Attachment 3:

No Discharges from MassDOT Outfalls Assessments

List of Impaired Water Bodies

Waterbody ID	Waterbody Name
MA34005	Arcadia Lake*
MA34051	Metacomet Lake*
MA42005	Buffumville Lake*
MA42014	Dresser Hill Pond*
MA42043	Pierpoint Meadow Pond*
MA81103	Plow Shop Pond*
MA83005	Fosters Pond
MA95-16	Pocasset River
MA95-24	Little Sippewisset Marsh
MA95-47	Back River
MA95-48	Eel Pond
MA96-02	Bumps River
MA96-04	Centerville River

*Not on original L-1 List.

06/08/2014

Impaired Waters Assessment for Arcadia Lake (MA34005)

Summary

		Stormwater[1]
Impaired Waters[2]	**Impairments**	Non-native aquatic plants, nutrient/eutrophication biological indicators
	Category:	5 (Waters requiring a TMDL)
	WQ Assessment	Connecticut River Watershed 2003 Water Quality Assessment Report (MassDEP, October 2008) [3]
Location	**Towns:**	Belchertown
	MassDOT Roads:	Route 9
Assessment Methods(s)	**7U (IC Method)**	☒
	No Discharge	☒

Site Description

Arcadia Lake (MA34005) is a 32 acre water body located in the Connecticut River Watershed in Belchertown, MA. The lake is located east and north of Federal Street, and west of Lake Drive and Amherst Road (Route 9). The total watershed draining to Arcadia Lake is 553 acres (0.86 square miles), as shown in **Figure 1**. Arcadia Lake's subwatershed is 134 acres and is also shown in **Figure 1**. MassDEP's Water Quality Assessment Report[3] for this receiving water identified the Aquatic Life Use with an "Impaired" status based on the presence of a non-native species (Macrophyte). All other uses were not assessed.

MassDOT-owned Route 9 (Amherst Road) in Belchertown is a two lane roadway that runs in a north-south direction along the east side of Arcadia Lake. Approximately 0.31 miles (1,650 feet) of this roadway passes through the Arcadia Lake subwatershed, and is about 250-feet away from Arcadia Lake at its closest point. After review of aerials and record plans, and a site visit on January 30, 2014, it was determined that Route 9 does not directly contribute to Arcadia Lake; an embankment with railroad tracks is located between Route 9 and Arcadia Lake, which acts as a berm.

1 MassDOT, December 2012. Impaired Waters Assessment for Impaired Waters with Impairments Unrelated to Stormwater. Available at: http://www.mhd.state.ma.us/downloads/projDev/ImpairedWaters_3/Year3_ImpairedWatersAssessment_1.pdf#page=308

2 MassDEP, 2013. Massachusetts Year 2012 Integrated List of Waters – Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act. Massachusetts. Available at: http://www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf

3 MassDEP, 2008. Connecticut River Watershed 2003 Water Quality Assessment Report. Available at: http://www.mass.gov/eea/docs/dep/water/resources/07v5/34wqar07.pdf

Stormwater collects and infiltrates at the low point within what appears to be a wetland on the east side of the berm.

As defined in MassDOT's assessment methodologies[4], since this portion of MassDOT urban area property does not directly contribute stormwater to Arcadia Lake, further assessment of this water body is not warranted under the Impaired Waters Program. MassDOT will continue to implement the measures outlined in its Stormwater Management Plan (SWMP) statewide to minimize the impacts of stormwater from its property.

[4] MassDOT, 6 April, 2011. Description of MassDOT's Application of Impervious Cover Method in BMP 7U (MassDOT Application of IC Method). http://www.mhd.state.ma.us/downloads/projDev/BMP_7U_ImpairedWaterbodiesAssessment.pdf

