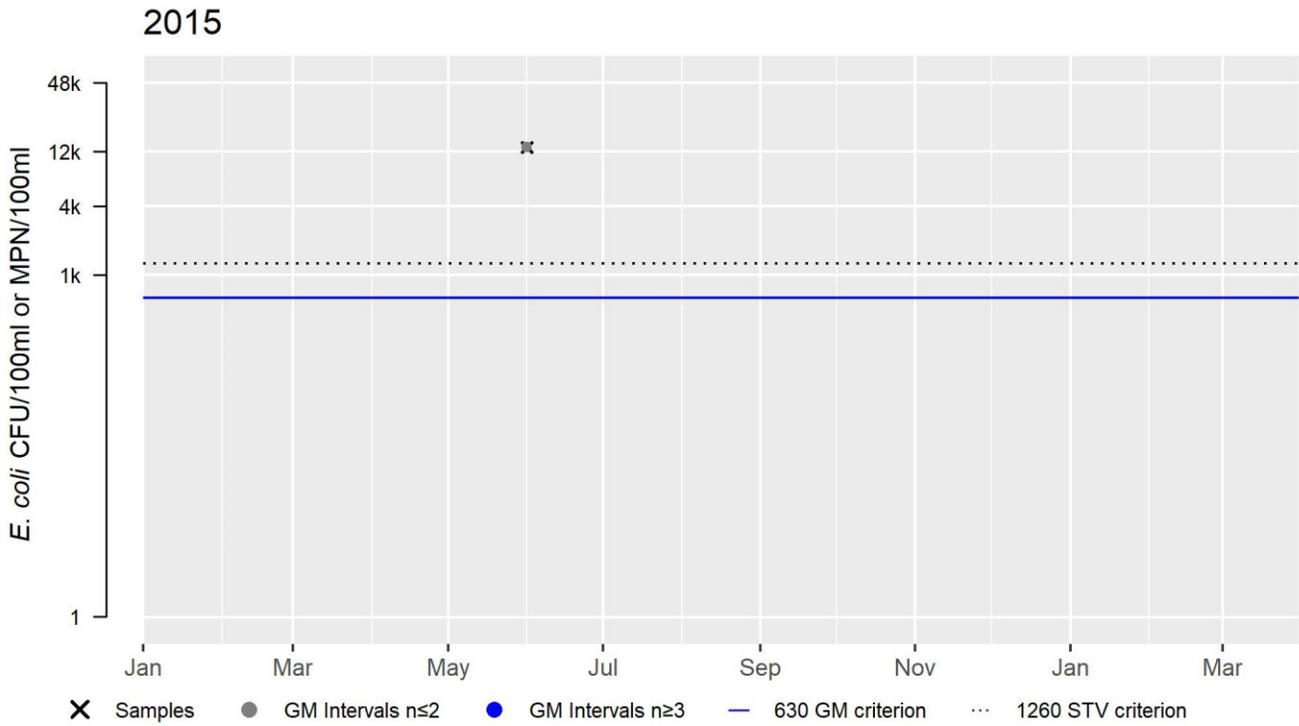
Variable	Cumulative %GMI Ex (all years)
Result	0



MyRWA_MWRA177 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	13140
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

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



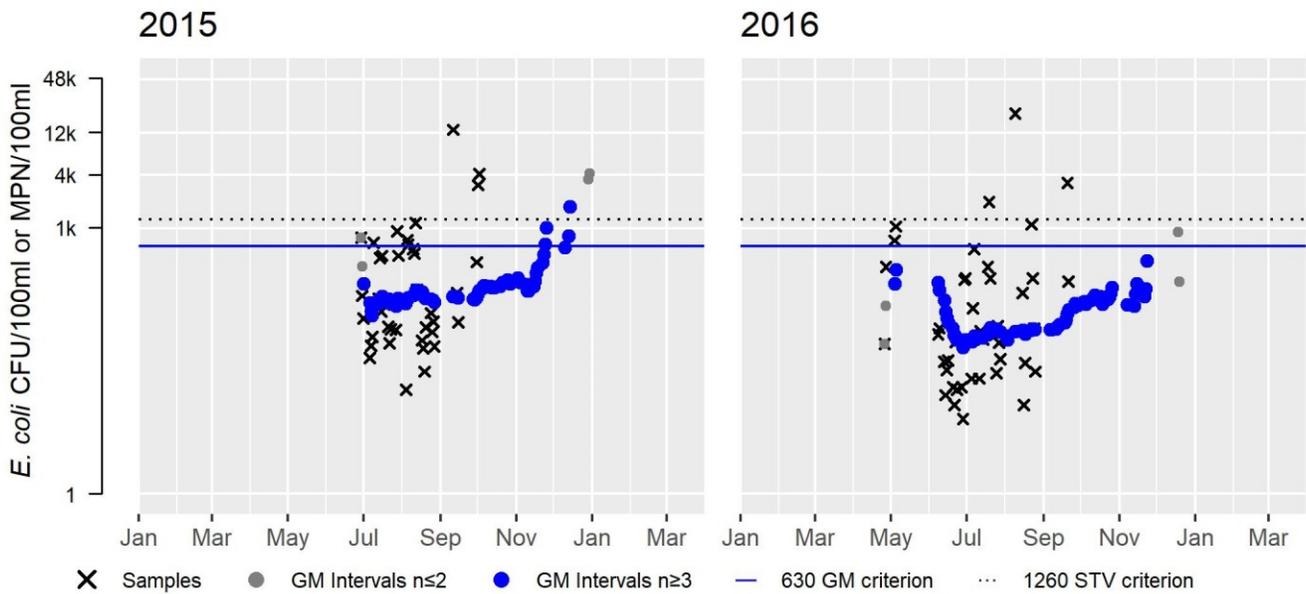
MyRWA_MYR0435 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	38
SeasGM	199
#GMI	71
#GMI Ex	4
%GMI Ex	6
n>STV	3
%n>STV	8

Var	Res
Samples	43
SeasGM	93
#GMI	76
#GMI Ex	0
%GMI Ex	0
n>STV	3
%n>STV	7

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

Variable	Cumulative %GMI Ex (all years)
Result	3

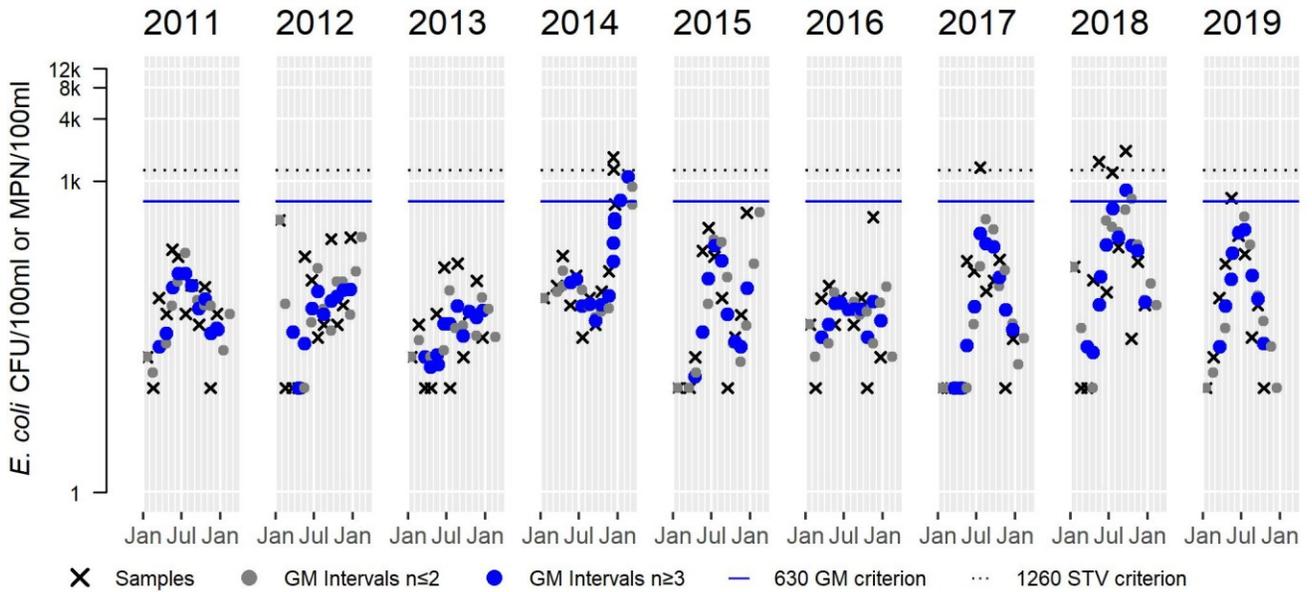


MyRWA_MYR071 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res														
Samples	12	Samples	12	Samples	12	Samples	13	Samples	11	Samples	12	Samples	12	Samples	10
SeasGM	51	SeasGM	60	SeasGM	35	SeasGM	147	SeasGM	56	SeasGM	48	SeasGM	48	SeasGM	135
#GMI	11	#GMI	10	#GMI	11	#GMI	13	#GMI	9	#GMI	10	#GMI	10	#GMI	11
#GMI Ex	0	#GMI Ex	0	#GMI Ex	0	#GMI Ex	2	#GMI Ex	0	#GMI Ex	0	#GMI Ex	0	#GMI Ex	1
%GMI Ex	0	%GMI Ex	0	%GMI Ex	0	%GMI Ex	15	%GMI Ex	0	%GMI Ex	0	%GMI Ex	0	%GMI Ex	9
n>STV	0	n>STV	0	n>STV	0	n>STV	2	n>STV	0	n>STV	0	n>STV	1	n>STV	2
%n>STV	0	%n>STV	0	%n>STV	0	%n>STV	15	%n>STV	0	%n>STV	0	%n>STV	8	%n>STV	17

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	3	2



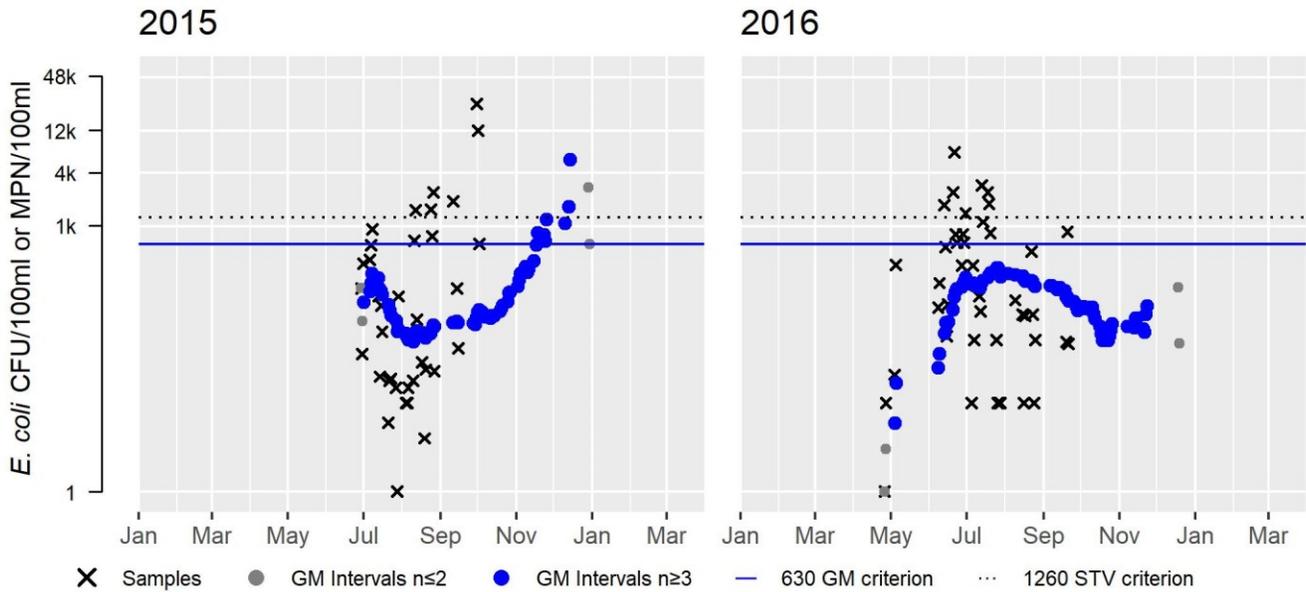
MyRWA_MYRBOBDOCK *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	37
SeasGM	116
#GMI	69
#GMI Ex	8
%GMI Ex	12
n>STV	6
%n>STV	16

Var	Res
Samples	43
SeasGM	160
#GMI	76
#GMI Ex	0
%GMI Ex	0
n>STV	7
%n>STV	16

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

Variable	Cumulative %GMI Ex (all years)
Result	6



Mystic River (MA71-03)

Location:	Amelia Earhart Dam, Somerville/Everett to confluence with Boston Inner Harbor, Chelsea/Charlestown (Includes Island End River SARIS# 7138175).
AU Type:	ESTUARY
AU Size:	0.49 SQUARE MILES
Classification/Qualifier:	SB(CSO): SFR

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Ammonia, Un-ionized		Unchanged
5	5	Cause Unknown [Contaminants in Fish and/or Shellfish; Sediment Screening Value (Exceedance)]		Unchanged
5	5	Dissolved Oxygen	R1_MA_2020_5a	Unchanged
5	5	Enterococcus	R1_MA_2019_01	Added
5	5	Fecal Coliform	R1_MA_2019_01	Unchanged
5	5	Flocculant Masses	R1_MA_2020_5a	Unchanged
5	5	Nutrient/Eutrophication Biological Indicators	R1_MA_2020_5a	Unchanged
5	5	Odor		Unchanged
5	5	Oil and Grease		Unchanged
5	5	PCBs in Fish Tissue		Unchanged
5	5	Petroleum Hydrocarbons		Unchanged
5	5	Scum/Foam		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Shellfish Harvesting	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Ammonia, Un-ionized	Source Unknown (N)	X					
Cause Unknown [Contaminants in Fish and/or Shellfish; Sediment Screening Value (Exceedance)]	Contaminated Sediments (Y)	X	X				
Cause Unknown [Contaminants in Fish and/or Shellfish; Sediment Screening Value (Exceedance)]	Source Unknown (N)	X	X				
Dissolved Oxygen	Source Unknown (N)	X					
Enterococcus	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)					X	X
Fecal Coliform	Source Unknown (N)			X			
Flocculant Masses	Contaminated Sediments (Y)				X	X	X
Nutrient/Eutrophication Biological Indicators	Combined Sewer Overflows (Y)	X					
Nutrient/Eutrophication Biological Indicators	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X					
Odor	Contaminated Sediments (Y)				X	X	X
Oil and Grease	Contaminated Sediments (Y)				X	X	X

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Shellfish Harvesting	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
PCBs in Fish Tissue	Source Unknown (N)		X				
Petroleum Hydrocarbons	Contaminated Sediments (Y)	X					
Scum/Foam	Contaminated Sediments (Y)				X	X	X

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
Recent data are not available, so the Aquatic Life Use of this Mystic River AU (MA71-03) will continue to be assessed as Not Supporting with historical impairments (un-ionized ammonia, Cause Unknown [Contaminants in Fish and/or Shellfish, Sediment Screening Value], Dissolved Oxygen, Nutrient/Eutrophication Biological Indicators, and Petroleum Hydrocarbons) being carried forward.	

Fish Consumption

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
Although no recent fish toxics sampling data are available, the Fish Consumption Use of this Mystic River AU (MA71-03) will continue to be assessed as Not Supporting with the Cause Unknown (Contaminants in Fish and/or Shellfish) and PCBs in Fish Tissue impairments being carried forward. As part of the broader advisory for Boston Harbor and all coastal waters that drain into it, MassDPH recommends that pregnant women, women who may become pregnant, nursing mothers, and children under 12 years old not eat lobsters, flounder, soft-shell clams and bivalves from these waters (MassDPH 2017).	

Shellfish Harvesting

2022 Use Attainment	Alert
Not Supporting	YES
2022 Use Attainment Summary	
Mystic River (MA71-03): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.4695 sq mi (95%). The sum of the approved, conditionally approved, and restricted shellfish growing areas represents 0 sq mi (0%). The prohibited shellfish growing area represents 0.4695 sq mi (95%). There is insufficient information available to assess the Shellfish Harvesting Use because the growing areas within this AU are classified as either entirely prohibited or a combination of prohibited and approved, conditionally approved, and/or restricted. Alert due to prohibited area ≥ 0.0001 sq mi. There is insufficient information available to delist the existing Fecal Coliform impairment so the Shellfish Harvesting Use is evaluated as not supporting.	

Shellfish Growing Area Classifications

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

Area Name	Waterbody/Area Description	Classification	Area (Sq. Mi.)	Area (% of AU)
GBH4.0	Boston Inner Harbor	Prohibited	0.46950	95.0%

Aesthetic

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
Recent data are not available, so the Aesthetics Use of this Mystic River AU (MA71-03) will continue to be assessed as Not Supporting with historical impairments (Flocculant Masses, Odor, Oil and Grease, Scum/Foam) being carried forward.	

Primary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
<p>MWRA staff and MyRWA staff/volunteers conducted Enterococci bacteria sampling throughout the 2012-2019 recreational seasons (Apr 1 – Oct 31) at multiple locations in this Mystic River AU (MA71-03). Analysis of the bacteria data will be discussed from upstream to downstream. Note that MWRA samples were collected from the surface and bottom at most stations (except for the Island End River station, MWRA_183S, where only surface samples were collected) and only the surface data will be discussed, as recreators are likely to have more contact with surface waters and the bacteria counts were typically quite low in the bottom samples. MWRA staff collected high frequency data (n= 23-38/yr) from 2014-2019 at a station downstream of the Amelia Earhart Dam, at the Somerville Marginal MWR205 CSO (MWRA_052S). Analysis of the data indicated that >10% of intervals (27-67%) had a GM >35 cfu/100mL in each of the most recent five years of data and that >10% of samples (14-39%) exceeded the 130 cfu/100mL STV in each of these years as well. MyRWA staff/volunteers collected moderate frequency data (generally, n=7/yr) from 2012-2019 at Draw Seven Park in Somerville, downstream of the MWR205 CSO (MyRWA_MYR275). Analysis of the data indicated that >20% of intervals (33-100%) had GMs >35 cfu/100mL in four of the most recent five years of data and that ≥2 samples (n= 2-4) exceeded the 130 cfu/100mL STV in four of the years. MWRA staff collected high frequency data (n= 24-37/yr) from 2014-2019 near the Schraffts Building and the BOS017 CSO (MWRA_069S). Analysis of the data indicated that >10% of intervals (19-72%) had GMs exceeding 35 cfu/100mL in four of the most recent five years of data and that >10% of samples (11-46%) exceeded the 130 cfu/100mL STV in four of these years. MWRA staff collected moderate frequency data (n= 13-14/yr) from 2014-2019 from a station 1/3 of a mile upstream of the Tobin Bridge (MWRA_137S). Analysis of the data indicated none of the intervals had GMs >35 cfu/100mL and no samples exceeded the 130 cfu/100mL STV in the entire dataset. MWRA staff collected moderate frequency data (n=7/yr) from 2014-2019 in the Island End River portion of this AU, near the marina (MWRA_183S). Analysis of the data indicated that >20% of intervals (75-100%) had GMs exceeding 35 cfu/100mL in two of the most recent five years of data, but no exceedances in the remaining 3 years. Cumulatively, this equated to a 43% exceedance rate (greater than the 20% threshold laid out in the 2022 CALM) over the recent five years of data. In the same two years with GM exceedances, ≥2 samples (n= 4-5) exceeded the 130 cfu/100mL STV. MyRWA staff/volunteers collected moderate frequency data (generally, n=7/yr) from 2012-2019 from the east side of the wooden pier at the east end of Mary O'Malley Park in Chelsea (MyRWA_MYRMMP). Analysis of the data indicated that >20% of intervals (33-67%) had GMs >35 cfu/100mL in three of the most recent five years of data and that ≥2 samples (n= 2-3) exceeded the 130 cfu/100mL STV criterion in the same three years.</p> <p>The Primary Contact Recreational Use for this Mystic River AU (MA71-03) is assessed as Not Supporting with historical impairments (Flocculant Masses, Odor, Oil and Grease, Scum/Foam) being carried forward. Based on extensive MWRA and MyRWA bacteria data indicating an impaired condition at most stations, an Enterococcus impairment will be added (the previous Alert status is no longer needed).</p>	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MWRA_052B	Massachusetts Water Resource Authority	Water Quality	MYSTIC MOUTH	Inner Harbor, Mystic River, below Earhart Dam, at Somerville Marginal MWR205	42.394215	-71.075816
MWRA_052S	Massachusetts Water Resource Authority	Water Quality	MYSTIC MOUTH	Inner Harbor, Mystic River, below Earhart Dam, at Somerville Marginal MWR205	42.394215	-71.075816
MWRA_069B	Massachusetts Water Resource Authority	Water Quality	MYSTIC MOUTH	Inner Harbor, Mystic River, near Schraffts Building, BOS017	42.385905	-71.068735
MWRA_069S	Massachusetts Water Resource Authority	Water Quality	MYSTIC MOUTH	Inner Harbor, Mystic River, near Schraffts Building, BOS017	42.385905	-71.068735
MWRA_137B	Massachusetts Water Resource Authority	Water Quality	MYSTIC MOUTH	Inner Harbor, Mystic River, mouth, 1/3-mile upstream of Tobin Bridge	42.386763	-71.062829
MWRA_137S	Massachusetts Water Resource Authority	Water Quality	MYSTIC MOUTH	Inner Harbor, Mystic River, mouth, 1/3-mile upstream of Tobin Bridge	42.386763	-71.062829
MWRA_183S	Massachusetts Water Resource Authority	Water Quality	ISLAND END RIVER	Inner Harbor, Mystic River, Island End River, near marina	42.392047	-71.050425
MyRWA_MYR275	Mystic River Watershed Association	Water Quality	Mystic River (Salt)	Mystic River at Draw Seven Park in Somerville; sampled downstream of MWR205	42.393173	-71.075633
MyRWA_MYRMMP	Mystic River Watershed Association	Water Quality	Mystic River (Salt)	Mystic River at Mary O'Malley Park in Chelsea; sampled from east side of wooden pier at east end of park	42.38715	-71.04901

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (30-day Interval Analysis) (MWRA 2019)

(MassDEP Undated 2) (MyRWA 2019) (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
MWRA_052B	Massachusetts Water Resource Authority	Enterococci	04/30/14	10/01/14	20	10	1860	38
MWRA_052B	Massachusetts Water Resource Authority	Enterococci	04/15/15	10/06/15	13	10	74	15
MWRA_052B	Massachusetts Water Resource Authority	Enterococci	05/09/16	10/26/16	21	10	62	12

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_052B	Massachusetts Water Resource Authority	Enterococci	04/04/17	10/19/17	10	10	52	15
MWRA_052B	Massachusetts Water Resource Authority	Enterococci	04/26/18	08/17/18	13	10	504	24
MWRA_052B	Massachusetts Water Resource Authority	Enterococci	05/03/19	10/16/19	9	10	63	16
MWRA_052S	Massachusetts Water Resource Authority	Enterococci	04/08/14	10/24/14	25	10	3440	45
MWRA_052S	Massachusetts Water Resource Authority	Enterococci	04/13/15	10/29/15	28	10	5480	37
MWRA_052S	Massachusetts Water Resource Authority	Enterococci	05/09/16	10/28/16	29	10	6590	25
MWRA_052S	Massachusetts Water Resource Authority	Enterococci	04/03/17	10/19/17	36	10	435	28
MWRA_052S	Massachusetts Water Resource Authority	Enterococci	04/24/18	10/24/18	38	10	24200	103
MWRA_052S	Massachusetts Water Resource Authority	Enterococci	05/03/19	10/16/19	23	10	6130	73
MWRA_069B	Massachusetts Water Resource Authority	Enterococci	04/30/14	10/01/14	17	10	41	11
MWRA_069B	Massachusetts Water Resource Authority	Enterococci	04/13/15	10/06/15	12	10	10	10
MWRA_069B	Massachusetts Water Resource Authority	Enterococci	05/09/16	10/26/16	25	10	31	12
MWRA_069B	Massachusetts Water Resource Authority	Enterococci	04/04/17	09/11/17	7	10	41	12
MWRA_069B	Massachusetts Water Resource Authority	Enterococci	04/26/18	10/22/18	6	10	63	14
MWRA_069B	Massachusetts Water Resource Authority	Enterococci	05/03/19	10/25/19	5	10	10	10
MWRA_069S	Massachusetts Water Resource Authority	Enterococci	04/08/14	10/24/14	25	10	2050	31
MWRA_069S	Massachusetts Water Resource Authority	Enterococci	04/13/15	10/29/15	28	10	5170	32
MWRA_069S	Massachusetts Water Resource Authority	Enterococci	05/09/16	10/28/16	29	10	292	17
MWRA_069S	Massachusetts Water Resource Authority	Enterococci	04/03/17	10/19/17	36	10	1020	22

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_069S	Massachusetts Water Resource Authority	Enterococci	04/24/18	10/24/18	37	10	5480	91
MWRA_069S	Massachusetts Water Resource Authority	Enterococci	05/03/19	10/25/19	24	10	1240	30
MWRA_137B	Massachusetts Water Resource Authority	Enterococci	04/02/14	10/21/14	14	10	20	11
MWRA_137B	Massachusetts Water Resource Authority	Enterococci	04/02/15	10/20/15	14	10	10	10
MWRA_137B	Massachusetts Water Resource Authority	Enterococci	04/06/16	10/19/16	13	10	20	11
MWRA_137B	Massachusetts Water Resource Authority	Enterococci	04/13/17	10/23/17	14	10	10	10
MWRA_137B	Massachusetts Water Resource Authority	Enterococci	04/03/18	10/25/18	13	10	30	11
MWRA_137B	Massachusetts Water Resource Authority	Enterococci	04/05/19	10/24/19	14	10	10	10
MWRA_137S	Massachusetts Water Resource Authority	Enterococci	04/02/14	10/21/14	14	10	10	10
MWRA_137S	Massachusetts Water Resource Authority	Enterococci	04/02/15	10/20/15	14	10	20	11
MWRA_137S	Massachusetts Water Resource Authority	Enterococci	04/06/16	10/19/16	13	10	20	11
MWRA_137S	Massachusetts Water Resource Authority	Enterococci	04/13/17	10/23/17	14	10	31	11
MWRA_137S	Massachusetts Water Resource Authority	Enterococci	04/03/18	10/25/18	13	10	122	15
MWRA_137S	Massachusetts Water Resource Authority	Enterococci	04/05/19	10/24/19	14	10	10	10
MWRA_183S	Massachusetts Water Resource Authority	Enterococci	04/22/14	10/21/14	7	63	7700	678
MWRA_183S	Massachusetts Water Resource Authority	Enterococci	04/22/15	10/20/15	7	10	4350	285
MWRA_183S	Massachusetts Water Resource Authority	Enterococci	04/25/16	10/19/16	7	10	134	16
MWRA_183S	Massachusetts Water Resource Authority	Enterococci	04/13/17	10/03/17	7	74	6130	761
MWRA_183S	Massachusetts Water Resource Authority	Enterococci	04/03/18	10/04/18	7	10	97	19

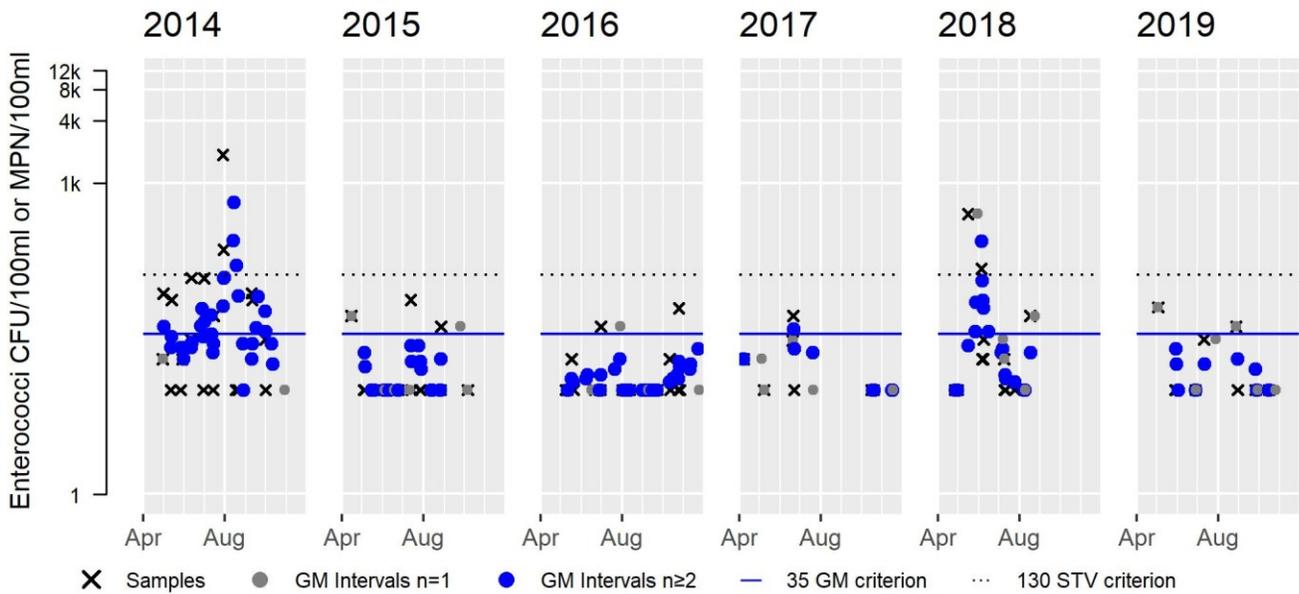
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_183S	Massachusetts Water Resource Authority	Enterococci	04/05/19	10/01/19	7	10	20	12
MyRWA_MYR275	Mystic River Watershed Association	Enterococci	04/10/12	10/04/12	7	10	130000	117
MyRWA_MYR275	Mystic River Watershed Association	Enterococci	04/29/13	10/09/13	6	10	170	33
MyRWA_MYR275	Mystic River Watershed Association	Enterococci	04/03/14	10/28/14	7	10	200	31
MyRWA_MYR275	Mystic River Watershed Association	Enterococci	04/08/15	10/02/15	7	10	980	71
MyRWA_MYR275	Mystic River Watershed Association	Enterococci	04/26/16	10/26/16	7	10	5200	61
MyRWA_MYR275	Mystic River Watershed Association	Enterococci	04/14/17	10/24/17	7	10	440	19
MyRWA_MYR275	Mystic River Watershed Association	Enterococci	04/04/18	10/29/18	7	10	1300	81
MyRWA_MYR275	Mystic River Watershed Association	Enterococci	04/23/19	10/18/19	7	10	21872	203
MyRWA_MYRMMP	Mystic River Watershed Association	Enterococci	04/10/12	10/04/12	7	10	380	31
MyRWA_MYRMMP	Mystic River Watershed Association	Enterococci	04/29/13	10/09/13	6	10	110	28
MyRWA_MYRMMP	Mystic River Watershed Association	Enterococci	04/03/14	10/28/14	7	1	100	14
MyRWA_MYRMMP	Mystic River Watershed Association	Enterococci	04/08/15	10/02/15	7	10	680	20
MyRWA_MYRMMP	Mystic River Watershed Association	Enterococci	04/26/16	10/26/16	7	10	590	44
MyRWA_MYRMMP	Mystic River Watershed Association	Enterococci	04/14/17	10/24/17	7	10	1200	53
MyRWA_MYRMMP	Mystic River Watershed Association	Enterococci	05/04/18	10/29/18	6	10	400	26
MyRWA_MYRMMP	Mystic River Watershed Association	Enterococci	04/23/19	10/18/19	7	10	1726	73

