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

Appendix 18
Mount Hope Bay (Shore) Drainage Area
Assessment and Listing Decision Summary

Prepared by:
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Massachusetts Department of Environmental Protection

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

Watershed Planning Program

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

Disclaimer

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

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Notice of Availability

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

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2022 Cycle Impairment Changes

Waterbody	AU_ID	2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
Cole River	MA61-03	4c	4c	(Fish Passage Barrier*)		Unchanged
Cole River	MA61-04	5	5	Chlorophyll-a		Unchanged
Cole River	MA61-04	5	5	Dissolved Oxygen		Unchanged
Cole River	MA61-04	5	5	Fecal Coliform	38907	Unchanged
Cole River	MA61-04	5	5	Nitrogen, Total		Unchanged
Cole River	MA61-10	2	5	Dissolved Oxygen		Added
Cole River	MA61-10	2	5	Escherichia Coli (E. Coli)		Added
Cole River	MA61-10	2	5	Lead		Added
Cook Pond	MA61001	3	3	None		Unchanged
Kickamuit River	MA61-08	4a	5	(Physical Substrate Habitat Alterations*)		Added
Kickamuit River	MA61-08	4a	5	Benthic Macroinvertebrates		Added
Kickamuit River	MA61-08	4a	5	Dissolved Oxygen		Added
Kickamuit River	MA61-08	4a	5	Escherichia Coli (E. Coli)	30702	Unchanged
Kickamuit River	MA61-08	4a	5	Fecal Coliform	30702	Unchanged
Lee River	MA61-01	5	5	Fecal Coliform	38905	Unchanged
Lee River	MA61-01	5	5	Nutrient/Eutrophication Biological Indicators		Unchanged
Lee River	MA61-02	5	5	Chlorophyll-a		Unchanged
Lee River	MA61-02	5	5	Dissolved Oxygen		Unchanged
Lee River	MA61-02	5	5	Fecal Coliform	38906	Unchanged
Lee River	MA61-02	5	5	Nitrogen, Total		Unchanged
Lewin Brook	MA61-09	5	5	Escherichia Coli (E. Coli)		Unchanged
Lewin Brook Pond	MA61011	4a	4a	Mercury in Fish Tissue	33880	Unchanged
Mount Hope Bay	MA61-06	5	5	Chlorophyll-a		Unchanged
Mount Hope Bay	MA61-06	5	5	Dissolved Oxygen		Unchanged
Mount Hope Bay	MA61-06	5	5	Enterococcus	38908	Unchanged
Mount Hope Bay	MA61-06	5	5	Fecal Coliform	38908	Unchanged
Mount Hope Bay	MA61-06	5	5	Fish Bioassessments		Unchanged
Mount Hope Bay	MA61-06	5	5	Nitrogen, Total		Unchanged
Mount Hope Bay	MA61-07	5	5	Chlorophyll-a		Unchanged
Mount Hope Bay	MA61-07	5	5	Dissolved Oxygen		Unchanged
Mount Hope Bay	MA61-07	5	5	Enterococcus		Removed
Mount Hope Bay	MA61-07	5	5	Fecal Coliform	38909	Unchanged
Mount Hope Bay	MA61-07	5	5	Fish Bioassessments		Unchanged
Mount Hope Bay	MA61-07	5	5	Nitrogen, Total		Unchanged
North Watuppa Pond	MA61004	4a	4a	Mercury in Fish Tissue	33880	Unchanged
Quequechan River	MA61-05	5	5	(Debris*)		Unchanged
Quequechan River	MA61-05	5	5	(Habitat Assessment*)		Unchanged
Quequechan River	MA61-05	5	5	Algae		Unchanged
Quequechan River	MA61-05	5	5	Dissolved Oxygen		Unchanged
Quequechan River	MA61-05	5	5	Escherichia Coli (E. Coli)		Unchanged
Quequechan River	MA61-05	5	5	Nutrient/Eutrophication Biological Indicators		Unchanged
Quequechan River	MA61-05	5	5	Trash		Unchanged
Sawdy Pond	MA61005	4a	4a	Mercury in Fish Tissue	42407	Unchanged

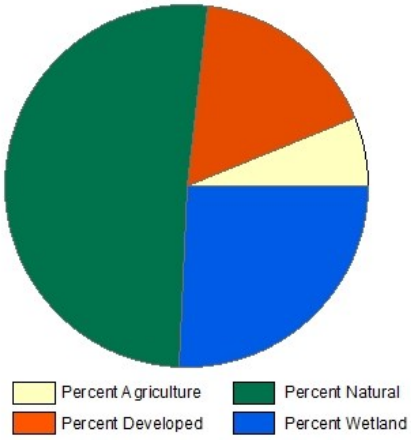
Waterbody	AU_ID	2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
South Watuppa Pond	MA61006	3	5	Harmful Algal Blooms		Added

Cole River (MA61-03)

Location:	Wood Street, Swansea to Route 6, Swansea.
AU Type:	RIVER
AU Size:	1.6 MILES
Classification/Qualifier:	B: WWF

Cole River - MA61-03

Watershed Area: 11.7 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	11.7	5.17	2.32	1.29
Agriculture	6.1%	8.9%	7.7%	12.3%
Developed	17%	21%	8.1%	7.9%
Natural	51.3%	50.9%	38.2%	40.9%
Wetland	25.6%	19.1%	45.9%	38.9%
Impervious Cover	6.9%			

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

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

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	

DMF biologists note two structures causing passage limitation to diadromous fish, at the downstream end of this Cole River AU (MA61-03). The Milford Pond Dam (NATID# MA00797) (no existing fishway), was given a passage score of "10" on a 0-10 scale, indicating that the dam allows no possible passage of the targeted fish species, river herring and American eel. Further down the AU, the Mill Pond Dam (NATID# MA01083) at Rt.6 (with an existing fishway), was given a passage score of "6", indicating that this dam restricts the passage of the same targeted fish species. DMF biologists visited this site in 2017 and noted that the tailwater needs maintenance and the fishway needs to be repaired to ensure better attraction flow. The population score was noted to be "2" in the area of both structures.
The Aquatic Life Use for this Cole River AU (MA61-03) will continue to be assessed as Not Supporting, based on the barrier to diadromous fish passage at the two dams mentioned above.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0642	MassDEP	Water Quality	Cole River	[Route 6, Swansea]	41.746430	-71.202122

Biological Monitoring Information

Habitat and Flow Data (anthropogenic alterations)

MassDMF Status of Priority Diadromous Fish Passage Barriers. (Chase 2020)

Assessment Summary
DMF biologists note two structures causing passage limitation to diadromous fish, at the downstream end of this Cole River AU. The Milford Pond Dam (NATID# MA00797) (no existing fishway), was given a passage score of "10" on a 0-10 scale, indicating that the dam allows no possible passage of the targeted fish species, river herring and American eel. Further down the AU, the Mill Pond Dam (NATID# MA01083) at Rt.6 (with an existing fishway), was given a passage score of "6", indicating that this dam restricts the passage of the same targeted fish species. DMF biologists visited this site in 2017 and noted that the tailwater needs maintenance and the fishway needs to be repaired to ensure better attraction flow. The population score was noted to be "2" in the area of both structures. The Aquatic Life Use for Cole River is assessed as Not Supporting, based on the barrier to diadromous fish passage at the two dams mentioned above.

Physico-chemical Water Quality Information

Nutrients (Primary Producer Screening, Physico-chemical Screening)

MassDEP Nutrient Enrichment Indicator Data (2011-2018). (MassDEP Undated 8) (MassDEP Undated 5)

[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
W0642	2015	--	--	--	--	--	--	--	--	2	0

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No fish toxics monitoring has been conducted in this Cole River AU (MA61-03); therefore, the Fish Consumption Use is Not Assessed.	

Aesthetic

2022 Use Attainment	Alert
Insufficient Information	NO
2022 Use Attainment Summary	
MassDEP staff recorded aesthetics observations at one site along this Cole River AU (MA61-03) at Rt.6, Swansea (W0642) in 2015 (n=2). There were generally no noted objectionable conditions (odors, deposits, growths, or turbidity). Too limited data are available to assess the Aesthetics Use for this Cole River AU (MA61-03) so it is assessed as having Insufficient Information.	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0642	MassDEP	Water Quality	Cole River	[Route 6, Swansea]	41.746430	-71.202122

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2018) (MassDEP Undated 5)

Station Code	Waterbody	Data Year	Field Sheet Count	Aesthetics Summary Statement
W0642	Cole River	2015	2	There are insufficient data available to assess the Aesthetics Use for the Cole River. There were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by MassDEP staff at station W0642 during surveys in summer 2015, however, data were limited (n=2).

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2018) (MassDEP Undated 8) (MassDEP Undated 5)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W0642	2015	2	2	0

MassDEP Aesthetics Observations (2011-2018) (MassDEP Undated 8)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W0642	Cole River	2015	Color	Light Yellow/Tan	1	2
W0642	Cole River	2015	Color	None	1	2
W0642	Cole River	2015	Objectionable Deposits	Not Applicable (N/A)	2	2
W0642	Cole River	2015	Odor	None	2	2

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W0642	Cole River	2015	Scum	Not Applicable (N/A)	2	2
W0642	Cole River	2015	Turbidity	Slightly Turbid	2	2

Primary Contact Recreation

2022 Use Attainment	Alert
Insufficient Information	NO

2022 Use Attainment Summary

E. coli bacteria data were collected by MassDEP staff for the purposes of bacteria source tracking (BST) in this Cole River AU (MA61-03) twice in 2015 –at Rt.6, Swansea (W0642).
Too limited bacteria data are available to assess the Primary Contact Recreational Use for this Cole River AU (MA61-03), so it is assessed as having Insufficient Information.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0642	MassDEP	Water Quality	Cole River	[Route 6, Swansea]	41.746430	-71.202122

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MassDEP Undated 8) (MassDEP Undated 5)

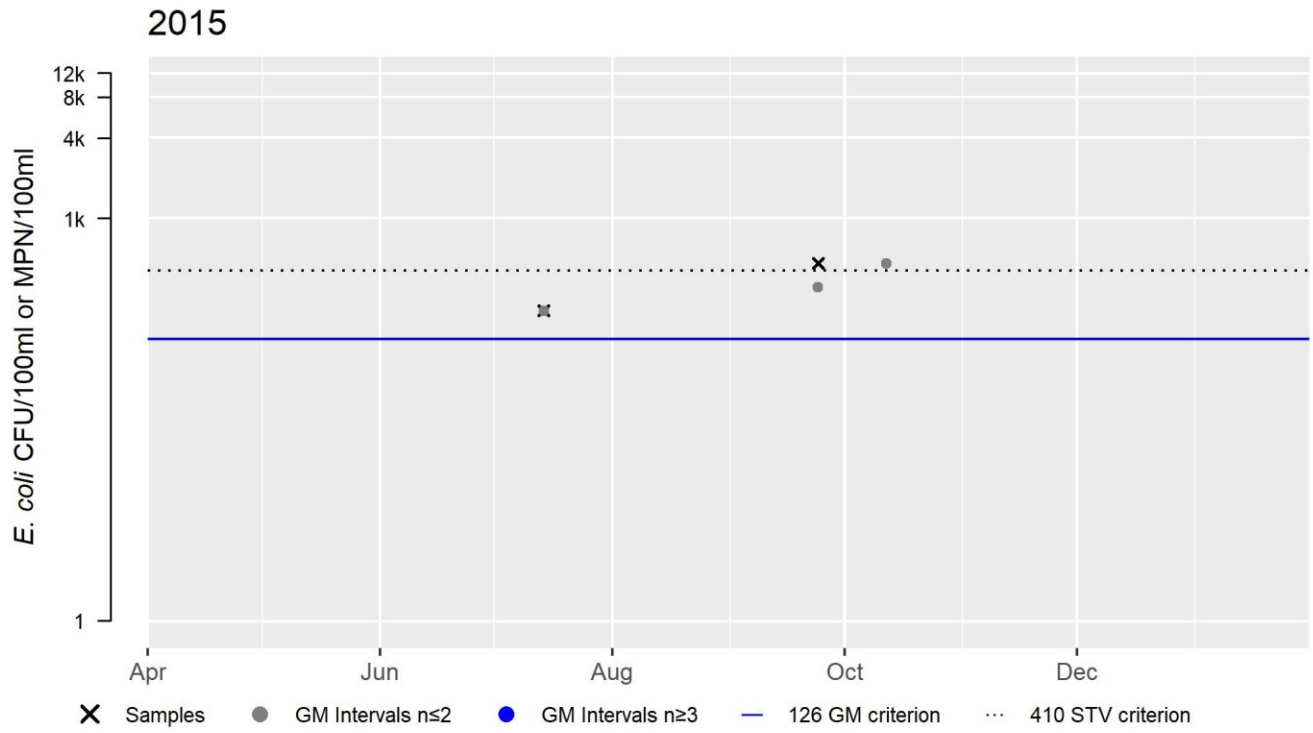
[Result units are CFU/100ml or MPN/100ml]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W0642	MassDEP	E. coli	07/14/15	09/24/15	2	205	461	307

W0642 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	2
SeasGM	307
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	50

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



MassDEP Bacteria Source Tracking (BST) Summary Statement for 2011-2019 (MassDEP Undated 1)

Summary
BST work was conducted in 2015 at 1 site at the downstream end of the Cole River AU (MA61-03), with *E. coli* concentrations ranging 205-461MPN (n=2). No correctable source was ever found.

Secondary Contact Recreation

2022 Use Attainment	**Alert**
Insufficient Information	NO
2022 Use Attainment Summary	
E. coli bacteria data were collected by MassDEP staff for the purposes of bacteria source tracking (BST) in this Cole River AU (MA61-03) twice in 2015 –at Rt.6, Swansea (W0642). Too limited bacteria data are available to assess the Secondary Contact Recreational Use for this Cole River AU (MA61-03), so it is assessed as having Insufficient Information.	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0642	MassDEP	Water Quality	Cole River	[Route 6, Swansea]	41.746430	-71.202122

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MassDEP Undated 8) (MassDEP Undated 5)

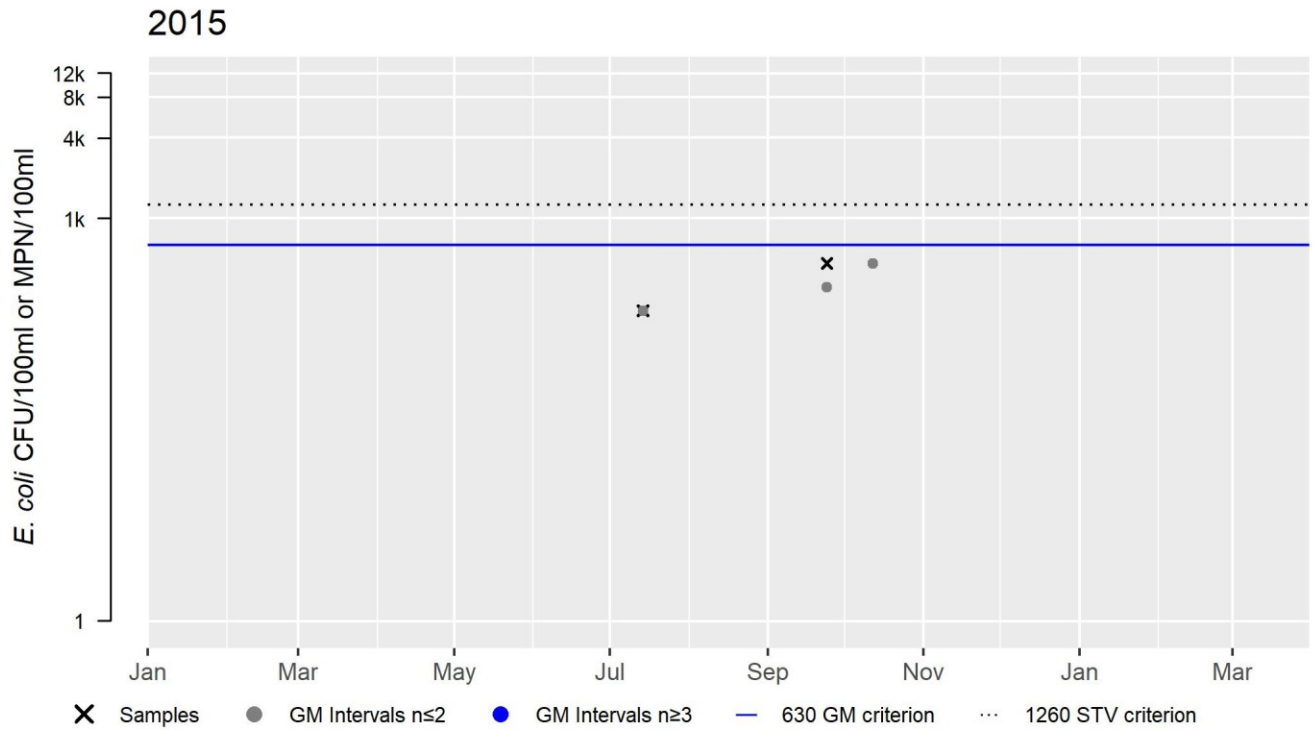
[Result units are CFU/100ml or MPN/100ml]

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)
W0642	MassDEP	E. coli	07/14/15	09/24/15	2	205	461	307

W0642 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	2
SeasGM	307
#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 Exeedances; %GMI Ex = percent GMI Exeedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



Cole River (MA61-04)

Location:	Route 6, Swansea to the mouth at Mount Hope Bay at old railway grade, Swansea.
AU Type:	ESTUARY
AU Size:	0.35 SQUARE MILES
Classification/Qualifier:	SA: SFO

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Chlorophyll-a		Unchanged
5	5	Dissolved Oxygen		Unchanged
5	5	Fecal Coliform	38907	Unchanged
5	5	Nitrogen, Total		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Shellfish Harvesting	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Chlorophyll-a	Source Unknown (N)	X					
Dissolved Oxygen	Source Unknown (N)	X					
Fecal Coliform	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X			
Fecal Coliform	Illicit Connections/Hook-ups to Storm Sewers (Y)			X			
Fecal Coliform	On-site Treatment Systems (Septic Systems and Similar Decentralized Systems) (Y)			X			
Fecal Coliform	Unspecified Urban Stormwater (Y)			X			
Nitrogen, Total	Source Unknown (N)	X					

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
No new/recent data are available to assess the status of the Aquatic Life Use for this Cole River AU (MA61-04), so it will continue to be assessed as Not Supporting with the Chlorophyll a, Dissolved Oxygen, and Total Nitrogen impairments being carried forward.	

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	

No fish toxics monitoring has been conducted in this Cole River AU (MA61-04); therefore the Fish Consumption Use is Not Assessed.

Shellfish Harvesting

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
Cole River (MA61-04): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.3411 sq mi (98%). The approved shellfish growing area represents 0 sq mi (0%). The Shellfish Harvesting Use is assessed as not supporting because the growing area (normalized to the AU area) is < 100% approved. Based on the new growing area classifications and the prior classifications, the existing fecal coliform impairment is being retained.	

Shellfish Growing Area Classifications

MassDFG-Division of Marine Fisheries Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 6)

Area Name	Waterbody/Area Description	Classification	Area (Sq. Mi.)	Area (% of AU)
MHB4.1	Coles River	Conditionally Approved	0.15607	45.0%
MHB4.11	Jette Street	Conditionally Approved	0.02616	7.5%
MHB4.5	Pearse Road	Prohibited	0.00104	0.3%
MHB4.6	Pine Street	Conditionally Approved	0.05004	14.4%
MHB4.7	Willow Circle	Prohibited	0.00570	1.6%
MHB4.8	Route 195	Prohibited	0.05082	14.7%
MHB4.9	Pleasure Island	Prohibited	0.05122	14.8%

Aesthetic

2022 Use Attainment	Alert
Fully Supporting	NO
2022 Use Attainment Summary	
MassDEP staff recorded observations related to aesthetics at two sites in Swansea in this Cole River AU (MA61-04) between July and September 2015: near the northern end of Lafayette St. (W2559) and Wilbur Ave (Rt.103) (W0643). There were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded at either site. The Aesthetics Use for this Cole River AU (MA61-04) is assessed as Fully Supporting based on the general lack of any objectionable conditions observed during the summer of 2015.	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0643	MassDEP	Water Quality	Cole River	[Route 103, Swansea]	41.733666	-71.215412
W2559	MassDEP	Water Quality	Cole River	[near the northern end of Lafayette Street, Swansea]	41.735201	-71.203686

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2018) (MassDEP Undated 5)

Station Code	Waterbody	Data Year	Field Sheet Count	Aesthetics Summary Statement
W0643	Cole River	2015	3	MassDEP aesthetics observations for station W0643 on Cole River can be summarized as follows: there were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DEP field sampling crews during summer 2015.
W2559	Cole River	2015	2	MassDEP aesthetics observations for station W2559 on Cole River can be summarized as follows: there were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DEP field sampling crews during summer 2015. However, there is insufficient information to assess the Aesthetics Use since data were limited (n=2).