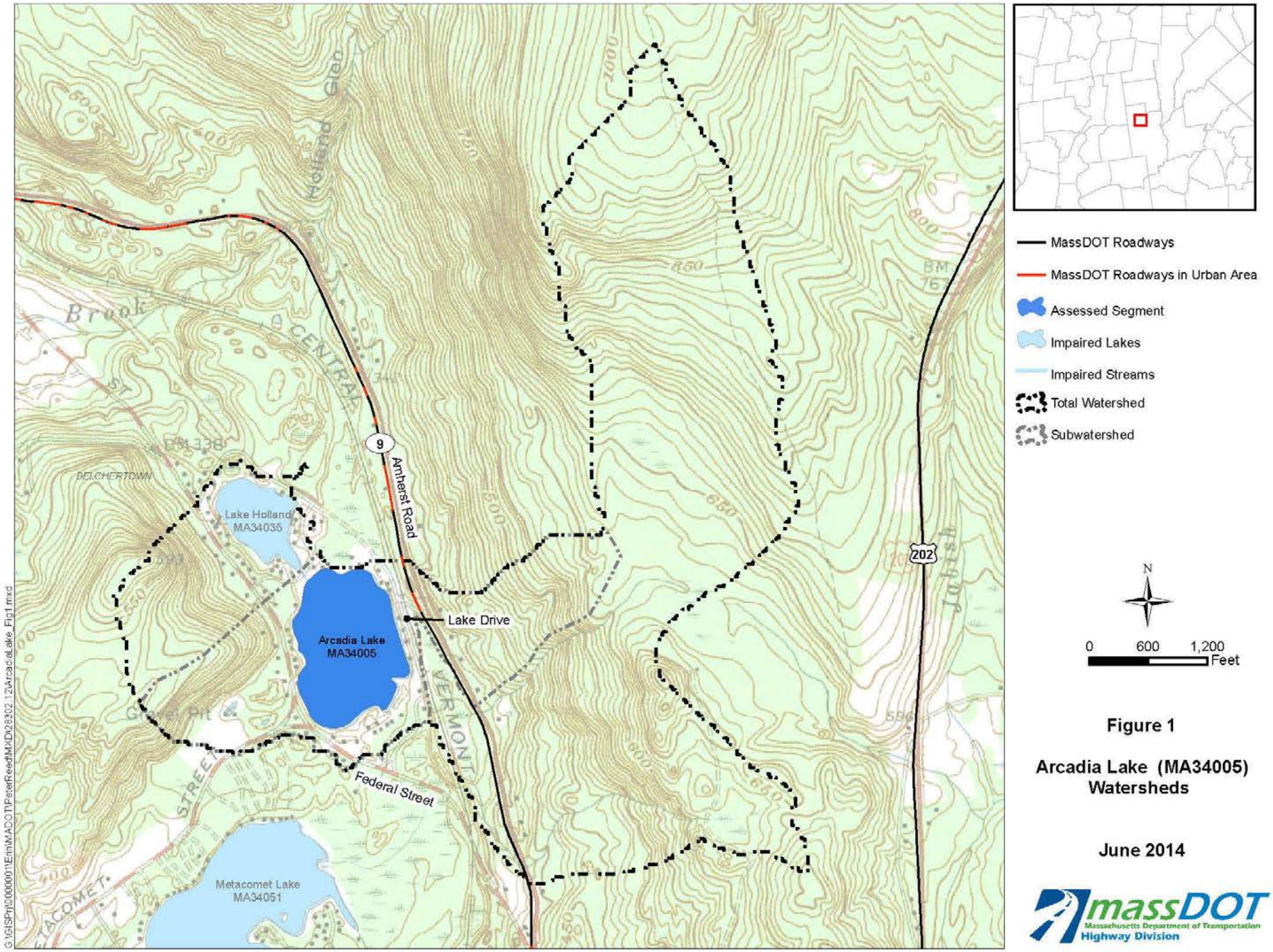

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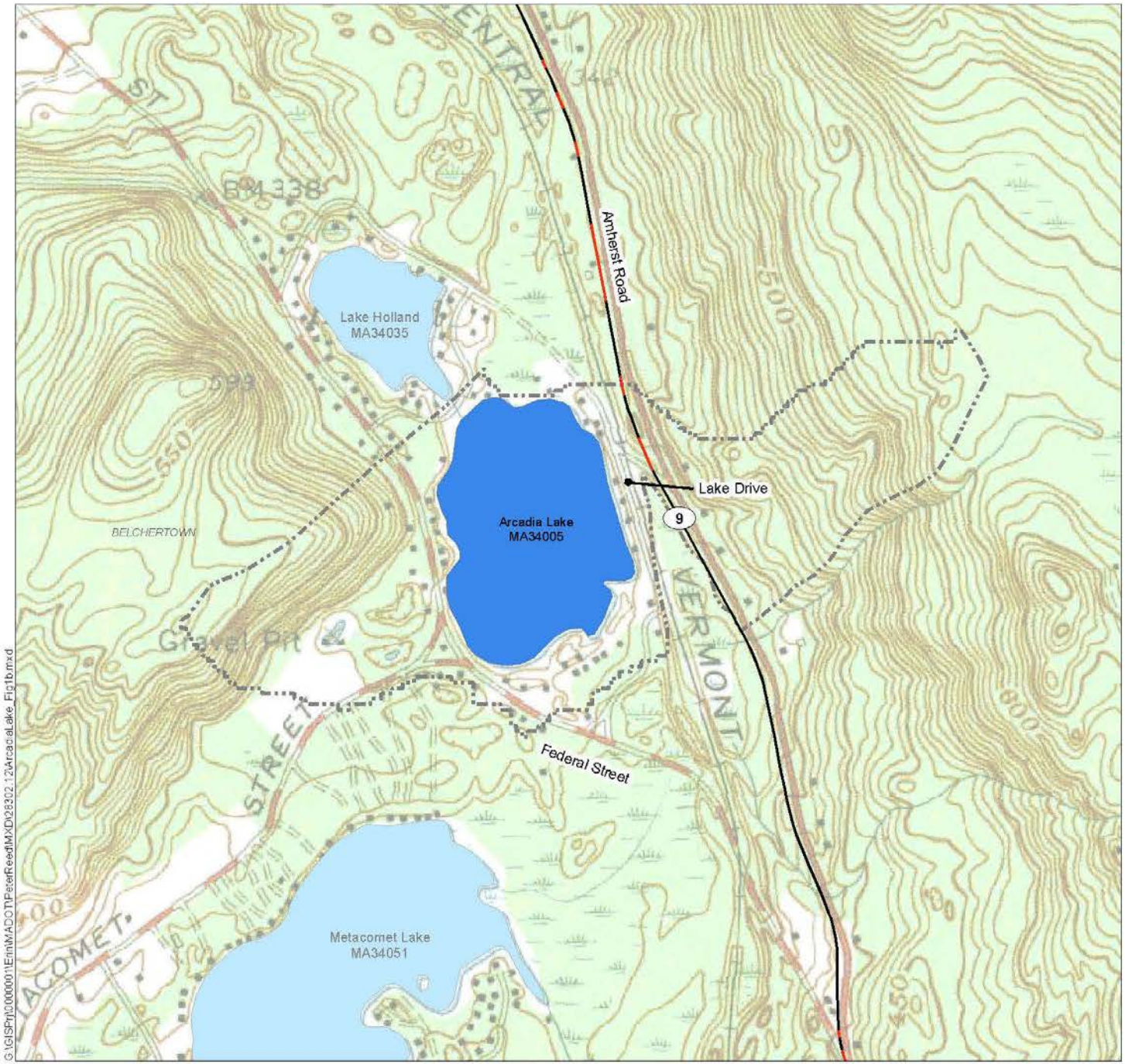
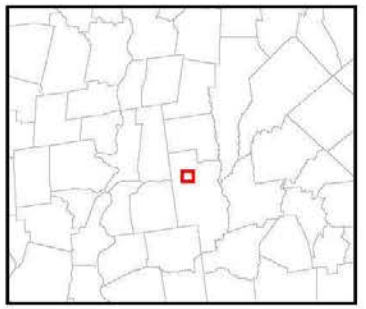
Figure 1

Arcadia Lake (MA34005) Watersheds

June 2014

massDOT
Massachusetts Department of Transportation
Highway Division





MassDOT Roadways

MassDOT Roadways in Urban Area

Assessed Segment

Impaired Lakes

Impaired Streams

Subwatershed

N

0 400 800

Feet

Figure 1b

Arcadia Lake (MA34005)
Sub Watershed

June 2014

massDOT
Massachusetts Department of Transportation
Highway Division

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Impaired Waters Assessment for Metacomet Lake (MA34051)

Summary

		Stormwater[1]
Impaired Waters[2]	**Impairments**	Non-native aquatic plants, low dissolved oxygen (DO)
	Category:	5 (Waters requiring a TMDL)
	WQ Assessment	Connecticut River Watershed 2003 Water Quality Assessment Report (MassDEP, October 2008)[3]
Location	**Towns:**	Belchertown
	MassDOT Roads:	Route 9
Assessment Methods(s)	**7U (IC Method)**	☒
	No Discharge	☒

Site Description

Metacomet Lake (MA34051) is a 51 acre water body located in the Connecticut River Watershed in Belchertown, MA. The lake is located north of Bay Road, southeast of Metacomet Street, and southwest of Federal Street and Amherst Road (Route 9). The total watershed draining to Metacomet Lake is 325 acres (0.51 square miles). Metacomet Lake's total and subwatershed are the same, as shown in **Figure 1.** MassDEP's Water Quality Assessment Report[3] for this receiving water identified the Aquatic Life Use with an "Impaired" status since approximately 34% of the lake had low dissolved oxygen levels and due to the presence of two invasive non-native macrophytes. The report identified the Aesthetic Use with a "Supported" status. All other uses were not assessed.