MWRA_052B Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	20	Samples	13	Samples	21	Samples	10	Samples	13	Samples	9
SeasGM	38	SeasGM	15	SeasGM	12	SeasGM	15	SeasGM	24	SeasGM	16
#GMI	34	#GMI	16	#GMI	29	#GMI	9	#GMI	18	#GMI	9
#GMI Ex	16	#GMI Ex	0	#GMI Ex	0	#GMI Ex	1	#GMI Ex	7	#GMI Ex	0
%GMI Ex	47	%GMI Ex	0	%GMI Ex	0	%GMI Ex	11	%GMI Ex	39	%GMI Ex	0
n>STV	2	n>STV	0	n>STV	0	n>STV	0	n>STV	2	n>STV	0
%n>STV	10	%n>STV	0	%n>STV	0	%n>STV	0	%n>STV	15	%n>STV	0

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	21	10

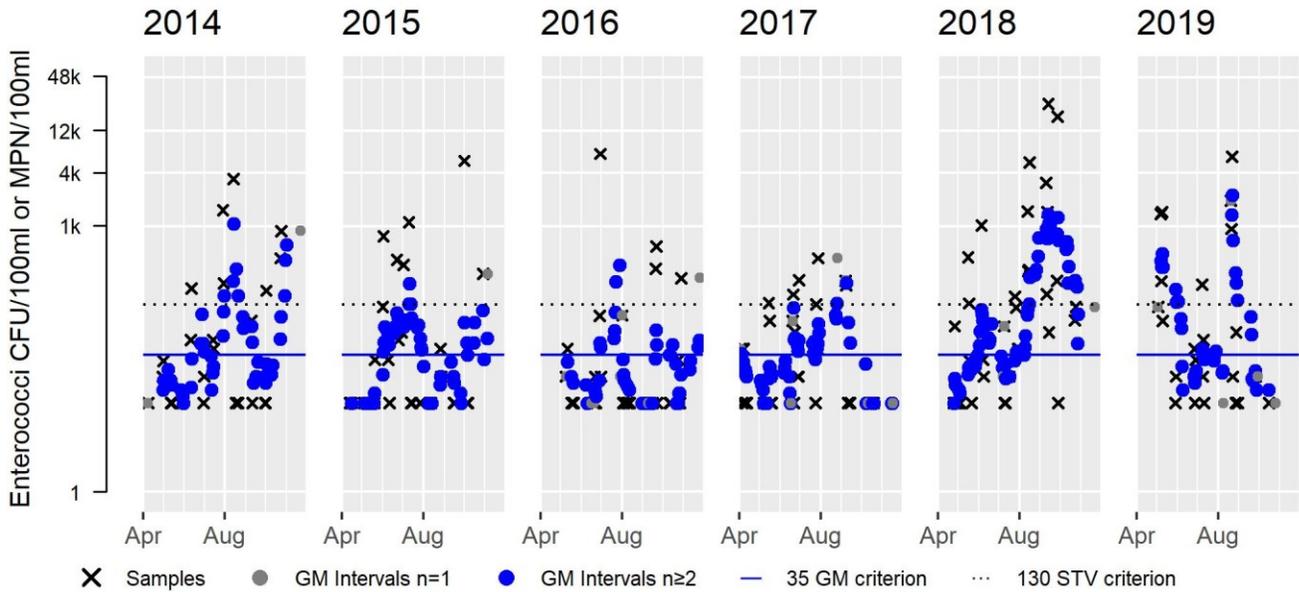


MWRA_052S Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	25	Samples	28	Samples	29	Samples	36	Samples	38	Samples	23
SeasGM	45	SeasGM	37	SeasGM	25	SeasGM	28	SeasGM	103	SeasGM	73
#GMI	43	#GMI	49	#GMI	45	#GMI	57	#GMI	66	#GMI	37
#GMI Ex	20	#GMI Ex	28	#GMI Ex	12	#GMI Ex	22	#GMI Ex	44	#GMI Ex	21
%GMI Ex	47	%GMI Ex	57	%GMI Ex	27	%GMI Ex	39	%GMI Ex	67	%GMI Ex	57
n>STV	7	n>STV	6	n>STV	4	n>STV	7	n>STV	15	n>STV	7
%n>STV	28	%n>STV	21	%n>STV	14	%n>STV	19	%n>STV	39	%n>STV	30

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	49	50

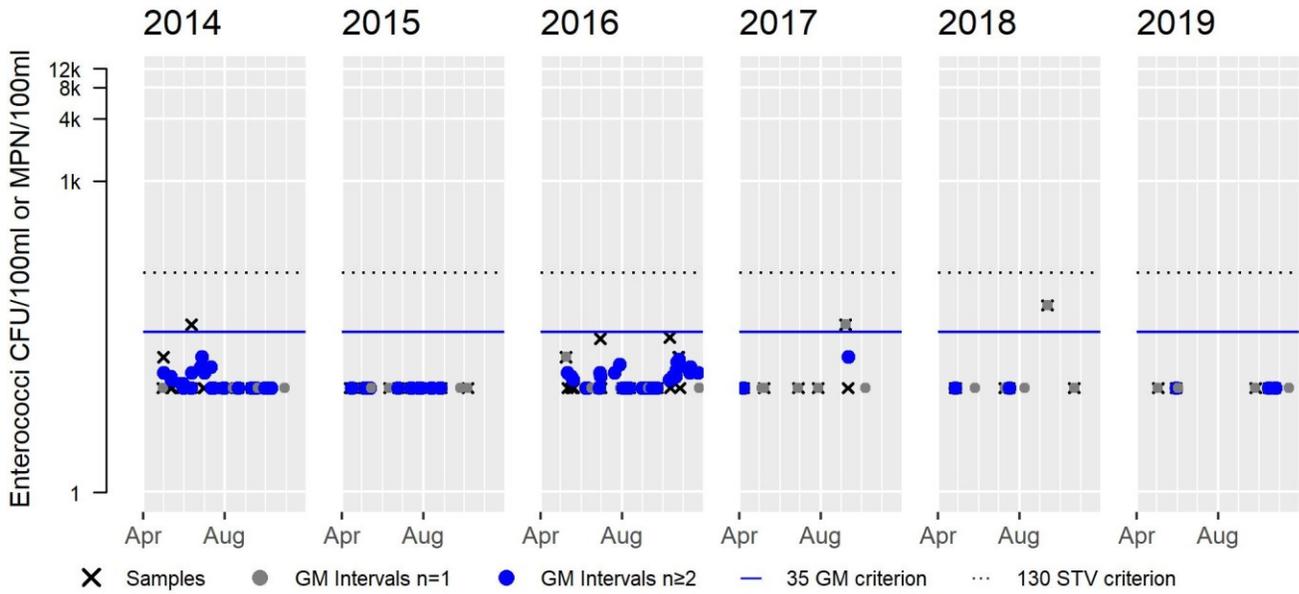


MWRA_069B Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	17	Samples	12	Samples	25	Samples	7	Samples	6	Samples	5
SeasGM	11	SeasGM	10	SeasGM	12	SeasGM	12	SeasGM	14	SeasGM	10
#GMI	25	#GMI	13	#GMI	37	#GMI	2	#GMI	2	#GMI	4
#GMI Ex	0										
%GMI Ex	0										
n>STV	0										
%n>STV	0										

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	0	0

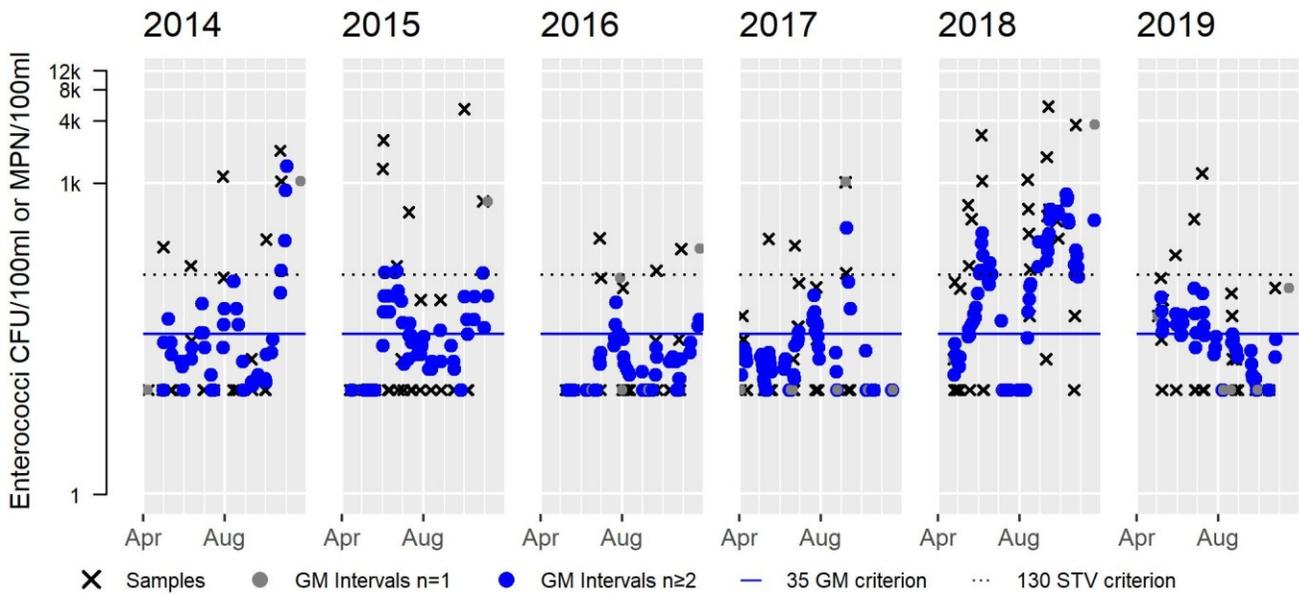


MWRA_069S Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	25	Samples	28	Samples	29	Samples	36	Samples	37	Samples	24
SeasGM	31	SeasGM	32	SeasGM	17	SeasGM	22	SeasGM	91	SeasGM	30
#GMI	43	#GMI	49	#GMI	45	#GMI	57	#GMI	64	#GMI	39
#GMI Ex	15	#GMI Ex	20	#GMI Ex	4	#GMI Ex	11	#GMI Ex	46	#GMI Ex	15
%GMI Ex	35	%GMI Ex	41	%GMI Ex	9	%GMI Ex	19	%GMI Ex	72	%GMI Ex	38
n>STV	6	n>STV	6	n>STV	3	n>STV	4	n>STV	17	n>STV	3
%n>STV	24	%n>STV	21	%n>STV	10	%n>STV	11	%n>STV	46	%n>STV	12

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	37	38

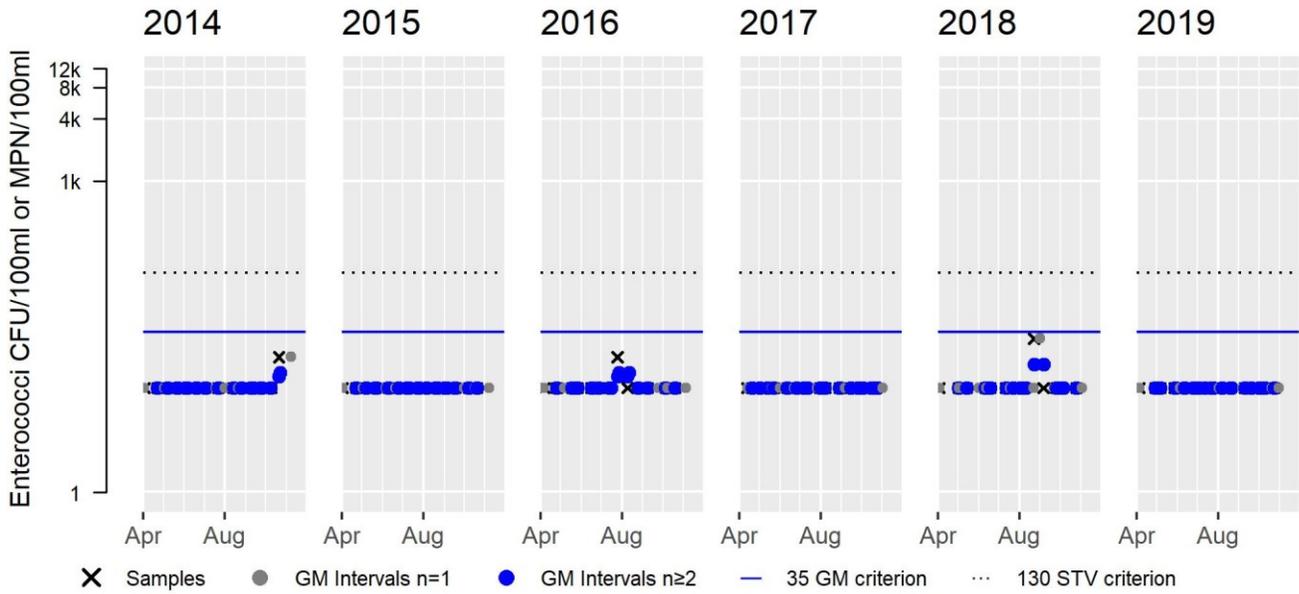


MWRA_137B Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	14	Samples	14	Samples	13	Samples	14	Samples	13	Samples	14
SeasGM	11	SeasGM	10	SeasGM	11	SeasGM	10	SeasGM	11	SeasGM	10
#GMI	20	#GMI	19	#GMI	16	#GMI	19	#GMI	14	#GMI	19
#GMI Ex	0										
%GMI Ex	0										
n>STV	0										
%n>STV	0										

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	0	0

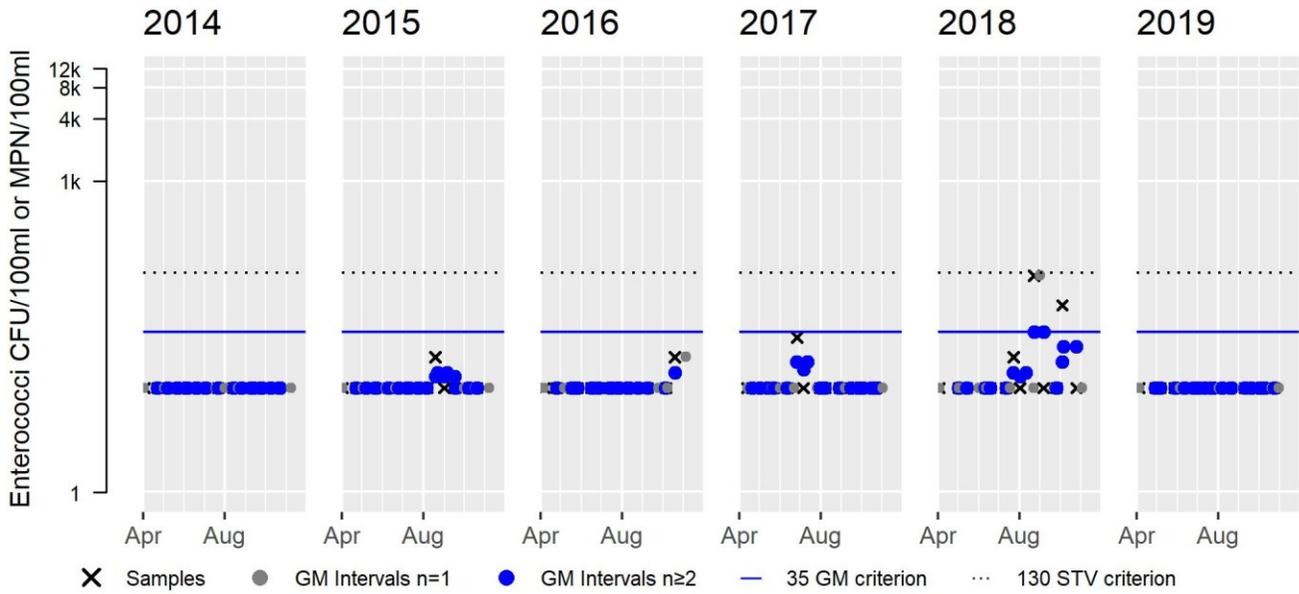


MWRA_137S Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	14	Samples	14	Samples	13	Samples	14	Samples	13	Samples	14
SeasGM	10	SeasGM	11	SeasGM	11	SeasGM	11	SeasGM	15	SeasGM	10
#GMI	20	#GMI	19	#GMI	16	#GMI	19	#GMI	14	#GMI	19
#GMI Ex	0										
%GMI Ex	0										
n>STV	0										
%n>STV	0										

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	0	0

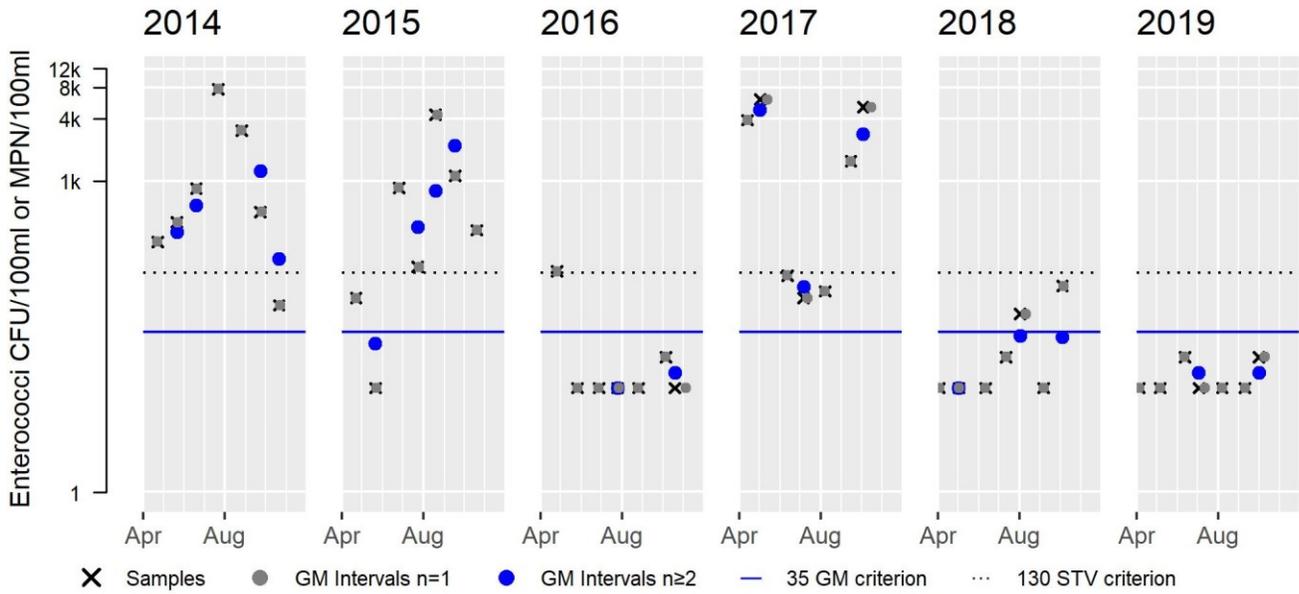


MWRA_183S Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res										
Samples	7										
SeasGM	678	SeasGM	285	SeasGM	16	SeasGM	761	SeasGM	19	SeasGM	12
#GMI	4	#GMI	4	#GMI	2	#GMI	3	#GMI	3	#GMI	2
#GMI Ex	4	#GMI Ex	3	#GMI Ex	0	#GMI Ex	3	#GMI Ex	0	#GMI Ex	0
%GMI Ex	100	%GMI Ex	75	%GMI Ex	0	%GMI Ex	100	%GMI Ex	0	%GMI Ex	0
n>STV	6	n>STV	5	n>STV	1	n>STV	4	n>STV	0	n>STV	0
%n>STV	86	%n>STV	71	%n>STV	14	%n>STV	57	%n>STV	0	%n>STV	0

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	56	43

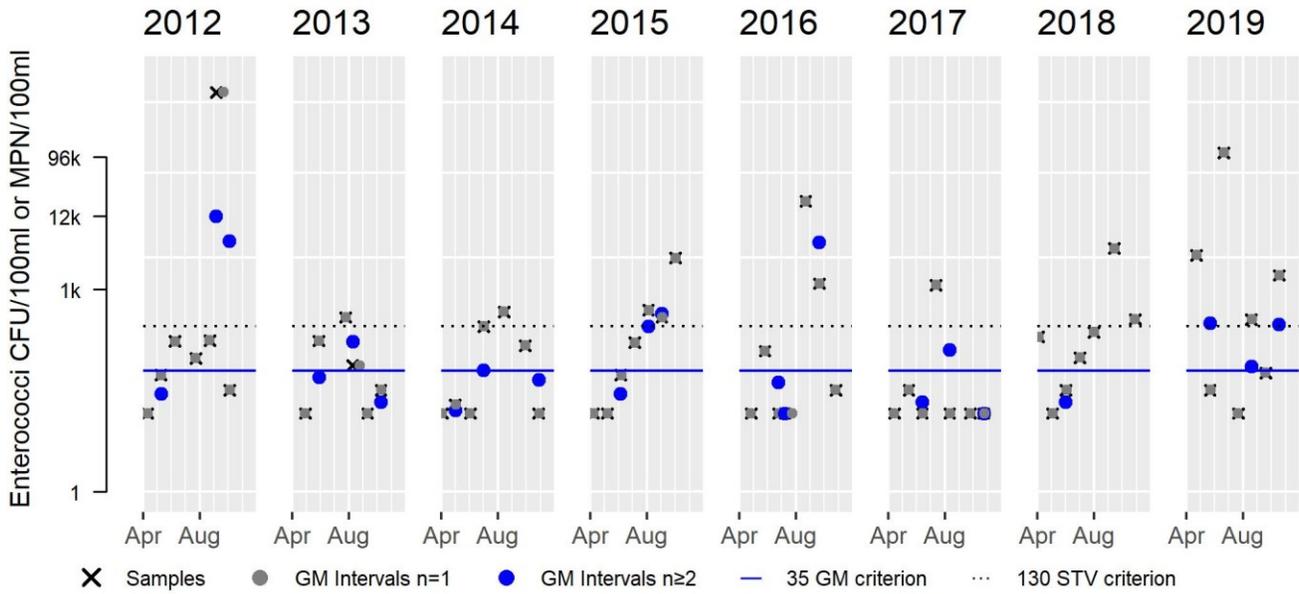


MyRWA_MYR275 Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res														
Samples	7	Samples	6	Samples	7										
SeasGM	117	SeasGM	33	SeasGM	31	SeasGM	71	SeasGM	61	SeasGM	19	SeasGM	81	SeasGM	203
#GMI	3	#GMI	1	#GMI	3										
#GMI Ex	2	#GMI Ex	1	#GMI Ex	1	#GMI Ex	2	#GMI Ex	1	#GMI Ex	1	#GMI Ex	0	#GMI Ex	3
%GMI Ex	67	%GMI Ex	33	%GMI Ex	33	%GMI Ex	67	%GMI Ex	33	%GMI Ex	33	%GMI Ex	0	%GMI Ex	100
n>STV	1	n>STV	1	n>STV	1	n>STV	3	n>STV	2	n>STV	1	n>STV	2	n>STV	4
%n>STV	14	%n>STV	17	%n>STV	14	%n>STV	43	%n>STV	29	%n>STV	14	%n>STV	29	%n>STV	57

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	50	54

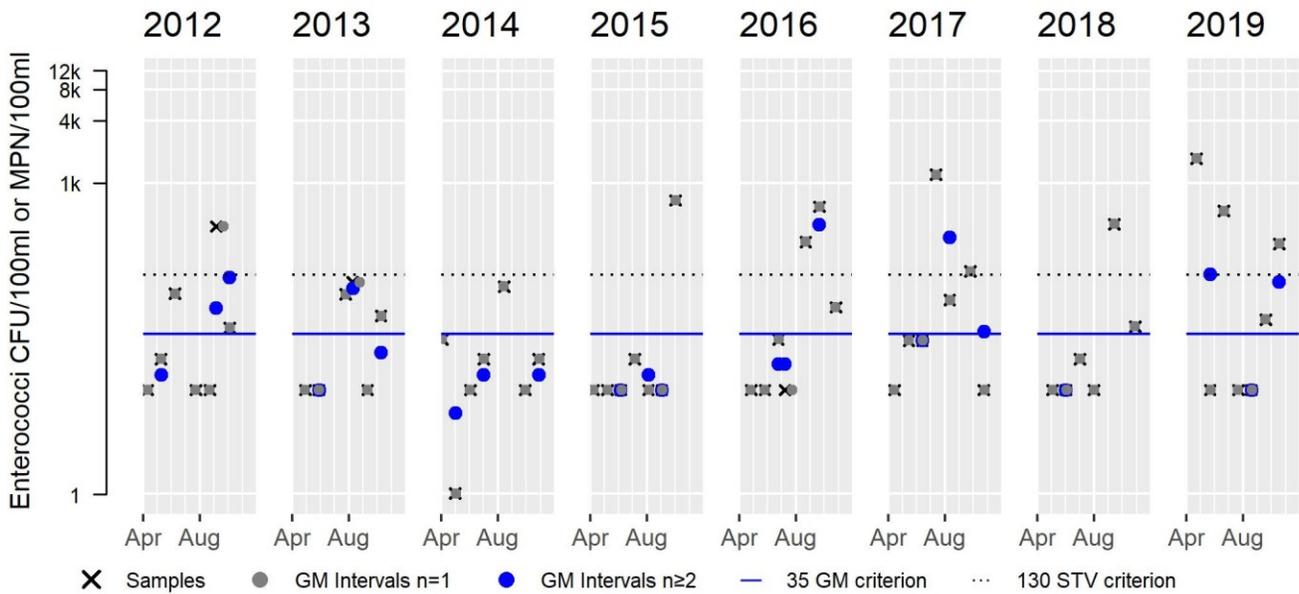


MyRWA_MYRMMP Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res														
Samples	7	Samples	6	Samples	7	Samples	7	Samples	7	Samples	7	Samples	6	Samples	7
SeasGM	31	SeasGM	28	SeasGM	14	SeasGM	20	SeasGM	44	SeasGM	53	SeasGM	26	SeasGM	73
#GMI	3	#GMI	1	#GMI	3										
#GMI Ex	2	#GMI Ex	1	#GMI Ex	0	#GMI Ex	0	#GMI Ex	1	#GMI Ex	2	#GMI Ex	0	#GMI Ex	2
%GMI Ex	67	%GMI Ex	33	%GMI Ex	0	%GMI Ex	0	%GMI Ex	33	%GMI Ex	67	%GMI Ex	0	%GMI Ex	67
n>STV	1	n>STV	0	n>STV	0	n>STV	1	n>STV	2	n>STV	2	n>STV	1	n>STV	3
%n>STV	14	%n>STV	0	%n>STV	0	%n>STV	14	%n>STV	29	%n>STV	29	%n>STV	17	%n>STV	43

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	36	38



Shellfish Growing Area Classifications

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

Summary
Mystic River (MA71-03): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.4695 sq mi (95%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Primary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Secondary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO

2022 Use Attainment Summary

MWRA staff and MyRWA staff/volunteers conducted Enterococci bacteria sampling from 2012-2019 at multiple locations in this Mystic River AU (MA71-03). Analysis of the bacteria data will be discussed from upstream to downstream. Note that MWRA samples were collected from the surface and bottom at most stations (except for the Island End River station, MWRA_183S, where only surface samples were collected) and only the surface data will be discussed, as recreators are likely to have more contact with surface waters and the bacteria counts were typically quite low in the bottom samples. MWRA staff collected high frequency data (n= 23-38/yr) from 2014-2019 at a station downstream of the Amelia Earhart Dam, at the Somerville Marginal MWR205 CSO (MWRA_052S). Analysis of the data indicated that >10% of intervals (11-36%) had a GM >175 cfu/100mL in the last 2 years of the dataset, with a cumulative exceedance rate of 10% over the last five years. More than 10% of samples (17-22%) exceeded the 350 cfu/100mL STV in three of the last five years. MyRWA staff/volunteers collected moderate frequency data (n= 10-12/yr) from 2012-2019 at Draw Seven Park in Somerville, downstream of the MWR205 CSO (MyRWA_MYR275). Analysis of the data indicated that >20% of intervals (23-27%) had GMs exceeding 175 cfu/100mL in the last two years of data and that ≥2 samples (n= 2-4) exceeded the 350 cfu/100mL STV in three of the most recent five years. MWRA staff collected high frequency data (n= 24-38/yr) from 2014-2019 near the Schraffts Building and the BOS017 CSO (MWRA_069S). Analysis of the data indicated that >10% of intervals (27%) had GMs >175 cfu/100mL in only one of the most recent five years of data and that the cumulative exceedance rate was only 6% over these five years. More than 10% of samples (17-35%) exceeded the 350 cfu/100mL STV in only 2 of the most recent 5 years, so none of the use impairment conditions was met. MWRA staff collected high frequency data (n= 23-24/yr) from 2014-2019 from a station 1/3 of a mile upstream of the Tobin Bridge (MWRA_137S). Analysis of the data indicated that no intervals had GMs exceeding 175 cfu/100mL and that no samples exceeded the 350 cfu/100mL STV. MWRA staff collected moderate frequency data (n= 11-12/yr) from 2014-2019 in the Island End River portion of this AU, near the marina (MWRA_183S). Analysis of the data indicated that >20% of intervals (70-93%) had GMs >175 cfu/100mL in two of the most recent five years of data and that the cumulative rate of exceedance was 34% over those five years. Additionally, ≥2 samples (n= 3-8) exceeded the 350 cfu/100mL STV in three of the most recent five years. MyRWA staff/volunteers collected moderate frequency data (n= 10-12/yr) from 2012-2019 from the east side of the wooden pier at the east end of Mary O'Malley Park in Chelsea (MyRWA_MYRMMP). Analysis of the data indicated that in none of the years did >20% of intervals have GMs >175 cfu/100mL and that ≥2 samples (n= 2-3) exceeded the 350 cfu/100mL STV in only two of the most recent five years of data.