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2018) (MassDEP Undated 8) (MassDEP Undated 5)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W0643	2015	3	0	0
W2559	2015	2	0	0

MassDEP Aesthetics Observations (2011-2018) (MassDEP Undated 8)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W0643	Cole River	2015	Color	None	3	3
W0643	Cole River	2015	Objectionable Deposits	Not Applicable (N/A)	3	3
W0643	Cole River	2015	Odor	None	3	3
W0643	Cole River	2015	Scum	Not Applicable (N/A)	3	3
W0643	Cole River	2015	Turbidity	Moderately Turbid	2	3
W0643	Cole River	2015	Turbidity	Unobservable	1	3
W2559	Cole River	2015	Color	None	2	2
W2559	Cole River	2015	Objectionable Deposits	Not Applicable (N/A)	2	2
W2559	Cole River	2015	Odor	None	2	2
W2559	Cole River	2015	Scum	Not Applicable (N/A)	2	2
W2559	Cole River	2015	Turbidity	Slightly Turbid	2	2

Primary Contact Recreation

2022 Use Attainment	Alert
Insufficient Information	NO
2022 Use Attainment Summary	

Enterococci bacteria data were collected by the MassDEP for the purposes of bacteria source tracking (BST) in this Cole River AU (MA61-04) in July and September 2015 – near the northern end of Lafayette St. (W2559) and at Wilbur Ave (Rt.103) (W0643), in Swansea. *Enterococci* counts were always less than the 35 cfu/100ml criterion. BST work was also conducted in 2015-2018 on two unnamed tributaries to this AU. In 2018 human marker analysis on one of the unnamed tributaries (discharging close to the downstream end of MA61-04) indicated "weak" evidence of a human source. There was no caffeine detected in the sample, but bacteriodetes markers, fluorescent whitening agents and optical brighteners were all present. Stream walk efforts made to locate a human source were unsuccessful. It was concluded that the results were likely indicative of a combination of wash water and bird fecal matter. No correctable source was ever found.
Too limited *Enterococci* bacteria data are available to assess the Primary Contact Recreational Use for this Cole River AU (MA61-04) according to the CALM "Use Attainment Impairment Decision Schema", consequently it is assessed as having Insufficient Information.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0643	MassDEP	Water Quality	Cole River	[Route 103, Swansea]	41.733666	-71.215412
W2559	MassDEP	Water Quality	Cole River	[near the northern end of Lafayette Street, Swansea]	41.735201	-71.203686

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MassDEP Undated 8) (MassDEP Undated 5)

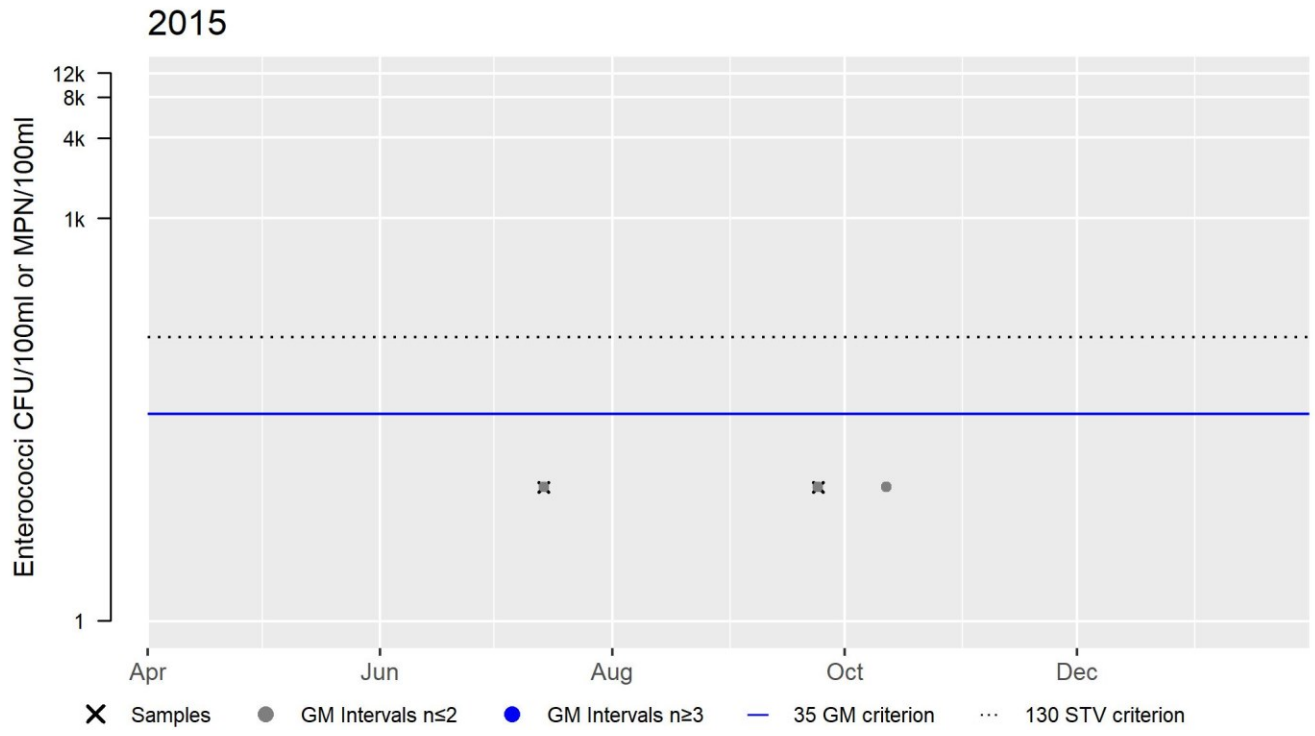
[Result units are CFU/100ml or MPN/100ml]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W0643	MassDEP	Enterococci	07/14/15	09/24/15	2	10	10	10
W2559	MassDEP	Enterococci	07/14/15	09/24/15	2	10	31	18

W0643 Enterococci (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	2
SeasGM	10
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

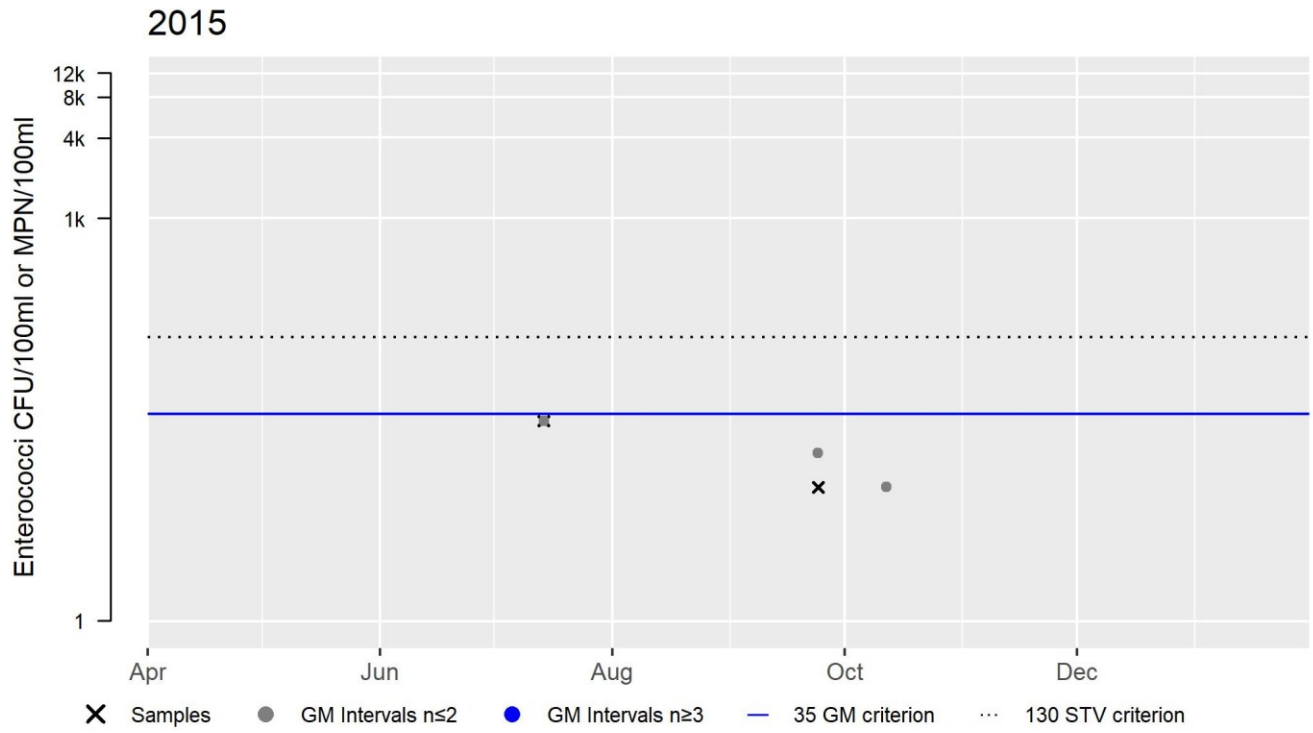
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exeedances; %GMI Ex = percent GMI Exeedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



W2559 Enterococci (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	2
SeasGM	18
#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 Exeedances; %GMI Ex = percent GMI Exeedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



MassDEP Bacteria Source Tracking (BST) Summary Statement for 2011-2019 (MassDEP Undated 1)

Summary
BST work was conducted in 2015 at 3 sites along the Coles River AU (MA61-04), with *E. coli* concentrations ranging <10 - 809MPN. BST work was also conducted in 2015-2018 on 2 unnamed tributaries with *E. coli* concentrations ranging 40 to >2,419.6MPN. In 2018 human marker analysis on one of the unnamed tributaries (discharging close to the downstream end of the AU) indicated "weak" evidence of a human source. There was no caffeine detected in the sample, but bacteriodetes markers, flurorescent whitening agents and optical brightners were all present. Stream walk efforts made to locate a human source were unsuccessful. It was concluded that the results were likely indicative of a combination of wash water and bird fecal matter. No correctable source was ever found.

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 6)

Summary
Cole River (MA61-04): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.3411 sq mi (98%). 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
Insufficient Information	NO

2022 Use Attainment Summary

Enterococci bacteria data were collected by the MassDEP for the purposes of bacteria source tracking (BST) in this Cole River AU (MA61-04) in July and September 2015 – near the northern end of Lafayette St. (W2559) and at Wilbur Ave (Rt.103) (W0643), in Swansea. BST work was also conducted in 2015-2018 on two unnamed tributaries to this AU. In 2018 human marker analysis on one of the unnamed tributaries (discharging close to the downstream end of MA61-04) indicated "weak" evidence of a human source. There was no caffeine detected in the sample, but bacteriodetes markers, fluorescent whitening agents and optical brighteners were all present. Stream walk efforts made to locate a human source were unsuccessful. It was concluded that the results were likely indicative of a combination of wash water and bird fecal matter. No correctable source was ever found.

Too limited *Enterococci* bacteria data are available to assess the Secondary Contact Recreational Use for this Cole River AU (MA61-04) according to the CALM "Use Attainment Impairment Decision Schema", consequently it is assessed as having Insufficient Information.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0643	MassDEP	Water Quality	Cole River	[Route 103, Swansea]	41.733666	-71.215412
W2559	MassDEP	Water Quality	Cole River	[near the northern end of Lafayette Street, Swansea]	41.735201	-71.203686

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MassDEP Undated 8) (MassDEP Undated 5)

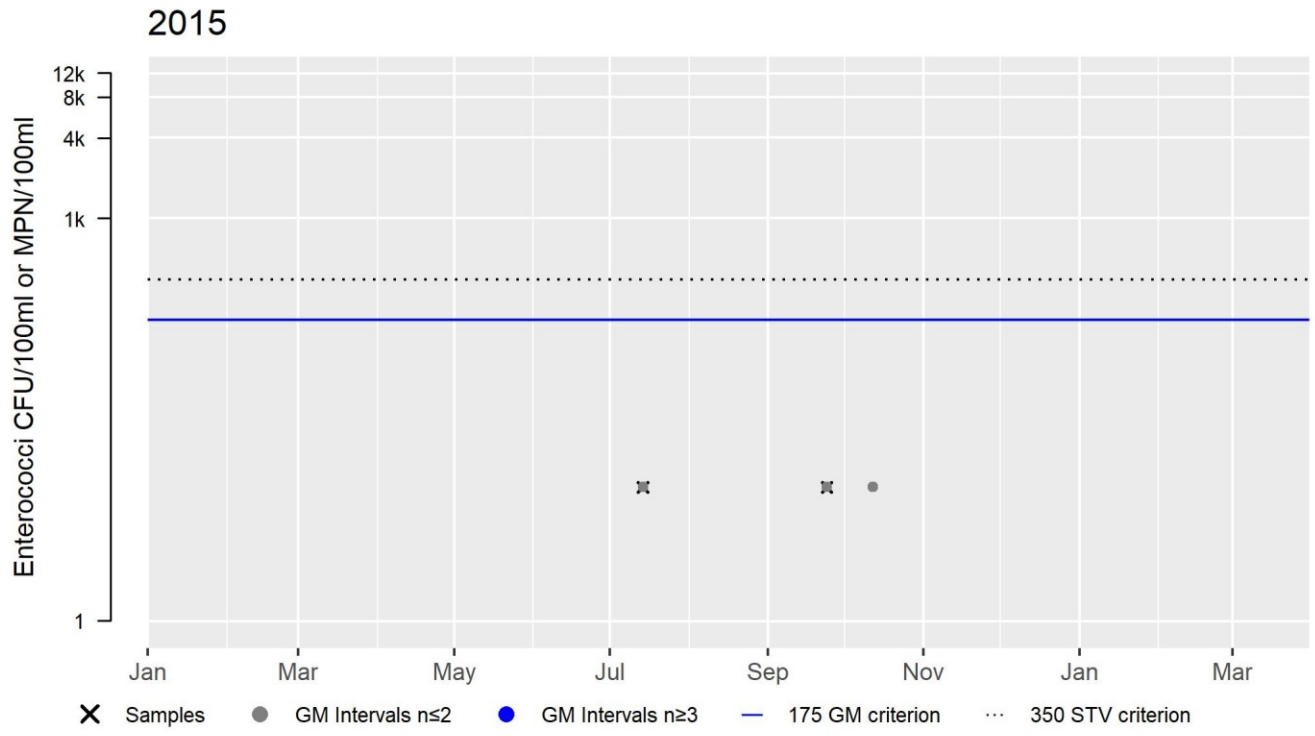
[Result units are CFU/100ml or MPN/100ml]

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)
W0643	MassDEP	Enterococci	07/14/15	09/24/15	2	10	10	10
W2559	MassDEP	Enterococci	07/14/15	09/24/15	2	10	31	18

W0643 Enterococci (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	2
SeasGM	10
#GMI	0
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

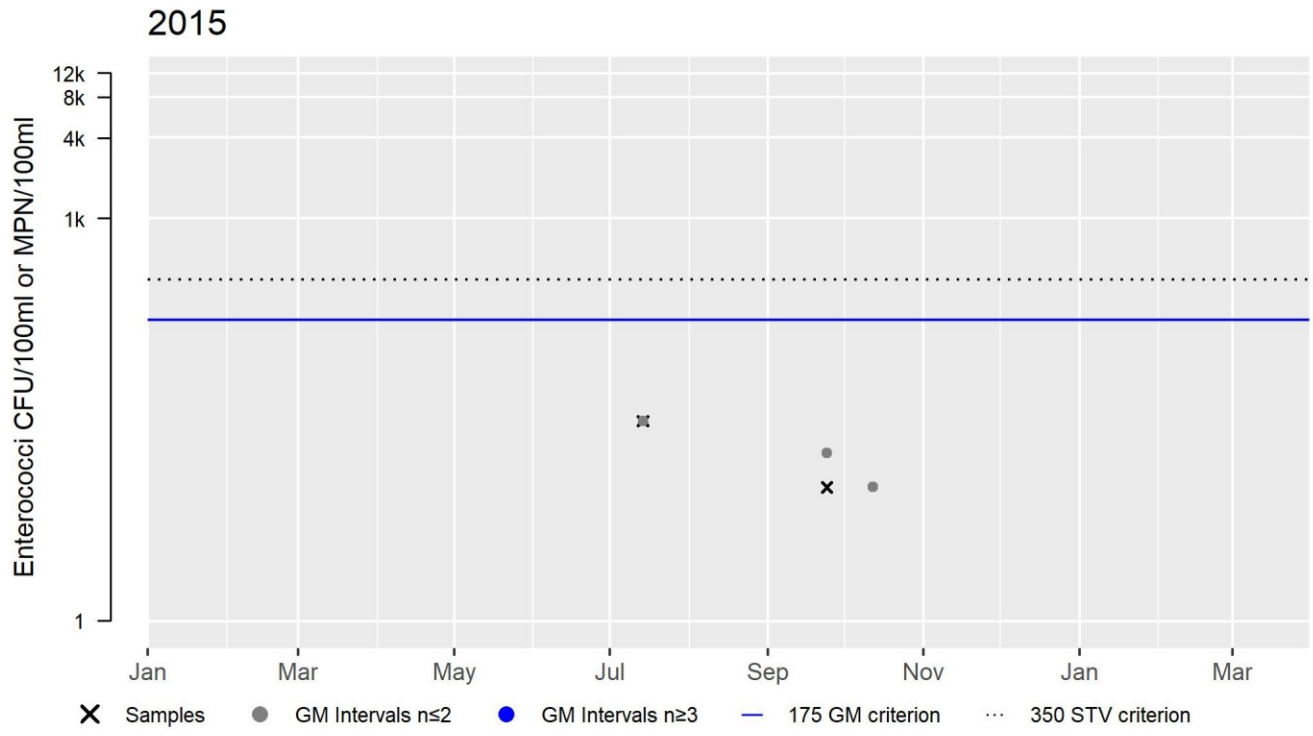
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exeedances; %GMI Ex = percent GMI Exeedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



W2559 Enterococci (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	2
SeasGM	18
#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 Exeedances; %GMI Ex = percent GMI Exeedances; 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 6)

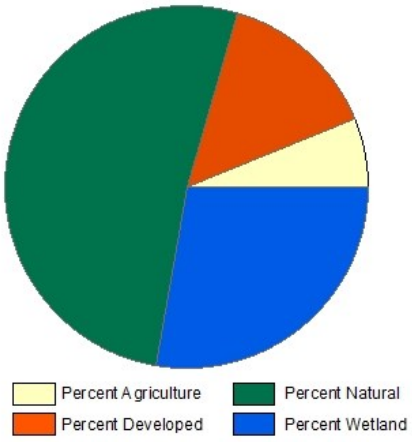
Summary
Cole River (MA61-04): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.3411 sq mi (98%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Secondary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Cole River (MA61-10)

Location:	Headwaters, south of Wellington Street, Dighton to Wood Street, Swansea.
AU Type:	RIVER
AU Size:	6.4 MILES
Classification/Qualifier:	B: WWF

COLE RIVER - MA61-10

Watershed Area: 10.44 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	10.44	6.14	2	1.26
Agriculture	6.1%	7.9%	7.4%	10.3%
Developed	14.3%	15%	7.5%	7.9%
Natural	51.8%	51.7%	34.8%	36.1%
Wetland	27.7%	25.4%	50.4%	45.7%
Impervious Cover	4.7%			

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
2	5	Dissolved Oxygen		Added
2	5	Escherichia Coli (E. Coli)		Added
2	5	Lead		Added

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				
Escherichia Coli (E. Coli)	Source Unknown (N)				X	
Lead	Source Unknown (N)	X				

Recommendations

2022 Recommendations
ALU: Conduct additional clean metals sampling to clarify the nature and extent of potential metals impairments for this Cole River AU (MA61-10), in particular the area just upstream of Hortonville Road, Swansea.