MassDOT-owned Route 9 (Amherst Road) in Belchertown is a two lane roadway that runs in a north-south direction to the east of Metacomet Lake. Approximately 0.05 miles (250 feet) of this roadway passes through the Metacomet Lake watershed, and is about 0.34 miles (1800-feet) away from Metacomet Lake. After review of aerials and record plans, and a site visit on January 30, 2014, it was determined that Route 9 does not directly contribute to Metacomet Lake; Federal Street and railroad tracks are located between Route 9 and Metacomet Lake, which act as a berm.

1 MassDOT, December 2012. Impaired Waters Assessment for Impaired Waters with Impairments Unrelated to Stormwater. Available at: http://www.mhd.state.ma.us/downloads/projDev/ImpairedWaters_3/Year3_ImpairedWatersAssessment_1.pdf#page=308

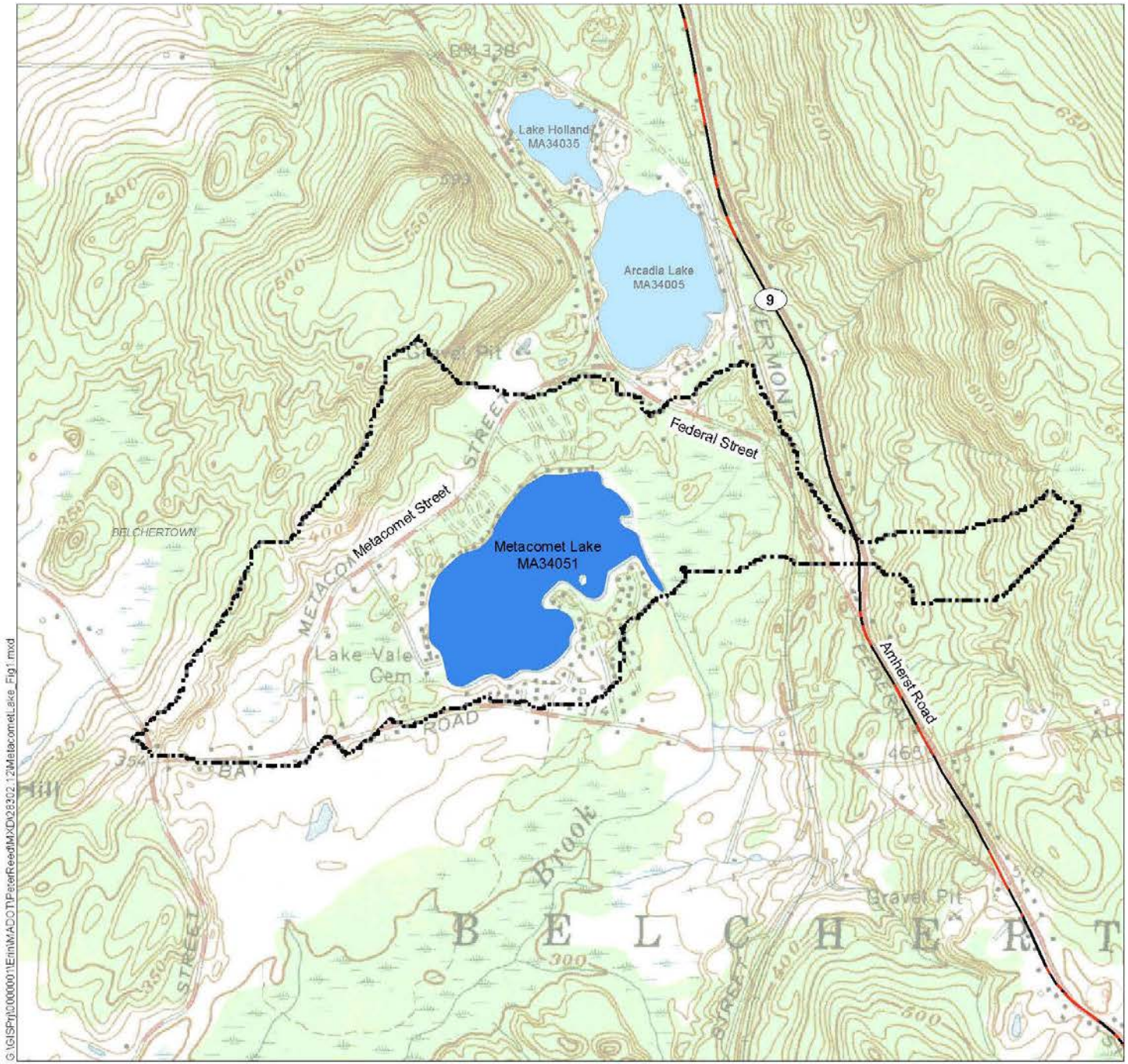
2 MassDEP, 2013. Massachusetts Year 2012 Integrated List of Waters – Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act. Massachusetts. Available at: http://www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf

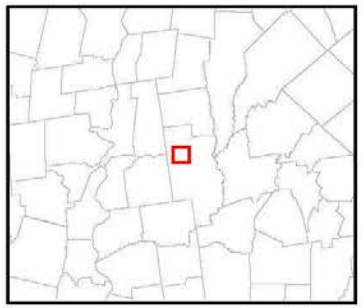
3 MassDEP, 2008. Connecticut River Watershed 2003 Water Quality Assessment Report. Available at: http://www.mass.gov/eea/docs/dep/water/resources/07v5/34wqar07.pdf

Stormwater collects and infiltrates within the low areas and wetlands located between Route 9 and Metacomet Lake.