The Secondary Contact Recreational Use for this Mystic River AU (MA71-03) is assessed as Not Supporting with historical impairments (Flocculant Masses, Odor, Oil and Grease, Scum/Foam) being carried forward. Extensive MWRA and MyRWA bacteria data gave mixed signals regarding bacteria contamination in this AU, however a protective decision is being made to add an impairment for Enterococcus based on indications of impairment at three of the sampling sites (MWRA_052S, MyRWA_MYR275, and MWRA_183S); the previous Alert for bacteria is no longer needed.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MWRA_052B	Massachusetts Water Resource Authority	Water Quality	MYSTIC MOUTH	Inner Harbor, Mystic River, below Earhart Dam, at Somerville Marginal MWR205	42.394215	-71.075816
MWRA_052S	Massachusetts Water Resource Authority	Water Quality	MYSTIC MOUTH	Inner Harbor, Mystic River, below Earhart Dam, at Somerville Marginal MWR205	42.394215	-71.075816
MWRA_069B	Massachusetts Water Resource Authority	Water Quality	MYSTIC MOUTH	Inner Harbor, Mystic River, near Schraffts Building, BOS017	42.385905	-71.068735

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MWRA_069S	Massachusetts Water Resource Authority	Water Quality	MYSTIC MOUTH	Inner Harbor, Mystic River, near Schraffts Building, BOS017	42.385905	-71.068735
MWRA_137B	Massachusetts Water Resource Authority	Water Quality	MYSTIC MOUTH	Inner Harbor, Mystic River, mouth, 1/3-mile upstream of Tobin Bridge	42.386763	-71.062829
MWRA_137S	Massachusetts Water Resource Authority	Water Quality	MYSTIC MOUTH	Inner Harbor, Mystic River, mouth, 1/3-mile upstream of Tobin Bridge	42.386763	-71.062829
MWRA_183S	Massachusetts Water Resource Authority	Water Quality	ISLAND END RIVER	Inner Harbor, Mystic River, Island End River, near marina	42.392047	-71.050425
MyRWA_MYR275	Mystic River Watershed Association	Water Quality	Mystic River (Salt)	Mystic River at Draw Seven Park in Somerville; sampled downstream of MWR205	42.393173	-71.075633
MyRWA_MYRMMP	Mystic River Watershed Association	Water Quality	Mystic River (Salt)	Mystic River at Mary O'Malley Park in Chelsea; sampled from east side of wooden pier at east end of park	42.38715	-71.04901

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MWRA 2019)

(MassDEP Undated 2) (MyRWA 2019) (MassDEP Undated 2)

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

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MWRA_052B	Massachusetts Water Resource Authority	Enterococci	04/30/14	10/01/14	20	10	1860	38
MWRA_052B	Massachusetts Water Resource Authority	Enterococci	04/15/15	10/06/15	13	10	74	15
MWRA_052B	Massachusetts Water Resource Authority	Enterococci	03/30/16	11/17/16	25	10	145	14
MWRA_052B	Massachusetts Water Resource Authority	Enterococci	04/04/17	10/19/17	10	10	52	15
MWRA_052B	Massachusetts Water Resource Authority	Enterococci	04/26/18	08/17/18	13	10	504	24
MWRA_052B	Massachusetts Water Resource Authority	Enterococci	05/03/19	10/16/19	9	10	63	16

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MWRA_052S	Massachusetts Water Resource Authority	Enterococci	04/08/14	12/26/14	31	10	3610	45
MWRA_052S	Massachusetts Water Resource Authority	Enterococci	03/27/15	10/29/15	29	10	5480	38
MWRA_052S	Massachusetts Water Resource Authority	Enterococci	01/11/16	12/02/16	38	10	6590	29
MWRA_052S	Massachusetts Water Resource Authority	Enterococci	04/03/17	11/27/17	37	10	435	28
MWRA_052S	Massachusetts Water Resource Authority	Enterococci	04/24/18	10/24/18	38	10	24200	103
MWRA_052S	Massachusetts Water Resource Authority	Enterococci	05/03/19	10/16/19	23	10	6130	73
MWRA_069B	Massachusetts Water Resource Authority	Enterococci	04/30/14	10/01/14	17	10	41	11
MWRA_069B	Massachusetts Water Resource Authority	Enterococci	04/13/15	10/06/15	12	10	10	10
MWRA_069B	Massachusetts Water Resource Authority	Enterococci	03/28/16	11/17/16	30	10	131	14
MWRA_069B	Massachusetts Water Resource Authority	Enterococci	04/04/17	09/11/17	7	10	41	12
MWRA_069B	Massachusetts Water Resource Authority	Enterococci	04/26/18	10/22/18	6	10	63	14
MWRA_069B	Massachusetts Water Resource Authority	Enterococci	05/03/19	10/25/19	5	10	10	10
MWRA_069S	Massachusetts Water Resource Authority	Enterococci	04/08/14	12/26/14	31	10	4880	36
MWRA_069S	Massachusetts Water Resource Authority	Enterococci	03/27/15	10/29/15	29	10	5170	34
MWRA_069S	Massachusetts Water Resource Authority	Enterococci	01/11/16	12/02/16	38	10	355	21
MWRA_069S	Massachusetts Water Resource Authority	Enterococci	04/03/17	11/27/17	37	10	1020	22
MWRA_069S	Massachusetts Water Resource Authority	Enterococci	04/24/18	10/24/18	37	10	5480	91
MWRA_069S	Massachusetts Water Resource Authority	Enterococci	05/03/19	10/25/19	24	10	1240	30

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MWRA_137B	Massachusetts Water Resource Authority	Enterococci	01/09/14	12/16/14	24	10	20	10
MWRA_137B	Massachusetts Water Resource Authority	Enterococci	01/06/15	12/16/15	23	10	10	10
MWRA_137B	Massachusetts Water Resource Authority	Enterococci	01/06/16	12/14/16	23	10	20	10
MWRA_137B	Massachusetts Water Resource Authority	Enterococci	01/05/17	12/07/17	23	10	10	10
MWRA_137B	Massachusetts Water Resource Authority	Enterococci	01/16/18	12/19/18	23	10	30	11
MWRA_137B	Massachusetts Water Resource Authority	Enterococci	01/03/19	12/18/19	24	10	10	10
MWRA_137S	Massachusetts Water Resource Authority	Enterococci	01/09/14	12/16/14	24	10	63	12
MWRA_137S	Massachusetts Water Resource Authority	Enterococci	01/06/15	12/16/15	23	10	30	11
MWRA_137S	Massachusetts Water Resource Authority	Enterococci	01/06/16	12/14/16	23	10	31	11
MWRA_137S	Massachusetts Water Resource Authority	Enterococci	01/05/17	12/07/17	23	10	74	12
MWRA_137S	Massachusetts Water Resource Authority	Enterococci	01/16/18	12/19/18	23	10	240	17
MWRA_137S	Massachusetts Water Resource Authority	Enterococci	01/03/19	12/18/19	24	10	41	11
MWRA_183S	Massachusetts Water Resource Authority	Enterococci	01/21/14	12/16/14	12	63	7700	762
MWRA_183S	Massachusetts Water Resource Authority	Enterococci	01/21/15	12/16/15	11	10	4350	455
MWRA_183S	Massachusetts Water Resource Authority	Enterococci	01/14/16	12/07/16	12	10	1720	40
MWRA_183S	Massachusetts Water Resource Authority	Enterococci	01/26/17	12/07/17	12	20	6130	636
MWRA_183S	Massachusetts Water Resource Authority	Enterococci	01/16/18	12/06/18	12	10	98	23
MWRA_183S	Massachusetts Water Resource Authority	Enterococci	01/03/19	12/04/19	12	10	63	14

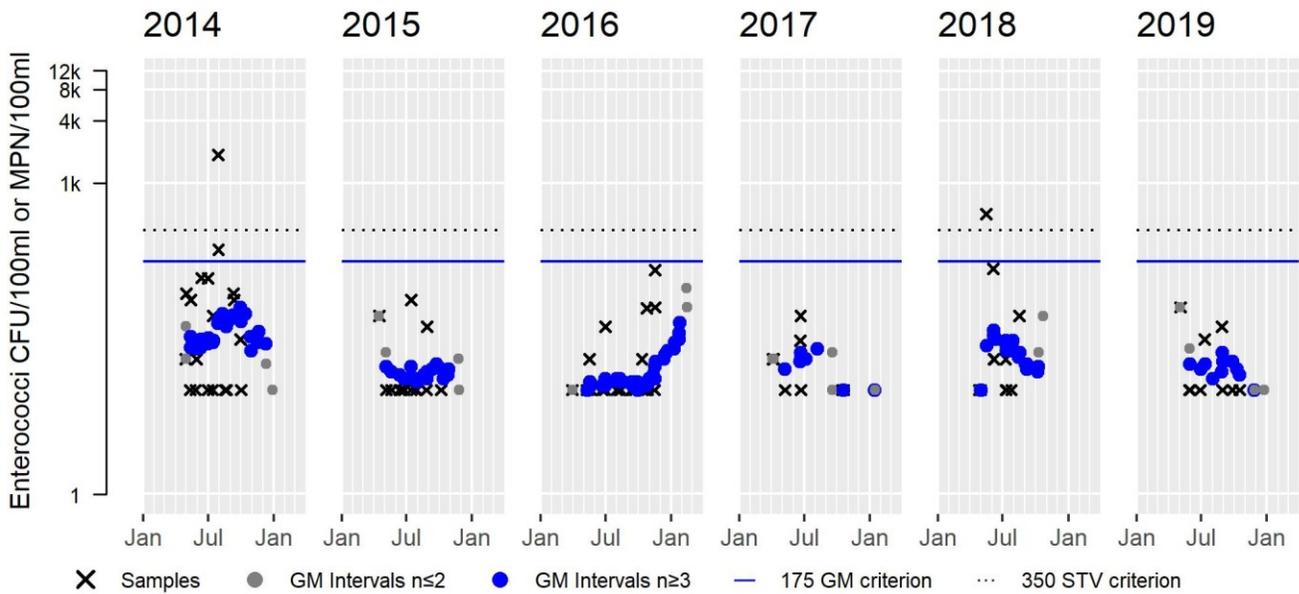
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MyRWA_MYR275	Mystic River Watershed Association	Enterococci	01/13/12	12/04/12	12	10	130000	59
MyRWA_MYR275	Mystic River Watershed Association	Enterococci	01/31/13	12/06/13	11	10	170	34
MyRWA_MYR275	Mystic River Watershed Association	Enterococci	01/06/14	12/12/14	12	10	14000	70
MyRWA_MYR275	Mystic River Watershed Association	Enterococci	01/23/15	12/16/15	11	10	980	43
MyRWA_MYR275	Mystic River Watershed Association	Enterococci	01/15/16	12/05/16	12	10	5200	33
MyRWA_MYR275	Mystic River Watershed Association	Enterococci	01/17/17	12/08/17	12	10	440	15
MyRWA_MYR275	Mystic River Watershed Association	Enterococci	01/22/18	12/13/18	12	10	3000	101
MyRWA_MYR275	Mystic River Watershed Association	Enterococci	01/25/19	10/18/19	10	10	21872	143
MyRWA_MYRMMP	Mystic River Watershed Association	Enterococci	01/13/12	12/04/12	12	10	380	29
MyRWA_MYRMMP	Mystic River Watershed Association	Enterococci	01/31/13	12/06/13	11	10	220	34
MyRWA_MYRMMP	Mystic River Watershed Association	Enterococci	01/06/14	12/12/14	12	1	790	25
MyRWA_MYRMMP	Mystic River Watershed Association	Enterococci	01/23/15	12/16/15	11	10	680	24
MyRWA_MYRMMP	Mystic River Watershed Association	Enterococci	01/15/16	12/05/16	12	10	590	50
MyRWA_MYRMMP	Mystic River Watershed Association	Enterococci	01/17/17	12/08/17	12	10	1200	36
MyRWA_MYRMMP	Mystic River Watershed Association	Enterococci	01/22/18	12/13/18	11	10	400	27
MyRWA_MYRMMP	Mystic River Watershed Association	Enterococci	01/25/19	10/18/19	10	10	1726	71

MWRA_052B Enterococci (90-day Interval), Secondary Contact Recreational Use Season

Var	Res										
Samples	20	Samples	13	Samples	25	Samples	10	Samples	13	Samples	9
SeasGM	38	SeasGM	15	SeasGM	14	SeasGM	15	SeasGM	24	SeasGM	16
#GMI	32	#GMI	20	#GMI	44	#GMI	10	#GMI	20	#GMI	11
#GMI Ex	0										
%GMI Ex	0										
n>STV	1	n>STV	0	n>STV	0	n>STV	0	n>STV	1	n>STV	0
%n>STV	5	%n>STV	0	%n>STV	0	%n>STV	0	%n>STV	8	%n>STV	0

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	0	0

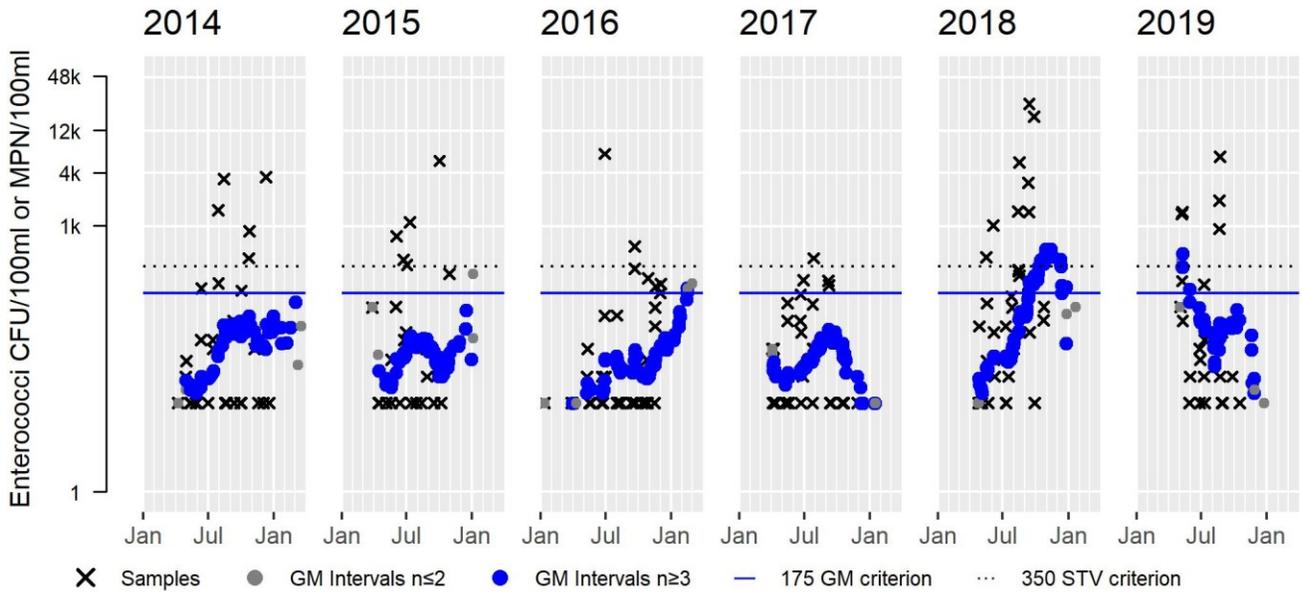


MWRA_052S Enterococci (90-day Interval), Secondary Contact Recreational Use Season

Var	Res										
Samples	31	Samples	29	Samples	38	Samples	37	Samples	38	Samples	23
SeasGM	45	SeasGM	38	SeasGM	29	SeasGM	28	SeasGM	103	SeasGM	73
#GMI	53	#GMI	52	#GMI	67	#GMI	69	#GMI	66	#GMI	38
#GMI Ex	0	#GMI Ex	0	#GMI Ex	2	#GMI Ex	0	#GMI Ex	24	#GMI Ex	4
%GMI Ex	0	%GMI Ex	0	%GMI Ex	3	%GMI Ex	0	%GMI Ex	36	%GMI Ex	11
n>STV	5	n>STV	5	n>STV	2	n>STV	1	n>STV	8	n>STV	5
%n>STV	16	%n>STV	17	%n>STV	5	%n>STV	3	%n>STV	21	%n>STV	22

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	9	10

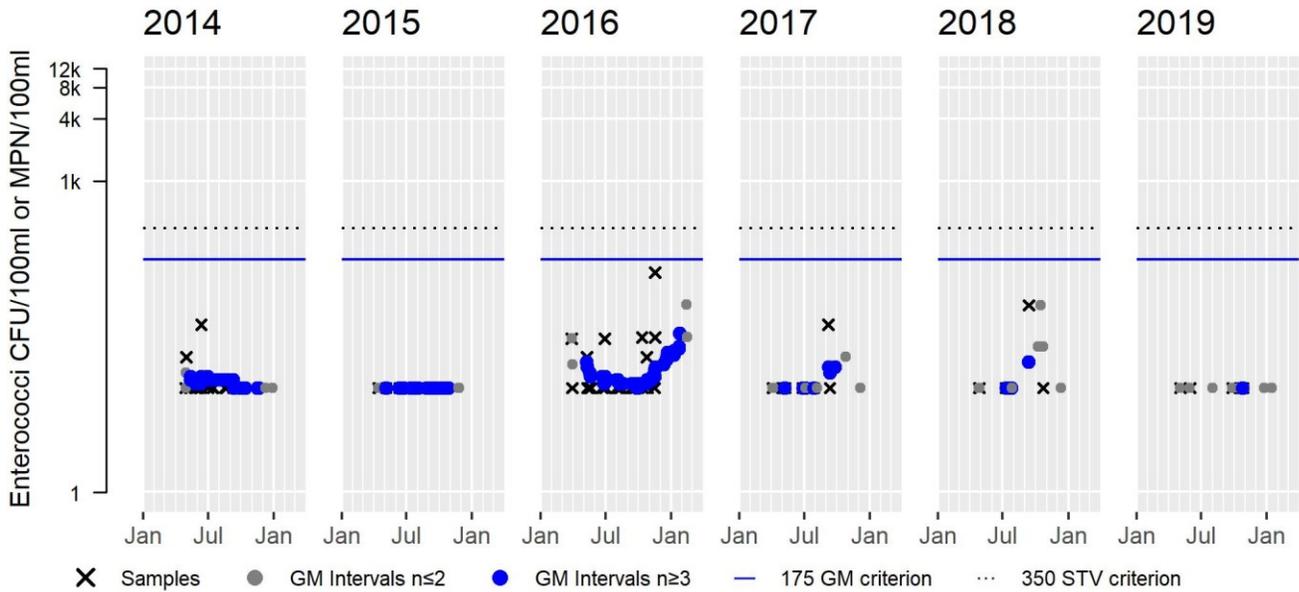


MWRA_069B Enterococci (90-day Interval), Secondary Contact Recreational Use Season

Var	Res										
Samples	17	Samples	12	Samples	30	Samples	7	Samples	6	Samples	5
SeasGM	11	SeasGM	10	SeasGM	14	SeasGM	12	SeasGM	14	SeasGM	10
#GMI	28	#GMI	18	#GMI	54	#GMI	7	#GMI	4	#GMI	1
#GMI Ex	0										
%GMI Ex	0										
n>STV	0										
%n>STV	0										

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	0	0

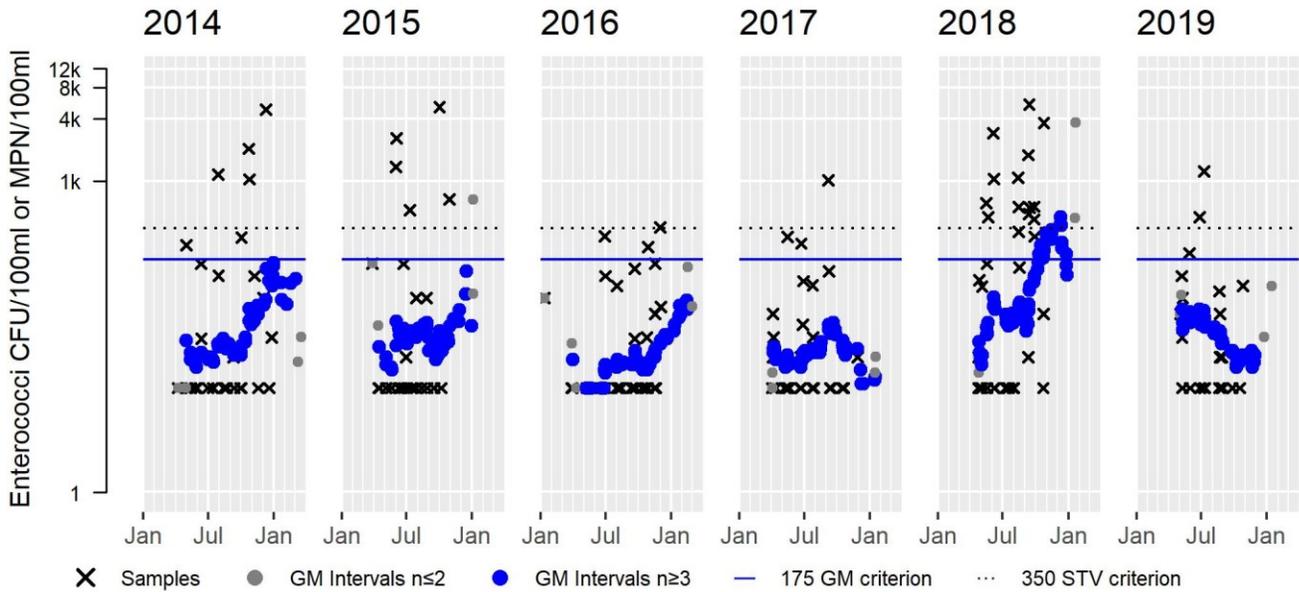


MWRA_069S Enterococci (90-day Interval), Secondary Contact Recreational Use Season

Var	Res										
Samples	31	Samples	29	Samples	38	Samples	37	Samples	37	Samples	24
SeasGM	36	SeasGM	34	SeasGM	21	SeasGM	22	SeasGM	91	SeasGM	30
#GMI	53	#GMI	52	#GMI	67	#GMI	69	#GMI	66	#GMI	40
#GMI Ex	0	#GMI Ex	18	#GMI Ex	0						
%GMI Ex	0	%GMI Ex	27	%GMI Ex	0						
n>STV	4	n>STV	5	n>STV	1	n>STV	1	n>STV	13	n>STV	2
%n>STV	13	%n>STV	17	%n>STV	3	%n>STV	3	%n>STV	35	%n>STV	8

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	5	6

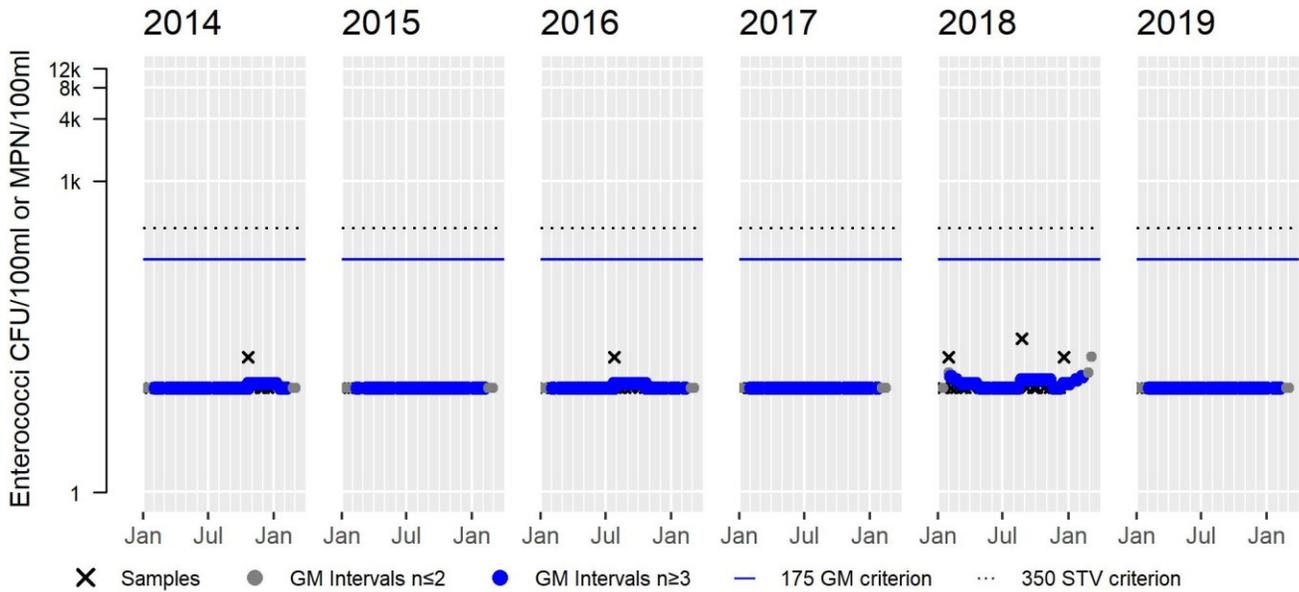


MWRA_137B Enterococci (90-day Interval), Secondary Contact Recreational Use Season

Var	Res										
Samples	24	Samples	23	Samples	23	Samples	23	Samples	23	Samples	24
SeasGM	10	SeasGM	10	SeasGM	10	SeasGM	10	SeasGM	11	SeasGM	10
#GMI	42	#GMI	38	#GMI	40	#GMI	40	#GMI	41	#GMI	41
#GMI Ex	0										
%GMI Ex	0										
n>STV	0										
%n>STV	0										

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	0	0

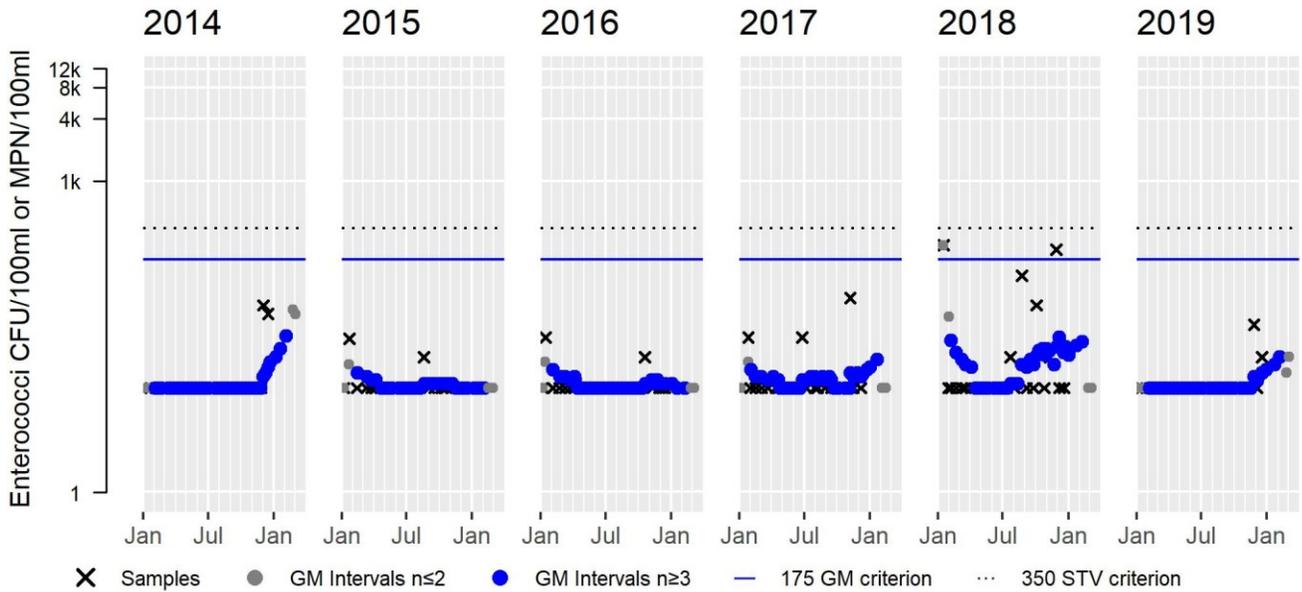


MWRA_137S Enterococci (90-day Interval), Secondary Contact Recreational Use Season

Var	Res										
Samples	24	Samples	23	Samples	23	Samples	23	Samples	23	Samples	24
SeasGM	12	SeasGM	11	SeasGM	11	SeasGM	12	SeasGM	17	SeasGM	11
#GMI	42	#GMI	38	#GMI	40	#GMI	40	#GMI	41	#GMI	41
#GMI Ex	0										
%GMI Ex	0										
n>STV	0										
%n>STV	0										

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	0	0

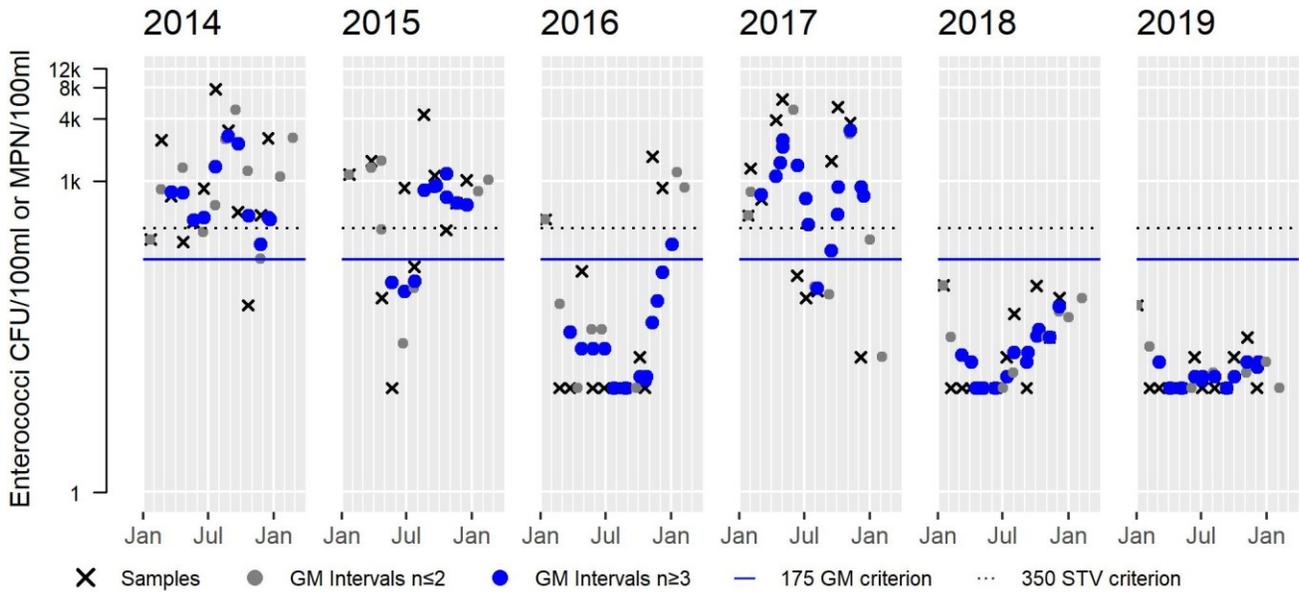


MWRA_183S Enterococci (90-day Interval), Secondary Contact Recreational Use Season