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	YES

2022 Use Attainment Summary

MassDEP biologists conducted biological and water quality sampling in this Cole River AU (MA61-10) just upstream of Hortonville Road, Swansea as part of the MAP2 monitoring project during the summer of 2013. The benthic sample collected in this low gradient reach in July 2013 (B0846) IBI score was indicative of satisfactory conditions (62) but was at the very low end of the Satisfactory Condition threshold. The fish sample (method not stated) conducted in September 2013 (SampleID 5076) resulted in the capture of the fluvial taxon creek chubsucker (comprising 1% of the sample), as well as other intolerant/moderately tolerant macrohabitat generalist fishes including pumpkinseed, redfin pickerel, and banded sunfish. Water quality monitoring data (W2387), including both deployed probe and discrete sampling efforts, can be summarized as follows: a continuous DO probe deployment lasting 101 days (June 20th -Oct 1st, 2013) recorded a minimum DO of 3.7 mg/L, with the 30-day mean falling below 6.0mg/L 49 times and the 7DADA falling below 6.5mg/L 39 times. The lowest consistent DO period during the deployment was late June into July. The percent natural land in this subwatershed area is 79.5% and while just below the natural conditions cutoff it should also be noted that both the towns of Swansea and Dighton's Water District Zone II Wellhead Protection areas lie along almost the entire length of this Cole River AU. The maximum temperature was 28.2^{o}C, the 7-DADM which was always <27.7^{o}C, and the maximum 24hr rolling average was 26.7^{o}C during the continuous probe deployments from June 19 to September 15) all meeting Warm Water standards and threshold guidance. Discrete pH measurements were low (range 5.9 to 6.2SU (n=3) just once falling below 6.0SU) but are considered naturally occurring. There were generally no physico-chemical indicators of nutrient enrichment issues (maximum diel DO shift 2.7mg/L, maximum DO saturation 67.9%, and no observations of dense/very dense filamentous algae; although the seasonal average total phosphorus concentration was elevated -- 0.140mg/L (n=4, max 0.190mg/L). Specific conductance measurements and chloride concentrations were both low (maximum 149 µS/cm and 34 mg/L, respectively (n=3)), as was total ammonia-nitrogen (TAN) (max 0.12mg/L, n=3 with no toxicity estimated). Of the three clean metal sampling rounds, there were some incidences of metals criteria exceedances: lead exceeded the acute criterion once (TU of 1.3 in June 2013) and all three samples exceeded the chronic criterion (TU's of 33.6, 17.8 & 5.3 in June, July, and August 2013 samples) and aluminum exceeded the chronic criterion twice (TU's 1.6 & 1.3 in June and July 2013 samples). Aside from lead and aluminum there were no other acute or chronic metals criteria exceedances.

While the biological data were indicative of generally good conditions in this low gradient, heavily wetland influenced portion of the Cole River, since the benthic IBI score was at the very low end of the Satisfactory Condition threshold and because of the frequent and very low DO condition and the chronic lead criteria exceedances, the Aquatic Life Use of this Cole River AU (MA61-10) is assessed as Not Supporting. Alerts are also being identified for elevated total phosphorus, the chronic aluminum criteria exceedances, and concern related to baseflow depletion from groundwater withdrawals.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
5076	MassDEP	Fish Community	Cole River	~2200 ft US/E of Hortonville Rd @ powerlines	41.77731	-71.19253
B0846	MassDEP	Benthic	Cole River/	[approximately 670 meters upstream/east from Hortonville Road, Swansea, MA]	41.777309	-71.192532
W2387	MassDEP	Water Quality	Cole River	[approximately 2200 feet upstream/east from Hortonville Road, Swansea]	41.777309	-71.192532

Biological Monitoring Information

Benthic Macroinvertebrate Data

MassDEP Benthic Macroinvertebrate Data (2011-2017). (MassDEP Undated 4)

[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
B0846	07/10/13	RBP multihab	Statewide_Low_Gradient	360	62	S

Fish Community Data and DELTS

Fish Community Data (2012-2019) Provided by MassDFG. (MassDFG 2020) (MassDEP Undated 2)

[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, BS = Banded Sunfish, CCS = Creek Chubsucker, GS = Golden Shiner, P = Pumpkinseed, RP = Redfin Pickerel]

Sample ID	Sample Date	Method	Sample Type	Gradient	Total Taxa	Total Ind	Cold Ind %	Fluvial Taxa	Fluvial Ind %	Intol Ind %	I/MT MG Taxa	I/MT MG Ind %	Notables	CFR	Species List
5076	09/17/13	NS	TP		6	71	0%	1	1%	3%	3	54%	No	No	AE, BS, CCS, GS, P, RP,

Physico-chemical Water Quality Information

DO, pH, Temperature

MassDEP Long-term Continuous Dissolved Oxygen Data (2011-2018). (MassDEP Undated 8) (MassDEP Undated 5)

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

Station Code	Start Date	End Date	Day Count	7day Count	30day Count	DO Min (mg/L)	Min 7DADMin (mg/L)	Min 7DADA (mg/L)	Delta DO Max (mg/L)	Count CW 7DADMin <6.0	Count CW 1Day Min <5.0	Count WW Early Life Stages 7DADA <6.5	Count WW Early Life Stages 1Day Min <5.0	Count WW Other Life Stages 7DADMin <5.0	Count WW Other Life Stages 1Day Min <4.0	Count CW 30DADA <8.0	Count WW Other Life Stages 30DADA <6.0
W2387	06/20/13	10/01/13	101	89	69	3.7	3.9	4.1	2.7	74	51	39	36	36	7	69	49

MassDEP Discrete Dissolved Oxygen Data (2011-2018). (MassDEP Undated 8) (MassDEP Undated 5)

[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
W2387	06/19/13	10/02/13	2	5.8	5.9	0	0	0

MassDEP Long-term Continuous Temperature Data (Summer Index 2011-2018). (MassDEP Undated 8) (MassDEP Undated 5)

[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
W2387	06/20/13	09/15/13	85	76	26.5	28.2	26.9	25.3	66	16	39	14	0	0
W2387	06/20/13	09/15/13	61	52	26.5	28.2	26.9	25.4	42	16	34	14	0	0

24-hour Rolling Average Calculations for MassDEP Short- and Long-term Continuous Temperature Data (Summer Index 2011-2018). (MassDEP Undated 8) (MassDEP Undated 5)

[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
W2387	06/19/13	09/15/13	88	2854	26.7	753	633	0
W2387	06/19/13	09/15/13	88	8012	26.6	1499	1255	0

MassDEP Discrete Temperature Data (2011-2018). (MassDEP Undated 8) (MassDEP Undated 5)

[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
W2387	06/19/13	10/02/13	5	3	20.2	17.3	1	0	0	0

MassDEP Discrete pH Data (2011-2018). (MassDEP Undated 8) (MassDEP Undated 5)

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
W2387	06/19/13	10/02/13	3	5.9	6.2	3	1

Nutrients (Primary Producer Screening, Physico-chemical Screening)

MassDEP Nutrient Enrichment Indicator Data (2011-2018). (MassDEP Undated 8) (MassDEP Undated 5)

[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
W2387	2013	4	0.1	0.190	0.140	2.7	0.7	67.9	6.2	8	0

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

MassDEP Clean Metals Water Column Data (2011-2018), Acute Criteria Violations. (MassDEP Undated 8) (MassDEP Undated 5)

[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
W2387	2013	3	0	0	0	0	1	0	0	0

MassDEP Clean Metals Water Column Data (2011-2018), Chronic Criteria Violations. (MassDEP Undated 8) (MassDEP Undated 5)

[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
W2387	2013	3	0	0	0	0	3	0	0	0

MassDEP Clean Metals Water Column Data (2011-2018), Selected TU Calculations. (MassDEP Undated 8) (MassDEP Undated 5)

[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
W2387	06/04/13	0.3	0.5	0.5	0.66	1.3	33.6
W2387	07/16/13	0.2	0.5	0.3	0.37	0.7	17.8
W2387	08/26/13	0.3	0.6	0.3	0.38	0.2	5.3

MassDEP Dissolved Aluminum Water Column Data (2011-2018). (MassDEP Undated 8) (MassDEP Undated 5)

[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
W2387	2013	3	0.100	0.36	0.250	0.8	1.6	0	2

MassDEP Total Ammonia Nitrogen (TAN) Data (2011-2018). (MassDEP Undated 8) (MassDEP Undated 5)

[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
W2387	2013	3	0.040	0.120	0.070	0	0

MassDEP Chloride Data (2011-2018). (MassDEP Undated 8) (MassDEP Undated 5)

Station Code	Data Year	Chloride Count	Chloride Min (mg/L)	Chloride Max (mg/L)	Chloride Avg (mg/L)	Count Chloride >230	Count Chloride >860
W2387	2013	3	16	34	23	0	0

MassDEP Discrete Specific Conductance Data (2011-2018) Compared to Estimated Chloride Criteria. (MassDEP Undated 8) (MassDEP Undated 5)

Station Code	Start Date	End Date	SpCond Count	SpCond Min (µs/cm)	SpCond Max (µs/cm)	Count SpCond >904	Count SpCond >994	Count SpCond >3193	Count SpCond >3512	Consecutive sets >904	Consecutive sets >994
W2387	06/19/13	10/02/13	3	112	149	0	0	0	0	0	0

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No fish toxics sampling has been conducted in this Cole River AU (MA61-10), therefore the Fish Consumption Use for Cole River (MA61-10), is Not Assessed.	

Aesthetic

2022 Use Attainment	Alert
Fully Supporting	NO
2022 Use Attainment Summary	
MassDEP staff aesthetics observations in this Cole River AU (MA61-10) approximately 2200 ft upstream from Hortonville Road, Swansea (station W2387) can be summarized as follows: There were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DWM-WPP field sampling crews during the summer of 2013 (n=8). The Aesthetics Use for this Cole River AU (MA61-10) will continue to be assessed as Fully Supporting based on the general lack of any objectionable conditions in the river upstream from Hortonville Road, Swansea during the summer of 2013.	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2387	MassDEP	Water Quality	Cole River	[approximately 2200 feet upstream/east from Hortonville Road, Swansea]	41.777309	-71.192532

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2018) (MassDEP Undated 5)

Station Code	Waterbody	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2387	Cole River	2013	8	MassDEP aesthetics observations for station W2387/MAP2-379 on Cole River can be summarized as follows: there were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DEP field sampling crews during summer 2013.

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2018) (MassDEP Undated 8) (MassDEP Undated 5)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2387	2013	8	8	0

MassDEP Aesthetics Observations (2011-2018) (MassDEP Undated 8)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2387	Cole River	2013	Color	Brownish	4	8
W2387	Cole River	2013	Color	Light Yellow/Tan	1	8
W2387	Cole River	2013	Color	Reddish	2	8
W2387	Cole River	2013	Color	Rusty	1	8
W2387	Cole River	2013	Objectionable Deposits	No	8	8
W2387	Cole River	2013	Odor	None	8	8
W2387	Cole River	2013	Scum	No	7	8
W2387	Cole River	2013	Scum	Yes	1	8
W2387	Cole River	2013	Turbidity	None	6	8
W2387	Cole River	2013	Turbidity	Slightly Turbid	2	8

Primary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO

2022 Use Attainment Summary

E. coli bacteria samples were collected at one station along this Cole River AU (MA61-10) as part of the MAP2 monitoring project during the summer of 2013. Samples were collected approximately 2200 ft upstream from Hortonville Road, Swansea. Data analysis of this single-year, low frequency *E. coli* dataset indicated generally poor conditions (elevated bacteria) as 100% of intervals had GMs >126 cfu/100ml, 3 samples exceeded the 410 cfu/100ml STV, with a seasonal GM of 441 cfu/100ml.

The Primary Contact Recreational Use for this Cole River AU (MA61-10) is assessed as Not Supporting since the E. coli concentrations exceeded the use attainment impairment thresholds.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2387	MassDEP	Water Quality	Cole River	[approximately 2200 feet upstream/east from Hortonville Road, Swansea]	41.777309	-71.192532

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MassDEP Undated 8) (MassDEP Undated 5)

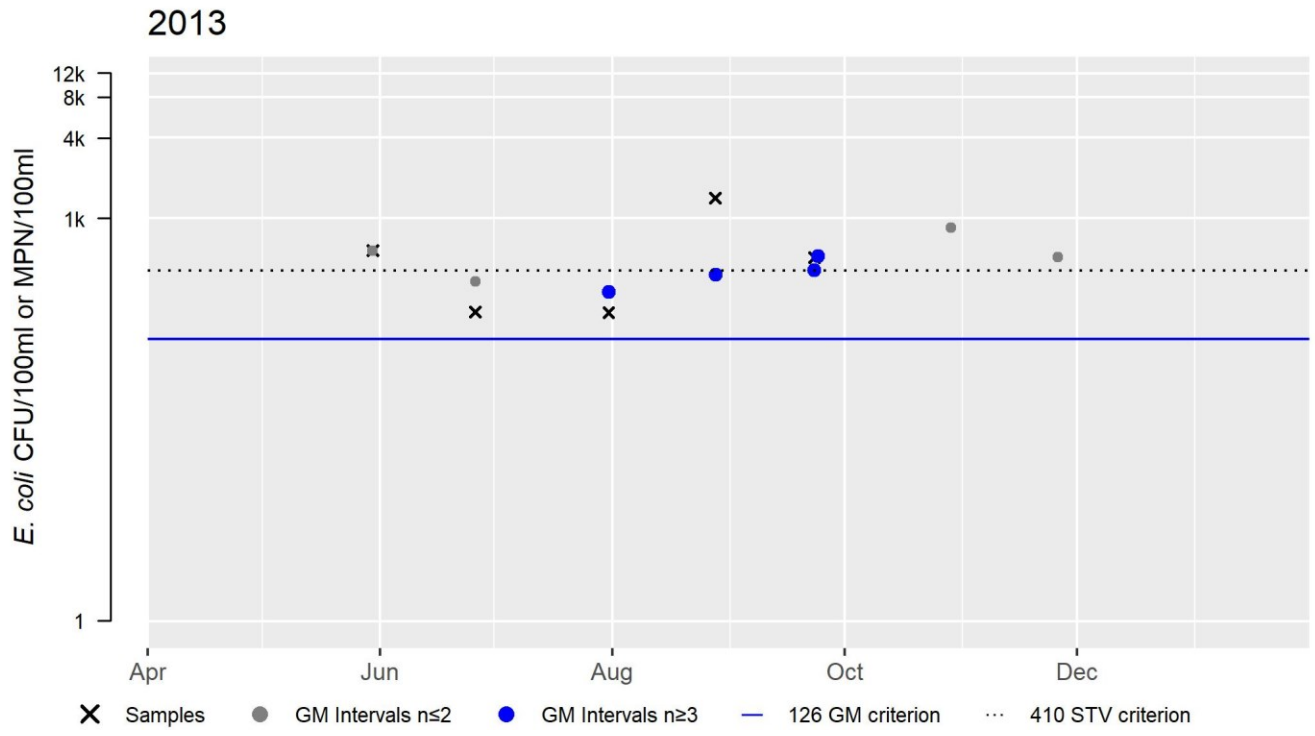
[Result units are CFU/100ml or MPN/100ml]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2387	MassDEP	E. coli	05/30/13	09/23/13	5	199	1420	441

W2387 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	5
SeasGM	441
#GMI	4
#GMI Ex	4
%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 Exeedances; %GMI Ex = percent GMI Exeedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



Secondary Contact Recreation

2022 Use Attainment	**Alert**
Fully Supporting	NO
2022 Use Attainment Summary	
E. coli bacteria samples were collected at one station along this Cole River AU (MA61-10) as part of the MAP2 monitoring project during the summer of 2013. Samples were collected approximately 2200 ft upstream from Hortonville Road, Swansea. Data analysis of this single-year, low frequency *E. coli* dataset indicated generally good conditions as none of the intervals had GMs >630 cfu/100ml, only one sample exceeded the 1260 cfu/100ml STV, with a seasonal GM of 441 cfu/100ml. Since the E. coli concentrations were below the use attainment impairment thresholds for this single year low frequency dataset, the Secondary Contact Recreational Use for this Cole River AU (MA61-10) is assessed as Fully Supporting.	

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2387	MassDEP	Water Quality	Cole River	[approximately 2200 feet upstream/east from Hortonville Road, Swansea]	41.777309	-71.192532

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MassDEP Undated 8) (MassDEP Undated 5)

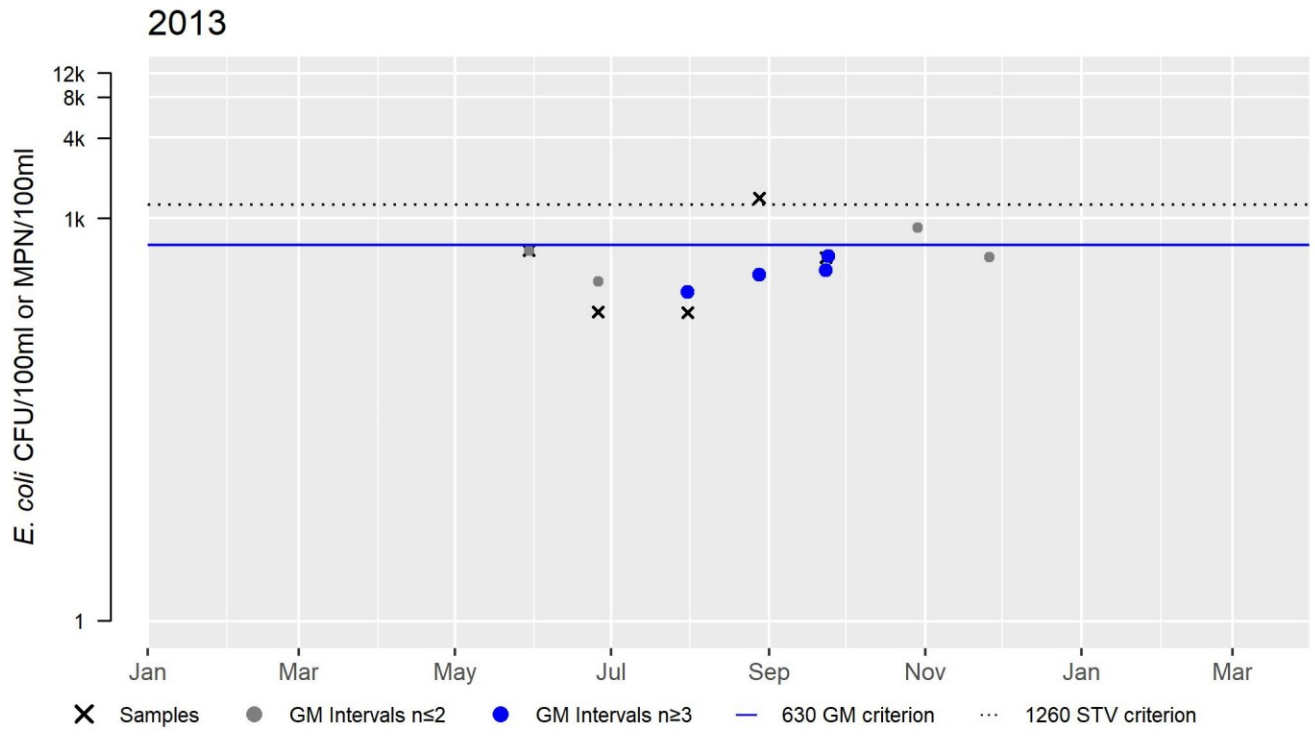
[Result units are CFU/100ml or MPN/100ml]

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)
W2387	MassDEP	E. coli	05/30/13	09/23/13	5	199	1420	441

W2387 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	5
SeasGM	441
#GMI	4
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	20

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



Cook Pond (MA61001)

Location:	Fall River, MA/Tiverton, RI.
AU Type:	FRESHWATER LAKE
AU Size:	157 ACRES
Classification/Qualifier:	B

No usable data were available for Cook Pond (MA61001) for the 2022 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