As defined in MassDOT's assessment methodologies[4], since this portion of MassDOT urban area property does not directly contribute stormwater to Metacomet Lake, further assessment of this water body is not warranted under the Impaired Waters Program. MassDOT will continue to implement the measures outlined in its Stormwater Management Plan (SWMP) statewide to minimize the impacts of stormwater from its property.

[4] MassDOT, 6 April, 2011. Description of MassDOT's Application of Impervious Cover Method in BMP 7U (MassDOT Application of IC Method). http://www.mhd.state.ma.us/downloads/projDev/BMP_7U_ImpairedWaterbodiesAssessment.pdf





MassDOT Roadways

MassDOT Roadways in Urban Area

Assessed Segment

Impaired Lakes

Impaired Streams

Total & Sub Watershed

N

0 600 1,200 Feet

Figure 1

Metacomet Lake (MA34051) Watersheds

June 2014

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Highway Division

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Impaired Waters Assessment for Buffumville Lake (MA42005)

Summary

		Stormwater	Non-Stormwater[1]
Impaired Water[2]	Impairments:	Excess algal growth	Non-native aquatic plants, mercury in fish tissue
	Category:	4A (TMDL is completed)	
	Final TMDLs:	Total Maximum Daily Loads of Phosphorus for Selected French Basin Lakes[3]	
	WQ Assessment:	French & Quinebaug River Watersheds 2004-2008 Water Quality Assessment Report4	
Location	Towns:	Charlton/Oxford, MA	
	MassDOT Roads:	None	
Assessment Method(s)	7R (TMDL Method)	☒	
	7U (IC Method)	☐	
	No Discharge	☒	

Site Description

Buffumville Lake (MA42005) in Charlton/Oxford is a large lake of approximately 186 acres operated by the US Army Corps of Engineers. The lake was constructed in 1958 as part of the Buffumville Army Corps Flood Control Project.[4] Buffumville Lake (MA42005) is listed under Category 4a, "TMDL is Completed", on MassDEP's final Massachusetts Year 2012 Integrated List of Waters.[2]

[1] MassDOT, December 2012. Impaired Waters Assessment for Impaired Waters with Impairments Unrelated to Stormwater. Available at: http://www.mhd.state.ma.us/downloads/projDev/ImpairedWaters_3/Year3_ImpairedWatersAssessment_1.pdf#page=308

[2] MassDEP, 2013. Massachusetts Year 2012 Integrated List of Waters – Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act. Massachusetts. Available at: http://www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf

[3] MassDEP. 2002. Total Maximum Daily Loads of Phosphorus for Selected French Basin Lakes. Available at: http://www.mass.gov/eea/docs/dep/water/resources/a-thru-m/french.pdf

[4] MassDEP, 2009. *French and Quinebaug River Watersheds 2004-2008 Water Quality Assessment Report*. Available at: http://www.mass.gov/eea/agencies/massdep/water/watersheds/french-quinebaug-river-watersheds-2004-08.html

According to the MassDEP's *Total Maximum Daily Loads of Phosphorus for Selected French Basin Lakes,*[5] the lake was assessed by the DEP in the summer of 1994. The DEP found significant impacts from excessive algal growth and the presence of the invasive species, *Myriophyllum heterophyllum*. The MassDEP also recommended that the general public limit fish consumption from the water body due to the high mercury content of the fish.

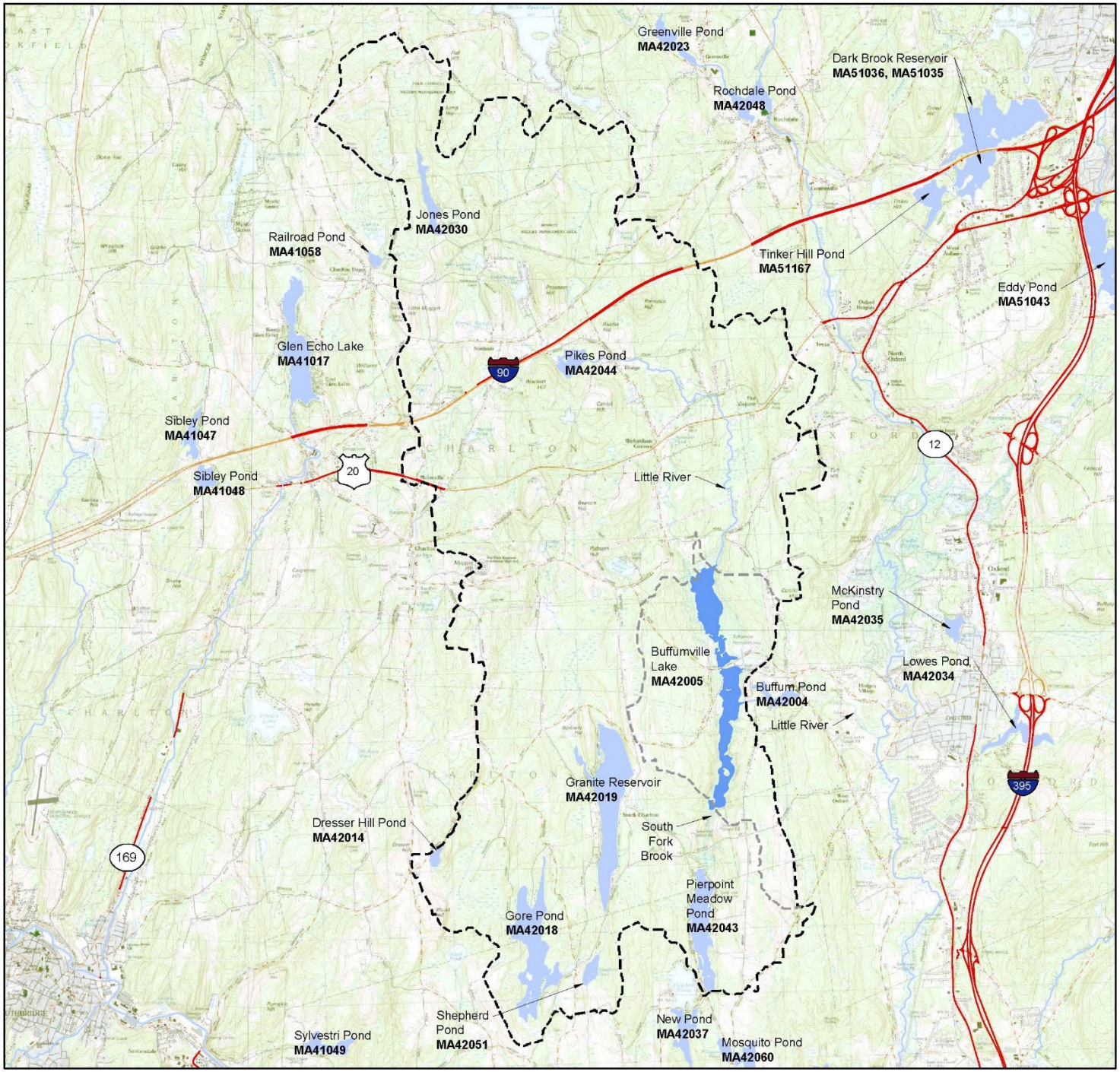
The watershed to Buffumville Lake is shown on Figure 1. The total Buffumville Lake watershed is approximately 16,800 acres. The watershed is comprised of the following primary land use types: 67% forested, 23% rural and agricultural land, 2% residential, 2% commercial/industrial, and 6% water and wetlands.[5] As shown on Figure 1, Buffumville Lake receives waters from the South Fork Brook to the south and from the Little River to the north. It discharges to the west through Buffumville Pond to the Little River.