Var	Res										
Samples	12	Samples	11	Samples	12	Samples	12	Samples	12	Samples	12
SeasGM	762	SeasGM	455	SeasGM	40	SeasGM	636	SeasGM	23	SeasGM	14
#GMI	11	#GMI	10	#GMI	13	#GMI	15	#GMI	14	#GMI	13
#GMI Ex	11	#GMI Ex	7	#GMI Ex	1	#GMI Ex	14	#GMI Ex	0	#GMI Ex	0
%GMI Ex	100	%GMI Ex	70	%GMI Ex	8	%GMI Ex	93	%GMI Ex	0	%GMI Ex	0
n>STV	9	n>STV	7	n>STV	3	n>STV	8	n>STV	0	n>STV	0
%n>STV	75	%n>STV	64	%n>STV	25	%n>STV	67	%n>STV	0	%n>STV	0

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	43	34

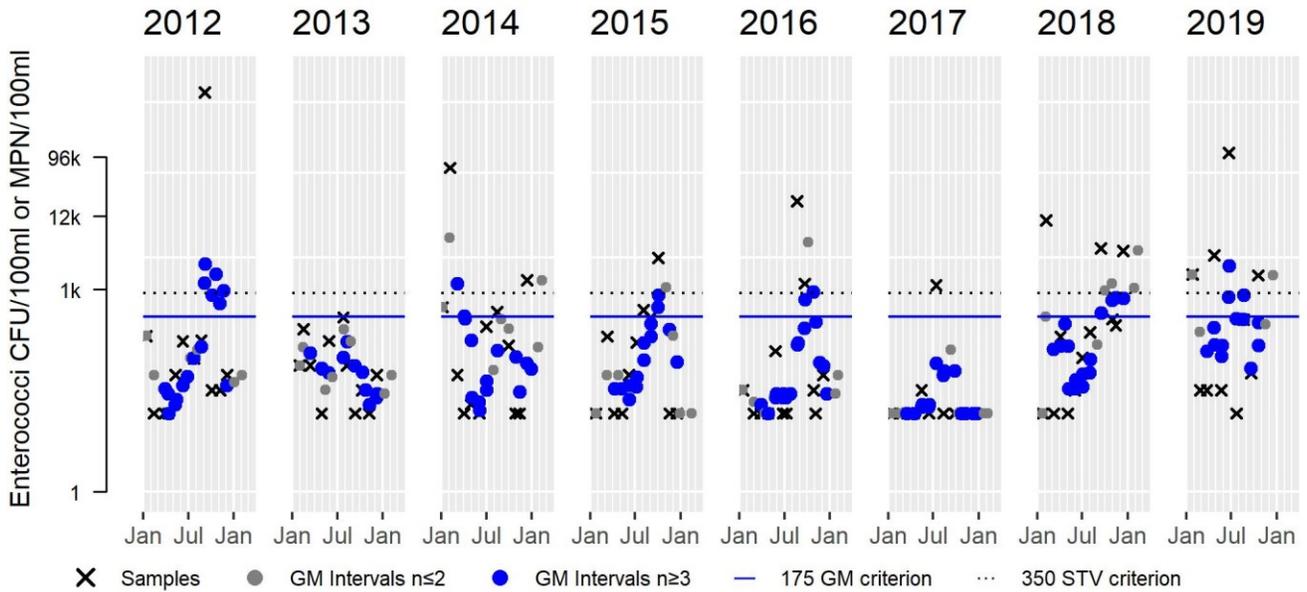


MyRWA_MYR275 Enterococci (90-day Interval), Secondary Contact Recreational Use Season

Var	Res														
Samples	12	Samples	11	Samples	12	Samples	11	Samples	12	Samples	12	Samples	12	Samples	10
SeasGM	59	SeasGM	34	SeasGM	70	SeasGM	43	SeasGM	33	SeasGM	15	SeasGM	101	SeasGM	143
#GMI	16	#GMI	12	#GMI	14	#GMI	14	#GMI	17	#GMI	15	#GMI	15	#GMI	13
#GMI Ex	6	#GMI Ex	0	#GMI Ex	2	#GMI Ex	2	#GMI Ex	2	#GMI Ex	0	#GMI Ex	4	#GMI Ex	3
%GMI Ex	38	%GMI Ex	0	%GMI Ex	14	%GMI Ex	14	%GMI Ex	12	%GMI Ex	0	%GMI Ex	27	%GMI Ex	23
n>STV	1	n>STV	0	n>STV	2	n>STV	1	n>STV	2	n>STV	1	n>STV	3	n>STV	4
%n>STV	8	%n>STV	0	%n>STV	17	%n>STV	9	%n>STV	17	%n>STV	8	%n>STV	25	%n>STV	40

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	16	15

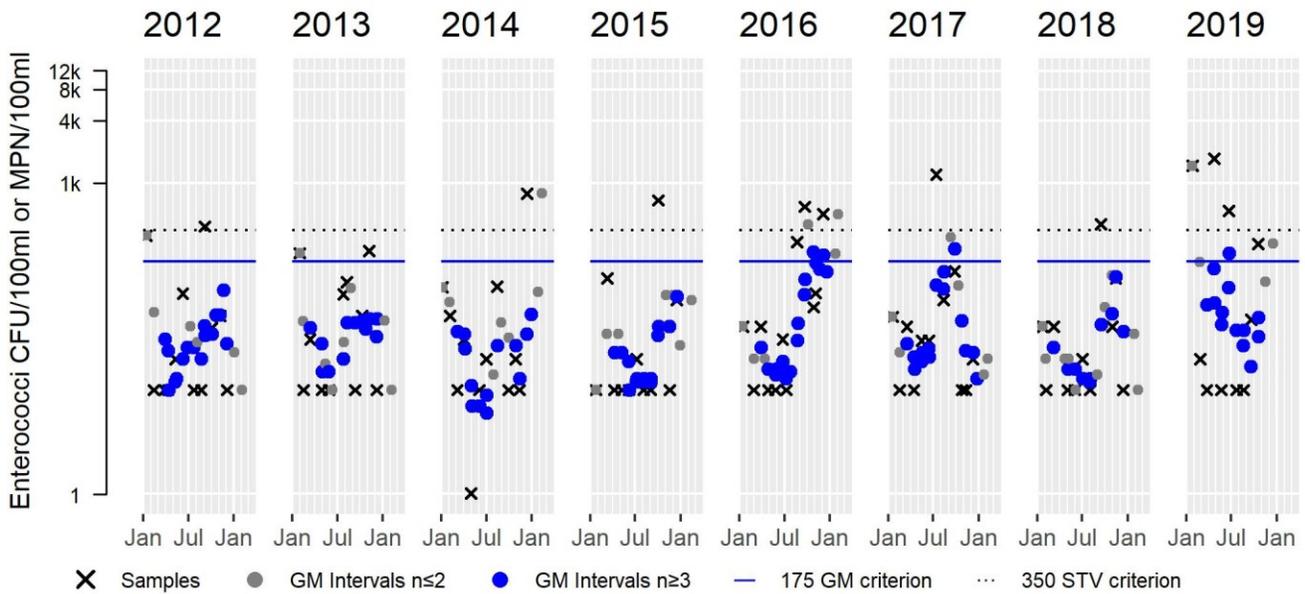


MyRWA_MYRMMP Enterococci (90-day Interval), Secondary Contact Recreational Use Season

Var	Res														
Samples	12	Samples	11	Samples	12	Samples	11	Samples	12	Samples	12	Samples	11	Samples	10
SeasGM	29	SeasGM	34	SeasGM	25	SeasGM	24	SeasGM	50	SeasGM	36	SeasGM	27	SeasGM	71
#GMI	16	#GMI	12	#GMI	14	#GMI	14	#GMI	17	#GMI	15	#GMI	10	#GMI	13
#GMI Ex	0	#GMI Ex	2	#GMI Ex	1	#GMI Ex	0	#GMI Ex	1						
%GMI Ex	0	%GMI Ex	12	%GMI Ex	7	%GMI Ex	0	%GMI Ex	8						
n>STV	1	n>STV	0	n>STV	1	n>STV	1	n>STV	2	n>STV	1	n>STV	1	n>STV	3
%n>STV	8	%n>STV	0	%n>STV	8	%n>STV	9	%n>STV	17	%n>STV	8	%n>STV	9	%n>STV	30

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	4	6



Shellfish Growing Area Classifications

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

Summary
Mystic River (MA71-03): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.4695 sq mi (95%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Secondary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Pond Brook (MA71-16)

Location:	Headwaters, outlet Horn Pond, Woburn to mouth at inlet Wedge Pond, Winchester.
AU Type:	RIVER
AU Size:	1 MILES
Classification/Qualifier:	B

No usable data were available for Pond Brook (MA71-16) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Fish Passage Barrier*)		Unchanged
5	5	Benthic Macroinvertebrates		Unchanged

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

Sales Creek (MA71-12)

Location:	Headwaters near Route 145, Revere to Bennington Street tidegate/confluence with Belle Isle Inlet, Boston/Revere.
AU Type:	ESTUARY
AU Size:	0.01 SQUARE MILES
Classification/Qualifier:	SA: ORW, SFO (Tributary to SA SFO ORW)

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

Recommendations

2022 Recommendations
REC: Enterococci data of sufficient sample size (per the current CALM) should be collected in Sales Creek to better evaluate bacteria conditions in the AU.

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent data have been collected in Sales Creek (MA71-12) so the Aquatic Life Use is Not Assessed.	

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No fish toxics sampling has been conducted in Sales Creek (MA71-12) so the Fish Consumption Use is Not Assessed.	

Shellfish Harvesting

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Sales Creek (MA71-12): There are no shellfish growing area classifications within this AU, therefore the Shellfish Harvesting Use is Not Assessed.	

Aesthetic

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent data have been collected in Sales Creek (MA71-12) so the Aesthetics Use is Not Assessed.	

Primary Contact Recreation

2022 Use Attainment	Alert
Insufficient Information	NO
2022 Use Attainment Summary	
MyRWA staff/volunteers collected 1 bacteria sample in Sales Creek in April 2014 (MyRWA_SACTRAILER, 42.40258° N, -71.00346° W). The Enterococci concentration was low (10 cfu/100mL) but this data is too limited for use attainment decisions.	
There is Insufficient Information to assess the Primary Contact Recreational Use of Sales Creek (MA71-12).	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MyRWA_SACTRAILER	Mystic River Watershed Association	Water Quality	Sales Creek	None submitted by MYRWA	42.40258	-71.00346

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MyRWA 2019)

(MassDEP Undated 2)

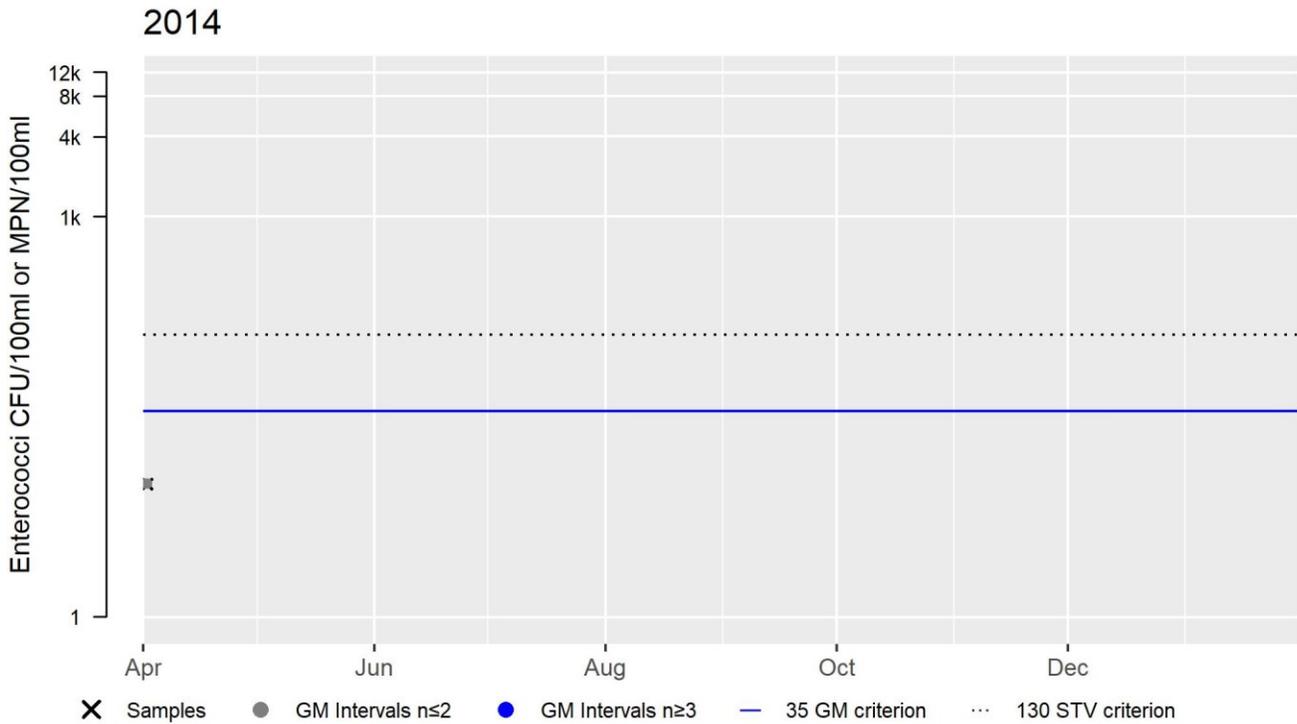
[Result units are CFU/100ml or MPN/100ml]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MyRWA_SACTRAILER	Mystic River Watershed Association	Enterococci	04/02/14	04/02/14	1	10	10	10

MyRWA_SACTRAILER Enterococci (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	10
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

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



Shellfish Growing Area Classifications

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

Summary
Sales Creek (MA71-12): There are no shellfish growing area classifications within this AU, therefore the Primary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Secondary Contact Recreation

2022 Use Attainment	Alert
Insufficient Information	NO
2022 Use Attainment Summary	

MyRWA staff/volunteers collected 1 bacteria sample in Sales Creek in April 2014 (MyRWA_SACTRAILER, 42.40258° N, -71.00346° W). The Enterococci concentration was low (10 cfu/100mL) but this data is too limited for use attainment decisions.

There is Insufficient Information to assess the Secondary Contact Recreational Use of Sales Creek (MA71-12).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MyRWA_SACTRAILER	Mystic River Watershed Association	Water Quality	Sales Creek	None submitted by MYRWA	42.40258	-71.00346

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MyRWA 2019)
(MassDEP Undated 2)

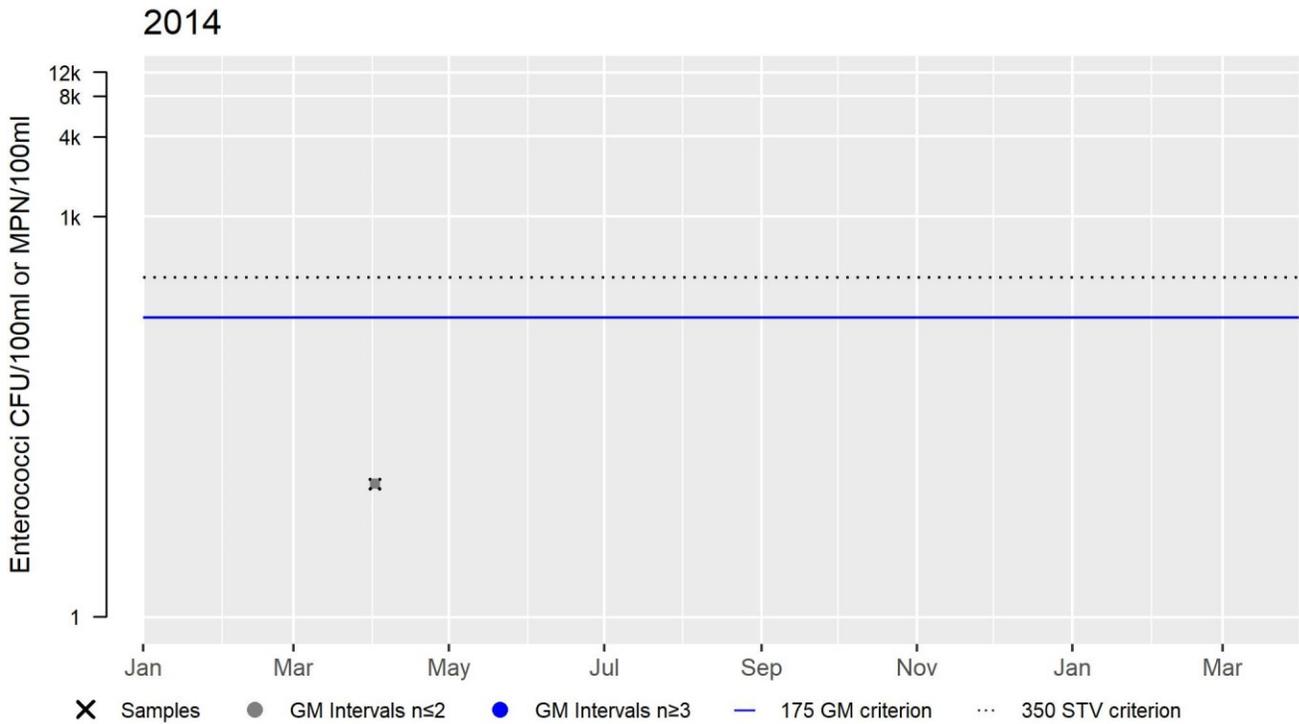
[Result units are CFU/100ml or MPN/100ml]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MyRWA_SACTRAILER	Mystic River Watershed Association	Enterococci	04/02/14	04/02/14	1	10	10	10

MyRWA_SACTRAILER Enterococci (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	10
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

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



Shellfish Growing Area Classifications

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

Summary
Sales Creek (MA71-12): There are no shellfish growing area classifications within this AU, therefore the Secondary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Shaker Glen Brook (MA71-11)

Location:	Headwaters, west of Dix Road Extention, Woburn to confluence with Fowle Brook, Woburn (portion culverted underground).
AU Type:	RIVER
AU Size:	1.5 MILES
Classification/Qualifier:	B

No usable data were available for Shaker Glen Brook (MA71-11) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Escherichia Coli (E. Coli)		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)				X	X
Escherichia Coli (E. Coli)	Source Unknown (N)				X	X

Spot Pond (MA71039)

Location:	Stoneham/Medford.
AU Type:	FRESHWATER LAKE
AU Size:	290 ACRES
Classification/Qualifier:	A: PWS, ORW

No usable data were available for Spot Pond (MA71039) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

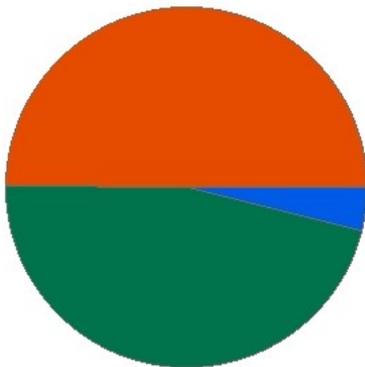
2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None		Unchanged

Spot Pond Brook (MA71-17)

Location:	Headwaters outlet Spot Pond, Stoneham to mouth at confluence with Malden River, south of Charles Street, Malden (approximately 55% culverted).
AU Type:	RIVER
AU Size:	3.5 MILES
Classification/Qualifier:	B

Spot Pond Brook - MA71-17

Watershed Area: 7.21 square miles



Percent Agriculture
 Percent Natural
 Percent Developed
 Percent Wetland

Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	7.21	5.52	0.53	0.38
Agriculture	0%	0%	0%	0%
Developed	49.9%	49.8%	36.5%	37.3%
Natural	46.3%	47.6%	56.3%	59.2%
Wetland	3.8%	2.6%	7.2%	3.5%
Impervious Cover	36.2%			

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
2	3	None		Unchanged

Recommendations

2022 Recommendations

ALU: Based on data summarized for the 2018/20 IR cycle, chloride and continuous specific conductance data should be collected in Spot Pond Brook (MA71-17), in the vicinity of Fairlawn St, Malden (DEP site W1978), to track chloride trends. Given the regional trend of increasing chloride, the use of de-icing products containing chloride should be minimized by all parties (i.e., highways/roads, municipalities, businesses, residences) in the Spot Pond Brook sub-watershed.

REC: Additional *E. coli* sampling should be conducted in Spot Pond Brook to evaluate if there is impairment of the Primary and Secondary Contact Recreational Uses since too limited data have been collected but an Alert has been identified.

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Assessed	YES

2022 Use Attainment Summary
No new data are available, so the Aquatic Life Use for Spot Pond Brook (MA71-17) is Not Assessed. The prior alert for potential chloride toxicity is being carried forward.

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No fish toxics sampling has been conducted in Spot Pond Brook (MA71-17), so the Fish Consumption Use is Not Assessed.	

Aesthetic

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent data are available, so the Aesthetics Use for Spot Pond Brook (MA71-17) is Not Assessed.	

Primary Contact Recreation

2022 Use Attainment	Alert
Insufficient Information	YES
2022 Use Attainment Summary	
<p>Limited <i>E. coli</i> bacteria sampling was conducted by MyRWA staff/volunteers at multiple locations in Spot Pond Brook (MA71-17) during the 2011-2015 recreational seasons (Apr 1 – Oct 31). Generally, only 1 sample per year was collected in 1-4 years at these MyRWA stations (MyRWA_MACENDW, MyRWA_MACENDC, MyRWA_MELx08S, MyRWA_MAC054, MyRWA_MAC033, MyRWA_MAC001), so sample size was insufficient to allow analysis of the data for use attainment decisions. Although data were so limited, it is notable that samples from several sites contained extremely elevated <i>E. coli</i> concentrations. Such elevated bacteria data can be summarized as follows: 24,810 cfu/100mL in June 2015 downstream from the MELx08 outfall in Melrose (MyRWA_MELx08S), 34,480 cfu/100mL in June 2015 just downstream from the Banks Place culvert in Melrose (MyRWA_MAC033; range= 353-34,480 cfu/100mL; 2011-2015), 2,452 cfu/100mL in June 2013 and 4,480 cfu/100mL in September 2013 upstream from Winter Street in Melrose (MyRWA_MAC001) (range= 343-4,480 cfu/100mL).</p> <p>There is Insufficient Information to assess the Primary Contact Recreational Use of Spot Pond Brook (MA71-17). However, an Alert is being identified for <i>E. coli</i> due to limited MyRWA data which includes a number of elevated bacteria concentrations.</p>	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MyRWA_MAC001	Mystic River Watershed Association	Water Quality	Malden Canal	None submitted by MyRWA	42.436171	-71.069768
MyRWA_MAC033	Mystic River Watershed Association	Water Quality	Malden Canal	EII Pond Brook DS of Banks Place	42.4407	-71.07008
MyRWA_MAC054	Mystic River Watershed Association	Water Quality	Malden Canal	EII Pond Brook US of Banks Place	42.44353	-71.06975
MyRWA_MACENDC	Mystic River Watershed Association	Water Quality	Malden Canal	End of Malden River "canal", center	42.449066	-71.070012

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MyRWA_MACENDW	Mystic River Watershed Association	Water Quality	Malden Canal	End of Malden River "canal", west side	42.44909	-71.069936
MyRWA_MELx08S	Mystic River Watershed Association	Water Quality	Spot Pond Brook	Stream just downstream of MELx08 outfall	42.445704	-71.070359

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MyRWA 2019)

(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
MyRWA_MAC001	Mystic River Watershed Association	E. coli	09/14/11	09/14/11	1	343	343	343
MyRWA_MAC001	Mystic River Watershed Association	E. coli	06/25/13	09/24/13	2	2452	4480	3314
MyRWA_MAC033	Mystic River Watershed Association	E. coli	09/14/11	09/14/11	1	353	353	353
MyRWA_MAC033	Mystic River Watershed Association	E. coli	08/07/12	08/07/12	1	767	767	767
MyRWA_MAC033	Mystic River Watershed Association	E. coli	08/21/14	08/21/14	1	494	494	494
MyRWA_MAC033	Mystic River Watershed Association	E. coli	06/01/15	06/01/15	1	34480	34480	34480
MyRWA_MAC054	Mystic River Watershed Association	E. coli	08/07/12	08/07/12	1	787	787	787
MyRWA_MAC054	Mystic River Watershed Association	E. coli	08/21/14	08/21/14	1	395	395	395
MyRWA_MACENDC	Mystic River Watershed Association	E. coli	08/07/12	08/07/12	1	767	767	767
MyRWA_MACENDC	Mystic River Watershed Association	E. coli	08/28/13	08/28/13	1	875	875	875
MyRWA_MACENDW	Mystic River Watershed Association	E. coli	08/07/12	08/07/12	1	104	104	104
MyRWA_MACENDW	Mystic River Watershed Association	E. coli	08/28/13	08/28/13	1	12	12	12
MyRWA_MELx08S	Mystic River Watershed Association	E. coli	06/01/15	06/01/15	1	24810	24810	24810

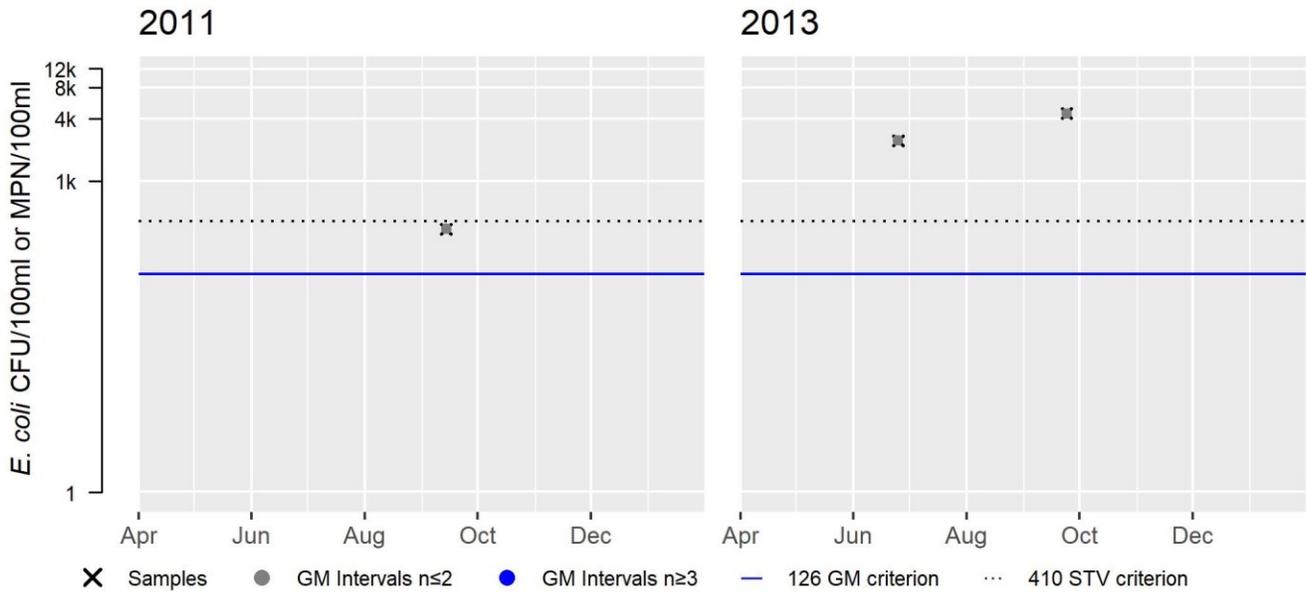
MyRWA_MAC001 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	343
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

Var	Res
Samples	2
SeasGM	3314
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	2
%n>STV	100

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

Variable	Cumulative %GMI Ex (all years)
Result	0

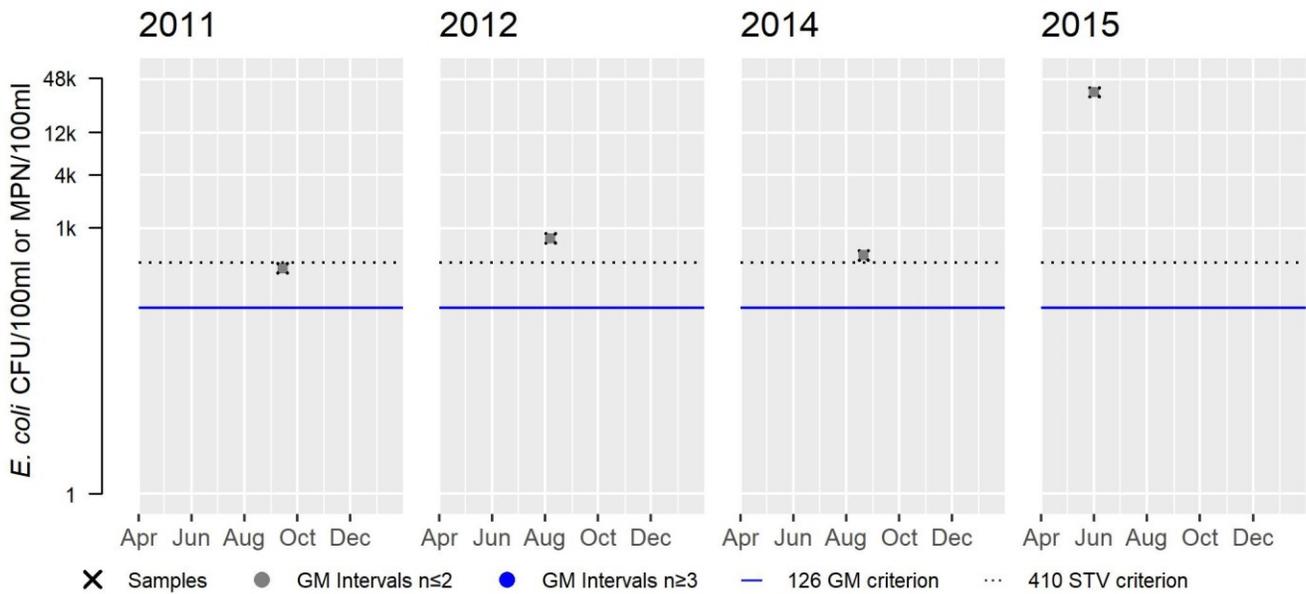


MyRWA_MAC033 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res	Var	Res	Var	Res	Var	Res
Samples	1	Samples	1	Samples	1	Samples	1
SeasGM	353	SeasGM	767	SeasGM	494	SeasGM	34480
#GMI	0	#GMI	0	#GMI	0	#GMI	0
#GMI Ex	0						
%GMI Ex	0						
n>STV	0	n>STV	1	n>STV	1	n>STV	1
%n>STV	0	%n>STV	100	%n>STV	100	%n>STV	100