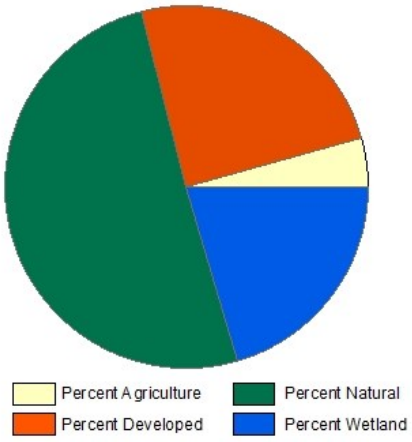
2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None		Unchanged

Kickamuit River (MA61-08)

Location:	Headwaters, outlet Warren Reservoir, Swansea, to state line, Swansea, MA/Warren, RI.
AU Type:	RIVER
AU Size:	2.8 MILES
Classification/Qualifier:	B

Kickamuit River - MA61-08

Watershed Area: 3.61 square miles



Landuse Type	Entire Basin	5km Radius Proximal Subbasin	100m Stream Buffer	Proximal Stream Buffer
Land Use Area (square miles)	3.61	3.44	0.73	0.73
Agriculture	4.4%	4.6%	3%	3%
Developed	24.6%	25.1%	13.8%	13.8%
Natural	50.5%	49.6%	42%	42%
Wetland	20.5%	20.8%	41.2%	41.2%
Impervious Cover	9.1%			

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	5	(Physical Substrate Habitat Alterations*)		Added
4a	5	Benthic Macroinvertebrates		Added
4a	5	Dissolved Oxygen		Added
4a	5	Escherichia Coli (E. Coli)	30702	Unchanged
4a	5	Fecal Coliform	30702	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				
Benthic Macroinvertebrates	Source Unknown (N)	X				
Dissolved Oxygen	Source Unknown (N)	X				
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)				X	
Escherichia Coli (E. Coli)	On-site Treatment Systems (Septic Systems and Similar Decentralized Systems) (Y)				X	
Escherichia Coli (E. Coli)	Unspecified Urban Stormwater (Y)				X	

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Escherichia Coli (E. Coli)	Waterfowl (N)				X	
Fecal Coliform	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)				X	
Fecal Coliform	On-site Treatment Systems (Septic Systems and Similar Decentralized Systems) (Y)				X	
Fecal Coliform	Unspecified Urban Stormwater (Y)				X	
Fecal Coliform	Waterfowl (N)				X	

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	YES

2022 Use Attainment Summary

DMF biologists note a structure causing passage limitation to diadromous fish at the Warren Reservoir Dam (NATID# MA00796) (upper end of the Kickamuit River AU). This dam allows no possible passage of the targeted fish species, river herring and American eel (population score is "0") into Warren Reservoir (not an AU) so the barrier has a passage score of "10". It was also noted by DMF biologists that there is no present outflow, and the dam is in poor condition. Further downstream the river is culverted under Route 6 and the Columbus Energies Inc. parking lot for ~160 feet. MassDEP biologists also conducted biological and water quality sampling in the Kickamuit River near the lower end of the AU just upstream of Bushee Road, Swansea as part of the MAP2 monitoring project during the summer of 2013. The benthic sample (B0834) collected from this low gradient habitat in July 2013 had an IBI score that was indicative of moderately degraded conditions (53). Backpack electrofishing in September 2013 (SampleID 5074) documented the moderately tolerant macrohabitat generalist fish redfin pickerel (comprising 59% of the sample) and American eel. A summary of the water quality data, including both deployed probe and discrete sampling efforts (W2376), is as follows: minimum DO was 3.7 mg/L during the continuous DO probe deploy lasting 104 days (June 20th -Oct 1st, 2013) with the 7DADA <6.5mg/L 23 times, the maximum temperature was 25.4^{o}C (7-DADM always <27.7^{o}C, max 24hr rolling average 23.8^{o}C during the thermistor deployment from June 20 to September 15), discrete pH measurements ranged from 6.8 to 7.1SU (n=3), there were generally no physico-chemical indicators of nutrient enrichment issues (maximum DO saturation 85.5%, no observations of dense/very dense filamentous algae, and low total phosphorus concentrations (seasonal average of 0.07mg/L (n=4), however the maximum diel DO shift was high -- 3.9mg/L). Specific conductance measurements and chloride concentrations were both low (max 432µS/cm and 74 mg/L, respectively, n=3), as was total ammonia-nitrogen (TAN) (max 0.13mg/L, n=3 with no toxicity estimated), nor were there any acute or chronic metals criteria exceedances (n=2). It is also noted that there are two additional barriers to diadromous fish on the Kickamuit River further downstream from the MA/RI state line in Warren RI. DMF biologists note that there is no possible passage at the BCWS Dam #2 but there is a Denil ladder that was installed in 2006 (cooperative project between Save the Bay, NRCS, RI DEM and others) at another BCWS Dam further downstream. Population scores of 1 were assigned for these two downstream/out-of-state barriers.

The Aquatic Life Use of the Kickamuit River is assessed as Not Supporting based on the moderately degraded benthic macroinvertebrate sample and low DO documented in the river just upstream of Bushee Road in the summer of 2013 as well as habitat alteration (a small portion of this river is culverted underground for ~160 feet at Route 6/Columbus Energies Inc. parking lot) so Benthic Macroinvertebrates, Dissolved Oxygen, and Physical Substrate Habitat Alterations impairments are being added. The Alert identified for impediments to fish passage will be carried forward because Warren Reservoir Dam and other barriers in Warren RI are still impassable to diadromous fish.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
5074	MassDEP	Fish Community	Kickamuit River	~60 ft D/S of Probe to '70'U/S Probe, ~1630 ft US/E of Bushee Rd, adj to smokerise circle	41.74470	-71.24826
B0834	MassDEP	Benthic	Kickamuit River/	[approximately 495 meters upstream/east from Bushee Road, Swansea, MA]	41.744702	-71.248262
W1961	MassDEP	Water Quality	Kickamuit River	[Bushee Road, Swansea]	41.746914	-71.251302
W2376	MassDEP	Water Quality	Kickamuit River	[approximately 1630 feet upstream/east from Bushee Road, Swansea]	41.744702	-71.248262
W2561	MassDEP	Water Quality	Kickamuit River	[Lynwood Road, Swansea]	41.747132	-71.244039
W2562	MassDEP	Water Quality	Kickamuit River	[Burnside Drive, Swansea]	41.749290	-71.244048
W2563	MassDEP	Water Quality	Kickamuit River	[approximately 60 feet downstream of culvert in Columbus Energies Inc. parking lot, south off of Route 6, Swansea. NOTE: between the road and the parking lot the river culverted approximately 160 feet]	41.753880	-71.239165
W2564	MassDEP	Water Quality	Kickamuit River	[Stephen French Road, Swansea]	41.761077	-71.232870

Biological Monitoring Information

Benthic Macroinvertebrate Data

MassDEP Benthic Macroinvertebrate Data (2011-2017). (MassDEP Undated 4)

[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
B0834	07/09/13	RBP multihab	Statewide_Low_Gradient	305	53	MD

Fish Community Data and DELTS

Fish Community Data (2012-2019) Provided by MassDFG. (MassDFG 2020) (MassDEP Undated 2)

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

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

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
5074	09/13/13	BP	TP		2	27	0%	0	0%	0%	1	59%	No	No	AE, RP,

Habitat and Flow Data (anthropogenic alterations)

MassDMF Status of Priority Diadromous Fish Passage Barriers. (Chase 2020)

Assessment Summary
DMF biologists note a structure causing passage limitation to diadromous fish at the upper end of the Kickamuit River AU, at the boundary with the Warren Reservoir (currently not an AU). The Warren Reservoir Dam (NATID# MA00796) (with no associated fishway) was given a passage score of "10" on a 0-10 scale, indicating that the dam allows no possible passage of the targeted fish species, river herring and American eel. However, the population score in the area was noted to be "0". It was further noted by DMF biologists that there is no present outflow and the dam is in poor condition.

Physico-chemical Water Quality Information

DO, pH, Temperature

MassDEP Long-term Continuous Dissolved Oxygen Data (2011-2018). (MassDEP Undated 8) (MassDEP Undated 5)

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

Station Code	Start Date	End Date	Day Count	7day Count	30day Count	DO Min (mg/L)	Min 7DADMin (mg/L)	Min 7DADA (mg/L)	Delta DO Max (mg/L)	Count CW 7DADMin <6.0	Count CW 1Day Min <5.0	Count WW Early Life Stages 7DADA <6.5	Count WW Early Life Stages 1Day Min <5.0	Count WW Other Life Stages 7DADMin <5.0	Count WW Other Life Stages 1Day Min <4.0	Count CW 30DADA <8.0	Count WW Other Life Stages 30DADA <6.0
W2376	06/20/13	10/01/13	104	98	75	3.7	5.1	5.8	3.9	41	8	23	4	0	1	75	0

MassDEP Discrete Dissolved Oxygen Data (2011-2018). (MassDEP Undated 8) (MassDEP Undated 5)

[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
W2376	06/19/13	10/02/13	2	7.2	7.4	0	0	0

MassDEP Long-term Continuous Temperature Data (Summer Index 2011-2018). (MassDEP Undated 8) (MassDEP Undated 5)

[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
W2376	06/20/13	09/15/13	88	85	23.6	25.4	24.5	23.0	75	1	24	0	0	0
W2376	06/20/13	09/15/13	88	85	23.5	25.3	24.4	22.9	74	0	23	0	0	0

24-hour Rolling Average Calculations for MassDEP Short- and Long-term Continuous Temperature Data (Summer Index 2011-2018). (MassDEP Undated 8) (MassDEP Undated 5)

[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
W2376	06/19/13	09/15/13	88	4199	23.7	31	0	0
W2376	06/19/13	09/15/13	88	4199	23.8	47	0	0

MassDEP Discrete Temperature Data (2011-2018). (MassDEP Undated 8) (MassDEP Undated 5)

[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
W2376	06/19/13	10/02/13	5	3	20.4	18.2	2	0	0	0

MassDEP Discrete pH Data (2011-2018). (MassDEP Undated 8) (MassDEP Undated 5)

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
W2376	06/19/13	10/02/13	3	6.8	7.1	0	0

Nutrients (Primary Producer Screening, Physico-chemical Screening)

MassDEP Nutrient Enrichment Indicator Data (2011-2018). (MassDEP Undated 8) (MassDEP Undated 5)

[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
W1961	2015	--	--	--	--	--	--	--	--	2	0
W2376	2013	4	0.053	0.086	0.072	3.9	1.1	85.5	7.1	7	0
W2561	2015	--	--	--	--	--	--	--	--	4	0
W2562	2015	--	--	--	--	--	--	--	--	4	0
W2563	2015	--	--	--	--	--	--	--	--	4	0
W2564	2015	--	--	--	--	--	--	--	--	4	0

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

MassDEP Clean Metals Water Column Data (2011-2018), Acute Criteria Violations. (MassDEP Undated 8) (MassDEP Undated 5)

[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
W2376	2013	2	0	0	0	0	0	0	0	0

MassDEP Clean Metals Water Column Data (2011-2018), Chronic Criteria Violations. (MassDEP Undated 8) (MassDEP Undated 5)

[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
W2376	2013	2	0	0	0	0	0	0	0	0

MassDEP Dissolved Aluminum Water Column Data (2011-2018). (MassDEP Undated 8) (MassDEP Undated 5)

[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
W2376	2013	2	0.006	0.037	0.021	0.1	0.2	0	0

MassDEP Total Ammonia Nitrogen (TAN) Data (2011-2018). (MassDEP Undated 8) (MassDEP Undated 5)

[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
W2376	2013	3	0.060	0.130	0.097	0	0

MassDEP Chloride Data (2011-2018). (MassDEP Undated 8) (MassDEP Undated 5)

Station Code	Data Year	Chloride Count	Chloride Min (mg/L)	Chloride Max (mg/L)	Chloride Avg (mg/L)	Count Chloride >230	Count Chloride >860
W2376	2013	3	62	74	67	0	0

MassDEP Discrete Specific Conductance Data (2011-2018) Compared to Estimated Chloride Criteria. (MassDEP Undated 8) (MassDEP Undated 5)

Station Code	Start Date	End Date	SpCond Count	SpCond Min (µs/cm)	SpCond Max (µs/cm)	Count SpCond >904	Count SpCond >994	Count SpCond >3193	Count SpCond >3512	Consecutive sets >904	Consecutive sets >994
W2376	06/19/13	10/02/13	3	355	432	0	0	0	0	0	0

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No fish toxics sampling has been conducted in the Kickamuit River; therefore, the Fish Consumption Use is Not Assessed.	

Aesthetic

2022 Use Attainment	Alert
Fully Supporting	NO

2022 Use Attainment Summary
MassDEP staff recorded aesthetics observations at six sites along Kickamuit River in Swansea, in either the summer of 2013 or 2015, from up to downstream as follows: Stephen French Rd (W2564) (2015), ~60 ft downstream of culvert in Columbus Energies Inc. parking lot, south of Rt. 6 (W2563) (2015), Burnside Drive (W2562) (2015), Lynwood Road (W2561) (2015), ~1630 ft upstream from Bushee Rd (W2376) (2013), and Bushee Road (W1961) (2015). There were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DWM-WPP field sampling crews during the surveys at any of the sampling station locations (n=27 site visits). The Aesthetics Use for Kickamuit River (MA61-08) is assessed as Fully Supporting based on the general lack of any objectionable conditions observed by MassDEP staff at six sites along the river during the summers of 2013 and 2015.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1961	MassDEP	Water Quality	Kickamuit River	[Bushee Road, Swansea]	41.746914	-71.251302
W2376	MassDEP	Water Quality	Kickamuit River	[approximately 1630 feet upstream/east from Bushee Road, Swansea]	41.744702	-71.248262
W2561	MassDEP	Water Quality	Kickamuit River	[Lynwood Road, Swansea]	41.747132	-71.244039
W2562	MassDEP	Water Quality	Kickamuit River	[Burnside Drive, Swansea]	41.749290	-71.244048
W2563	MassDEP	Water Quality	Kickamuit River	[approximately 60 feet downstream of culvert in Columbus Energies Inc. parking lot, south off of Route 6, Swansea. NOTE: between the road and the parking lot the river culverted approximately 160 feet]	41.753880	-71.239165
W2564	MassDEP	Water Quality	Kickamuit River	[Stephen French Road, Swansea]	41.761077	-71.232870

Aesthetic Observations

Aesthetics Summary Statements for MassDEP Stations (2011-2018) (MassDEP Undated 5)

Station Code	Waterbody	Data Year	Field Sheet Count	Aesthetics Summary Statement
W1961	Kickamuit River	2015	4	MassDEP aesthetics observations for station W1961 on Kickamuit River can be summarized as follows: there were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DEP field sampling crews during summer 2015.
W2376	Kickamuit River	2013	7	MassDEP aesthetics observations for station W2376/MAP2-335 on Kickamuit River can be summarized as follows: there were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DEP field sampling crews during summer 2013.
W2561	Kickamuit River	2015	4	MassDEP aesthetics observations for station W2561 on Kickamuit River can be summarized as follows: there were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DEP field sampling crews during summer 2015.

Station Code	Waterbody	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2562	Kickamuit River	2015	4	MassDEP aesthetics observations for station W2562 on Kickamuit River can be summarized as follows: there were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DEP field sampling crews during summer 2015.
W2563	Kickamuit River	2015	4	MassDEP aesthetics observations for station W2563 on Kickamuit River can be summarized as follows: there were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DEP field sampling crews during summer 2015.
W2564	Kickamuit River	2015	4	MassDEP aesthetics observations for station W2564 on Kickamuit River can be summarized as follows: there were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DEP field sampling crews during summer 2015.

Observations of Filamentous/Film Algae at MassDEP Stations (2011-2018) (MassDEP Undated 8) (MassDEP Undated 5)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W1961	2015	4	2	0
W2376	2013	7	7	0
W2561	2015	4	4	0
W2562	2015	4	4	0
W2563	2015	4	4	0
W2564	2015	4	4	0

MassDEP Aesthetics Observations (2011-2018) (MassDEP Undated 8)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W1961	Kickamuit River	2015	Color	None	4	4
W1961	Kickamuit River	2015	Objectionable Deposits	Not Applicable (N/A)	4	4
W1961	Kickamuit River	2015	Odor	None	4	4
W1961	Kickamuit River	2015	Scum	Not Applicable (N/A)	4	4
W1961	Kickamuit River	2015	Turbidity	Slightly Turbid	4	4
W2376	Kickamuit River	2013	Color	Light Yellow/Tan	3	7
W2376	Kickamuit River	2013	Color	None	4	7
W2376	Kickamuit River	2013	Objectionable Deposits	No	7	7
W2376	Kickamuit River	2013	Odor	None	6	7
W2376	Kickamuit River	2013	Odor	NR	1	7
W2376	Kickamuit River	2013	Scum	No	6	7
W2376	Kickamuit River	2013	Scum	NR	1	7
W2376	Kickamuit River	2013	Turbidity	None	6	7
W2376	Kickamuit River	2013	Turbidity	Slightly Turbid	1	7
W2561	Kickamuit River	2015	Color	None	4	4
W2561	Kickamuit River	2015	Objectionable Deposits	Not Applicable (N/A)	4	4
W2561	Kickamuit River	2015	Odor	None	4	4
W2561	Kickamuit River	2015	Scum	Not Applicable (N/A)	4	4

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2561	Kickamuit River	2015	Turbidity	Slightly Turbid	4	4
W2562	Kickamuit River	2015	Color	None	4	4
W2562	Kickamuit River	2015	Objectionable Deposits	Not Applicable (N/A)	4	4
W2562	Kickamuit River	2015	Odor	None	4	4
W2562	Kickamuit River	2015	Scum	Not Applicable (N/A)	4	4
W2562	Kickamuit River	2015	Turbidity	Slightly Turbid	4	4
W2563	Kickamuit River	2015	Color	None	4	4
W2563	Kickamuit River	2015	Objectionable Deposits	Not Applicable (N/A)	4	4
W2563	Kickamuit River	2015	Odor	None	3	4
W2563	Kickamuit River	2015	Odor	Other	1	4
W2563	Kickamuit River	2015	Scum	Not Applicable (N/A)	4	4
W2563	Kickamuit River	2015	Turbidity	Slightly Turbid	4	4
W2564	Kickamuit River	2015	Color	None	4	4
W2564	Kickamuit River	2015	Objectionable Deposits	Not Applicable (N/A)	4	4
W2564	Kickamuit River	2015	Odor	None	4	4
W2564	Kickamuit River	2015	Scum	Not Applicable (N/A)	4	4
W2564	Kickamuit River	2015	Turbidity	Moderately Turbid	2	4
W2564	Kickamuit River	2015	Turbidity	Slightly Turbid	2	4

Primary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO

2022 Use Attainment Summary

E. coli bacteria samples were collected in Kickamuit River (MA61-08) by MassDEP staff four to five times per year for the purpose of either bacteria source tracking (BST) or the MAP2 project, at the following sampling stations (data years): Stephen French Rd (W2564) (2015), ~60 ft downstream of culvert in Columbus Energies Inc. parking lot, south of Rt. 6 (W2563) (2015), Burnside Drive (W2562) (2015), Lynwood Rd (W2561) (2015), ~1630 ft upstream from Bushee Rd (W2376) (2013) and Bushee Road (W1961) (2015). Analysis of these single-year low frequency *E. coli* datasets indicated 100% of intervals had GMs >126 cfu/100ml at all six stations, with seasonal GM's ranging 205-618 cfu/100ml and >two samples exceeded the 410 cfu/100ml STV at four out of the six stations.