After review, it was determined that the MassDOT property does not discharge to Buffumville Lake. The MassDOT-owned Massachusetts Turnpike is located within the Buffumville Lake watershed, approximately 2.5 miles away from Buffumville Lake. However, the Massachusetts Turnpike does not directly discharge to Buffumville Lake, but rather to Pike's Pond, the Little River, and tributaries of the Litter River. This determination was made using the USGS DS451 per BMP 7R methodology through a review of topographical maps of the region and was verified through a site visit on April 2, 2014.[6]

As defined in MassDOT's assessment methodologies,[6] since this portion of MassDOT's urban area property does not directly contribute stormwater runoff to Buffumville Lake, further assessment of this water body is not warranted under the Impaired Waters Program. MassDOT will continue to implement the measures outlined in its Stormwater Management Plan (SWMP) statewide to minimize the impacts of stormwater from its property.

[5] MassDEP. 2002. Total Maximum Daily Loads of Phosphorus for Selected French Basin Lakes. Available at: http://www.mass.gov/eea/docs/dep/water/resources/a-thru-m/french.pdf

[6] Massachusetts Department of Transportation (MassDOT), July 22, 2010. BMP 7R: TMDL Watershed Review. Available at: http://www.mhd.state.ma.us/downloads/projDev/BMP_7R_TMDL_WatershedReview.pdf



MassDOT Roadways in Urban Areas

Total Watershed

Subwatershed

Assessed Segment

Impaired Lakes

Impaired Streams

N

0 3,500 7,000 Feet

Figure 1

Buffumville Lake
(MA42005)
Watershed

June 2014

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Highway Division

Impaired Waters Assessment for Dresser Hill Pond (MA42014)

Summary

		Stormwater
Impaired Water[1]	**Impairments:**	Turbidity
	Category:	4A (TMDL is completed)
	Final TMDLs:	Total Maximum Daily Loads of Phosphorus for Selected French Basin Lakes[2]
	WQ Assessment:	French & Quinebaug River Watersheds 2004-2008 Water Quality Assessment Report[3]
Location	**Towns:**	Charlton, MA
	MassDOT Roads:	None
Assessment Method(s)	**7R (TMDL Method)**	☒
	7U (IC Method)	☐
	No Discharge	☒

Site Description

Dresser Hill Pond (MA42014) is an 8 acre water body located in the French River Watershed in Charlton, MA. Its total drainage area is approximately 42 acres. Dresser Hill Pond (MA42014) is listed under Category 4a, "TMDL is Completed", on MassDEP's final *Massachusetts Year 2012 Integrated List of Waters.*[1] Dresser Hill Pond is impaired for turbidity and is covered by a Total Maximum Daily Load (TMDL) for phosphorus according to MassDEP's *Total Maximum Daily Loads of Phosphorus for Selected French Basin Lakes.*[2] According to this report, "A 17 August 1994 DEP synoptic survey indicated that turbidity was the main cause of a non-supporting primary contact over the entire pond". The pond exhibited dense algae growth and no aquatic plants were present.

[1] MassDEP, 2013. Massachusetts Year 2012 Integrated List of Waters – Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act. Massachusetts. Available at: http://www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf

[2] MassDEP. 2002. Total Maximum Daily Loads of Phosphorus for Selected French Basin Lakes. Available at: http://www.mass.gov/eea/docs/dep/water/resources/a-thru-m/french.pdf

[3] MassDEP, 2009. French and Quinebaug River Watersheds 2004-2008 Water Quality Assessment Report. Available at: http://www.mass.gov/eea/agencies/massdep/water/watersheds/french-quinebaug-river-watersheds-2004-08.html

To address these problems, the pond was repeatedly treated with alum and copper in the late nineties.