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

Variable	Cumulative %GMI Ex (all years)
Result	0



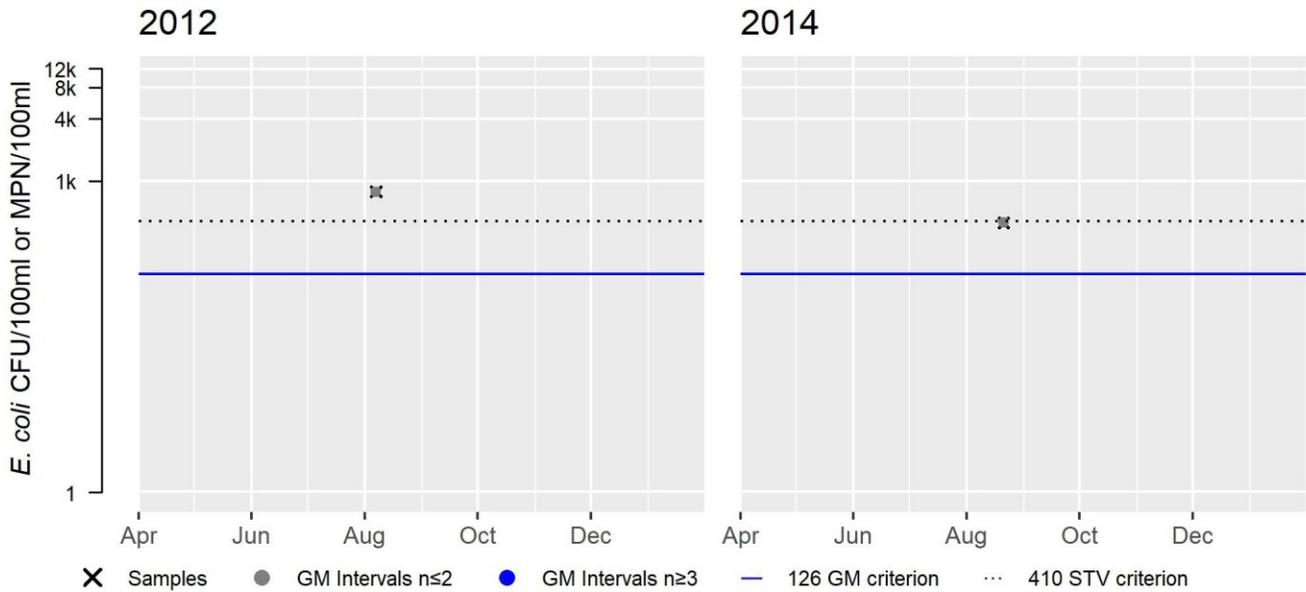
MyRWA_MAC054 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	787
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

Var	Res
Samples	1
SeasGM	395
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

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

Variable	Cumulative %GMI Ex (all years)
Result	0



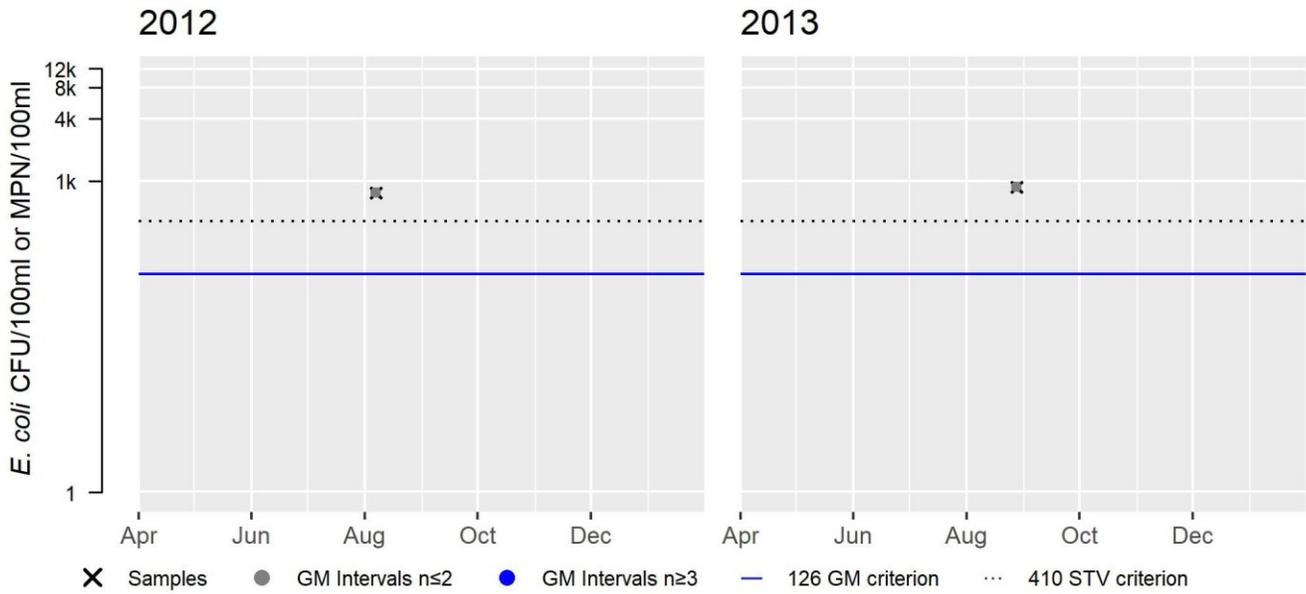
MyRWA_MACENDC *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	767
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

Var	Res
Samples	1
SeasGM	875
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

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

Variable	Cumulative %GMI Ex (all years)
Result	0



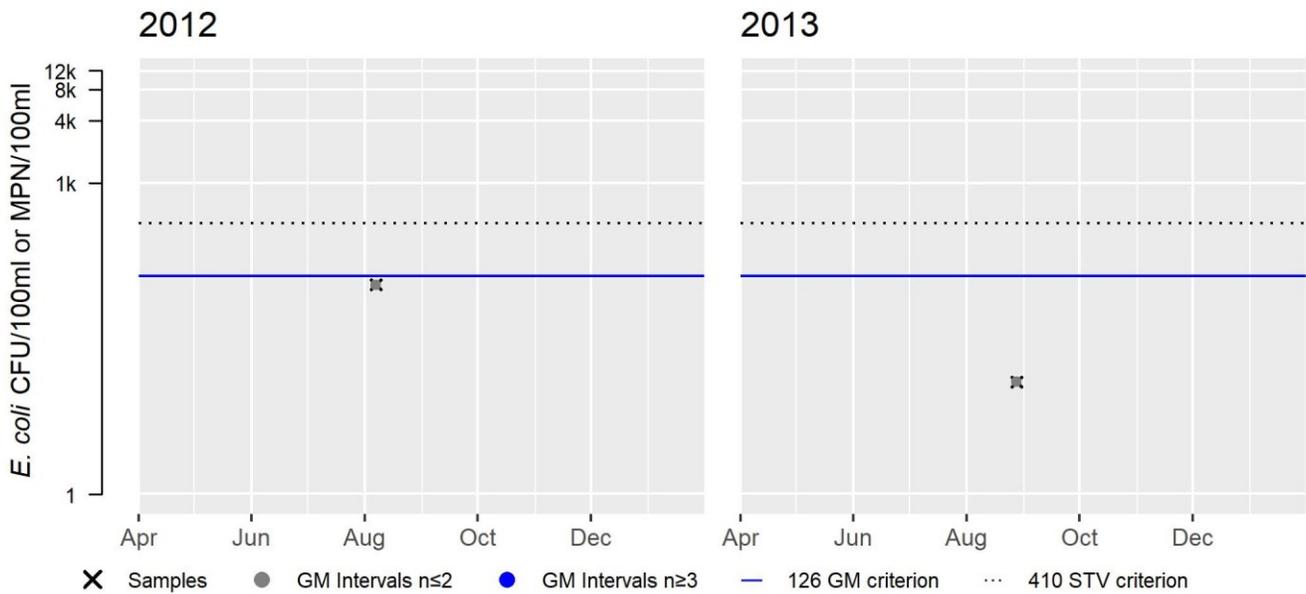
MyRWA_MACENDW *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	104
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

Var	Res
Samples	1
SeasGM	12
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

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

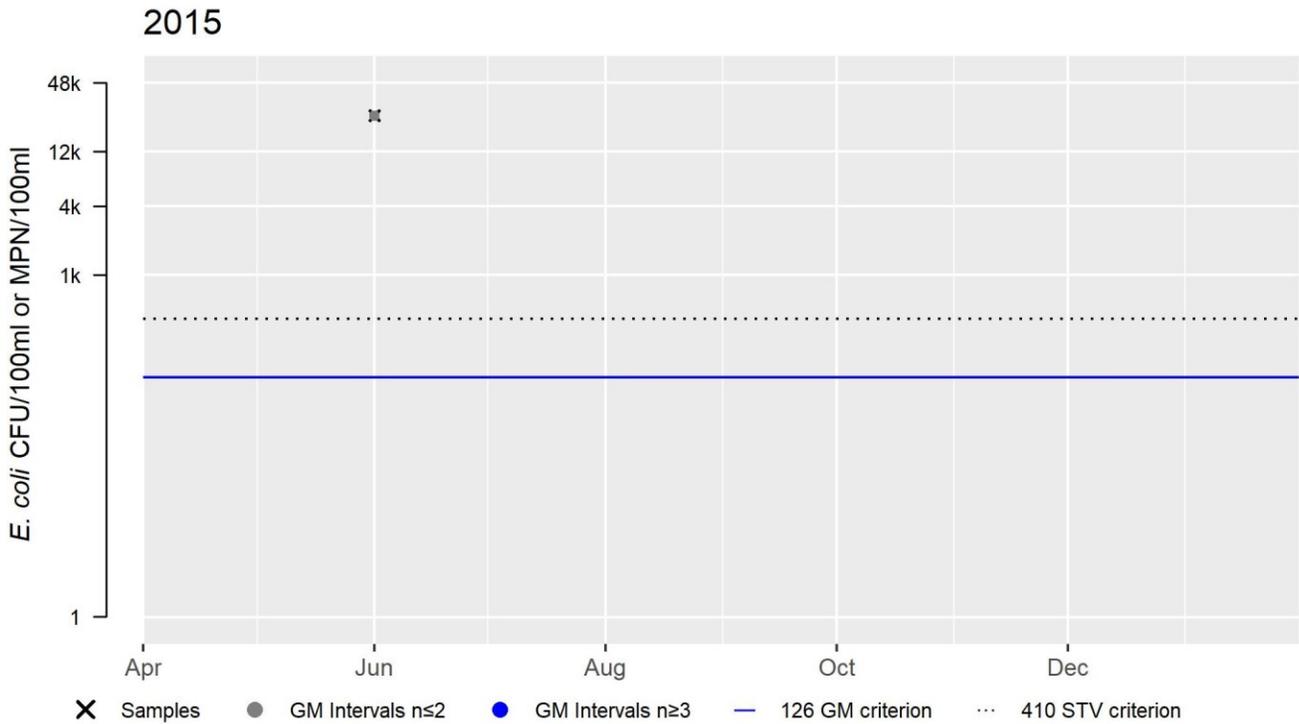
Variable	Cumulative %GMI Ex (all years)
Result	0



MyRWA_MELx08S *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	24810
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

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



Secondary Contact Recreation

2022 Use Attainment	Alert
Insufficient Information	YES
2022 Use Attainment Summary	

Limited *E. coli* bacteria sampling was conducted by MyRWA staff/volunteers from 2011-2015 at multiple locations in Spot Pond Brook (MA71-17). Generally, only one sample per year was collected at these MyRWA stations (MyRWA_SPB033, MyRWA_SPB021, MyRWA_SPBRAVINE, MyRWA_MACENDW, MyRWA_MACENDC, MyRWA_MELx08S, MyRWA_MAC054, MyRWA_MAC033, MyRWA_MAC001), so sample size was insufficient to allow analysis of these data for use attainment decisions. Although data were so limited, it is notable that samples from several sites contained extremely elevated *E. coli* concentrations. Such elevated bacteria data can be summarized as follows: 24,810 cfu/100mL in June 2015 downstream from the MELx08 outfall in Melrose (MyRWA_MELx08S), 34,480 cfu/100mL in June 2015 just downstream from the Banks Place culvert in Melrose (MyRWA_MAC033; range= 353-34,480 cfu/100mL; 2011-2015), 2,452 cfu/100mL in June 2013 and 4,480 cfu/100mL in September 2013 upstream from Winter Street in Melrose (MyRWA_MAC001) (range= 343-4,480 cfu/100mL).

There is Insufficient Information to assess the Secondary Contact Recreational Use of Spot Pond Brook (MA71-17). However, an Alert is being identified for *E. coli* due to limited MyRWA data which includes a number of elevated bacteria concentrations.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MyRWA_MAC001	Mystic River Watershed Association	Water Quality	Malden Canal	None submitted by MYRWA	42.436171	-71.069768
MyRWA_MAC033	Mystic River Watershed Association	Water Quality	Malden Canal	Ell Pond Brook DS of Banks Place	42.4407	-71.07008
MyRWA_MAC054	Mystic River Watershed Association	Water Quality	Malden Canal	Ell Pond Brook US of Banks Place	42.44353	-71.06975
MyRWA_MACENDC	Mystic River Watershed Association	Water Quality	Malden Canal	End of Malden River "canal", center	42.449066	-71.070012
MyRWA_MACENDW	Mystic River Watershed Association	Water Quality	Malden Canal	End of Malden River "canal", west side	42.44909	-71.069936
MyRWA_MELx08S	Mystic River Watershed Association	Water Quality	Spot Pond Brook	Stream just downstream of MELx08 outfall	42.445704	-71.070359
MyRWA_SPB021	Mystic River Watershed Association	Water Quality	Spot Pond Brook	None submitted by MYRWA	42.4555	-71.080667
MyRWA_SPB033	Mystic River Watershed Association	Water Quality	Spot Pond Brook	None submitted by MYRWA	42.455333	-71.083333
MyRWA_SPBRAVINE	Mystic River Watershed Association	Water Quality	Spot Pond Brook	W. Wyoming Ave and Ravine Terrace walk through playground to brook behind homes, close to SPB016	42.45616	-71.07889

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MyRWA 2019)
(MassDEP Undated 2)

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

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MyRWA_MAC001	Mystic River Watershed Association	E. coli	09/14/11	09/14/11	1	343	343	343
MyRWA_MAC001	Mystic River Watershed Association	E. coli	06/25/13	09/24/13	2	2452	4480	3314
MyRWA_MAC033	Mystic River Watershed Association	E. coli	09/14/11	09/14/11	1	353	353	353
MyRWA_MAC033	Mystic River Watershed Association	E. coli	08/07/12	08/07/12	1	767	767	767
MyRWA_MAC033	Mystic River Watershed Association	E. coli	08/21/14	08/21/14	1	494	494	494
MyRWA_MAC033	Mystic River Watershed Association	E. coli	06/01/15	06/01/15	1	34480	34480	34480
MyRWA_MAC054	Mystic River Watershed Association	E. coli	08/07/12	08/07/12	1	787	787	787
MyRWA_MAC054	Mystic River Watershed Association	E. coli	08/21/14	08/21/14	1	395	395	395
MyRWA_MACENDC	Mystic River Watershed Association	E. coli	08/07/12	08/07/12	1	767	767	767
MyRWA_MACENDC	Mystic River Watershed Association	E. coli	08/28/13	08/28/13	1	875	875	875
MyRWA_MACENDW	Mystic River Watershed Association	E. coli	08/07/12	08/07/12	1	104	104	104
MyRWA_MACENDW	Mystic River Watershed Association	E. coli	08/28/13	08/28/13	1	12	12	12
MyRWA_MELx08S	Mystic River Watershed Association	E. coli	06/01/15	06/01/15	1	24810	24810	24810
MyRWA_SPB021	Mystic River Watershed Association	E. coli	01/26/11	01/26/11	1	169	169	169
MyRWA_SPB033	Mystic River Watershed Association	E. coli	01/26/11	01/26/11	1	1	1	1
MyRWA_SPBRAVINE	Mystic River Watershed Association	E. coli	01/26/11	01/26/11	1	230	230	230

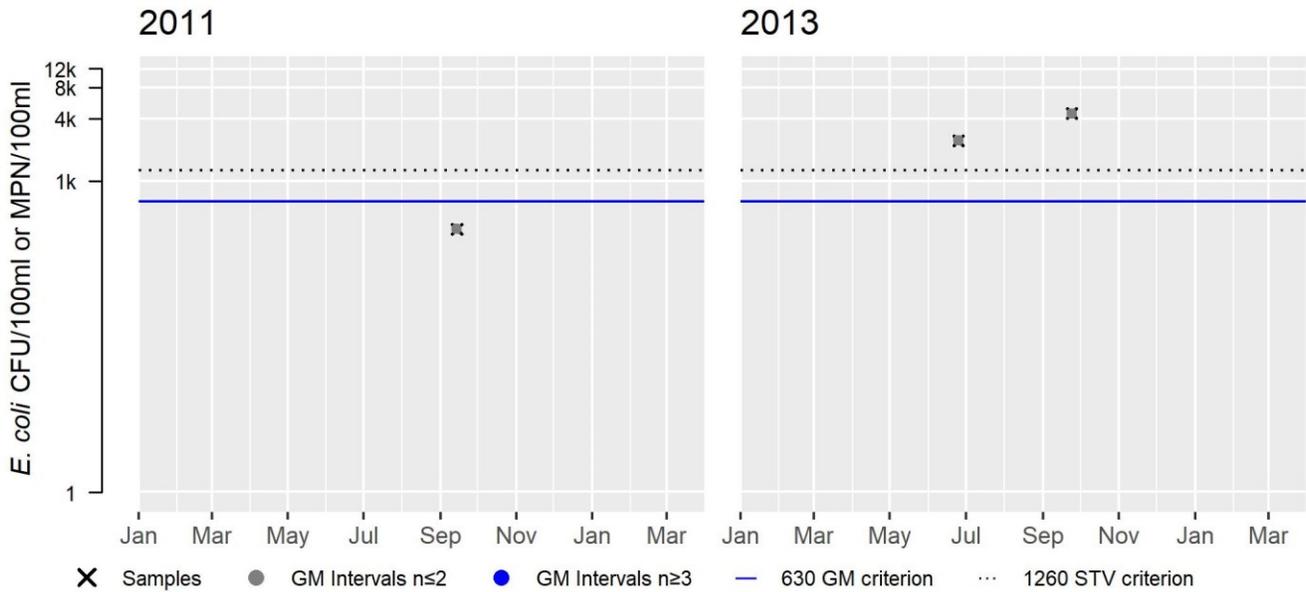
MyRWA_MAC001 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	343
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

Var	Res
Samples	2
SeasGM	3314
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	2
%n>STV	100

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

Variable	Cumulative %GMI Ex (all years)
Result	0

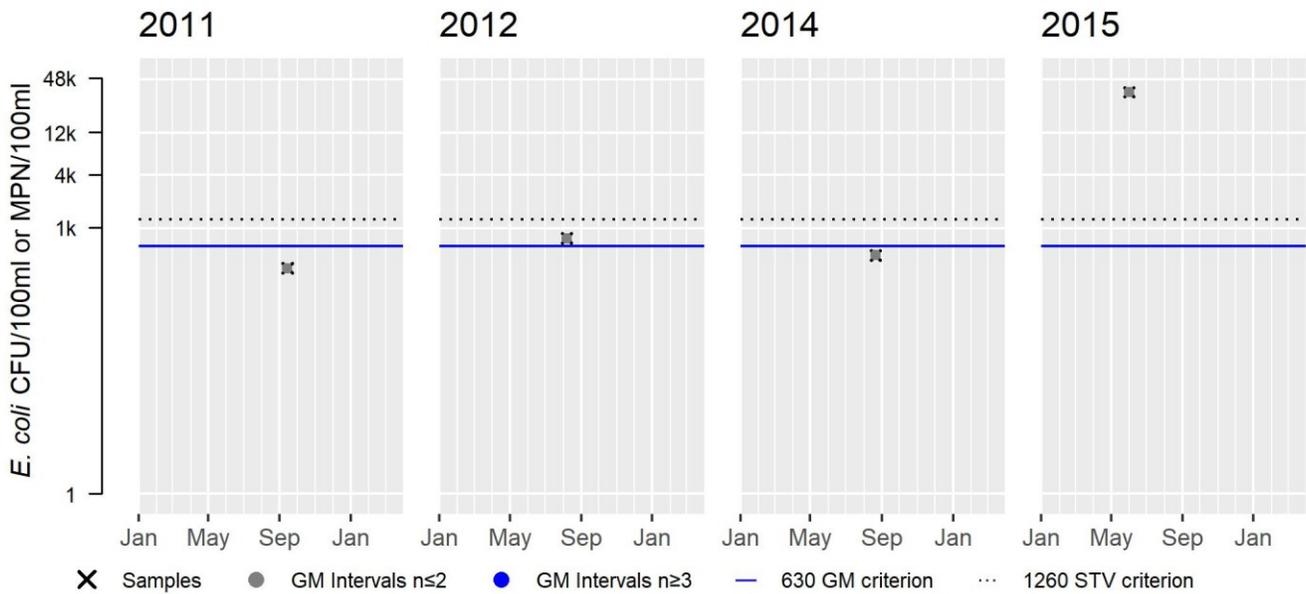


MyRWA_MAC033 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res	Var	Res	Var	Res	Var	Res
Samples	1	Samples	1	Samples	1	Samples	1
SeasGM	353	SeasGM	767	SeasGM	494	SeasGM	34480
#GMI	0	#GMI	0	#GMI	0	#GMI	0
#GMI Ex	0						
%GMI Ex	0						
n>STV	0	n>STV	0	n>STV	0	n>STV	1
%n>STV	0	%n>STV	0	%n>STV	0	%n>STV	100

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

Variable	Cumulative %GMI Ex (all years)
Result	0



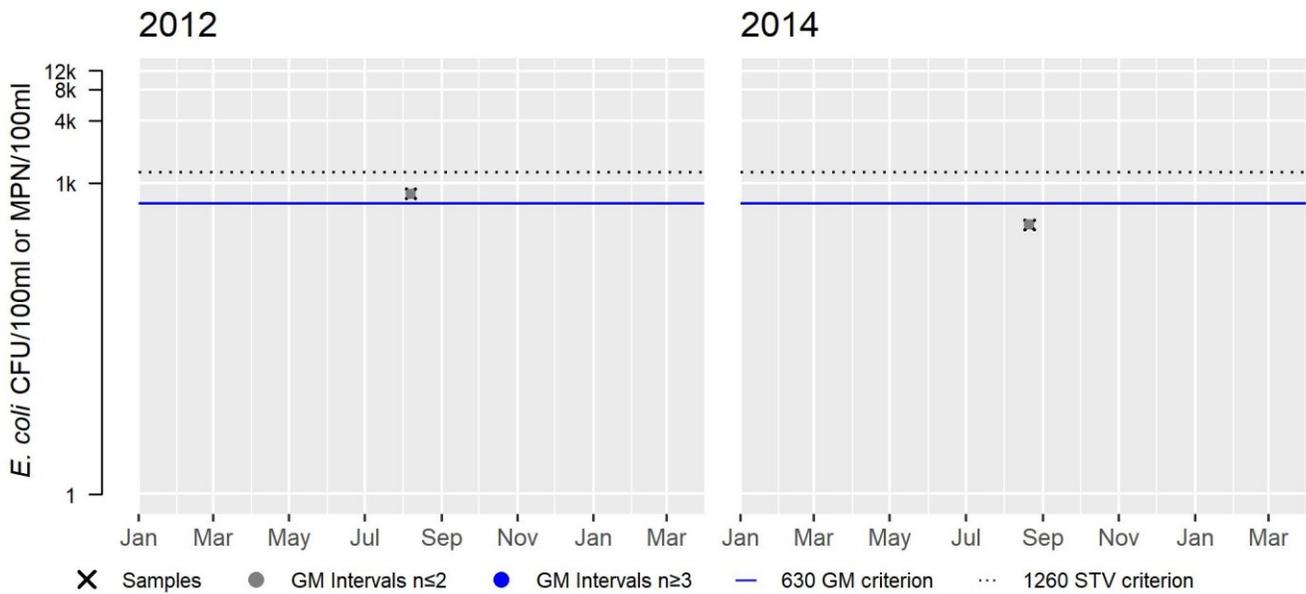
MyRWA_MAC054 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	787
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

Var	Res
Samples	1
SeasGM	395
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

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

Variable	Cumulative %GMI Ex (all years)
Result	0



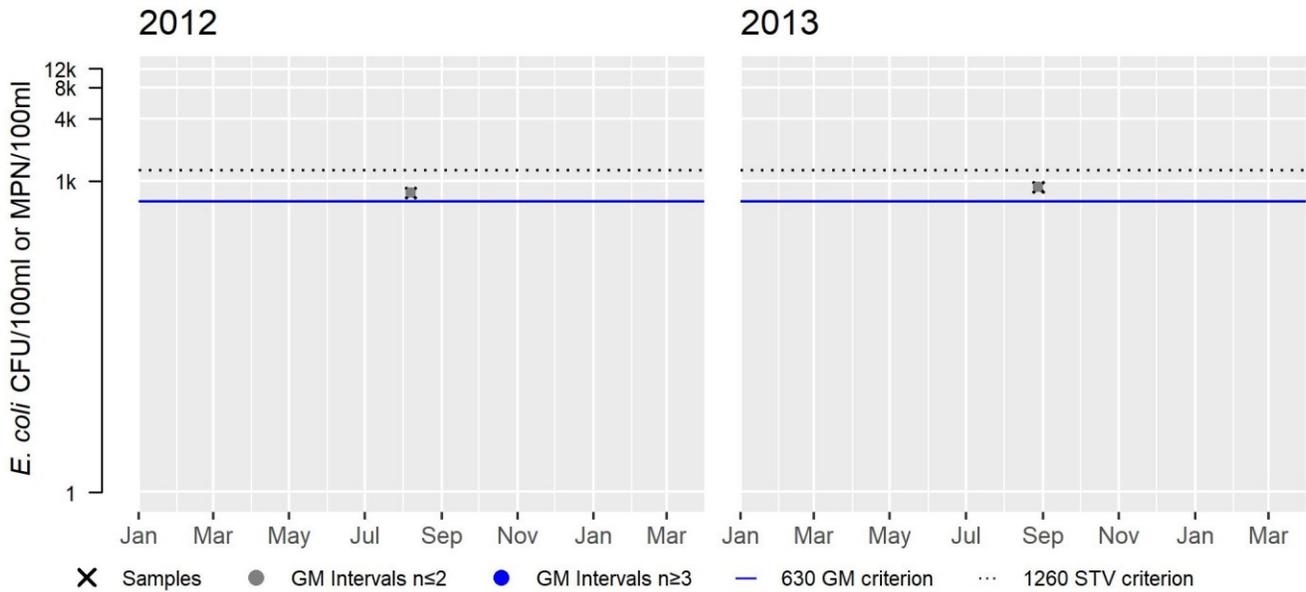
MyRWA_MACENDC *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	767
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

Var	Res
Samples	1
SeasGM	875
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

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

Variable	Cumulative %GMI Ex (all years)
Result	0



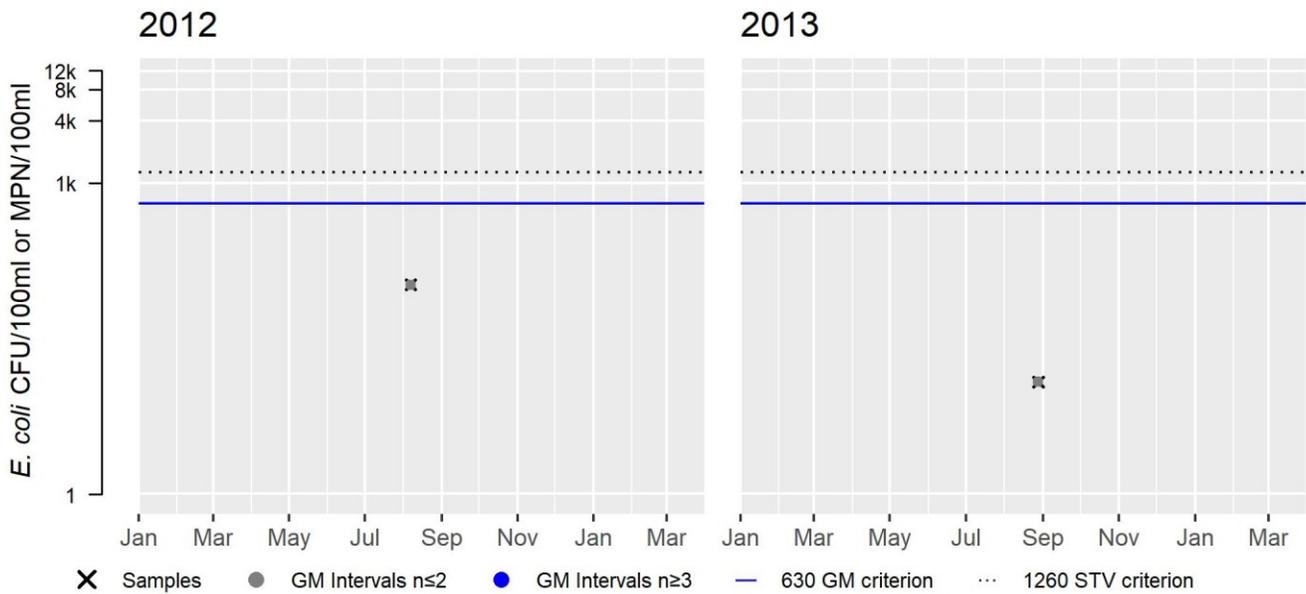
MyRWA_MACENDW *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	104
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

Var	Res
Samples	1
SeasGM	12
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