The Primary Contact Recreational Use for the Kickamuit River will continue to be assessed as Not Supporting since the *E. coli* bacteria concentrations in samples collected from the river by MassDEP staff in 2013 and 2015 exceeded the use attainment impairment thresholds. Both the *E. coli* and Fecal Coliform impairments are being carried forward.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1961	MassDEP	Water Quality	Kickamuit River	[Bushee Road, Swansea]	41.746914	-71.251302
W2376	MassDEP	Water Quality	Kickamuit River	[approximately 1630 feet upstream/east from Bushee Road, Swansea]	41.744702	-71.248262
W2561	MassDEP	Water Quality	Kickamuit River	[Lynwood Road, Swansea]	41.747132	-71.244039
W2562	MassDEP	Water Quality	Kickamuit River	[Burnside Drive, Swansea]	41.749290	-71.244048

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2563	MassDEP	Water Quality	Kickamuit River	[approximately 60 feet downstream of culvert in Columbus Energies Inc. parking lot, south off of Route 6, Swansea. NOTE: between the road and the parking lot the river culverted approximately 160 feet]	41.753880	-71.239165
W2564	MassDEP	Water Quality	Kickamuit River	[Stephen French Road, Swansea]	41.761077	-71.232870

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MassDEP Undated 8) (MassDEP Undated 5)

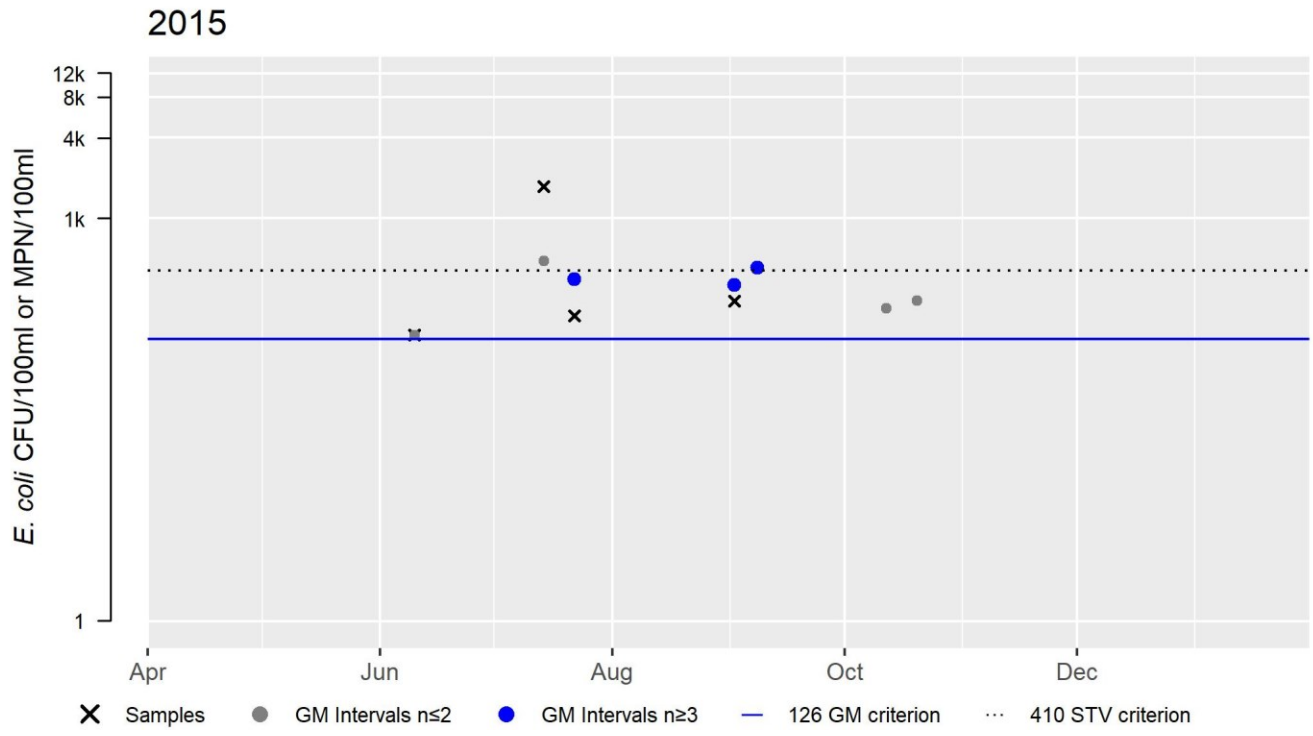
[Result units are CFU/100ml or MPN/100ml]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1961	MassDEP	E. coli	06/10/15	09/02/15	4	135	1730	322
W2376	MassDEP	E. coli	05/30/13	09/23/13	5	86	1860	618
W2561	MassDEP	E. coli	06/10/15	09/02/15	4	96	2419.6	391
W2562	MassDEP	E. coli	06/10/15	09/02/15	4	88	727	337
W2563	MassDEP	E. coli	06/10/15	09/02/15	4	27	1200	205
W2564	MassDEP	E. coli	06/10/15	09/02/15	4	214	770	356

W1961 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	4
SeasGM	322
#GMI	3
#GMI Ex	3
%GMI Ex	100
n>STV	1
%n>STV	25

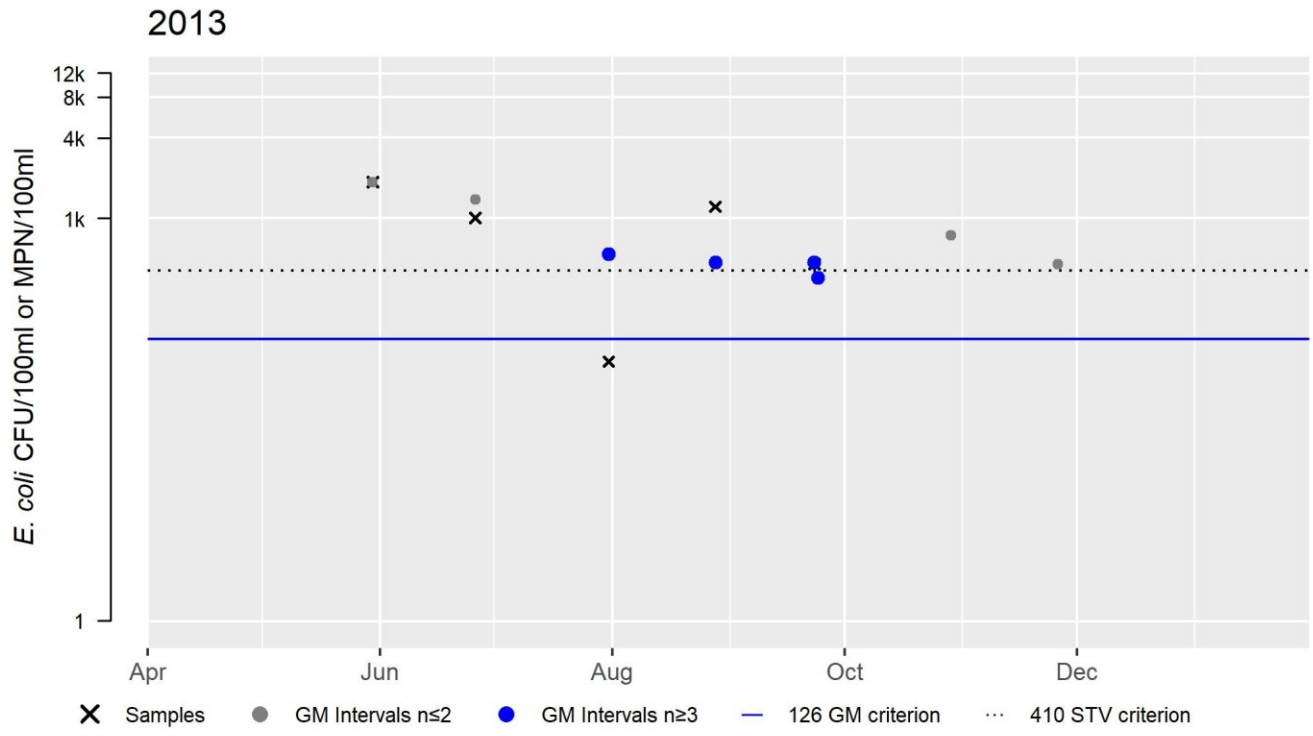
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exeedances; %GMI Ex = percent GMI Exeedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



W2376 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	5
SeasGM	618
#GMI	4
#GMI Ex	4
%GMI Ex	100
n>STV	4
%n>STV	80

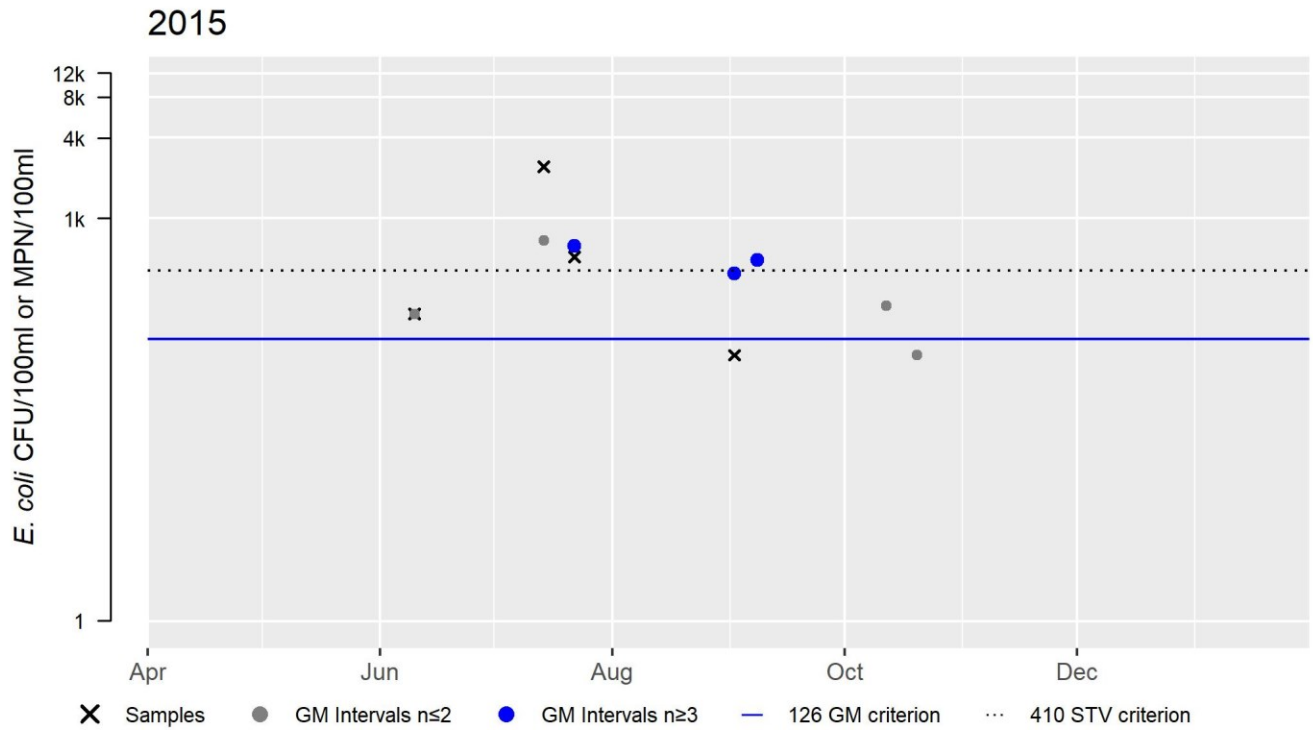
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exeedances; %GMI Ex = percent GMI Exeedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



W2561 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	4
SeasGM	391
#GMI	3
#GMI Ex	3
%GMI Ex	100
n>STV	2
%n>STV	50

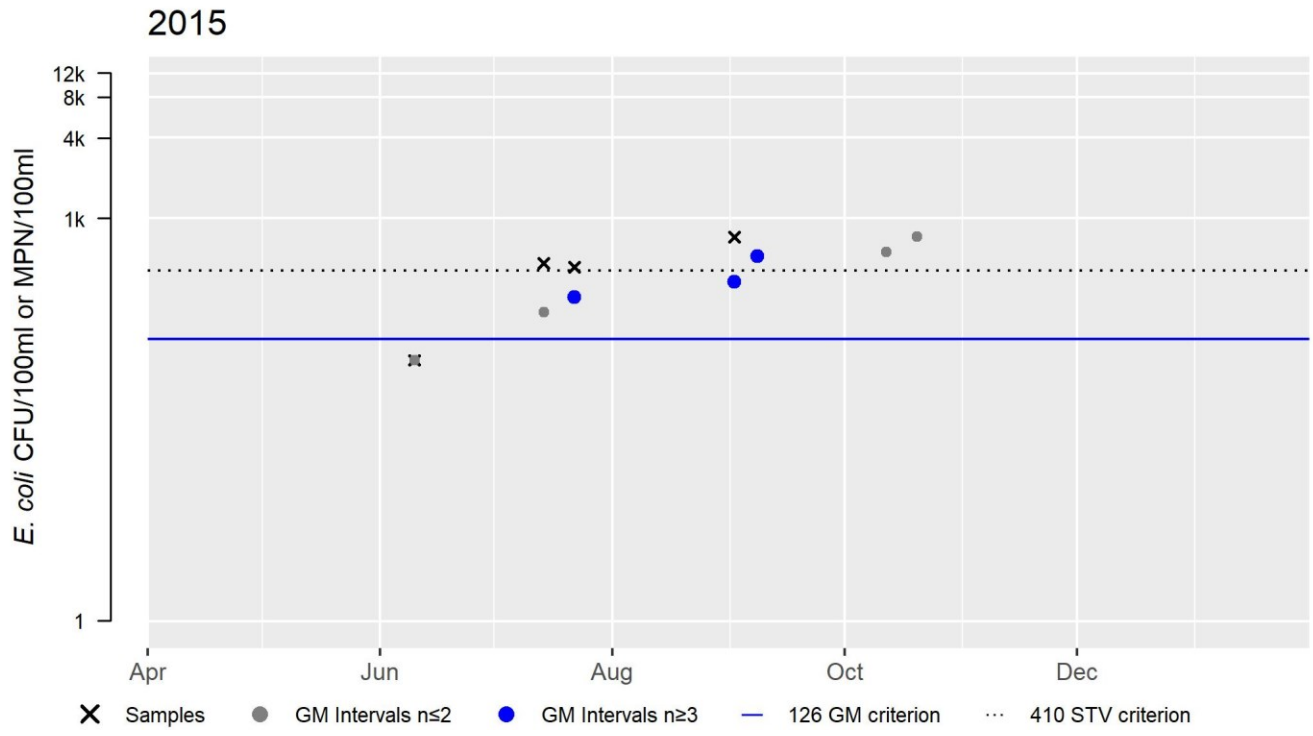
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exeedances; %GMI Ex = percent GMI Exeedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



W2562 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	4
SeasGM	337
#GMI	3
#GMI Ex	3
%GMI Ex	100
n>STV	3
%n>STV	75

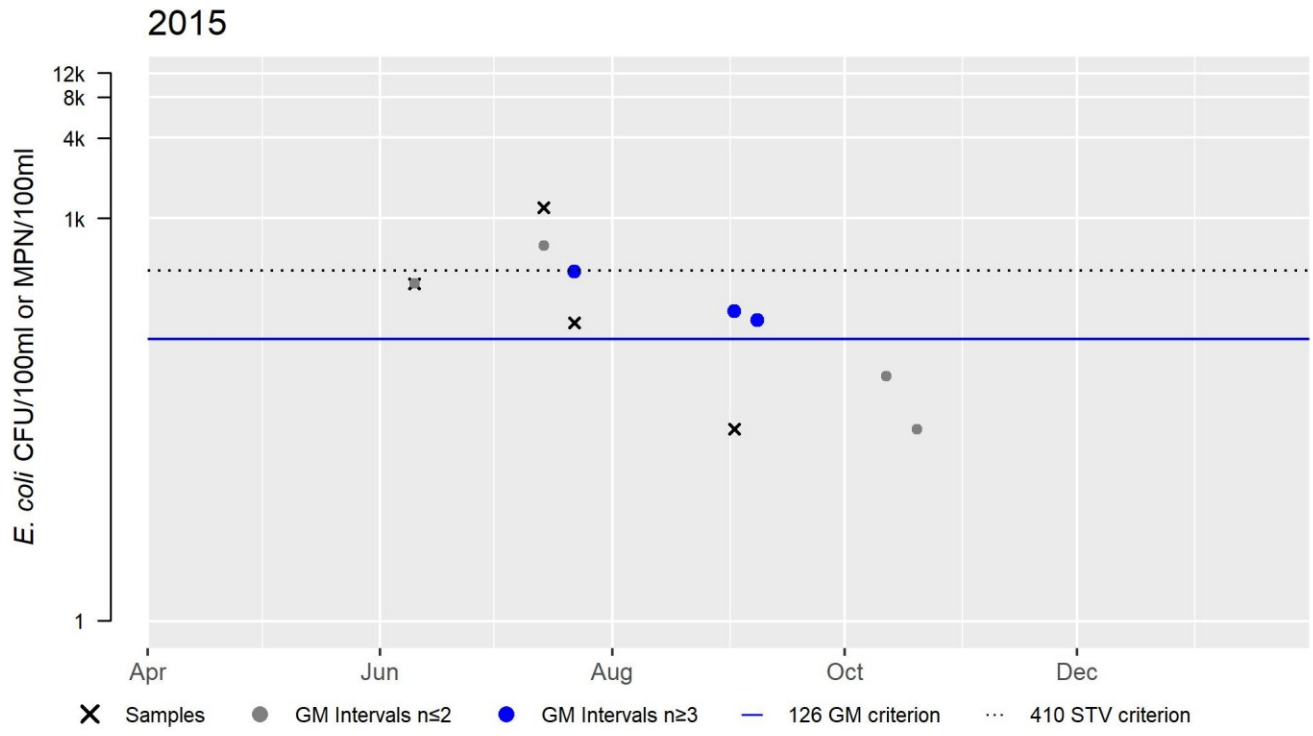
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exeedances; %GMI Ex = percent GMI Exeedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



W2563 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	4
SeasGM	205
#GMI	3
#GMI Ex	3
%GMI Ex	100
n>STV	1
%n>STV	25

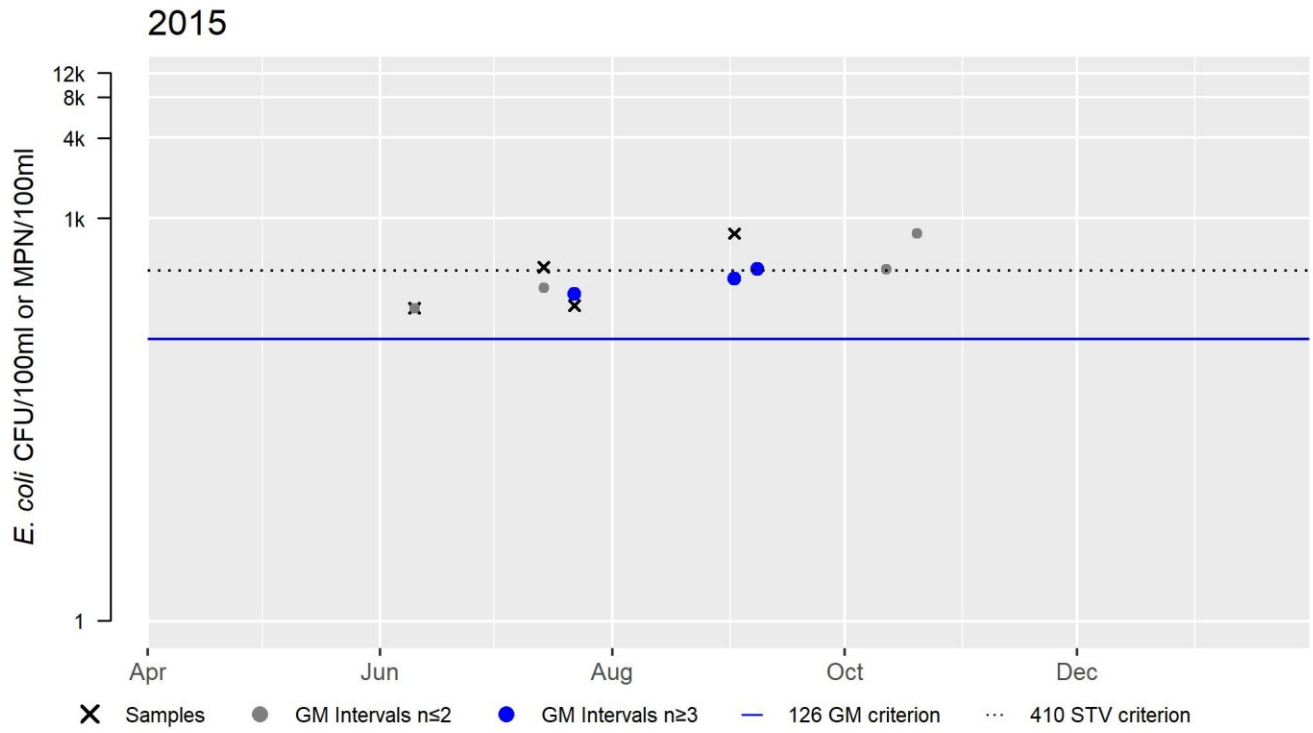
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exeedances; %GMI Ex = percent GMI Exeedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



W2564 *E. coli* (90-day Interval), Primary Contact Recreational Use Season

Var	Res
Samples	4
SeasGM	356
#GMI	3
#GMI Ex	3
%GMI Ex	100
n>STV	2
%n>STV	50

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



MassDEP Bacteria Source Tracking (BST) Summary Statement for 2011-2019 (MassDEP Undated 1)

Summary
BST work was conducted in 2015 at 5 sites along the Kickamuit River AU (MA61-08), with *E. coli* concentrations ranging 27 to >2,419.6MPN and on 1 unnamed tributary discharging to the downstream half of the AU with a max *E. coli* concentration of 2,419.6MPN. In 2015 human marker analysis on the tributary indicated "inconclusive" evidence of a human source. Overall, it was concluded that the data collected did not suggest the presence of a human source of bacteria in this watershed.