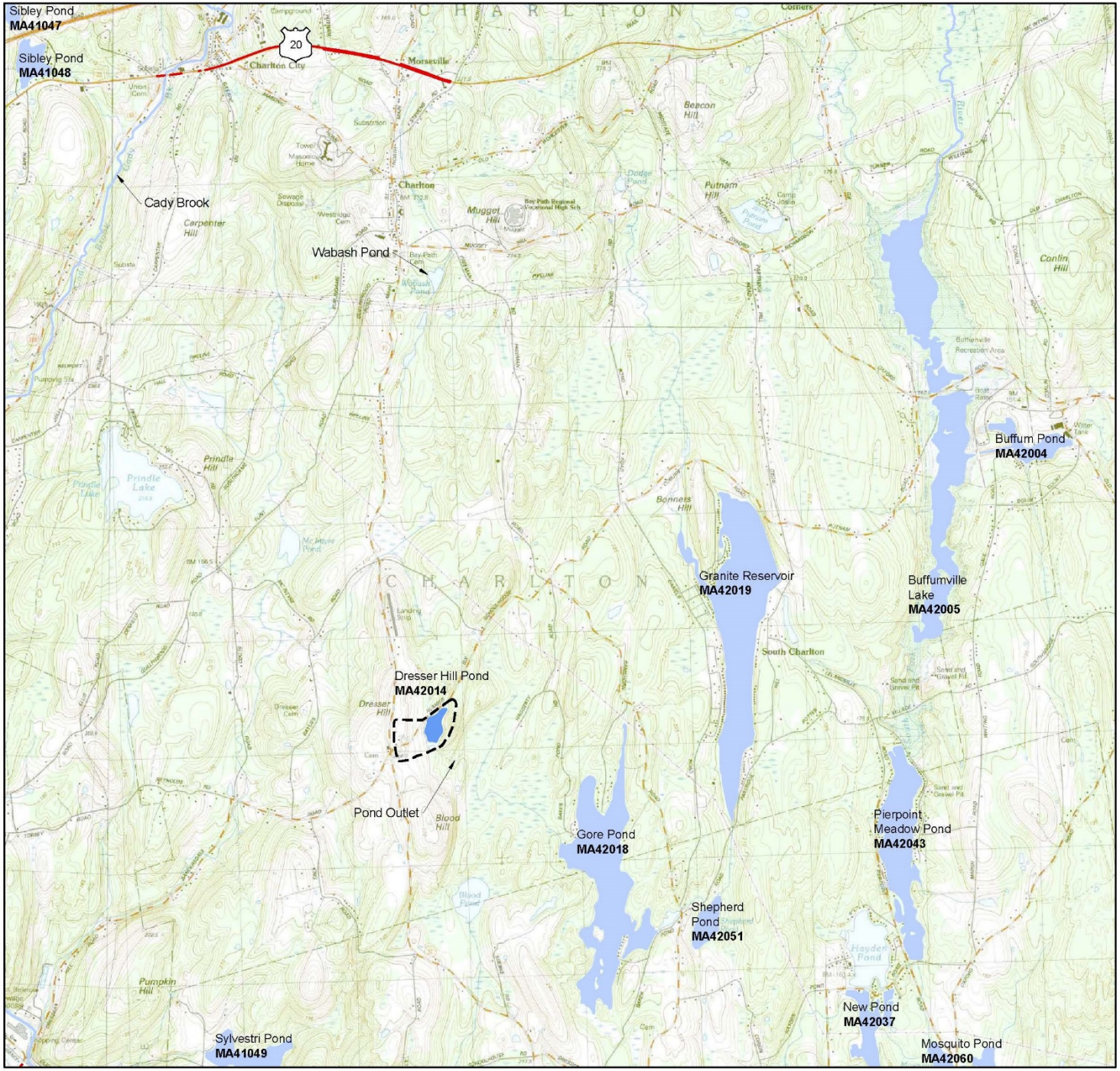
The watershed to Dresser Hill Pond is shown on Figure 1. According to MassDEP's *French & Quinebaug River Watersheds 2004-2008 Water Quality Assessment Report,*[4] Dresser Hill Pond is located at the watershed divide between the French and Quinebaug River Valleys. Management activities at the pond have altered the pond's natural discharge, which is to the north. As shown on Figure 1, the pond now drains to the south through an unnamed stream to Gore Pond.

After review, it was determined that the MassDOT property does not discharge to Dresser Hill Pond. The Dresser Hill Pond drainage area is located over 3.5 miles south of the nearest MassDOT owned highway, which is Route 20. This section of Route 20 discharges to Cady Brook and tributaries of Wabash Pond. This determination was made using the USGS DS451 per BMP 7R methodology through a review of topographical maps of the region and was verified through a site visit on April 2, 2014.[5]

As defined in MassDOT's assessment methodologies,[5] since this portion of MassDOT's urban area property does not directly contribute stormwater runoff to Dresser Hill Pond, further assessment of this water body is not warranted under the Impaired Waters Program. MassDOT will continue to implement the measures outlined in its Stormwater Management Plan (SWMP) statewide to minimize the impacts of stormwater from its property.

[4] MassDEP, 2009. *French and Quinebaug River Watersheds 2004-2008 Water Quality Assessment Report*. Available at: http://www.mass.gov/eea/agencies/massdep/water/watersheds/french-quinebaug-river-watersheds-2004-08.html

[5] Massachusetts Department of Transportation (MassDOT), July 22, 2010. BMP 7R: TMDL Watershed Review. Available at: http://www.mhd.state.ma.us/downloads/projDev/BMP_7R_TMDL_WatershedReview.pdf



MassDOT Roadways in Urban Areas

Total Watershed and Sub-Watershed

Assessed Segment

Impaired Lakes

Impaired Streams

N

0 2,000 4,000 Feet

Figure 1

Dresser Hill Pond
(MA42014)
Watershed

June 2014

massDOT
Massachusetts Department of Transportation
Highway Division

massDOT Massachusetts Department of Transportation Highway Division

06/08/2014

Impaired Waters Assessment for Pierpoint Meadow Pond (MA42043)

Summary

		Stormwater	Non-Stormwater[1]
Impaired Water[2]	**Impairments:**	Aquatic plants (macrophytes)	Non-native aquatic plants
	Category:	4A (TMDL is completed)	
	Final TMDLs:	Total Maximum Daily Loads of Phosphorus for Selected French Basin Lakes[3]	
	WQ Assessment:	French & Quinebaug River Watersheds 2004-2008 Water Quality Assessment Report[4]	
Location	**Towns:**	Dudley/Charlton, MA	
	MassDOT Roads:	None	
Assessment Method(s)	**7R (TMDL Method)**	☒	
	7U (IC Method)	☐	
	No Discharge	☒	

Site Description

Pierpoint Meadow Pond (MA42043) is a 95 acre water body located in the French River Watershed in Dudley and Charlton, MA. Its total drainage area is approximately 790 acres. Pierpoint Meadow Pond (MA42043) is listed under Category 4a, "TMDL is Completed", on MassDEP's final *Massachusetts Year 2012 Integrated List of Waters.*[2]

[1] MassDOT, December 2012. Impaired Waters Assessment for Impaired Waters with Impairments Unrelated to Stormwater. Available at: http://www.mhd.state.ma.us/downloads/projDev/ImpairedWaters_3/Year3_ImpairedWatersAssessment_1.pdf#page=308

[2] MassDEP, 2013. Massachusetts Year 2012 Integrated List of Waters – Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act. Massachusetts. Available at: http://www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf

[3] MassDEP. 2002. Total Maximum Daily Loads of Phosphorus for Selected French Basin Lakes. Available at: http://www.mass.gov/eea/docs/dep/water/resources/a-thru-m/french.pdf

[4] MassDEP. 2009. *French and Quinebaug River Watersheds 2004-2008 Water Quality Assessment Report*. Available at: http://www.mass.gov/eea/agencies/massdep/water/watersheds/french-quinebaug-river-watersheds-2004-08.html

Pierpoint Meadow Pond is impaired for Non-Native Aquatic Plants and Aquatic Plants (Macrophytes) and is covered by a Total Maximum Daily Load (TMDL) for phosphorus according to MassDEP's *Total Maximum Daily Loads of Phosphorus for Selected French Basin Lakes.*[5] According to this report, the watershed is relatively undeveloped, containing 59% forested land use, 23% rural, 13% water/wetland, and 5% urban. According to the *French & Quinebaug River Watersheds 2004-2008 Water Quality Assessment Report,*[6] the invasive plant species, *Myriohyllum heterophyllum*, is present in the water body. The watershed to Pierpoint Meadow Pond is shown on Figure 1.