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

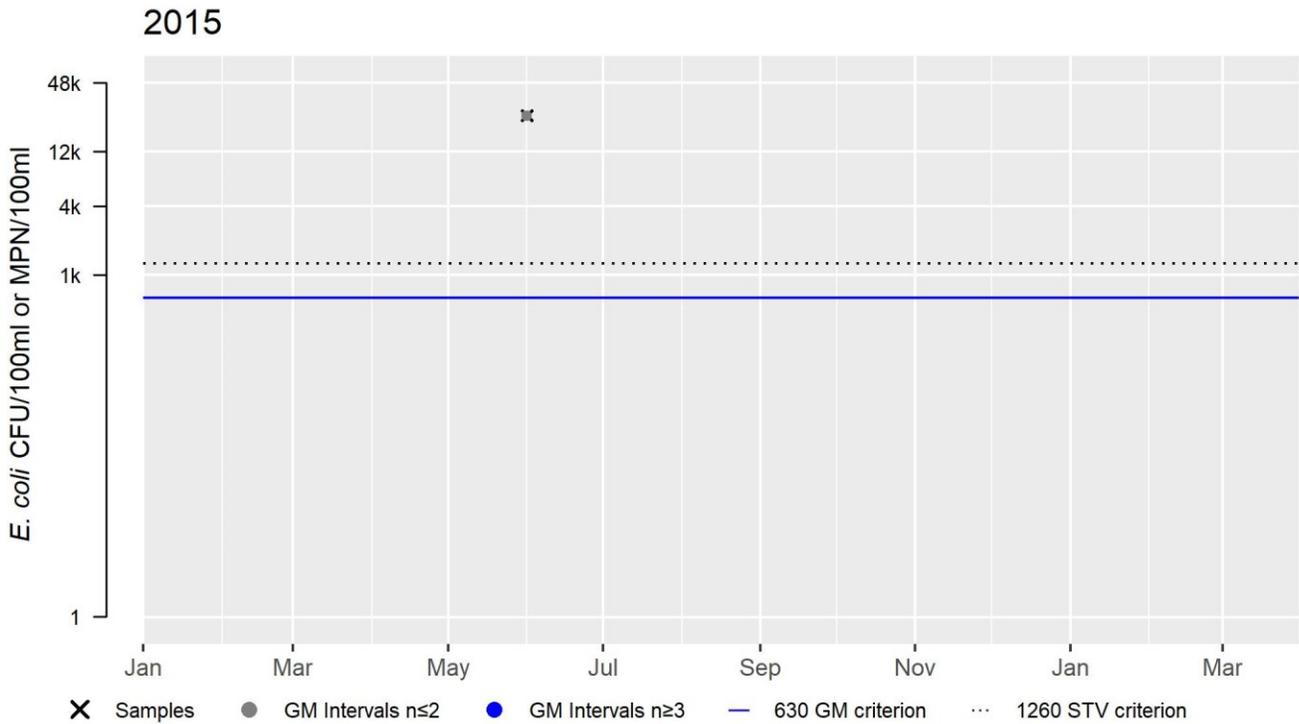
Variable	Cumulative %GMI Ex (all years)
Result	0



MyRWA_MELx08S *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	24810
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

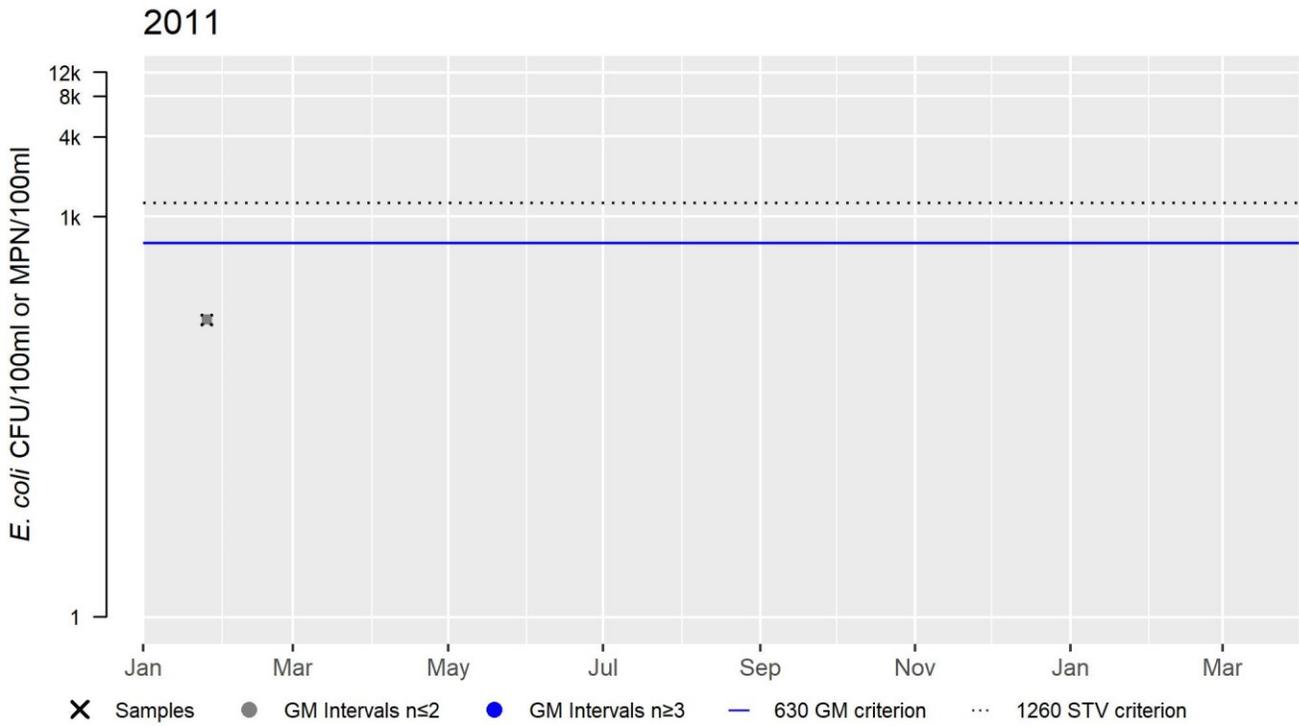
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exceedances; %GMI Ex = percent GMI Exceedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



MyRWA_SPB021 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	169
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

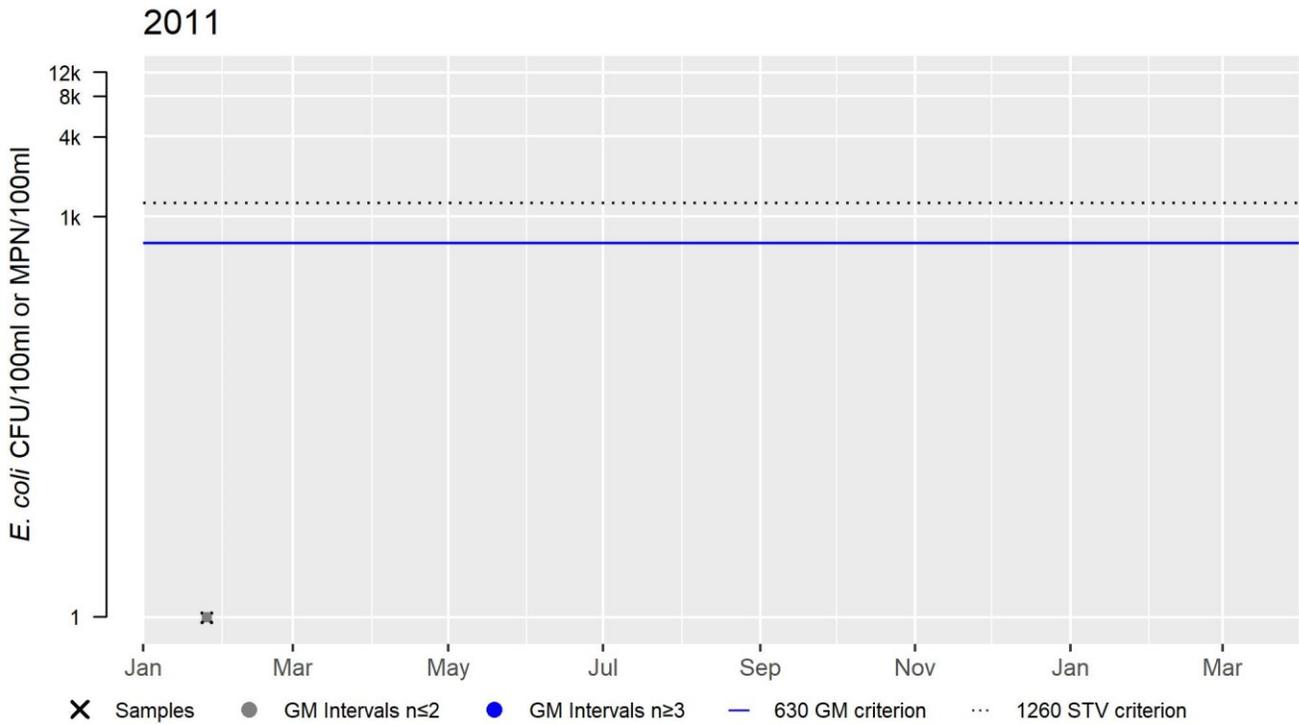
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exceedances; %GMI Ex = percent GMI Exceedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



MyRWA_SPB033 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	1
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

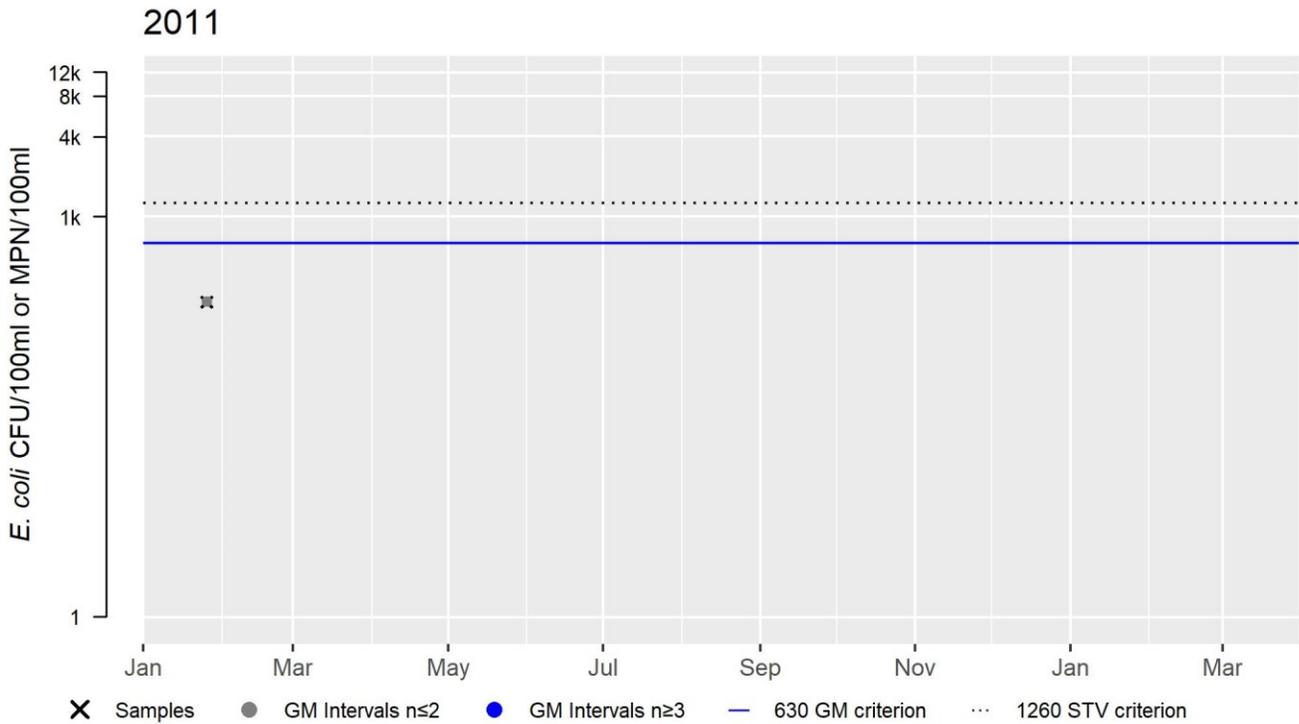
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exceedances; %GMI Ex = percent GMI Exceedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



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

Var	Res
Samples	1
SeasGM	230
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

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



Spy Pond (MA71040)

Location:	Arlington.
AU Type:	FRESHWATER LAKE
AU Size:	98 ACRES
Classification/Qualifier:	B

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Curly-leaf Pondweed*)		Unchanged
5	5	(Eurasian Water Milfoil, Myriophyllum Spicatum*)		Unchanged
5	5	(Water Chestnut*)		Unchanged
5	5	Chlordane in Fish Tissue		Unchanged
5	5	DDT in Fish Tissue		Unchanged
5	5	Dissolved Oxygen		Unchanged
5	5	Harmful Algal Blooms		Unchanged
5	5	Phosphorus, Total		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X				
(Eurasian Water Milfoil, Myriophyllum Spicatum*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X				
(Water Chestnut*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X				
Chlordane in Fish Tissue	Source Unknown (N)		X			
DDT in Fish Tissue	Source Unknown (N)		X			
Dissolved Oxygen	Source Unknown (N)	X				
Harmful Algal Blooms	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	X		X	X	X
Harmful Algal Blooms	Highway/Road/Bridge Runoff (Non-construction Related) (N)	X		X	X	X
Harmful Algal Blooms	Source Unknown (N)	X		X	X	X
Phosphorus, Total	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	X		X	X	X
Phosphorus, Total	Highway/Road/Bridge Runoff (Non-construction Related) (N)	X		X	X	X
Phosphorus, Total	Source Unknown (N)	X		X	X	X

Recommendations

2022 Recommendations
ALU: A survey of Spy Pond should be conducted to confirm the presence of <i>live</i> specimens of Asian clam (<i>Corbicula fluminea</i>); confirmation of any non-native species should be made by a qualified state agency/taxonomist.

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	YES
2022 Use Attainment Summary	
C-HAB postings for Spy Pond (MA71040) were reported to MassDPH for 36 days in 2019. Since blooms >20 days in length were reported in a recent year, this supports the retention of the prior impairment for Harmful Algal Blooms. The Aquatic Life Use for Spy Pond (MA71040) is assessed as Not Supporting. Prior impairments being carried forward include Harmful Algal Blooms, "Phosphorus, Total," Dissolved Oxygen, Curly-leaf Pondweed, Water Chestnut, and Eurasian Water Milfoil. The prior Alert for a potential Asian clam infestation, as noted in the 2018/2020 IR (MassDEP 2021), is also being carried forward.	

Fish Consumption

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
While no recent fish toxics data are available, the Fish Consumption Use for Spy Pond (MA71040) will continue to be assessed as Not Supporting with the Chlordane in Fish Tissue and DDT in Fish Tissue impairments being carried forward. MassDPH advises that children younger than 12 years of age, pregnant women, women of childbearing age who may become pregnant, and nursing mothers, as well as the general public, should not eat any carp from Spy Pond (MassDPH 2021).	

Aesthetic

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
C-HAB postings for Spy Pond (MA71040) were reported to MassDPH for 36 days in 2019. Since blooms >20 days in length were reported in a recent year, this supports the retention of the prior impairment for Harmful Algal Blooms. The Aesthetics Use for Spy Pond (MA71040) will continue to be assessed as Not Supporting with the Harmful Algal Blooms and "Phosphorus, Total" impairments being carried forward.	

Algal Bloom Information

Cyanobacteria Harmful Algal Bloom (C-HAB) Summary Statements for 2015-2019 MassDPH Data (Bailey, Logan April 15, 2021) (MassDEP Undated 2)

C-HAB Summary Statement
C-HAB postings for Spy Pond (MA71040) were reported to MassDPH for 36 days in 2019. Since blooms >20 days in length were reported in a recent year, the Primary/Secondary Contact Recreational Uses and Aesthetics Use are assessed as Not Supporting.

Cyanobacteria Harmful Algal Bloom (C-HAB) Data (2015-2019) Provided by MassDPH (Bailey, Logan April 15, 2021)

Waterbody	Sample Analysis Used in Issuing Advisory	Bloom Days, 2015	Bloom Days, 2016	Bloom Days, 2017	Bloom Days, 2018	Bloom Days, 2019	# Years with >20 Days of Closure	>1 Posting Per Year
Spy Pond	Not issued or confirmed by sampling					36	1	no

Primary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
C-HAB postings for Spy Pond (MA71040) were reported to MassDPH for 36 days in 2019. Since blooms >20 days in length were reported in a recent year, this supports the retention of the prior impairment for Harmful Algal Blooms. The Primary Contact Recreational Use for Spy Pond (MA71040) will continue to be assessed as Not Supporting with the Harmful Algal Blooms and "Phosphorus, Total" impairments being carried forward.	

Secondary Contact Recreation

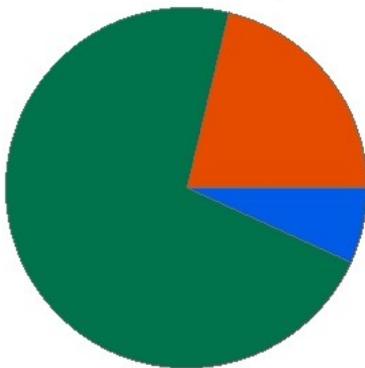
2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
C-HAB postings for Spy Pond (MA71040) were reported to MassDPH for 36 days in 2019. Since blooms >20 days in length were reported in a recent year, this supports the retention of the prior impairment for Harmful Algal Blooms. The Secondary Contact Recreational Use for Spy Pond (MA71040) will continue to be assessed as Not Supporting with the Harmful Algal Blooms and "Phosphorus, Total" impairments being carried forward.	

Unnamed Tributary (MA71-13)

Location:	Unnamed tributary locally known as 'Meetinghouse Brook', from emergence south of Route 16/east of Winthrop Street, Medford to confluence with the Mystic River, Medford. (brook not apparent on 1985 Boston North USGS quad - 2005 orthophotos used to delineate stream).
AU Type:	RIVER
AU Size:	0.1 MILES
Classification/Qualifier:	B

Unnamed Tributary - MA71-13

Watershed Area: 2.76 square miles



Percent Agriculture
 Percent Natural
 Percent Developed
 Percent Wetland

Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	2.76	2.76	1.04	1.04
Agriculture	0%	0%	0%	0%
Developed	21.2%	21.2%	9%	9%
Natural	72.1%	72.1%	79.8%	79.8%
Wetland	6.8%	6.8%	11.3%	11.3%
Impervious Cover	15.3%			

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	Escherichia Coli (E. Coli)	R1_MA_2019_01	Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)				X	

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
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Not Assessed	YES
2022 Use Attainment Summary	
No recent data are available to assess the Aquatic Life Use of this Unnamed Tributary (MA71-13) locally known as Meetinghouse Brook, so it is Not Assessed. The prior Alert for low DO (Carr 2010) is being carried forward.	

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No fish toxics sampling has been conducted in this Unnamed Tributary (MA71-13) locally known as Meetinghouse Brook, so the Fish Consumption Use is Not Assessed.	

Aesthetic

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent data are available for this Unnamed Tributary (MA71-13) locally known as Meetinghouse Brook so the Aesthetics Use is Not Assessed.	

Primary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
<p>MyRWA staff and volunteers collected <i>E. coli</i> bacteria samples in this Unnamed Tributary (MA71-13), locally known as Meetinghouse Brook, on the upstream side of a culvert near the brook's confluence with the Mystic River (MyRWA_MEB001). Bacteria samples were collected (generally, n=7/yr) during the 2011-2019 recreational seasons (Apr 1 – Oct 31). Analysis of this moderate frequency dataset indicated that >20% of intervals (40-100%) in each of the most recent 5 years of data had GMs >126 cfu/100mL and that ≥2 samples (n=2-4) in 4 of those years exceeded the 410 cfu/100mL STV.</p> <p>The Primary Contact Recreational Use for Unnamed Tributary (MA71-13), locally known as Meetinghouse Brook, will continue to be assessed as Not Supporting for Escherichia Coli (E. Coli) based on these MyRWA data.</p>	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MyRWA_MEB001	Mystic River Watershed Association	Water Quality	Meetinghouse Brook	Meetinghouse Brook at Mystic River in Medford; upstream side of the culvert	42.418419	-71.116981

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MyRWA 2019)
(MassDEP Undated 2)

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

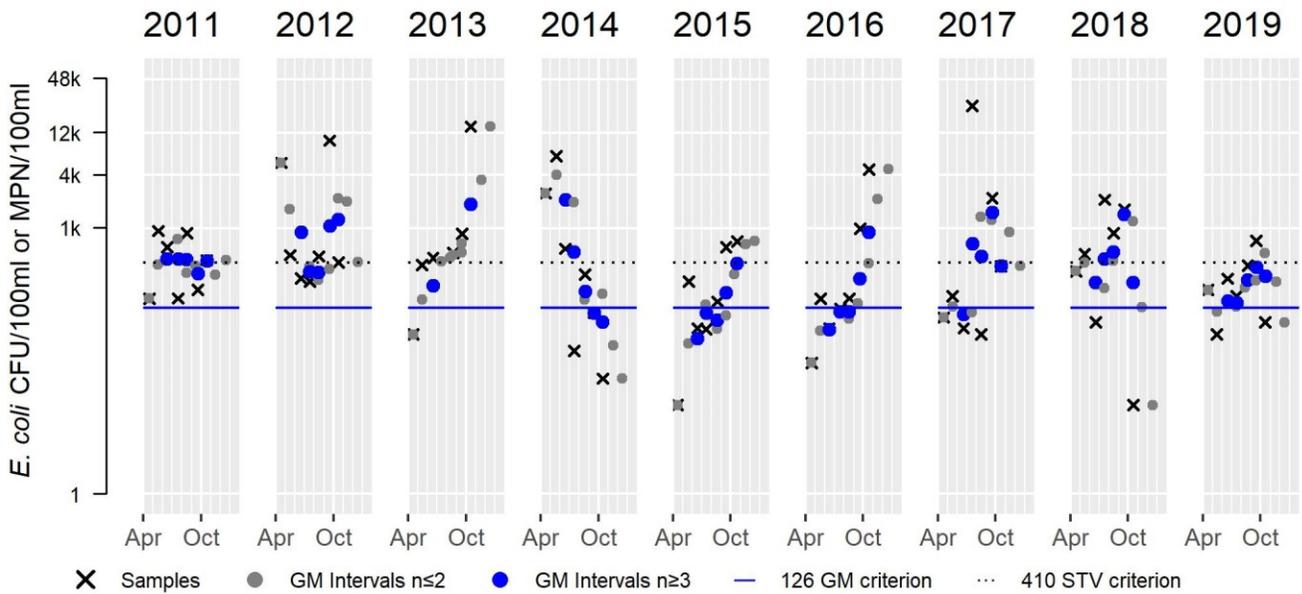
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MyRWA_MEB001	Mystic River Watershed Association	E. coli	04/20/11	10/19/11	7	160	933	379
MyRWA_MEB001	Mystic River Watershed Association	E. coli	04/18/12	10/17/12	7	250	9800	864
MyRWA_MEB001	Mystic River Watershed Association	E. coli	04/17/13	10/16/13	6	63	14100	646
MyRWA_MEB001	Mystic River Watershed Association	E. coli	04/16/14	10/15/14	7	20	6490	307
MyRWA_MEB001	Mystic River Watershed Association	E. coli	04/15/15	10/21/15	7	10	712	136
MyRWA_MEB001	Mystic River Watershed Association	E. coli	04/20/16	10/19/16	7	30	4610	228
MyRWA_MEB001	Mystic River Watershed Association	E. coli	04/19/17	10/18/17	7	63	24200	397
MyRWA_MEB001	Mystic River Watershed Association	E. coli	04/18/18	10/17/18	7	10	2100	331
MyRWA_MEB001	Mystic River Watershed Association	E. coli	04/17/19	10/16/19	7	63	723	202

MyRWA_MEB001 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res														
Samples	7	Samples	7	Samples	6	Samples	7								
SeasGM	379	SeasGM	864	SeasGM	646	SeasGM	307	SeasGM	136	SeasGM	228	SeasGM	397	SeasGM	331
#GMI	5	#GMI	5	#GMI	2	#GMI	5								
#GMI Ex	5	#GMI Ex	5	#GMI Ex	2	#GMI Ex	3	#GMI Ex	2	#GMI Ex	2	#GMI Ex	4	#GMI Ex	5
%GMI Ex	100	%GMI Ex	100	%GMI Ex	100	%GMI Ex	60	%GMI Ex	40	%GMI Ex	40	%GMI Ex	80	%GMI Ex	100
n>STV	4	n>STV	5	n>STV	4	n>STV	3	n>STV	2	n>STV	2	n>STV	2	n>STV	4
%n>STV	57	%n>STV	71	%n>STV	67	%n>STV	43	%n>STV	29	%n>STV	29	%n>STV	29	%n>STV	57

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	79	72



Secondary Contact Recreation

2022 Use Attainment	Alert
Fully Supporting	NO
2022 Use Attainment Summary	

MyRWA staff and volunteers collected *E. coli* bacteria samples in this Unnamed Tributary (MA71-13), locally known as Meetinghouse Brook, on the upstream side of a culvert near the brook's confluence with the Mystic River (MyRWA_MEB001). Bacteria samples were collected roughly monthly (generally, n=11-12/yr) from 2011 to 2019. Analysis of this moderate frequency dataset indicated that >20% of intervals exceeded the GM criterion of 630 cfu/100mL only in 1 of the most recent 5 years of data (30% exceedance in 2016) and that cumulatively, only 13% of GM intervals in the most recent 5 years exceeded the GM criterion. Additionally, 2 samples in 2 of the most recent 5 years of data exceeded the 1260 cfu/100mL STV (there were fewer exceedances in the other 3 years). According to 2022 CALM guidance (MassDEP 2022), MyRWA 2015-2019 data are indicative of an improvement in bacteria concentrations in Meetinghouse Brook (as compared to the 2011-2014 data) and the more recent data do not exceed the impairment decision schema. Therefore, the Escherichia Coli (*E. Coli*) impairment is being removed and the Secondary Contact Recreational Use for this Unnamed Tributary (MA71-13), locally known as Meetinghouse Brook, will be assessed as Fully Supporting.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MyRWA_MEB001	Mystic River Watershed Association	Water Quality	Meetinghouse Brook	Meetinghouse Brook at Mystic River in Medford; upstream side of the culvert	42.418419	-71.116981

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MyRWA 2019)

(MassDEP Undated 2)

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

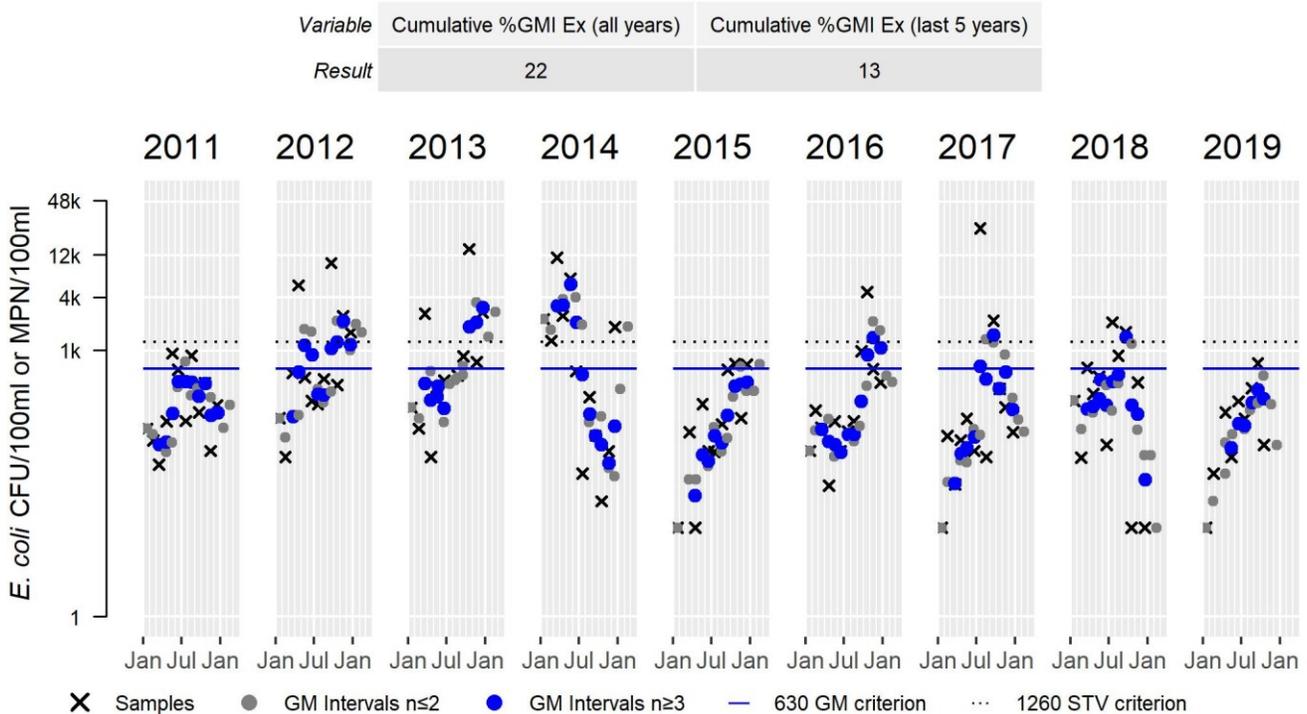
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MyRWA_MEB001	Mystic River Watershed Association	<i>E. coli</i>	01/19/11	12/14/11	12	52	933	221
MyRWA_MEB001	Mystic River Watershed Association	<i>E. coli</i>	01/18/12	12/19/12	12	63	9800	674
MyRWA_MEB001	Mystic River Watershed Association	<i>E. coli</i>	01/16/13	12/18/13	11	63	14100	667
MyRWA_MEB001	Mystic River Watershed Association	<i>E. coli</i>	01/15/14	12/17/14	12	20	11200	569
MyRWA_MEB001	Mystic River Watershed Association	<i>E. coli</i>	01/21/15	12/16/15	11	10	712	126
MyRWA_MEB001	Mystic River Watershed Association	<i>E. coli</i>	01/20/16	12/21/16	12	30	4610	227
MyRWA_MEB001	Mystic River Watershed Association	<i>E. coli</i>	01/18/17	12/20/17	12	10	24200	184

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MyRWA_MEB001	Mystic River Watershed Association	E. coli	01/17/18	12/19/18	12	10	2100	229
MyRWA_MEB001	Mystic River Watershed Association	E. coli	01/16/19	10/16/19	9	10	723	121

MyRWA_MEB001 E. coli (90-day Interval), Secondary Contact Recreational Use Season

Var	Res														
Samples	12	Samples	12	Samples	11	Samples	12	Samples	11	Samples	12	Samples	12	Samples	9
SeasGM	221	SeasGM	674	SeasGM	667	SeasGM	569	SeasGM	126	SeasGM	227	SeasGM	184	SeasGM	121
#GMI	11	#GMI	10	#GMI	8	#GMI	10	#GMI	9	#GMI	10	#GMI	10	#GMI	6
#GMI Ex	0	#GMI Ex	6	#GMI Ex	3	#GMI Ex	4	#GMI Ex	0	#GMI Ex	3	#GMI Ex	2	#GMI Ex	0
%GMI Ex	0	%GMI Ex	60	%GMI Ex	38	%GMI Ex	40	%GMI Ex	0	%GMI Ex	30	%GMI Ex	20	%GMI Ex	0
n>STV	0	n>STV	4	n>STV	3	n>STV	6	n>STV	0	n>STV	1	n>STV	2	n>STV	0
%n>STV	0	%n>STV	33	%n>STV	27	%n>STV	50	%n>STV	0	%n>STV	8	%n>STV	17	%n>STV	0

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

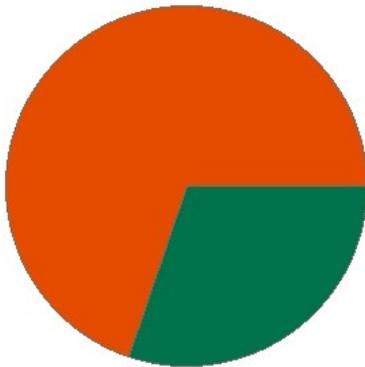


Unnamed Tributary (MA71-19)

Location:	Unnamed tributary to Little River (locally known as 'Wellington Brook'), headwaters south of Trapelo Road, Belmont to inlet Claypit Pond, Belmont (portions culverted underground) (1893 Boston USGS quad used to delineate stream).
AU Type:	RIVER
AU Size:	2.1 MILES
Classification/Qualifier:	B

Unnamed Tributary - MA71-19

Watershed Area: 1.35 square miles



Percent Agriculture
 Percent Natural
 Percent Developed
 Percent Wetland

Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	1.35	1.35	0	0
Agriculture	0%	0%	0%	0%
Developed	69.5%	69.5%	60.9%	60.9%
Natural	30%	30%	39.1%	39.1%
Wetland	0.5%	0.5%	0%	0%
Impervious Cover	51%			

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

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

Recommendations

2022 Recommendations
<p>ALU: Conduct additional water quality and benthic monitoring in this Unnamed Tributary (MA71-19) locally known as 'Wellington Brook' upstream of the Cottage Sreet culvert, Belmont (W1970, B0757). Water quality sampling should include deployment of probes to measure continuous DO and temperature data, as well as collection of discrete probe and grab sample data to assess nutrient enrichment and toxicity (e.g., total phosphorus, pH, total ammonia nitrogen, specific conductance, chloride, clean metals samples).</p> <p>REC: Sufficient bacteria sampling should be conducted in this Unnamed Tributary (MA71-19), to evaluate the status of the Primary and Secondary Contact Recreational Uses.</p>

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
No recent data are available, so the Aquatic Life Use of Unnamed Tributary MA71-19 (locally known as Wellington Brook) will continue to be assessed as Not Supporting with the Benthic Macroinvertebrates impairment being carried forward.	