Secondary Contact Recreation

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

E. coli bacteria samples were collected in Kickamuit River (MA61-08) by MassDEP four to five times per year for the purpose of bacteria source tracking (BST), at the following sampling stations (data years): Stephen French Rd (W2564) (2015), ~60 ft downstream of culvert in Columbus Energies Inc. parking lot, south of Rt. 6 (W2563) (2015), Burnside Drive (W2562) (2015), Lynwood Rd (W2561) (2015), ~1630 ft upstream from Bushee Rd (W2376) (2013) and Bushee Road (W1961) (2015). Analysis of these single year low frequency *E. coli* datasets indicated generally good water quality conditions as none of the intervals at any of the six sample stations had GMs >630 cfu/100ml, with seasonal GM's ranging 205-618 cfu/100ml and (at most) only one sample exceeded the 1260 cfu/100ml STV at any of the six sample stations.
The Secondary Contact Recreational Use for the Kickamuit River is assessed as Fully Supporting since the *E. coli* bacteria concentrations in samples collected from the river by MassDEP staff in 2013 and 2015 did not exceed the use attainment impairment thresholds. The prior impairments for both E. coli and Fecal Coliform are therefore being removed from this use, while Primary Contact Recreation continues to be assessed as Not Supporting for both impairments.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1961	MassDEP	Water Quality	Kickamuit River	[Bushee Road, Swansea]	41.746914	-71.251302
W2376	MassDEP	Water Quality	Kickamuit River	[approximately 1630 feet upstream/east from Bushee Road, Swansea]	41.744702	-71.248262
W2561	MassDEP	Water Quality	Kickamuit River	[Lynwood Road, Swansea]	41.747132	-71.244039
W2562	MassDEP	Water Quality	Kickamuit River	[Burnside Drive, Swansea]	41.749290	-71.244048
W2563	MassDEP	Water Quality	Kickamuit River	[approximately 60 feet downstream of culvert in Columbus Energies Inc. parking lot, south off of Route 6, Swansea NOTE: between the road and the parking lot the river culverted approximately 160 feet]	41.753880	-71.239165
W2564	MassDEP	Water Quality	Kickamuit River	[Stephen French Road, Swansea]	41.761077	-71.232870

Bacteria Data

Bacteria Data Collected by MassDEP and External Data Providers 2011-2020 (90-day Interval Analysis) (MassDEP Undated 8) (MassDEP Undated 5)

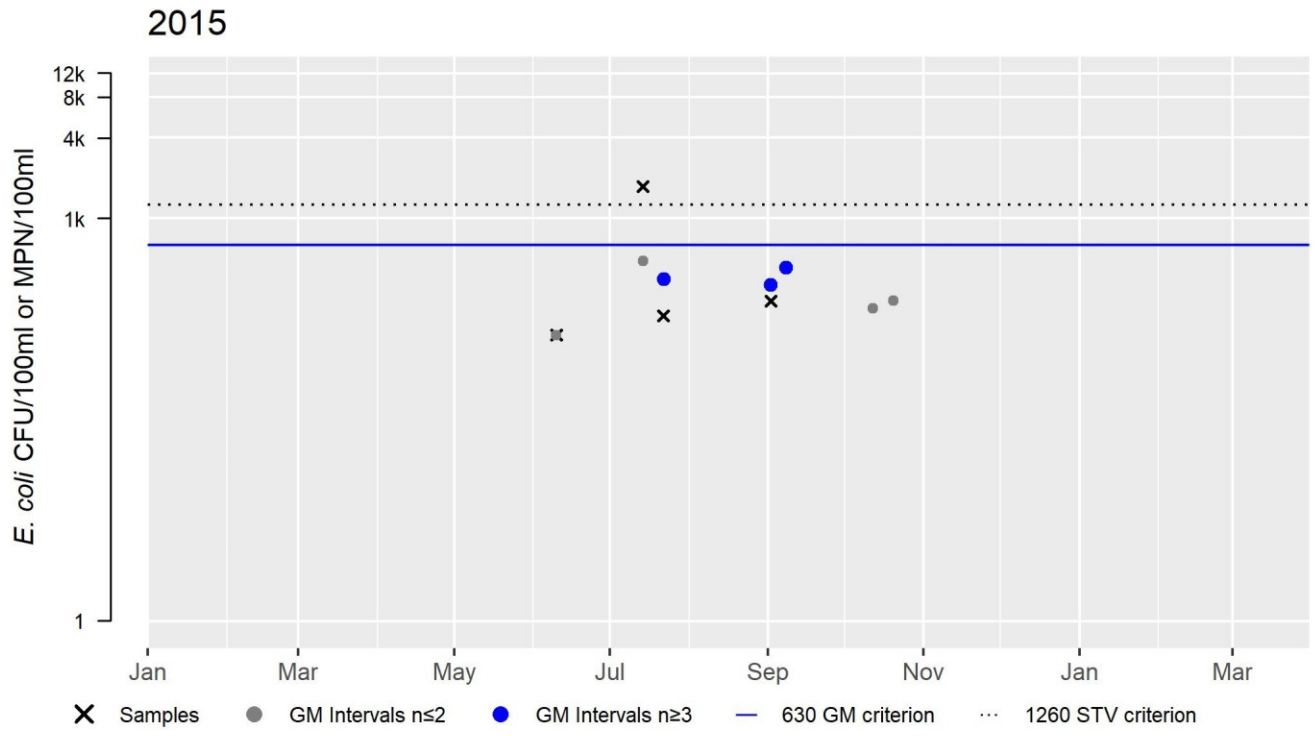
[Result units are CFU/100ml or MPN/100ml]

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)
W1961	MassDEP	E. coli	06/10/15	09/02/15	4	135	1730	322
W2376	MassDEP	E. coli	05/30/13	09/23/13	5	86	1860	618
W2561	MassDEP	E. coli	06/10/15	09/02/15	4	96	2419.6	391
W2562	MassDEP	E. coli	06/10/15	09/02/15	4	88	727	337
W2563	MassDEP	E. coli	06/10/15	09/02/15	4	27	1200	205
W2564	MassDEP	E. coli	06/10/15	09/02/15	4	214	770	356

W1961 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	4
SeasGM	322
#GMI	3
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	25

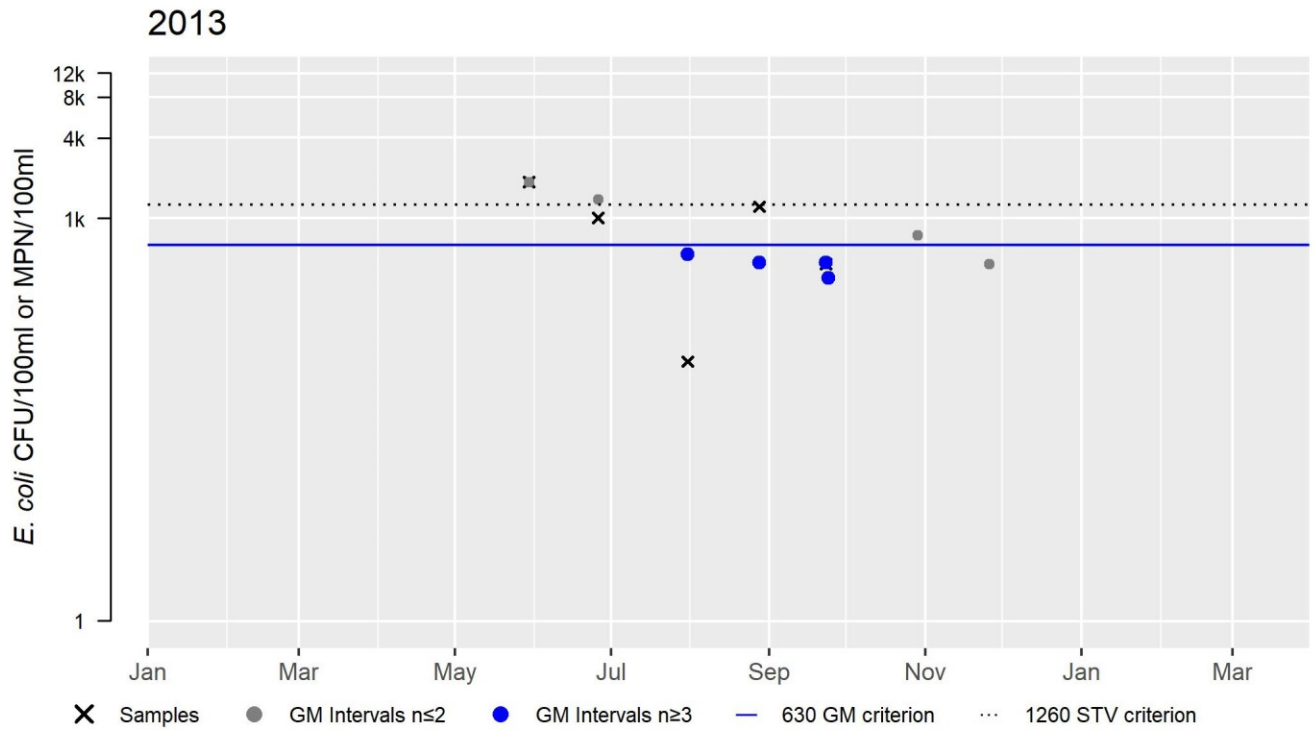
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exeedances; %GMI Ex = percent GMI Exeedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



W2376 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	5
SeasGM	618
#GMI	4
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	20

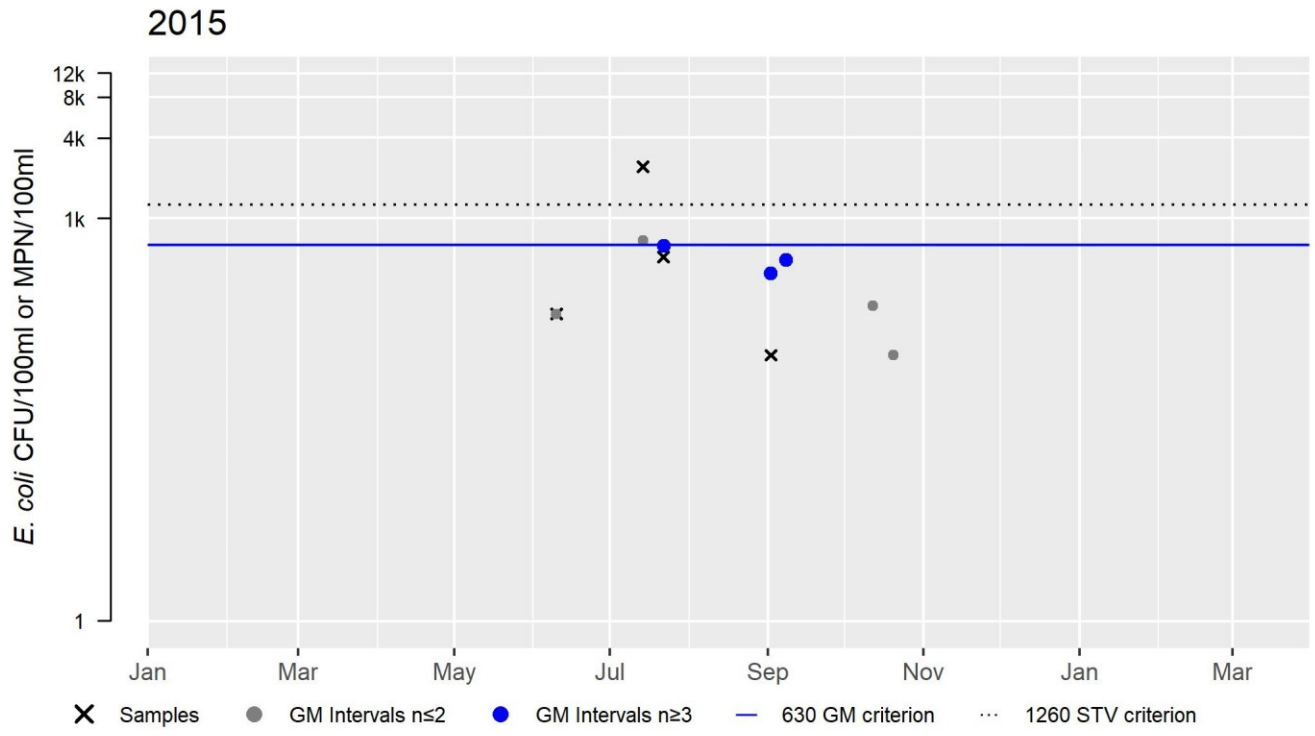
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exeedances; %GMI Ex = percent GMI Exeedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



W2561 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	4
SeasGM	391
#GMI	3
#GMI Ex	0
%GMI Ex	0
n>STV	1
%n>STV	25

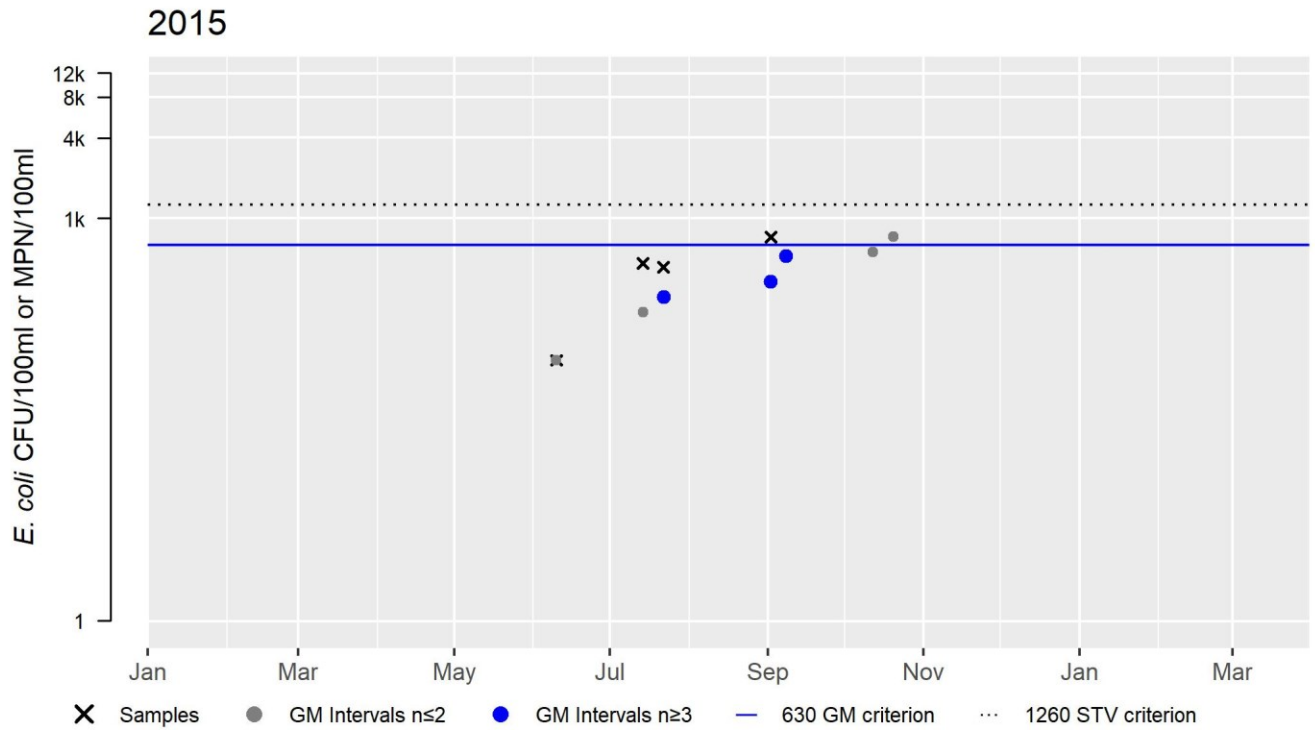
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exeedances; %GMI Ex = percent GMI Exeedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



W2562 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	4
SeasGM	337
#GMI	3
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

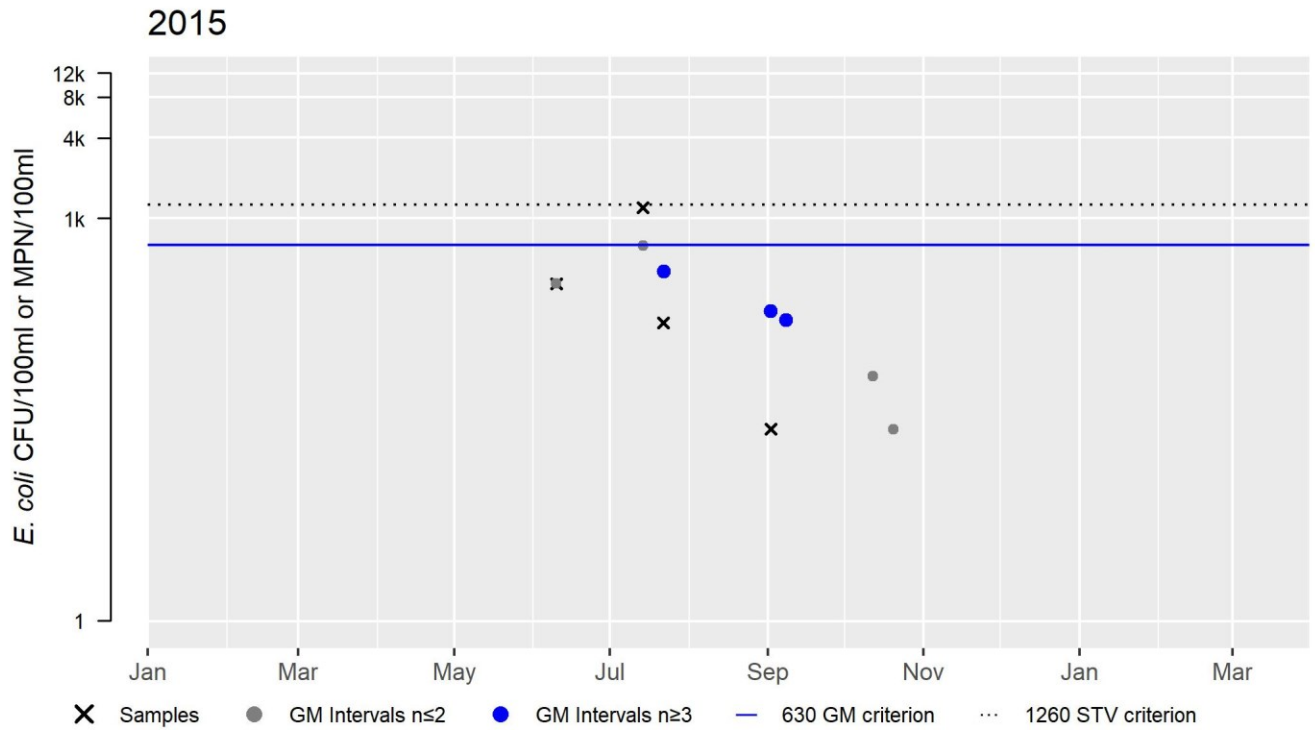
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exeedances; %GMI Ex = percent GMI Exeedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



W2563 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	4
SeasGM	205
#GMI	3
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