After review, it was determined that the MassDOT property does not discharge to Pierpoint Meadow Pond. The Pierpoint Meadow Pond drainage area is located over a mile away from the nearest MassDOT owned highway, which is Route 12. This determination was made through USGS DS451 per BMP 7R methodology through a review of topographical maps of the region and was verified through a site visit on April 2, 2014.[7]

As defined in MassDOT's assessment methodologies,[7] since this portion of MassDOT's urban area property does not directly contribute stormwater runoff to Pierpoint Meadow Pond, further assessment of this water body is not warranted under the Impaired Waters Program. MassDOT will continue to implement the measures outlined in its Stormwater Management Plan (SWMP) statewide to minimize the impacts of stormwater from its property.

[5] MassDEP. 2002. Total Maximum Daily Loads of Phosphorus for Selected French Basin Lakes. Available at: http://www.mass.gov/eea/docs/dep/water/resources/a-thru-m/french.pdf

[6] MassDEP. 2009. *French and Quinebaug River Watersheds 2004-2008 Water Quality Assessment Report*. Available at: http://www.mass.gov/eea/agencies/massdep/water/watersheds/french-quinebaug-river-watersheds-2004-08.html

[7] Massachusetts Department of Transportation (MassDOT), July 22, 2010. BMP 7R: TMDL Watershed Review. Available at: http://www.mhd.state.ma.us/downloads/projDev/BMP_7R_TMDL_WatershedReview.pdf

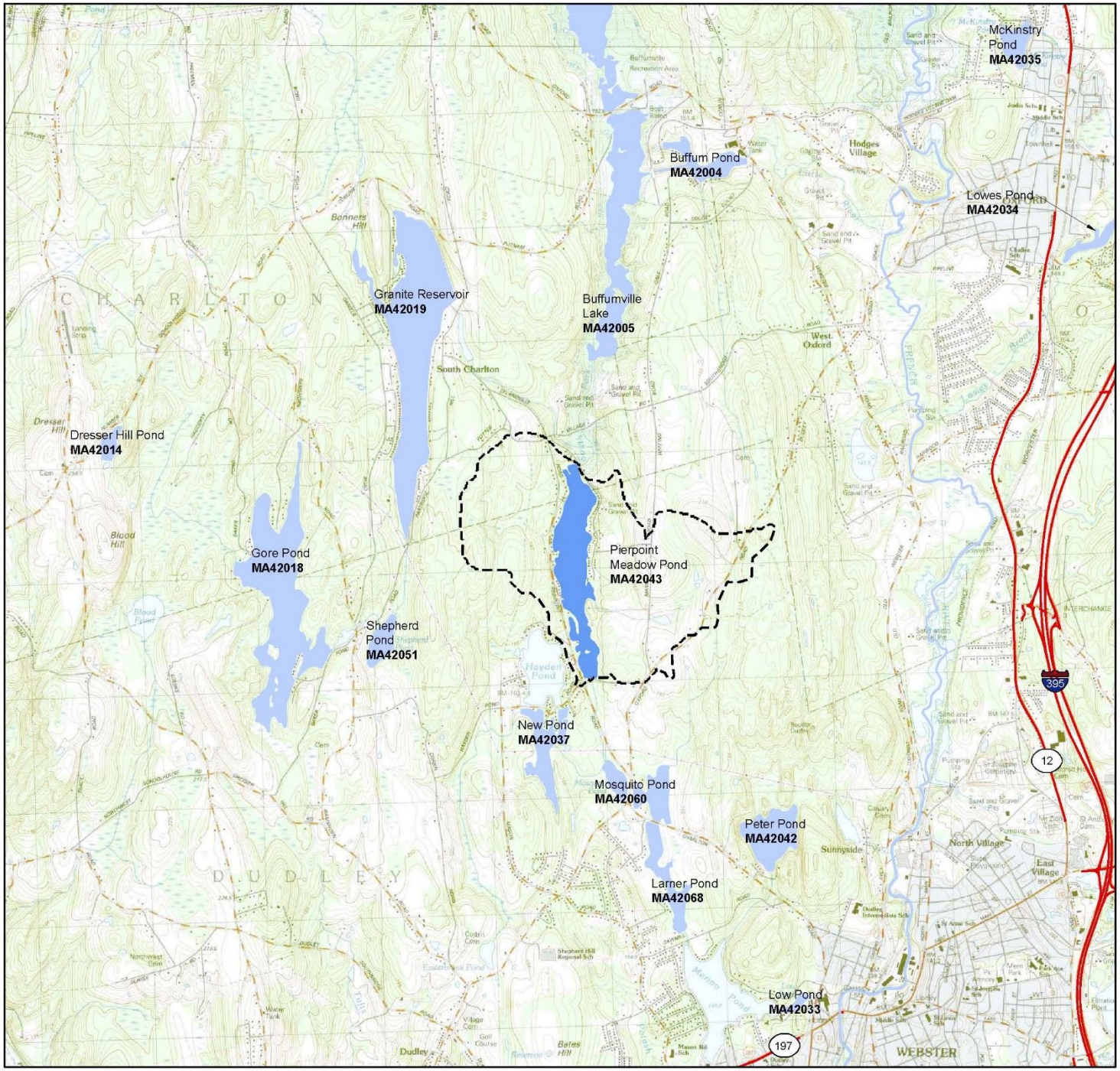


Figure 1

Pierpoint Meadow Pond (MA42043) Watershed

June 2014

MassDOT Massachusetts Department of Transportation Highway Division

Impaired Waters Assessment for Plow Shop Pond (MA81103)