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No fish toxics sampling has been conducted in this Unnamed Tributary MA71-19 (locally known as Wellington Brook), so the Fish Consumption Use is Not Assessed.	

Aesthetic

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent data are available, so the Aesthetics Use of this Unnamed Tributary MA71-19 (locally known as Wellington Brook) is Not Assessed.	

Primary Contact Recreation

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent bacteria sampling was conducted during the primary contact recreational season (April 1 – October 31) in this Unnamed Tributary (MA71-19), so the Primary Contact Recreational Use is Not Assessed.	

Secondary Contact Recreation

2022 Use Attainment	Alert
Insufficient Information	YES
2022 Use Attainment Summary	

Limited *E. coli* bacteria sampling was conducted at a number of stations (MyRWA_WEB013, MyRWA_WEB010, MyRWA_WEB007, MyRWA_WEB07N, MyRWA_WEB07S) in this Unnamed Tributary (MA71-19) (locally known as Wellington Brook) by MyRWA staff/volunteers between 2011 and 2016 (1 sample per year with number of years per station varying from 1-3). According to the 2022 CALM (MassDEP 2022), these data are too limited to make a use attainment decision, so the Secondary Contact Recreational Use for Unnamed Tributary MA71-19 is assessed as having Insufficient Information. However, an Alert is being identified because of high counts at all stations including some data running into the multiple thousands.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MyRWA_WEB007	Mystic River Watershed Association	Water Quality	Wellington Brook	None submitted by MYRWA	42.393561	-71.166747
MyRWA_WEB010	Mystic River Watershed Association	Water Quality	Wellington Brook	None submitted by MYRWA	42.394278	-71.17195
MyRWA_WEB013	Mystic River Watershed Association	Water Quality	Wellington Brook	None submitted by MYRWA	42.395247	-71.176317
MyRWA_WEB07N	Mystic River Watershed Association	Water Quality	Wellington Brook	Wellington Brook outlet to Claypit Pond @ SW corner by Concord Ave. north side of culvert	42.39358	-71.16682
MyRWA_WEB07S	Mystic River Watershed Association	Water Quality	Wellington Brook	Wellington Brook outlet to Claypit Pond @ SW corner by Concord Ave. south side of culvert	42.39355	-71.16677

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MyRWA 2019)

(MassDEP Undated 2)

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

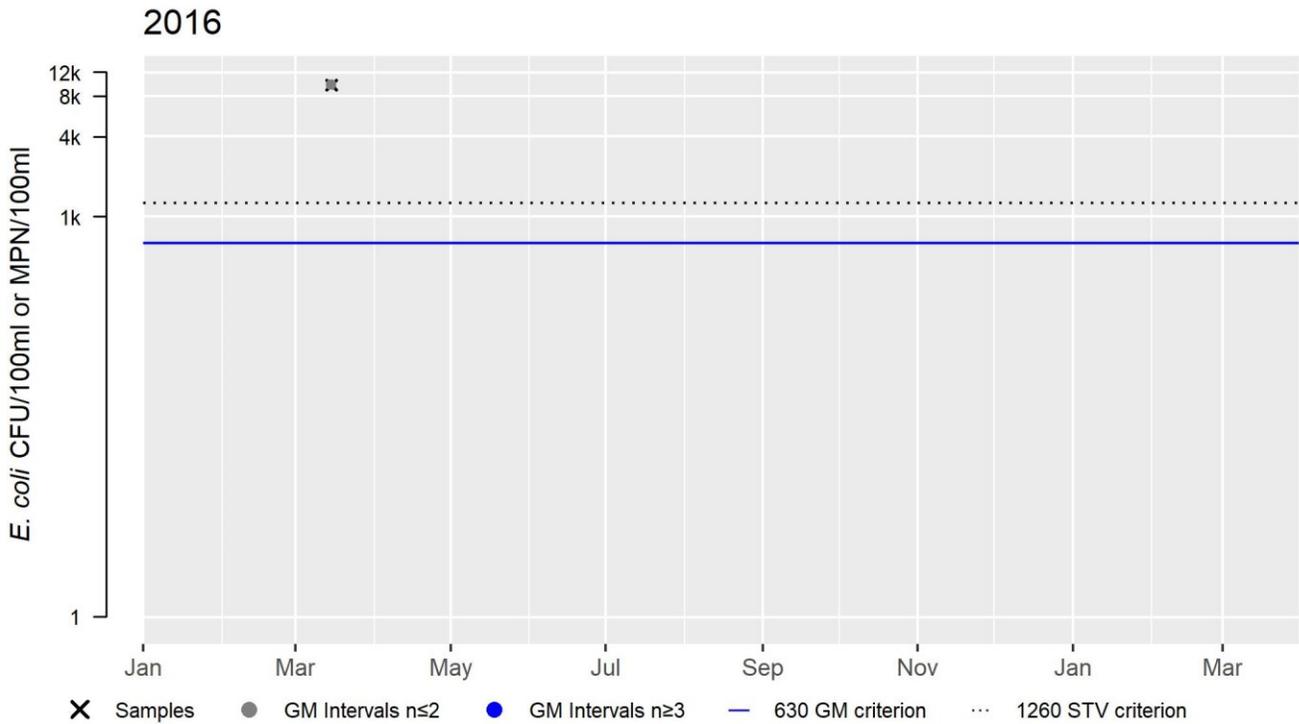
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MyRWA_WEB007	Mystic River Watershed Association	E. coli	03/15/16	03/15/16	1	9678	9678	9678
MyRWA_WEB010	Mystic River Watershed Association	E. coli	12/13/11	12/13/11	1	202	202	202
MyRWA_WEB010	Mystic River Watershed Association	E. coli	03/29/12	03/29/12	1	5199	5199	5199
MyRWA_WEB010	Mystic River Watershed Association	E. coli	02/26/14	02/26/14	1	2747	2747	2747
MyRWA_WEB013	Mystic River Watershed Association	E. coli	12/13/11	12/13/11	1	1302	1302	1302

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MyRWA_WEB013	Mystic River Watershed Association	E. coli	03/29/12	03/29/12	1	86640	86640	86640
MyRWA_WEB013	Mystic River Watershed Association	E. coli	02/26/14	02/26/14	1	7945	7945	7945
MyRWA_WEB07N	Mystic River Watershed Association	E. coli	12/13/11	12/13/11	1	100	100	100
MyRWA_WEB07N	Mystic River Watershed Association	E. coli	03/29/12	03/29/12	1	2595	2595	2595
MyRWA_WEB07S	Mystic River Watershed Association	E. coli	12/13/11	12/13/11	1	713	713	713
MyRWA_WEB07S	Mystic River Watershed Association	E. coli	03/29/12	03/29/12	1	3922	3922	3922

MyRWA_WEB007 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	9678
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

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



MyRWA_WEB010 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

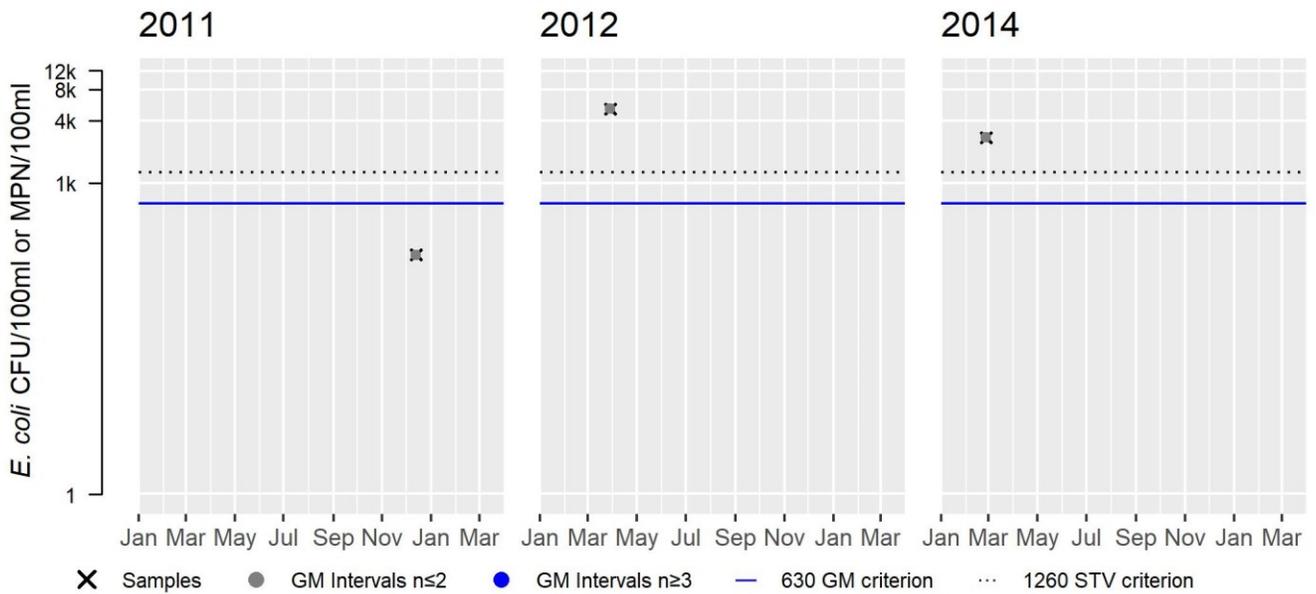
Var	Res
Samples	1
SeasGM	202
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

Var	Res
Samples	1
SeasGM	5199
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

Var	Res
Samples	1
SeasGM	2747
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

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

Variable	Cumulative %GMI Ex (all years)
Result	0



MyRWA_WEB013 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

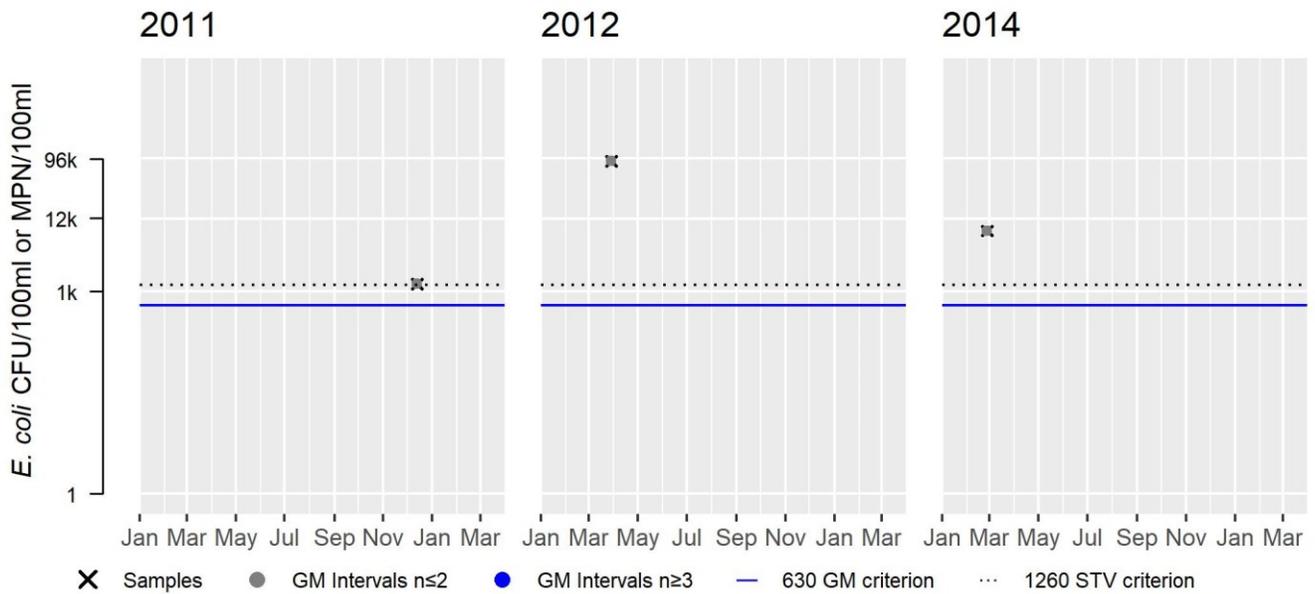
Var	Res
Samples	1
SeasGM	1302
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

Var	Res
Samples	1
SeasGM	86640
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

Var	Res
Samples	1
SeasGM	7945
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

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

Variable	Cumulative %GMI Ex (all years)
Result	0



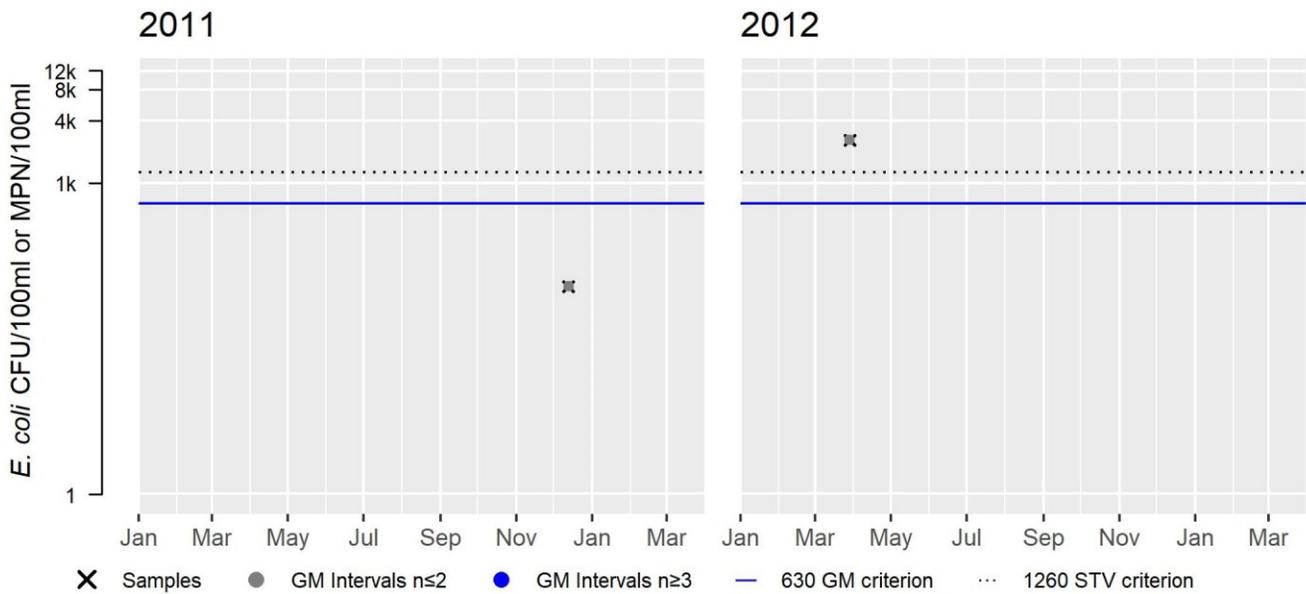
MyRWA_WEB07N *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	100
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

Var	Res
Samples	1
SeasGM	2595
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

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

Variable	Cumulative %GMI Ex (all years)
Result	0



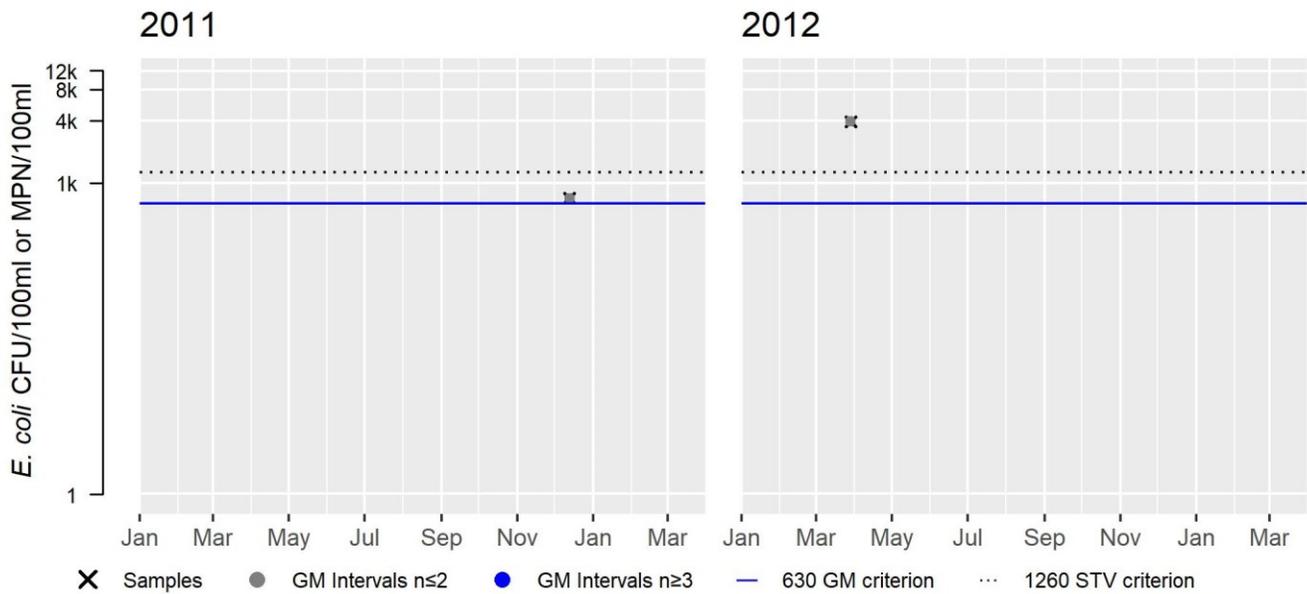
MyRWA_WEB07S *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	713
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

Var	Res
Samples	1
SeasGM	3922
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	100

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

Variable	Cumulative %GMI Ex (all years)
Result	0



Upper Mystic Lake (MA71043)

Location:	Winchester/Arlington/Medford.
AU Type:	FRESHWATER LAKE
AU Size:	176 ACRES
Classification/Qualifier:	B: WWF

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Curly-leaf Pondweed*)		Unchanged
5	5	Dissolved Oxygen	R1_MA_2020_5a	Unchanged
5	5	Dissolved Oxygen Supersaturation	R1_MA_2020_5a	Unchanged
5	5	Enterococcus		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X				
Dissolved Oxygen	Source Unknown (N)	X				
Dissolved Oxygen Supersaturation	Source Unknown (N)	X				
Enterococcus	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)				X	
Enterococcus	Source Unknown (N)				X	

Recommendations

2022 Recommendations
ALU: As first identified in the 2018/2020 IR cycle (MassDEP 2021), paired chloride and specific conductance measurements should be collected in a depth profile at the deep hole location of Upper Mystic Lake to evaluate whether the lake suffers from chloride toxicity. Additionally, an aquatic macrophyte survey of Upper Mystic Lake should be conducted to confirm the presence of <i>Potamogeton crispus</i> (confirmation of any non-native species should be made by a qualified state agency/taxonomist).

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	YES
2022 Use Attainment Summary	

C-HAB postings for Upper Mystic Lake (MA71043) were reported to MassDPH for 21 days in 2017 (the advisory was confirmed by sample analysis). Since no extended blooms (>20 days) were reported in the last couple years of the reporting period (2015-2019), an impairment decision will not be made at this time.

With no other recent data, the Aquatic Life Use of Upper Mystic Lake (MA71043) will continue to be assessed as Not Supporting with prior impairments (Curly-leaf Pondweed, Dissolved Oxygen, and Dissolved Oxygen Supersaturation) being carried forward. An Alert is also being carried forward for “elevated specific conductance measured in the hypolimnion, which could be indicative of chronic chloride toxicity” (MassDEP 2021) and a new Alert is being identified for C-HABs due to the 2017 bloom.

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent fish toxics sampling has been conducted in Upper Mystic Lake (MA71043), and since no site-specific advisory has been issued, the Fish Consumption Use is Not Assessed.	

Aesthetic

2022 Use Attainment	Alert
Not Assessed	YES
2022 Use Attainment Summary	
C-HAB postings for Upper Mystic Lake (MA71043) were reported to MassDPH for 21 days in 2017 (the advisory was confirmed by sample analysis). Since no extended blooms (>20 days) were reported in the last couple years of the reporting period (2015-2019), an impairment decision will not be made at this time.	
With no other recent data, the Aesthetics Use of Upper Mystic Lake (MA71043) is Not Assessed. The prior Alert for excess algal growth (identified for a 2013 14-day harmful algal bloom (MassDEP Undated 6)) is being replaced with an Alert for C-HABs.	

Algal Bloom Information

Cyanobacteria Harmful Algal Bloom (C-HAB) Summary Statements for 2015-2019 MassDPH Data (Bailey, Logan April 15, 2021) (MassDEP Undated 2)

C-HAB Summary Statement
C-HAB postings for Upper Mystic Lake (MA71043) were reported to MassDPH for 21 days in 2017 (the advisory was confirmed by sample analysis). Since no extended blooms (>20 days) were reported in the last couple years of the reporting period, an impairment decision will not be made at this time. However, an Alert is identified for C-HABs.

Cyanobacteria Harmful Algal Bloom (C-HAB) Data (2015-2019) Provided by MassDPH (Bailey, Logan April 15, 2021)

Waterbody	Sample Analysis Used in Issuing Advisory	Bloom Days, 2015	Bloom Days, 2016	Bloom Days, 2017	Bloom Days, 2018	Bloom Days, 2019	# Years with >20 Days of Closure	>1 Posting Per Year
Upper Mystic Lake	Advisory confirmed by sample analysis			21			1	no

Primary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	YES
2022 Use Attainment Summary	

MyRWA staff and volunteers conducted bacteria sampling during the 2011-2019 recreational seasons (Apr 1 – Oct 31) at two locations in Upper Mystic Lake. High frequency Enterococci data were collected in 2015 and 2016 (n= 34 or 43 per year) in waist-deep water at the center of Shannon Beach (Station MyRWA_UPLSHBC), while moderate frequency *E. coli* data were collected from 2011-2019 (n = 7/yr) at the Mystic Lakes Dam (Station MyRWA_UPL001). For the Enterococci data from Shannon Beach, >10% of intervals (14% in 2015) exceeded 35 cfu/100mL in only 1 of the 2 years of data, but cumulatively, 11% of intervals exceeded the GM criterion. More than 10% of the samples did not exceed the 130 cfu/100mL STV in either year. For the moderate frequency *E. coli* data collected at the Mystic Lakes Dam, >20% of GM intervals (25-50%) exceeded 126 cfu/100mL in 2 of the most recent 5 years of data but cumulatively, only 16% of the intervals in the most recent 5 years exceeded the criterion. Two samples exceeded the 410 cfu/100mL STV in 2018 but there no exceedances in the other 4 years. Despite these bacteria data generally indicating good conditions, Shannon Beach was posted >10% of the time in 2017 (26%) and 2019 (31%). C-HAB postings for Upper Mystic Lake (MA71043) were reported to MassDPH for 21 days in 2017 (the advisory was confirmed by sample analysis). Since no extended blooms (>20 days) were reported in the last couple years of the reporting period (2015-2019), an impairment decision should not be made at this time.

Although bacteria samples collected from Upper Mystic Lake (MA71043) were generally indicative of good conditions, the Primary Contact Recreational Use will continue to be assessed as Not Supporting because Shannon Beach was posted >10% of the season during two recent years (2017 and 2019). The prior Alert for excess algal growth (identified for a 2013 14-day harmful algal bloom (MassDEP Undated 6)) is being replaced with an Alert for C-HABs.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MyRWA_UPL001	Mystic River Watershed Association	Water Quality	Upper Mystic Lake	Upper Mystic Lake at Mystic Lakes Dam in Medford; Sample at south east corner of Upper Mystic Lake	42.430814	-71.148164
MyRWA_UPLSHBC	Mystic River Watershed Association	Water Quality	Upper Mystic Lake	waste deep, center of beach	42.439907	-71.146155

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (30-day Interval Analysis) (MyRWA 2019) (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
MyRWA_UPL001	Mystic River Watershed Association	E. coli	04/20/11	10/19/11	7	10	63	26
MyRWA_UPL001	Mystic River Watershed Association	E. coli	04/18/12	10/17/12	7	10	74	24
MyRWA_UPL001	Mystic River Watershed Association	E. coli	04/17/13	10/16/13	7	10	546	47
MyRWA_UPL001	Mystic River Watershed Association	E. coli	04/16/14	10/15/14	7	10	74	21
MyRWA_UPL001	Mystic River Watershed Association	E. coli	04/15/15	10/21/15	7	10	63	17

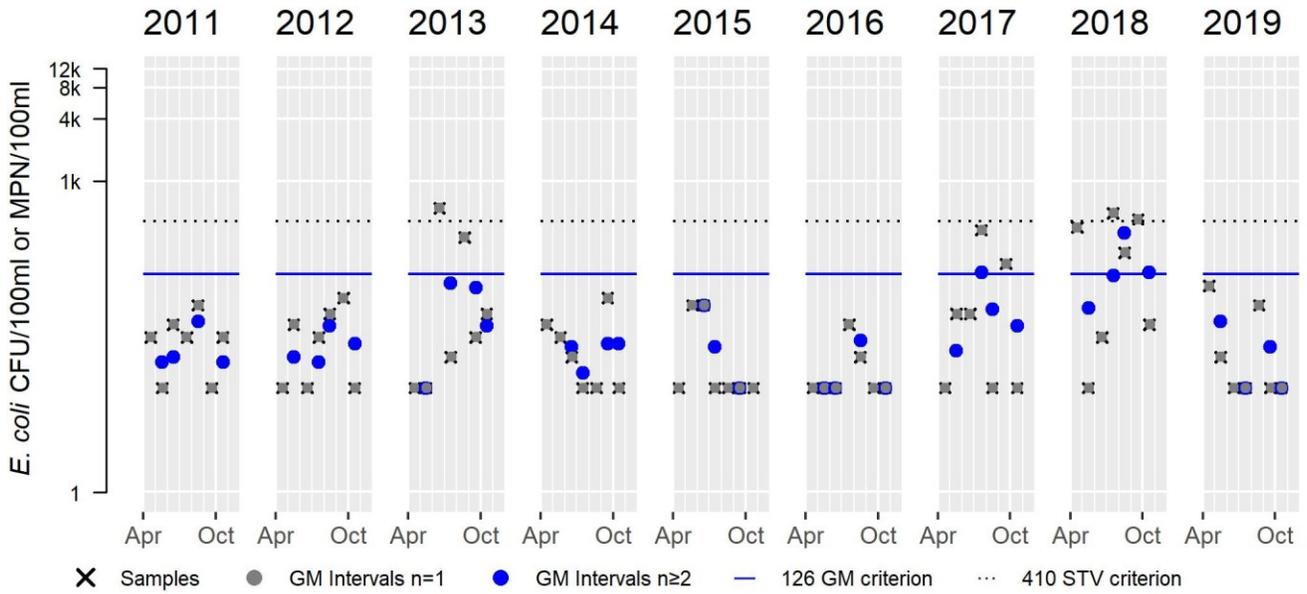
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MyRWA_UPL001	Mystic River Watershed Association	E. coli	04/20/16	10/19/16	7	10	41	14
MyRWA_UPL001	Mystic River Watershed Association	E. coli	04/19/17	10/18/17	7	10	335	39
MyRWA_UPL001	Mystic River Watershed Association	E. coli	04/18/18	10/17/18	7	10	489	110
MyRWA_UPL001	Mystic River Watershed Association	E. coli	04/17/19	10/16/19	7	10	97	20
MyRWA_UPLSHBC	Mystic River Watershed Association	Enterococci	06/29/15	10/02/15	34	1	1334	9
MyRWA_UPLSHBC	Mystic River Watershed Association	Enterococci	04/26/16	09/21/16	43	1	2419.6	9

MyRWA_UPL001 *E. coli* (30-day Interval), Primary Contact Recreational Use Season