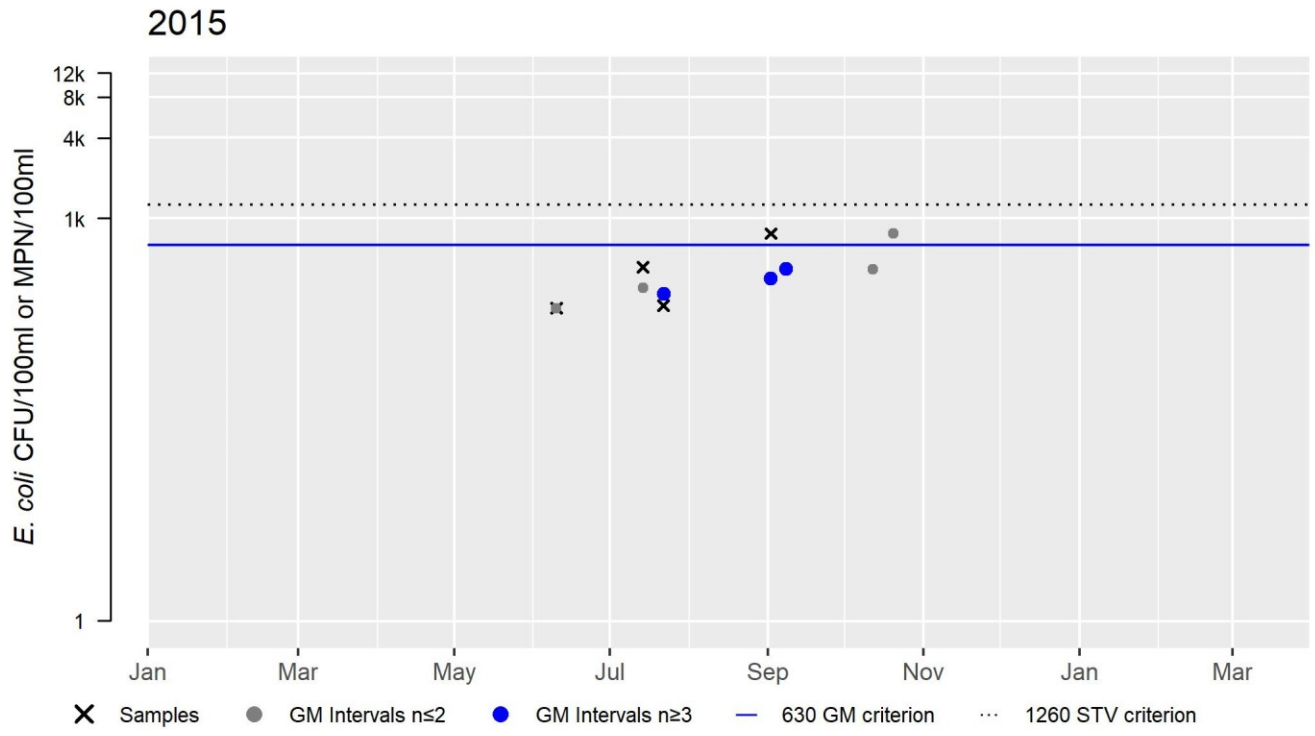
Abbreviations: Samples = #samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = number GM Intervals; #GMI Ex = number GMI Exeedances; %GMI Ex = percent GMI Exeedances; n>STV = #samples>Statistical Threshold Value (STV); %n>STV = percent samples>STV



W2564 *E. coli* (90-day Interval), Secondary Contact Recreational Use Season

Var	Res
Samples	4
SeasGM	356
#GMI	3
#GMI Ex	0
%GMI Ex	0
n>STV	0
%n>STV	0

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



Lee River (MA61-01)

Location:	From confluence with Lewin Brook, Swansea to Route 6, Swansea/Somerset.
AU Type:	ESTUARY
AU Size:	0.02 SQUARE MILES
Classification/Qualifier:	SA: SFO

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Fecal Coliform	38905	Unchanged
5	5	Nutrient/Eutrophication Biological Indicators		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Shellfish Harvesting	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Fecal Coliform	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)			X		X	
Fecal Coliform	Illicit Connections/Hook-ups to Storm Sewers (N)			X		X	
Fecal Coliform	On-site Treatment Systems (Septic Systems and Similar Decentralized Systems) (Y)			X		X	
Nutrient/Eutrophication Biological Indicators	On-site Treatment Systems (Septic Systems and Similar Decentralized Systems) (Y)	X			X	X	X
Nutrient/Eutrophication Biological Indicators	Unspecified Urban Stormwater (N)	X			X	X	X

Recommendations

2022 Recommendations
ALU: Confirmation of water quality degradation related to nutrient enrichment problems in this Lee River AU (MA61-01) should be conducted via field reconnaissance during the summer season to evaluate if additional monitoring needs rare needed; REC: Conduct Enterococcus bacteria monitoring in this Lee River AU (MA61-01) since at least one source of bacteria has been eliminated in order to better assess the status of the Primary and Secondary Contact Recreational Uses.

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	

No new/recent data are available to assess the status of the Aquatic Life Use for this Lee River AU (MA61-01), so it will continue to be assessed as Not Supporting, with the impairment for Nutrient/Eutrophication Biological Indicators 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 Lee River AU (MA61-01), therefore the Fish Consumption Use is Not Assessed.	

Shellfish Harvesting

2022 Use Attainment	Alert
Not Supporting	YES
2022 Use Attainment Summary	
Lee River (MA61-01): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.0195 sq mi (91%). The approved shellfish growing area represents 0 sq mi (0%). The prohibited shellfish growing area represents 0.0195 sq mi (91%). There is insufficient information available to assess the Shellfish Harvesting Use because the growing areas within this AU are classified as either entirely prohibited or a combination of approved and prohibited. Alert due to prohibited area >= 0.0001 sq mi. There is insufficient information available to delist the existing Fecal Coliform impairment, so the Shellfish Harvesting Use is evaluated as Not Supporting.	

Shellfish Growing Area Classifications

MassDFG-Division of Marine Fisheries Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 6)

Area Name	Waterbody/Area Description	Classification	Area (Sq. Mi.)	Area (% of AU)
MHB3.7	Route 6	Prohibited	0.01945	90.5%

Aesthetic

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
There were no new/recent data available to assess the status of the Aesthetic Use for this Lee River AU (MA61-01), so it will continue to be assessed as Not Supporting with the impairment for Nutrient/Eutrophication Biological Indicators being carried forward.	

Primary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	

MassDEP conducted BST work prior to 2011 and also 2011-2013, on an unnamed tributary discharging roughly to the middle of this Lee River AU (MA61-01). In 2009, human marker analysis indicated "strong" evidence of a human source just upstream of Elm Street, with a max *E. coli* concentration of 19,863MPN. In 2012/2013 a human source was identified associated with a wetland just upstream of Elm Street (an old cesspool that had not been correctly abandoned, with a washing machine tied in). The Town of Swansea Board of Health arranged to have this source removed. Later in 2013 once corrections had been confirmed, follow-up samples at the Elm Street Bridge were very low, meeting single sample standards both in July and August. No other more recent data are available. The Primary Contact Recreational Use for this Lee River AU (MA61-01) will continue to be assessed as Not Supporting, with the Fecal Coliform and Nutrient/Eutrophication Biological Indicators impairments being carried forward.

Bacteria Data

MassDEP Bacteria Source Tracking (BST) Summary Statement for 2011-2019 (MassDEP Undated 1)

Summary
BST work was conducted prior to 2011 and also 2011-2013, on an unnamed tributary discharging roughly to the middle of the Lee River AU (MA61-01). In 2009, human marker analysis indicated "strong" evidence of a human source just upstream of Elm Street, with a max *E. coli* concentration of 19,863MPN. In 2012/2013 a human source was identified associated with a wetland just upstream of Elm Street (an old cess pool that had not been correctly abandoned, with a washing machine tied in). The Town of Swansea Board of Health arranged to have this source removed. Later in 2013 once corrections had been confirmed, follow-up samples at the Elm Street Bridge were very low, meeting single sample standards both in July and August.

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 6)

Summary
Lee River (MA61-01): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.0195 sq mi (91%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Primary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Secondary Contact Recreation

2022 Use Attainment	**Alert**
Not Supporting	NO
2022 Use Attainment Summary	
MassDEP conducted BST work prior to 2011 and also 2011-2013, on an unnamed tributary discharging roughly to the middle of this Lee River AU (MA61-01). In 2009, human marker analysis indicated "strong" evidence of a human source just upstream of Elm Street, with a max *E. coli* concentration of 19,863MPN. In 2012/2013 a human source was identified associated with a wetland just upstream of Elm Street (an old cesspool that had not been correctly abandoned, with a washing machine tied in). The Town of Swansea Board of Health arranged to have this source removed. Later in 2013 once corrections had been confirmed, follow-up samples at the Elm Street Bridge were very low, meeting single sample standards both in July and August. No other more recent data are available. The Secondary Contact Recreational Use for this Lee River AU (MA61-01) will continue to be assessed as Not Supporting, with the Nutrient/Eutrophication Biological Indicators impairment being carried forward.	

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 6)

Summary
Lee River (MA61-01): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.0195 sq mi (91%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Secondary Contact Recreational Use cannot be assessed for 2022 using the shellfish classification data.

Lee River (MA61-02)

Location:	Route 6, Swansea/Somerset to mouth at Mount Hope Bay, Swansea/Somerset.
AU Type:	ESTUARY
AU Size:	0.51 SQUARE MILES
Classification/Qualifier:	SA: SFO

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Chlorophyll-a		Unchanged
5	5	Dissolved Oxygen		Unchanged
5	5	Fecal Coliform	38906	Unchanged
5	5	Nitrogen, Total		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Shellfish Harvesting	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Chlorophyll-a	Source Unknown (N)	X					
Dissolved Oxygen	Source Unknown (N)	X					
Fecal Coliform	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X			
Fecal Coliform	On-site Treatment Systems (Septic Systems and Similar Decentralized Systems) (Y)			X			
Fecal Coliform	Unspecified Urban Stormwater (Y)			X			
Nitrogen, Total	Source Unknown (N)	X					

Recommendations

2022 Recommendations
AES: Conduct a thorough survey of aesthetics conditions in this Lee River AU (MA61-02), paying close attention to presence/absence of trash & debris, presence/absence of any colored discharge(s) at stormdrain outfall pipes, and presence/absence of septic odor.

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 to assess the status of the Aquatic Life Use for this Lee River AU (MA61-02), so this use will continue to be assessed as Not Supporting, with the Chlorophyll-a, Dissolved Oxygen and Total Nitrogen impairments 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 Lee River AU (MA61-02), therefore the Fish Consumption Use is Not Assessed.	

Shellfish Harvesting

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
Lee River (MA61-02): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.5005 sq mi (98%). The approved shellfish growing area represents 0 sq mi (0%). The Shellfish Harvesting Use is assessed as not supporting because the growing area (normalized to the AU area) is < 100% approved. Based on the new growing area classifications and the prior classifications, the existing fecal coliform impairment is being retained.	

Shellfish Growing Area Classifications

MassDFG-Division of Marine Fisheries Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 6)

Area Name	Waterbody/Area Description	Classification	Area (Sq. Mi.)	Area (% of AU)
MHB1.1	Mount Hope Bay	Conditionally Approved	0.00014	0.0%
MHB3.1	Lower River, Swansea	Conditionally Approved	0.19046	37.4%
MHB3.2	Lees River - Swansea	Prohibited	0.00005	0.0%
MHB3.3	Lees River - Swansea	Prohibited	0.00002	0.0%
MHB3.4	Lees River - Swansea	Prohibited	0.00004	0.0%
MHB3.5	Little Neck, Swansea	Conditionally Approved	0.03075	6.0%
MHB3.6	Little Neck West	Prohibited	0.02264	4.4%
MHB3.7	Route 6	Prohibited	0.04596	9.0%
MHB3.8	Lee River, Somerset	Prohibited	0.21039	41.3%

Aesthetic

2022 Use Attainment	Alert
Not Assessed	YES
2022 Use Attainment Summary	
There are no data available to assess the status of the Aesthetic Use for Lee River (MA61-02), so it is Not Assessed. The Alert identified for some localized and occasional areas of trash/debris and odor is being carried forward.	

Primary Contact Recreation

2022 Use Attainment	Alert
Fully Supporting	YES
2022 Use Attainment Summary	
The Leeside Beach (in Swansea) was infrequently posted for swimming between 2014 and 2019 except during the summers of 2015 and 2016 when posting exceeded 10% (16 and 14%, respectively). Since there were infrequent swimming advisory postings at the Leeside Beach along the western shore of this Lee River AU (MA61-02), the Primary Contact Recreational Use will continue to be assessed as Fully Supporting. An Alert is being identified, however, since there were two years that postings exceeded 10% of the swimming season. The former Alert for some localized and occasional areas of trash/debris and odor is also being carried forward.	

Beach Postings

MassDPH Beach Posting Data Summary (% Bathing Season Posted 2014-2019) (Bailey, Logan Feb. 2, 2021) (MassDEP Undated 3)

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%
5413	Leeside/Swansea	41.71830	-71.19780	41.71900	-71.19670	6%	16%	14%	10%	7%	7%	3

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 6)

Summary
Lee River (MA61-02): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.5005 sq mi (98%). 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	YES
2022 Use Attainment Summary	
The Leeside Beach (in Swansea) was infrequently posted for swimming between 2014 and 2019 except during the summers of 2015 and 2016 when were 16 and 14% of the swimming season, respectively. The Secondary Contact Recreational Use for Lee River (MA61-02) will continue to be assessed as Fully Supporting since there were infrequent swimming advisory postings at the Leeside Beach. The Alert due to some localized and occasional areas of trash/debris and odor is being carried forward.	

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 6)

Summary
Lee River (MA61-02): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 0.5005 sq mi (98%). 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.

Lewin Brook (MA61-09)

Location:	Headwaters, west of Sharps Lot Road, Swansea to the inlet of the unnamed impoundment north of Lewin Lane, Swansea (impoundment upstream of dam, NATID# MA03247).
AU Type:	RIVER
AU Size:	1.9 MILES
Classification/Qualifier:	B

No usable data were available for Lewin Brook (MA61-09) 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	

Lewin Brook Pond (MA61011)

Location:	Swansea.
AU Type:	FRESHWATER LAKE
AU Size:	11 ACRES
Classification/Qualifier:	B

No usable data were available for Lewin Brook Pond (MA61011) 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
4a	4a	Mercury in Fish Tissue	33880	Unchanged

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

Mount Hope Bay (MA61-06)

Location:	The Massachusetts portion just upstream of the Braga Bridge, Fall River/Somerset to the state border Fall River, MA/Tiverton, RI to the line from Brayton Point Somerset to MA/RI border approximately 3/4 of a mile due east of Spar Island, RI.
AU Type:	ESTUARY
AU Size:	2.32 SQUARE MILES
Classification/Qualifier:	SB: SFR, CSO

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Chlorophyll-a		Unchanged
5	5	Dissolved Oxygen		Unchanged
5	5	Enterococcus	38908	Unchanged
5	5	Fecal Coliform	38908	Unchanged
5	5	Fish Bioassessments		Unchanged
5	5	Nitrogen, Total		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Shellfish Harvesting	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Chlorophyll-a	Municipal Point Source Discharges (Y)	X					
Chlorophyll-a	Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO) (N)	X					
Dissolved Oxygen	Source Unknown (N)	X					
Enterococcus	Combined Sewer Overflows (Y)					X	X
Fecal Coliform	Combined Sewer Overflows (Y)			X			
Fecal Coliform	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X			
Fecal Coliform	On-site Treatment Systems (Septic Systems and Similar Decentralized Systems) (N)			X			
Fecal Coliform	Unspecified Urban Stormwater (Y)			X			
Fecal Coliform	Waterfowl (N)			X			
Fish Bioassessments	Historical Source, No Longer Present (Y)	X					
Nitrogen, Total	Municipal Point Source Discharges (Y)	X					
Nitrogen, Total	Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO) (N)	X					

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
Analysis of recent biological and water quality data for this Mount Hope Bay AU (MA61-06) can be found in Appendix 18 (Mount Hope Bay Shore Coastal Drainage Area assessment and listing decision summary document) of the 2018/2020 IR (MassDEP 2021). The Aquatic Life Use for this Mount Hope Bay AU (MA61-06) will continue to be assessed as Not Supporting with the Chlorophyll-a, Dissolved Oxygen, Fish Bioassessments, and Total Nitrogen impairments being carried forward.	

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Since there is no site-specific fish consumption advisory for this Mount Hope Bay AU (MA61-06), the Fish Consumption Use is Not Assessed.	

Shellfish Harvesting

2022 Use Attainment	Alert
Not Supporting	YES
2022 Use Attainment Summary	
Mount Hope Bay (MA61-06): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 2.3135 sq mi (100%). The sum of the approved, conditionally approved, and restricted shellfish growing areas represents 0.6832 sq mi (29%). The prohibited shellfish growing area represents 1.6303 sq mi (70%). 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 will continue to be evaluated as Not Supporting.	

Shellfish Growing Area Classifications

MassDFG-Division of Marine Fisheries Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 6)

Area Name	Waterbody/Area Description	Classification	Area (Sq. Mi.)	Area (% of AU)
MHB1.2	Mount Hope Bay	Prohibited	0.31811	13.7%
MHB1.3	Mount Hope Bay	Prohibited	1.04660	45.1%
MHB2.0	Taunton River	Restricted	0.03589	1.5%
MHB2.3	Taunton River	Restricted	0.64732	27.9%
MHB2.5	Middle Street	Prohibited	0.17178	7.4%
MHB2.6	Dominion Energy	Prohibited	0.09378	4.0%

Aesthetic

2022 Use Attainment	Alert
Not Assessed	YES
2022 Use Attainment Summary	
There are no data available to assess the status of the Aesthetic Use for Mount Hope Bay (MA61-06), so it is Not Assessed. The Alert will be carried forward due to the high possibility of aesthetic quality degradation (e.g., odors, turbidity, trash/debris) from the multiple CSO discharges to Mount Hope Bay.	

Primary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
There are no new/recent Enterococci bacteria data available to assess the status of the Primary Contact Recreation Use for this Mount Hope Bay AU (MA61-06) so it will continue to be assessed as Not Supporting with the Enterococcus impairment being carried forward.	

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 6)

Summary
Mount Hope Bay (MA61-06): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 2.3135 sq mi (100%). 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	
There are no new/recent Enterococci bacteria data available, so the Secondary Contact Recreation Use for this Mount Hope Bay AU (MA61-06), will continue to be assessed as Not Supporting, with the Enterococcus impairment being carried forward.	

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 6)

Summary
Mount Hope Bay (MA61-06): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 2.3135 sq mi (100%). 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.