Var	Res														
Samples	7														
SeasGM	26	SeasGM	24	SeasGM	47	SeasGM	21	SeasGM	17	SeasGM	14	SeasGM	39	SeasGM	110
#GMI	4	#GMI	4	#GMI	4	#GMI	4	#GMI	3	#GMI	4	#GMI	4	#GMI	4
#GMI Ex	0	#GMI Ex	1	#GMI Ex	2										
%GMI Ex	0	%GMI Ex	25	%GMI Ex	50										
n>STV	0	n>STV	0	n>STV	1	n>STV	0	n>STV	0	n>STV	0	n>STV	0	n>STV	2
%n>STV	0	%n>STV	0	%n>STV	14	%n>STV	0	%n>STV	0	%n>STV	0	%n>STV	0	%n>STV	29

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	9	16



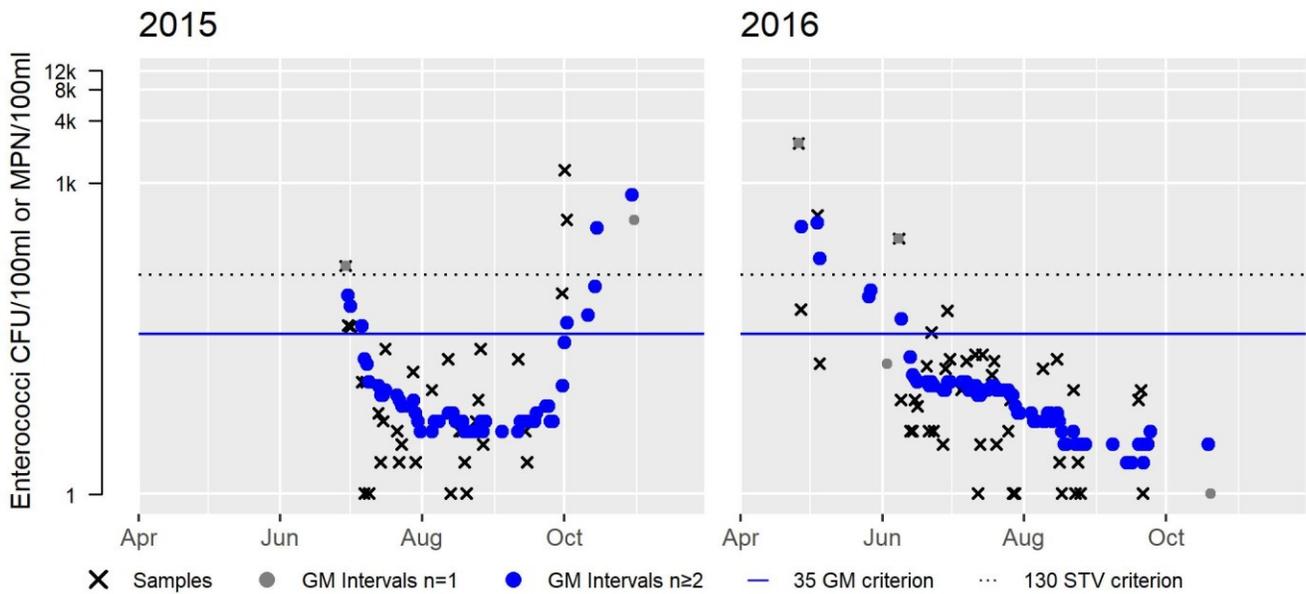
MyRWA_UPLSHBC Enterococci (30-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	34
SeasGM	9
#GMI	57
#GMI Ex	8
%GMI Ex	14
n>STV	3
%n>STV	9

Var	Res
Samples	43
SeasGM	9
#GMI	71
#GMI Ex	6
%GMI Ex	8
n>STV	3
%n>STV	7

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

Variable	Cumulative %GMI Ex (all years)
Result	11



Beach Postings

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

Beach ID	Beach Name/Town	Left Boundary (Latitude)	Left Boundary (Longitude)	Right Boundary (Latitude)	Right Boundary (Longitude)	2014	2015	2016	2017	2018	2019	# years > 10%
5173	Shannon Beach @ Upper Mystic (DCR)/Winchester	42.44011	-71.14660	42.43961	-71.14580	5%	4%	0%	26%	1%	31%	2

Secondary Contact Recreation

2022 Use Attainment	Alert
Fully Supporting	YES
2022 Use Attainment Summary	
<p>MyRWA staff and volunteers collected <i>E. coli</i> data from 2011-2019 in Upper Mystic Lake at the Mystic Lakes Dam (Station MyRWA_UPL001). Analysis of the moderate frequency data (n= 10-12/yr) indicated that there were no intervals with exceedances of the 630 cfu/100mL GM criterion and no samples exceeded the 1260 cfu/100mL STV criterion. C-HAB postings for Upper Mystic Lake (MA71043) were reported to MassDPH for 21 days in 2017 (the advisory was confirmed by sample analysis). Since no extended blooms (>20 days) were reported in the last couple years of the reporting period (2015-2019), an impairment decision will not be made at this time.</p> <p>The Secondary Contact Recreational Use of Upper Mystic Lake (MA71043) is assessed as Fully Supporting based on MyRWA's <i>E. coli</i> data. The prior Alert for excess algal growth (identified for a 2013 14-day harmful algal bloom (MassDEP Undated 6)) is being replaced with an Alert for C-HABs.</p>	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MyRWA_UPL001	Mystic River Watershed Association	Water Quality	Upper Mystic Lake	Upper Mystic Lake at Mystic Lakes Dam in Medford; Sample at south east corner of Uppper Mystic Lake	42.430814	-71.148164

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MyRWA 2019)
 (MassDEP Undated 2)

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

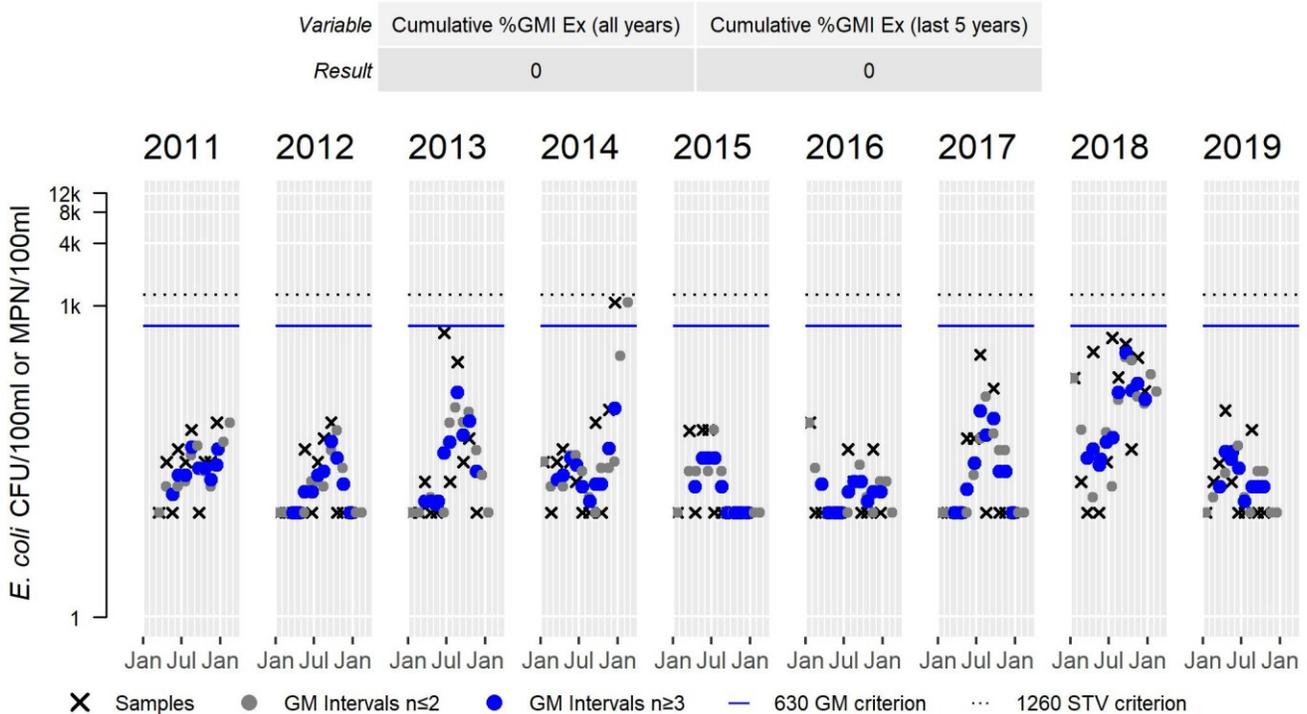
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MyRWA_UPL001	Mystic River Watershed Association	E. coli	03/16/11	12/14/11	10	10	74	27
MyRWA_UPL001	Mystic River Watershed Association	E. coli	01/18/12	12/19/12	12	10	74	17
MyRWA_UPL001	Mystic River Watershed Association	E. coli	01/16/13	11/20/13	11	10	546	28
MyRWA_UPL001	Mystic River Watershed Association	E. coli	01/15/14	12/17/14	12	10	1070	33
MyRWA_UPL001	Mystic River Watershed Association	E. coli	01/21/15	12/16/15	11	10	63	16
MyRWA_UPL001	Mystic River Watershed Association	E. coli	01/20/16	12/21/16	12	10	74	16
MyRWA_UPL001	Mystic River Watershed Association	E. coli	01/18/17	12/20/17	12	10	335	22

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MyRWA_UPL001	Mystic River Watershed Association	E. coli	01/17/18	12/19/18	12	10	489	92
MyRWA_UPL001	Mystic River Watershed Association	E. coli	01/16/19	10/16/19	10	10	97	19

MyRWA_UPL001 E. coli (90-day Interval), Secondary Contact Recreational Use Season

Var	Res														
Samples	10	Samples	12	Samples	11	Samples	12	Samples	11	Samples	12	Samples	12	Samples	10
SeasGM	27	SeasGM	17	SeasGM	28	SeasGM	33	SeasGM	16	SeasGM	16	SeasGM	22	SeasGM	92
#GMI	9	#GMI	10	#GMI	10	#GMI	10	#GMI	9	#GMI	10	#GMI	10	#GMI	11
#GMI Ex	0														
%GMI Ex	0														
n>STV	0														
%n>STV	0														

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



Wedge Pond (MA71045)

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

No usable data were available for Wedge Pond (MA71045) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Dissolved Oxygen		Unchanged
5	5	Harmful Algal Blooms		Unchanged
5	5	Phosphorus, Total		Unchanged

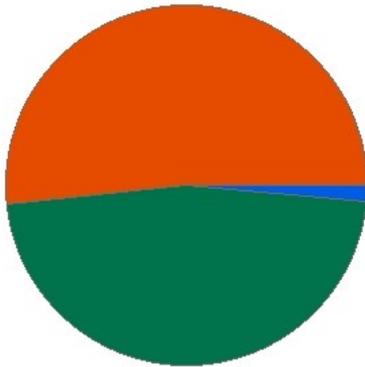
Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Dissolved Oxygen	Source Unknown (N)	X				
Harmful Algal Blooms	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	X		X	X	X
Harmful Algal Blooms	Source Unknown (N)	X		X	X	X
Phosphorus, Total	Source Unknown (N)	X				

Winn Brook (MA71-09)

Location:	Headwaters near Juniper Road and the Belmont Hill School, Belmont to confluence with Little Pond, Belmont (portions culverted underground).
AU Type:	RIVER
AU Size:	1.4 MILES
Classification/Qualifier:	B

Winn Brook - MA71-09

Watershed Area: 1.39 square miles



Percent Agriculture
 Percent Developed
 Percent Natural
 Percent Wetland

Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	1.39	1.39	0.21	0.21
Agriculture	0%	0%	0%	0%
Developed	51.7%	51.7%	49.1%	49.1%
Natural	47%	47%	49.9%	49.9%
Wetland	1.4%	1.4%	1%	1%
Impervious Cover	34.7%			

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	(Physical Substrate Habitat Alterations*)		Unchanged
4a	4a	Escherichia Coli (E. Coli)	R1_MA_2019_01	Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
(Physical Substrate Habitat Alterations*)	Habitat Modification - other than Hydromodification (Y)	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, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
No recent data are available, so the Aquatic Life Use of Winn Brook (MA71-09) will continue to be assessed as Not Supporting with the Physical Substrate Habitat Alterations impairment (due to the fact that it is seventy percent culverted (Carr 2010)) being carried forward.	

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No fish toxics sampling has been conducted in Winn Brook (MA71-09), so the Fish Consumption Use is Not Assessed.	

Aesthetic

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No recent data are available, so the Aesthetics Use of Winn Brook (MA71-09) is Not Assessed.	

Primary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
<p>MyRWA staff/volunteers conducted <i>E. coli</i> bacteria sampling in Winn Brook (MA71-09) during the 2011-2019 recreational seasons (Apr 1 – Oct 31). Bacteria samples (generally, n=7/yr) were collected at the outlet to Little Pond in Belmont (MyRWA_WIB001). Analysis of this moderate frequency dataset indicated that >20% of intervals (80-100%) in each of the most recent 5 years of data had GMs >126 cfu/100mL and that ≥2 samples (n=2-7) in each of those years exceeded the 410 cfu/100mL STV.</p> <p>The Primary Contact Recreational Use for Winn Brook (MA71-09) will continue to be assessed as Not Supporting for Escherichia Coli (<i>E. Coli</i>) based on the MyRWA data.</p>	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MyRWA_WIB001	Mystic River Watershed Association	Water Quality	Winns Brook	Winn's Brook at Little Pond in Belmont; outlet from Pond, downstream side of the bridge; sample from the top of concrete structure	42.3994	-71.16109

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MyRWA 2019)
(MassDEP Undated 2)

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

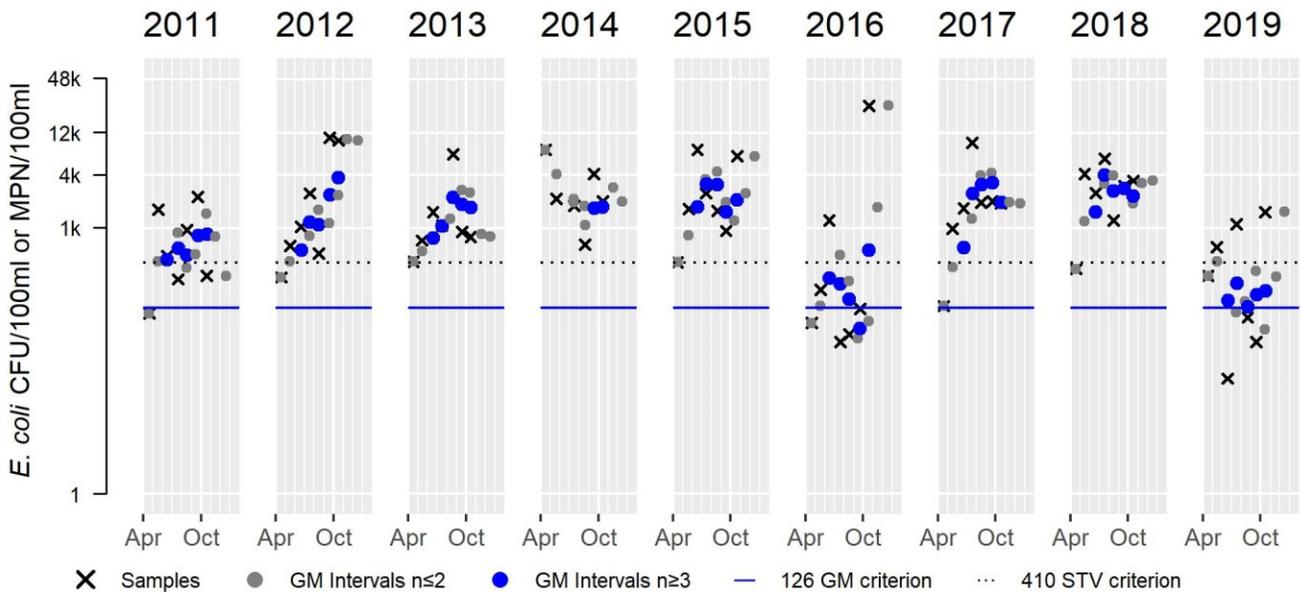
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MyRWA_WIB001	Mystic River Watershed Association	E. coli	04/20/11	10/19/11	7	109	2250	544
MyRWA_WIB001	Mystic River Watershed Association	E. coli	04/18/12	10/17/12	7	278	10500	1577
MyRWA_WIB001	Mystic River Watershed Association	E. coli	04/17/13	10/16/13	7	419	6870	1138
MyRWA_WIB001	Mystic River Watershed Association	E. coli	04/16/14	10/15/14	6	650	7700	2326
MyRWA_WIB001	Mystic River Watershed Association	E. coli	04/15/15	10/21/15	7	413	7700	1990
MyRWA_WIB001	Mystic River Watershed Association	E. coli	04/20/16	10/19/16	7	52	24200	297
MyRWA_WIB001	Mystic River Watershed Association	E. coli	04/19/17	10/18/17	7	132	9210	1470
MyRWA_WIB001	Mystic River Watershed Association	E. coli	04/18/18	10/17/18	7	345	6130	2228
MyRWA_WIB001	Mystic River Watershed Association	E. coli	04/17/19	10/16/19	7	20	1520	226

MyRWA_WIB001 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res
Samples	7	Samples	7	Samples	7	Samples	6	Samples	7	Samples	7	Samples	7	Samples	7	Samples	7
SeasGM	544	SeasGM	1577	SeasGM	1138	SeasGM	2326	SeasGM	1990	SeasGM	297	SeasGM	1470	SeasGM	2228	SeasGM	226
#GMI	5	#GMI	5	#GMI	5	#GMI	2	#GMI	5	#GMI	5	#GMI	5	#GMI	5	#GMI	5
#GMI Ex	5	#GMI Ex	5	#GMI Ex	5	#GMI Ex	2	#GMI Ex	5	#GMI Ex	4	#GMI Ex	5	#GMI Ex	5	#GMI Ex	5
%GMI Ex	100	%GMI Ex	100	%GMI Ex	100	%GMI Ex	100	%GMI Ex	100	%GMI Ex	80	%GMI Ex	100	%GMI Ex	100	%GMI Ex	100
n>STV	4	n>STV	6	n>STV	7	n>STV	6	n>STV	7	n>STV	2	n>STV	6	n>STV	6	n>STV	3
%n>STV	57	%n>STV	86	%n>STV	100	%n>STV	100	%n>STV	100	%n>STV	29	%n>STV	86	%n>STV	86	%n>STV	43

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

Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	98	96



Secondary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
<p><i>E. coli</i> bacteria sampling was conducted by MyRWA staff/volunteers at two sites in Winn Brook (MA71-09). Bacteria samples were collected roughly monthly (n=10-12/yr) from 2011-2019 at the outlet to Little Pond in Belmont (MyRWA_WIB001). Analysis of the moderate frequency data indicated that >20% of intervals (70-88%) in 3 of the most recent 5 years of data had GMs >630 cfu/100mL and that ≥2 samples (n= 2-7) in all of the most recent 5 years exceeded 1260 cfu/100mL STV. Bacteria sampling was also conducted infrequently at an additional MyRWA station (MyRWA_WIB009), but sampling was insufficient to allow analysis of these data for use attainment decisions. The Secondary Contact Recreational Use for Winn Brook (MA71-09) will continue to be assessed as Not Supporting for Escherichia Coli (<i>E. Coli</i>) based on the MyRWA data.</p>	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MyRWA_WIB001	Mystic River Watershed Association	Water Quality	Winns Brook	Winn's Brook at Little Pond in Belmont; outlet from Pond, downstream side of the bridge; sample from the top of concrete structure	42.3994	-71.16109
MyRWA_WIB009	Mystic River Watershed Association	Water Quality	Winns Brook	None submitted by MYRWA	42.399078	-71.173158

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MyRWA 2019) (MassDEP Undated 2)

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

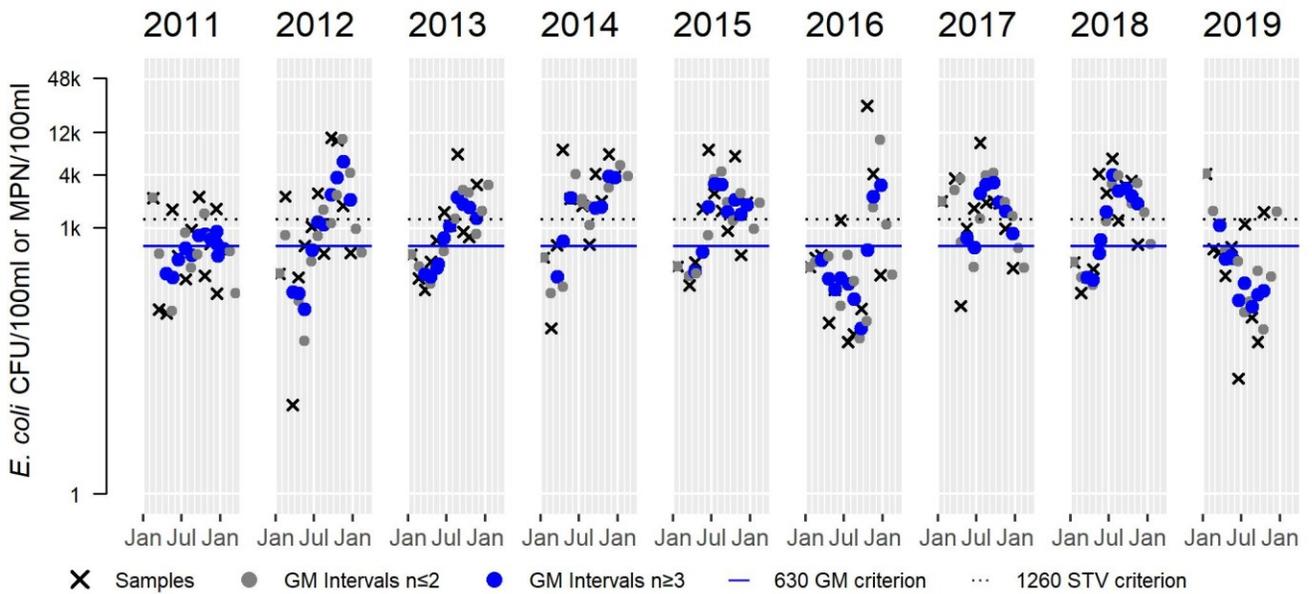
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result (CFU/100ml or MPN/100ml)	Maximum Sample Result (CFU/100ml or MPN/100ml)	Seasonal Geometric Mean (CFU/100ml or MPN/100ml)
MyRWA_WIB001	Mystic River Watershed Association	E. coli	02/16/11	12/14/11	12	109	2250	549
MyRWA_WIB001	Mystic River Watershed Association	E. coli	01/18/12	12/19/12	12	10	10500	858
MyRWA_WIB001	Mystic River Watershed Association	E. coli	01/16/13	11/20/13	11	201	6870	868
MyRWA_WIB001	Mystic River Watershed Association	E. coli	01/15/14	12/17/14	11	74	7700	1510
MyRWA_WIB001	Mystic River Watershed Association	E. coli	01/21/15	12/16/15	11	226	7700	1232
MyRWA_WIB001	Mystic River Watershed Association	E. coli	01/20/16	12/21/16	12	52	24200	407
MyRWA_WIB001	Mystic River Watershed Association	E. coli	01/18/17	12/20/17	11	132	9210	1392
MyRWA_WIB001	Mystic River Watershed Association	E. coli	01/17/18	11/14/18	11	185	6130	1129
MyRWA_WIB001	Mystic River Watershed Association	E. coli	01/16/19	10/16/19	10	20	4110	362
MyRWA_WIB009	Mystic River Watershed Association	E. coli	12/13/11	12/13/11	1	34	34	34

MyRWA_WIB001 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res	Var	Res
Samples	12	Samples	12	Samples	11	Samples	11	Samples	11	Samples	12	Samples	11	Samples	11	Samples	10
SeasGM	549	SeasGM	858	SeasGM	868	SeasGM	1510	SeasGM	1232	SeasGM	407	SeasGM	1392	SeasGM	1129	SeasGM	362
#GMI	12	#GMI	10	#GMI	10	#GMI	7	#GMI	9	#GMI	10	#GMI	8	#GMI	10	#GMI	9
#GMI Ex	5	#GMI Ex	6	#GMI Ex	6	#GMI Ex	6	#GMI Ex	7	#GMI Ex	2	#GMI Ex	7	#GMI Ex	7	#GMI Ex	1
%GMI Ex	42	%GMI Ex	60	%GMI Ex	60	%GMI Ex	86	%GMI Ex	78	%GMI Ex	20	%GMI Ex	88	%GMI Ex	70	%GMI Ex	11
n>STV	4	n>STV	5	n>STV	3	n>STV	7	n>STV	6	n>STV	2	n>STV	7	n>STV	5	n>STV	2
%n>STV	33	%n>STV	42	%n>STV	27	%n>STV	64	%n>STV	55	%n>STV	17	%n>STV	64	%n>STV	45	%n>STV	20

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

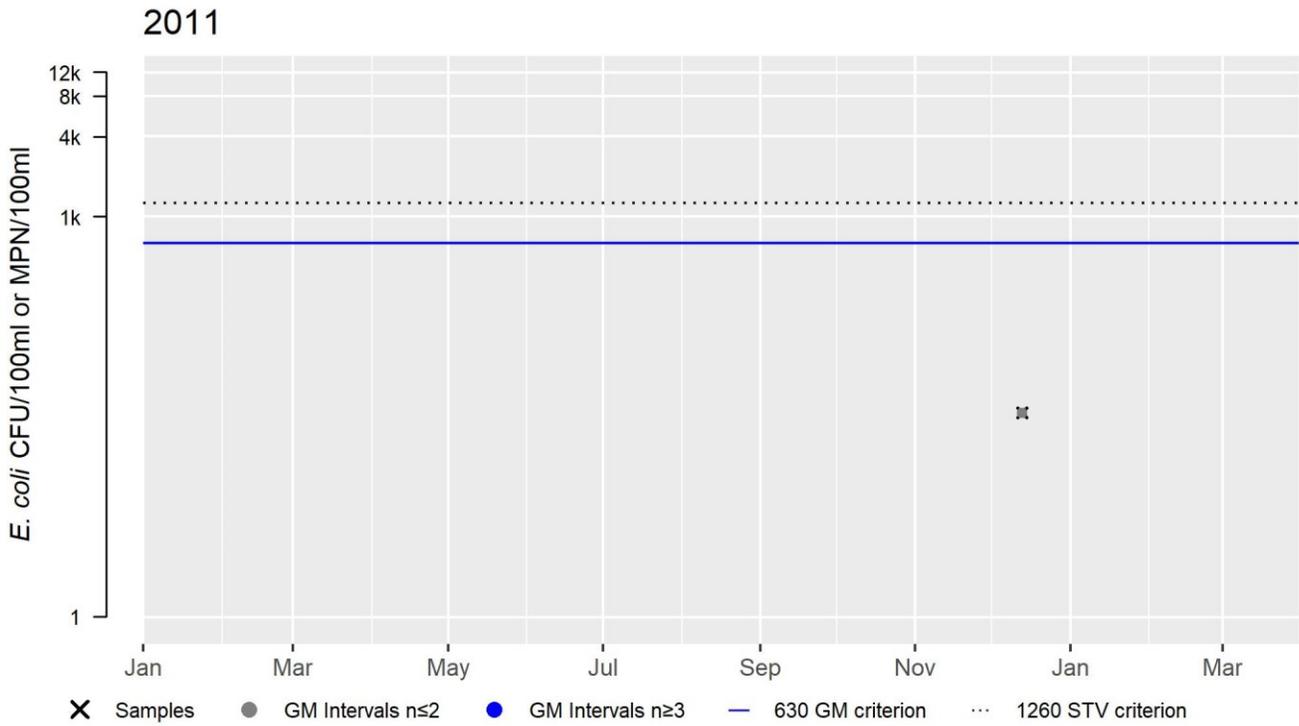
Variable	Cumulative %GMI Ex (all years)	Cumulative %GMI Ex (last 5 years)
Result	55	52



MyRWA_WIB009 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	1
SeasGM	34
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

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



Winter Pond (MA71047)

Location:	Winchester.
AU Type:	FRESHWATER LAKE
AU Size:	19 ACRES
Classification/Qualifier:	B

No usable data were available for Winter Pond (MA71047) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Non-Native Aquatic Plants*)		Unchanged
5	5	Nutrient/Eutrophication Biological Indicators		Unchanged

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

Data Sources

- Bailey, Logan. "Email providing Harmful Algal Bloom advisory data (2015-2019) in the attached spreadsheet "HAB_Advisory_Data_forDEP"." Email to Laurie Kennedy (MassDEP Watershed Planning Program) and others with subject line "RE: Beaches Bill reporting data", Environmental Toxicology Program, Bureau of Environmental Health, Massachusetts Department of Public Health, Boston, MA, April 15, 2021.
- Bailey, Logan. "RE: Beaches Bill reporting data." Email to Dan Davis (MassDEP Watershed Planning Program) providing an Excel file (DEP_BeachDataRequest) with data for marine and DCR freshwater beaches, Environmental Toxicology Program, Bureau of Environmental Health, Massachusetts Department of Public Health, Boston, MA, Feb. 2, 2021.
- Bettencourt, Greg. "MA shellfish classification areas, shapefile provided via email." Email to Laurie Kennedy (MassDEP Watershed Planning Program) with subject line "RE: Hello and question on DMF GIS shellfish classification datalayer - next update", Division of Marine Fisheries, Massachusetts Department of Fish and Game, Gloucester, MA, August 25, 2021.
- Carr, Jamie. "Mystic River Watershed and Coastal Drainage Area 2004-2008 Water Quality Assessment Report." CN 170.2, Division of Watershed Management, Massachusetts Department of Environmental Protection, Worcester, MA, 2010.
- Ivushkina, Tatiana. "Toxic Elements in the Sediments of the Alewife Brook and Mill Brook Watersheds: Spatial Distribution and Depositional History, A Thesis." Department of Civil and Environmental Engineering, Tufts University, Medford, Massachusetts, 1999.
- 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. "Massachusetts Consolidated Assessment and Listing Methodology (CALM) Guidance Manual for the 2022 Reporting Cycle." CN 564.0, Watershed Planning Program, Division of Watershed Management, Massachusetts Department of Environmental Protection, Worcester, MA, 2022.
- MassDEP. "Open file analysis of DFG 2012-2019 fish community data using 2022 CALM guidance." Division of Watershed Management, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 1.
- MassDEP. "Open file analysis of external water quality data (potential date range 2011-2020) using 2022 CALM guidance." Division of Watershed Management, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 2.
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