Mount Hope Bay (MA61-07)

Location:	the Massachusetts portion from mouth of Cole River (at old railway grade), Swansea to state border Swansea, MA/Warren, RI to the line from Brayton Point, Somerset to MA/RI border approximately 3/4 of a mile due east of Spar Island, RI to the line between Bay Point, Swansea and Brayton Point, Somerset (the mouth of the Lee River).
AU Type:	ESTUARY
AU Size:	1.84 SQUARE MILES
Classification/Qualifier:	SA: SFO

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Chlorophyll-a		Unchanged
5	5	Dissolved Oxygen		Unchanged
5	5	Enterococcus		Removed
5	5	Fecal Coliform	38909	Unchanged
5	5	Fish Bioassessments		Unchanged
5	5	Nitrogen, Total		Unchanged

Impairment	Source (Confirmed Y/N)	Fish, other Aquatic Life and Wildlife	Fish Consumption	Shellfish Harvesting	Aesthetic	Primary Contact Recreation	Secondary Contact Recreation
Chlorophyll-a	Municipal Point Source Discharges (Y)	X					
Chlorophyll-a	Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO) (Y)	X					
Dissolved Oxygen	Municipal Point Source Discharges (Y)	X					
Dissolved Oxygen	Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO) (Y)	X					
Fecal Coliform	Combined Sewer Overflows (Y)			X			
Fecal Coliform	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X			
Fecal Coliform	Illicit Connections/Hook-ups to Storm Sewers (Y)			X			
Fecal Coliform	On-site Treatment Systems (Septic Systems and Similar Decentralized Systems) (N)			X			
Fecal Coliform	Unspecified Urban Stormwater (Y)			X			
Fecal Coliform	Waterfowl (N)			X			
Fish Bioassessments	Historical Source, No Longer Present (Y)	X					
Nitrogen, Total	Municipal Point Source Discharges (Y)	X					
Nitrogen, Total	Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO) (Y)	X					

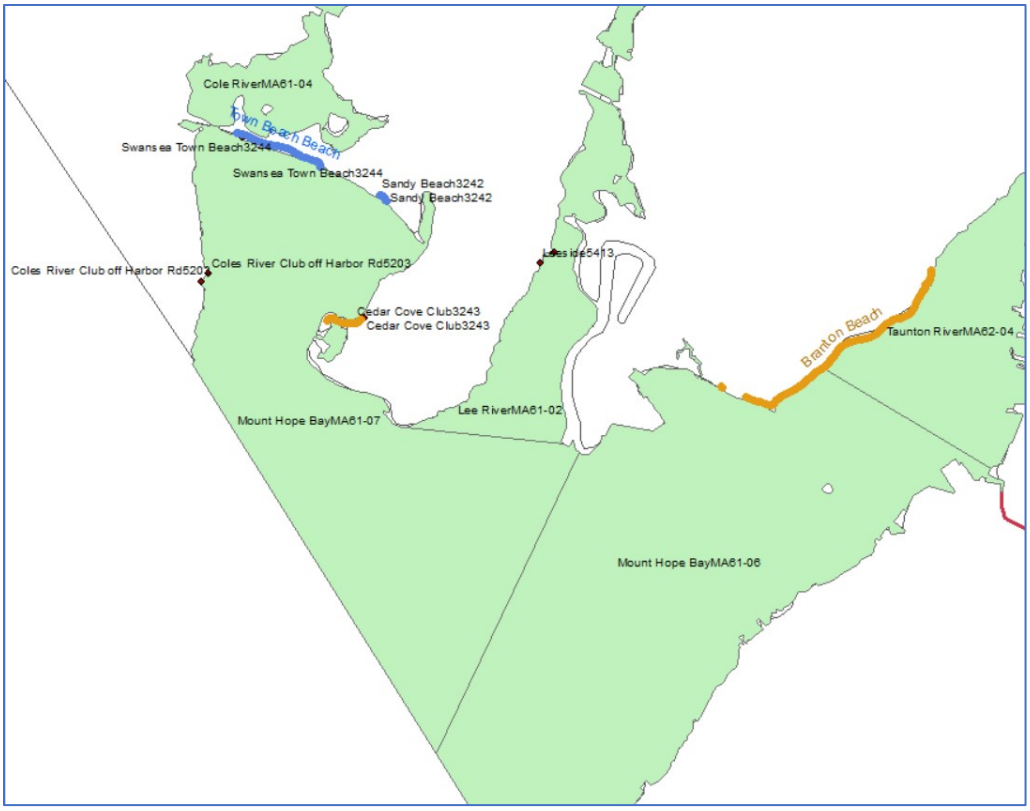
Supporting Information for Removed Impairments

2018/20 Removed Impairment	Removal Reason	Removal Comment
Enterococcus	Applicable WQS attained; based on new data	This Mount Hope Bay AU (MA61-07) was first listed as impaired for Enterococcus bacteria in the 2016 reporting cycle. The impairment decision was based on Massachusetts Department of Public Health (MA DPH) 'Beach Posting' data from four public beach locations along the Swansea shoreline (Coles River Club, Swansea Town, Sandy, and Cedar Cove Club beaches) from 2005 through 2013. Three of the annual measures (35 total) exceeded 10%; one at Cedar Cove Club (21% in 2010) and two at Sandy Beach (18% in 2009 and 19% in 2013). The exceedance in 2013 was also the most recent year of that dataset. Considering the percentage of beach postings and how frequently they occur (i.e., whether the percentage of annual postings exceeds 10%) is one of the Primary Contact Recreational Use attainment impairment thresholds described in the CALM Guidance Document (MassDEP 2022). For the 2022 reporting cycle, beach posting data were available for the same four beaches (Coles River Club, Swansea Town, Sandy, and Cedar Cove Club) from 2014 through 2019. In this most recent period only one of the four beaches (Cedar Cove Club) was posted for slightly more than 10% during one swimming season (2016), representing only one of 24 total annual measures, and therefore indicative of improved conditions. The Coles River Club was posted for 10% of the bathing season in 2018 (not an exceedance of the threshold) while none of the four beaches exceeded the >10% posting threshold in the most recent three years. The Sandy Beach location, which had two years of frequent postings used to justify the original impairment decision, had 0% postings for the most recent four years of data (2016-2019). Based on the overall decrease in occurrences of beach postings that exceeded the 10% threshold (as described in the CALM Guidance Document MassDEP 2022), and the lack of any exceedances of that use impairment threshold in the most recent three years of data, the Enterococcus impairment in this Mount Hope Bay AU (MA61-07) is being delisted.

Enterococcus

The weekly beach data collected at the four beaches by the MA DPH (see screen capture of beach locations) provides good spatial and temporal coverage of the "inner-bay" area of this AU.

Beach locations Mount Hope Bay AU (MA61-07) (MassGIS 2005):



Original data summary used to make Enterococcus impairment decision:

MA DPH Beach Posting Data (2005-2013) (MassDEP Undated 7)

Id	Name	Town	2005	2006	2007	2008	2009	2010	2011	2012	2013
3242	Sandy Beach	Swansea	0%	4%	0%	0%	18%	8%	4%	7%	19%
3243	Cedar Cove Club	Swansea		5%	1%	0%	0%	21%	0%	0%	0%
3244	Swansea Town Beach	Swansea	0%	3%	0%	0%	0%	9%	4%	0%	4%
5203	Coles River Club off Harbor Rd	Swansea	0%	0%	0%	0%	3%	0%	0%	0%	0%

Current data summary used to remove Enterococcus impairment:

MassDPH Beach Posting Data Summary (% Bathing Season Posted 2014-2019) (Bailey, Logan Feb. 2, 2021) (MassDEP Undated 3)

Beach ID	Beach Name/Town	2014	2015	2016	2017	2018	2019
3242	Sandy Beach/Swansea	6%	2%	0%	0%	0%	0%
3243	Cedar Cove Club/Swansea	0%	0%	14%	6%	3%	0%
3244	Swansea Town Beach/Swansea	0%	2%	0%	0%	2%	0%
5203	Coles River Club off Harbor Rd/Swansea	0%	0%	3%	5%	10%	0%

Recommendations

2022 Recommendations
ALU: Continue to evaluate buoy data (DO, temperature, other water quality measurements) from Mount Hope Bay since additional nutrient (nitrogen) removal will likely be required of Taunton River NPDES discharges and as CSO treatment and minimization continues to be implemented in Fall River so improved conditions should be forthcoming over time. Continued evaluation of any fisheries monitoring data in Mount Hope Bay (MA61-06 and MA61-07) should also be conducted (last evaluation Brayton Point's long-term entrainment/impingement and heat effects on the bay indicated effects not yet resolved; climate change effects may also affect the relative abundance of different species of fish and other aquatic organisms in this embayment so a different point of stability than in previous years may ultimately be the situation. REC: Continue to monitor beach posting information at the four Swansea public beaches along the shoreline of this Mount Hope Bay AU (MA61-07) (Coles River Club, Swansea Town, Sandy, and Cedar Cove Club beaches) to assure Enterococcus bacteria concentrations continue to meet Primary Contact Recreational Use criteria.

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
Analysis of recent biological and water quality data for this Mount Hope Bay AU (MA61-07) can be found in Appendix 18 (Mount Hope Bay Shore Coastal Drainage Area assessment and listing decision summary document) of the 2018/2020 IR (MassDEP 2021). The Aquatic Life Use for this Mount Hope Bay AU (MA61-07) will continue to be assessed as Not Supporting with the Chlorophyll-a, Dissolved Oxygen, Fish Bioassessments, and Total Nitrogen impairments being carried forward.	

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Since there is no site-specific fish consumption advisory for this Mount Hope Bay AU (MA61-07), the Fish Consumption Use is Not Assessed.	

Shellfish Harvesting

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
Mount Hope Bay (MA61-07): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 1.8342 sq mi (100%). The approved shellfish growing area represents 0 sq mi (0%). The Shellfish Harvesting Use is assessed as not supporting because the growing area (normalized to the AU area) is < 100% approved. Based on the new growing area classifications and the prior classifications, the existing fecal coliform impairment is being retained.	

Shellfish Growing Area Classifications

MassDFG-Division of Marine Fisheries Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 6)

Area Name	Waterbody/Area Description	Classification	Area (Sq. Mi.)	Area (% of AU)
MHB1.1	Mount Hope Bay	Conditionally Approved	0.79704	43.4%
MHB1.2	Mount Hope Bay	Prohibited	0.30393	16.6%
MHB3.1	Lower River, Swansea	Conditionally Approved	0.00240	0.1%

Area Name	Waterbody/Area Description	Classification	Area (Sq. Mi.)	Area (% of AU)
MHB3.8	Lee River, Somerset	Prohibited	0.00585	0.3%
MHB4.01	Seaview Ave Mooring Area	Conditionally Approved	0.04916	2.7%
MHB4.1	Coles River	Conditionally Approved	0.51317	27.9%
MHB4.2	Coles River	Prohibited	0.00303	0.2%
MHB4.3	Swansea Marina and Mooring Area	Conditionally Approved	0.15963	8.7%

Aesthetic

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
No data are available to assess the status of the Aesthetic Use for this Mount Hope Bay AU (MA61-07), so it is Not Assessed.	

Primary Contact Recreation

2022 Use Attainment	Alert
Fully Supporting	NO
2022 Use Attainment Summary	
MassDEP BST work was conducted from 2015-2016 at one unnamed tributary discharging into this Mount Hope Bay AU (MA61-07) in the northwest corner. *E. coli* concentrations in this tributary ranged 10 to 5,172MPN. In 2016, human marker analysis (just upstream of Pearse Rd) indicated "inconclusive" evidence of a human source. No correctable source was ever found. Four Swansea beaches (Cedar Cove Club, Swansea Town, Coles River Club, & Sandy Beach) were infrequently posted for swimming between 2014 and 2019, except at the Cedar Cove Club during the summer of 2016 when posting exceeded 10% (was 14%). The Primary Contact Recreational Use for this Mount Hope Bay AU (MA61-07) is assessed as Fully Supporting since there were very few if any swimming advisory postings at the Cedar Cove Club, Swansea Town, Coles River Club, and Sandy beaches between 2014 and 2019. The Enterococcus impairment is being removed (see justification in removal comments).	

Bacteria Data

MassDEP Bacteria Source Tracking (BST) Summary Statement for 2011-2019 (MassDEP Undated 1)

Summary
BST work was conducted from 2015-2016 at one unnamed tributary discharging near the upstream end of the Mount Hope Bay AU (MA61-07). *E. coli* concentrations on the tributary ranged 10 to 5,172MPN. In 2016, human marker analysis (just upstream of Pearse Rd) indicated "inconclusive" evidence of a human source. No correctable source was ever found.

Beach Postings

MassDPH Beach Posting Data Summary (% Bathing Season Posted 2014-2019) (Bailey, Logan Feb. 2, 2021) (MassDEP Undated 3)

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%
3242	Sandy Beach/Swansea	41.72249	-71.21090	41.72212	-71.21030	6%	2%	0%	0%	0%	0%	0
3243	Cedar Cove Club/Swansea	41.71474	-71.21300	41.71504	-71.21220	0%	0%	14%	6%	3%	0%	1
3244	Swansea Town Beach/Swansea	41.72603	-71.22200	41.72443	-71.21580	0%	2%	0%	0%	2%	0%	0
5203	Coles River Club off Harbor Rd/Swansea	41.71774	-71.22490	41.71727	-71.22540	0%	0%	3%	5%	10%	0%	1

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 6)

Summary
Mount Hope Bay (MA61-07): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 1.8342 sq mi (100%). 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	
The four Swansea beaches (Cedar Cove Club, Swansea Town, Coles River Club, & Sandy Beach) along the shore of this Mount Hope Bay AU (MA61-07) were rarely, if at all, posted with swimming advisories between 2014 and 2019 (only Cedar Cove Club Beach posting slightly exceeded 10% in one of six years). The Secondary Contact Recreational Use for this Mount Hope Bay AU (MA61-07) is assessed as Fully Supporting based on the general lack of any beach postings at the Cedar Cove Club, Swansea Town, Coles River Club, and Sandy Beaches. No Alert is needed.	

Shellfish Growing Area Classifications

MassDEP Summary Statement for MassDFG Shellfish Growing Area Classification Data (Bettencourt August 25, 2021) (MassDEP Undated 6)

Summary
Mount Hope Bay (MA61-07): The total of all shellfish growing area classifications (Bettencourt August 25, 2021) within this AU is 1.8342 sq mi (100%). 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.

North Watuppa Pond (MA61004)

Location:	Fall River/Westport.
AU Type:	FRESHWATER LAKE
AU Size:	1728 ACRES
Classification/Qualifier:	A: PWS, ORW

No usable data were available for North Watuppa Pond (MA61004) 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
4a	4a	Mercury in Fish Tissue	33880	Unchanged

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

Quequechan River (MA61-05)

Location:	Outlet South Watuppa Pond, Fall River to confluence with Mt. Hope Bay at mouth of Taunton River (just upstream of the Braga Bridge), Fall River.
AU Type:	RIVER
AU Size:	2.4 MILES
Classification/Qualifier:	B: WWF, CSO

No usable data were available for Quequechan River (MA61-05) 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	(Habitat Assessment*)		Unchanged
5	5	Algae		Unchanged
5	5	Dissolved Oxygen		Unchanged
5	5	Escherichia Coli (E. Coli)		Unchanged
5	5	Nutrient/Eutrophication Biological Indicators		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
(Debris*)	Unspecified Urban Stormwater (Y)			X	X	X
(Habitat Assessment*)	Channelization (Y)	X				
Algae	Combined Sewer Overflows (Y)			X	X	X
Algae	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)			X	X	X
Algae	Unspecified Urban Stormwater (Y)			X	X	X
Dissolved Oxygen	Combined Sewer Overflows (Y)	X				
Dissolved Oxygen	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X				
Dissolved Oxygen	Unspecified Urban Stormwater (Y)	X				
Escherichia Coli (E. Coli)	Combined Sewer Overflows (Y)				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				
Nutrient/Eutrophication Biological Indicators	Unspecified Urban Stormwater (Y)	X				
Trash	Combined Sewer Overflows (Y)			X	X	X

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

Sawdy Pond (MA61005)

Location:	Westport/Fall River.
AU Type:	FRESHWATER LAKE
AU Size:	369 ACRES
Classification/Qualifier:	B

No usable data were available for Sawdy Pond (MA61005) 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
4a	4a	Mercury in Fish Tissue	42407	Unchanged

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

South Watuppa Pond (MA61006)

Location:	Fall River/Westport.
AU Type:	FRESHWATER LAKE
AU Size:	1473 ACRES
Classification/Qualifier:	B

2018/20 AU Category	2022 AU Category	Impairment	ATTAINS Action ID	Impairment Change Summary
3	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
Harmful Algal Blooms	Source Unknown (N)			X	X	X

Recommendations

2022 Recommendations
ALU: Monitor for nutrients and indicators of nutrient enrichment.

Designated Use Attainment Decisions

Fish, other Aquatic Life and Wildlife

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
The evaluation of the Aquatic Life Use for South Watuppa Pond (MA61006), using data collected by MassDEP biologists during the summer of 2018 as part of the probabilistic lake surveys (MAP2), will be conducted in the next IR reporting cycle. The Aquatic Life Use for South Watuppa Pond is currently Not Assessed.	

Fish Consumption

2022 Use Attainment	Alert
Not Assessed	NO
2022 Use Attainment Summary	
Fish toxics sampling was performed by MassDEP WPP biologists at South Watuppa Pond in Fall River/Westport (MA61006) in June 2018 as part of the probabilistic lake surveys (MAP2). Edible fillets were analyzed for the presence of mercury, metals, and organochlorine pesticides. No site-specific fish consumption advisory was issued by MA DPH, therefore, the Fish Consumption Use for this South Watuppa Pond AU (MA61006) is Not Assessed.	

MassDEP fish toxics sampling information (2018-2020) and MassDPH Fish Consumption Advisory information (2019-2021): (MassDEP 2018) (MassDEP Undated 8)

Fish toxics sampling was performed by MassDEP WPP biologists at South Watuppa Pond in Fall River/Westport (MA61006) in June 2018 as part of the probabilistic lake surveys (MAP2). Edible fillets were analyzed for the presence of mercury, metals, and organochlorine pesticides. No site-specific fish consumption advisory was issued by MassDPH.

Aesthetic

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	
C-HAB postings for South Watuppa Pond (MA61006) were reported to MassDPH for 147 days in 2018 (advisory was issued based on sample analysis) and 330 days in 2019 (not issued or confirmed based on samples). The Aesthetics Use for South Watuppa Pond is assessed as Not Supporting since blooms >20 days in length were reported in two recent years 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 3)

C-HAB Summary Statement
C-HAB postings for South Watuppa Pond (MA61006) were reported to MassDPH for 147 days in 2018 (advisory was issued based on sample analysis) and 330 days in 2019 (not issued or confirmed based on samples). Since blooms >20 days in length were reported in 2 recent years, 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
South Watuppa Pond	Advisory issued based on sample analysis				147		1	no
South Watuppa Pond	Not issued or confirmed by sampling					330	1	no

Primary Contact Recreation

2022 Use Attainment	Alert
Not Supporting	NO
2022 Use Attainment Summary	

C-HAB postings for South Watuppa Pond (MA61006) were reported to MA DPH for 147 days in 2018 (advisory was issued based on sample analysis) and 330 days in 2019 (not issued or confirmed based on samples). The Primary Contact Recreational Use for South Watuppa Pond is assessed as Not Supporting since blooms >20 days in length were reported in two recent years so the Harmful Algal Blooms impairment is being added.

Secondary Contact Recreation

2022 Use Attainment	**Alert**
Not Supporting	NO
2022 Use Attainment Summary	
C-HAB postings for South Watuppa Pond (MA61006) were reported to MA DPH for 147 days in 2018 (advisory was issued based on sample analysis) and 330 days in 2019 (not issued or confirmed based on samples). Since blooms >20 days in length were reported in two recent years, the Secondary Contact Recreational Use for South Watuppa Pond is assessed as Not Supporting, so the Harmful Algal Blooms impairment is being added.	

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, 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.

Chase, B. "Diadromous Fish Restoration Priority List Version 4.0 All Regions (Excel sheet)." Massachusetts Division of Marine Fisheries, New Bedford, MA, 2020.

MassDEP. "2018 DWM Environmental Monitoring Overview." CN 444.0. Division of Watershed Management, Massachusetts Department of Environmental Protection. 2018. https://www.mass.gov/doc/2018-environmental-monitoring-summary/download (accessed July 2021).

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. "Open file analysis of 2011-2019 bacteria source tracking data collected by MassDEP Southeast Regional Office staff." Southeast Regional Office, Massachusetts Department of Environmental Protection, Lakeville, MA, Undated 1.

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 2.

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 3.

MassDEP. "Open file analysis of MassDEP WPP benthic survey data (2011-2018) using 2022 CALM guidance." Watershed Planning Program, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 4.

MassDEP. "Open file analysis of MassDEP WPP water quality data collected between 2011 and 2018 using 2022 CALM guidance." Division of Watershed Management, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 5.

MassDEP. "Open file analysis of shellfish growing area classifications using 2022 CALM guidance." Data provided by MassDFG Division of Marine Fisheries staff in August 25, 2021 email, Division of Watershed Management, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 6.

MassDEP. "Open files of repository documents for the 2016 Integrated Report cycle." Division of Watershed Management, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 7.

MassDEP. "Open files of unpublished, validated water quality monitoring data, field sheet data, and GIS datalayers in development." Division of Watershed Management, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 8.

MassDFG. *Fish Community Data 1964-2019.* Database submitted to MassDEP on 24 November 2020. Division of Fisheries and Wildlife, Massachusetts Department of Fish and Game. Westborough, MA, November 24, 2020.

MassGIS. "MassGIS Data: Marine Beaches, Data provided by MassDPH's Environmental Toxicology Program in the Center for Environmental Health." Bureau of Geographic Information, Boston, MA. January 2005. https://www.mass.gov/info-details/massgis-data-marine-beaches.