Summary

		Stormwater	Non-Stormwater[1]
Impaired Water[2]	Impairments:	Aquatic plants (macrophytes), arsenic, chromium (total), polycyclic aromatic hydrocarbons (PAHs) (aquatic ecosystems), sediment biassays – chronic toxicity freshwater	Non-native aquatic plants, mercury in fish tissue
	Category:	5 (Waters requiring a TMDL)	
	Final TMDLs:	None	
	WQ Assessment:	Nashua River Watershed 2003 Water Quality Assessment Report[3]	
Location	Towns:	Ayer	
	MassDOT Roads:	Route 2A, Route 110 and Route 111	
Assessment Method(s)	7R (TMDL Method)	☐	
	7U (IC Method)	☒	
	No Discharge	☒	

[1] MassDOT, December 2012. Impaired Waters Assessment for Impaired Waters with Impairments Unrelated to Stormwater. Available at: http://www.mhd.state.ma.us/downloads/projDev/ImpairedWaters_3/Year3_ImpairedWatersAssessment_1.pdf#page=308

[2] MassDEP, 2013. Massachusetts Year 2012 Integrated List of Waters – Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act. Massachusetts. Available at: http://www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf

[3] MassDEP, 2008. Nashua River Watershed 2003 Water Quality Assessment Report. Available at: http://www.mass.gov/eea/docs/dep/water/resources/71wqar09/81wqar08.pdf

Site Description

Plow Shop Pond (MA81103) is located south of West Main Street and west of the Boston and Maine Railroad near the center of Ayer. Plow Shop Pond has a surface area of approximately 29 acres which receives flow from Grove Pond (MA81053) via a culvert underneath the Boston and Main Railroad. The downstream end of Plow Shop Pond is dammed, and its overflows are directed to Nonacoicus Brook (MA81-17). MassDEP's Water Quality Assessment Report[4] for this receiving water identified the Aquatic Life Use, Primary and Secondary Contact Uses with an "Impaired" status due to the introduction of non-native organisms (accidental or intentional), contaminated sediments and contaminated groundwater. The receiving water also is identified with an "Impaired" status for the Fish Consumption Use due to atmospheric deposition – toxics and Aesthetics Use due to the introduction of non-native organisms (accidental or intentional).

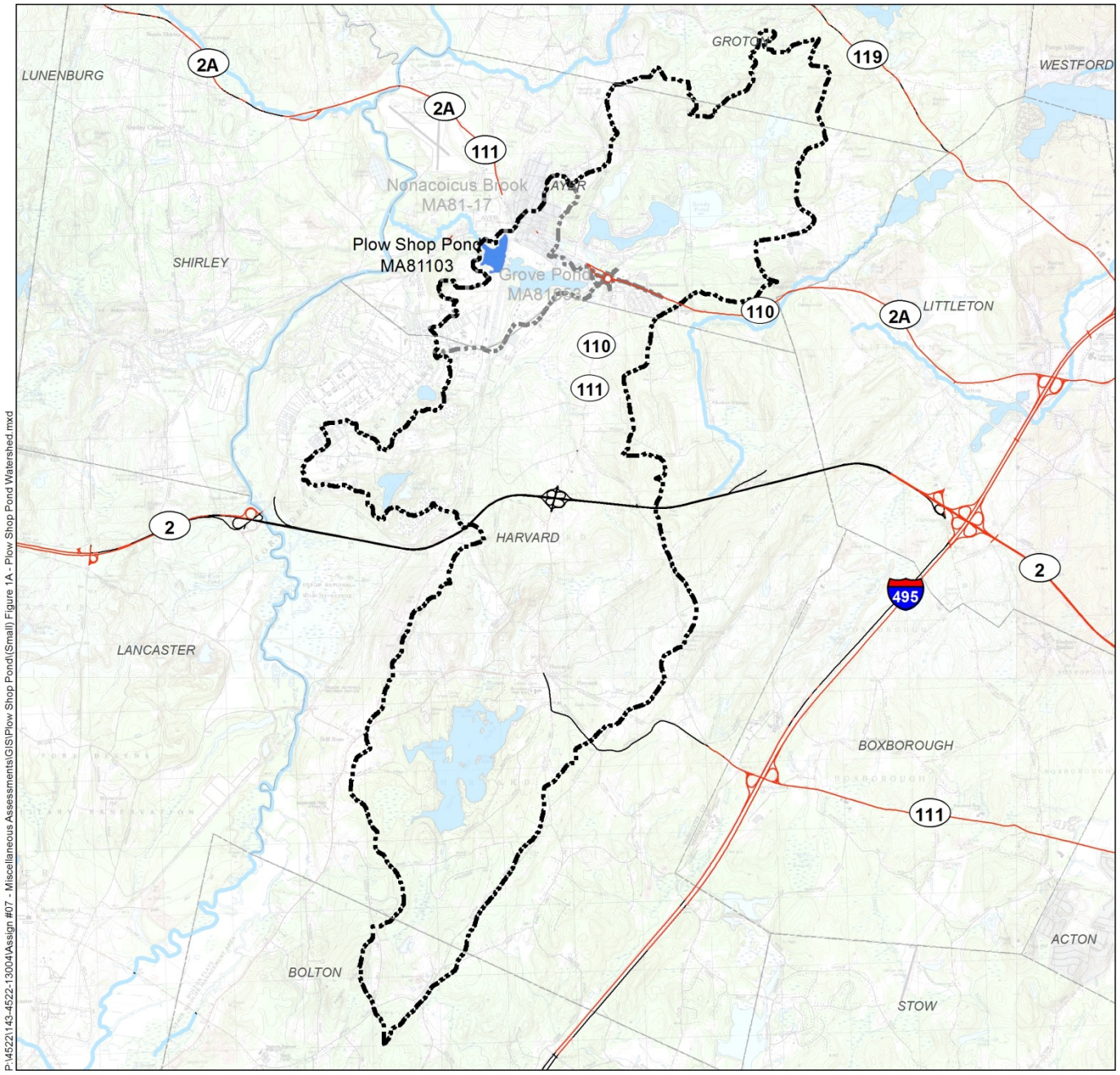
The total and subwatersheds of Plow Shop Pond are shown of Figure 1A, which includes the towns of Ayer, Bolton, Groton and Harvard. Figure 1B shows the MassDOT property in the Plow Shop Pond subwatershed, which includes portions of Route 2A, Route 110 and Route 111. The subwatershed to Plow Shop Pond is comprised of commercial, industrial, medium density and multifamily residential land with the majority of the watershed consisting of forested land and open space.

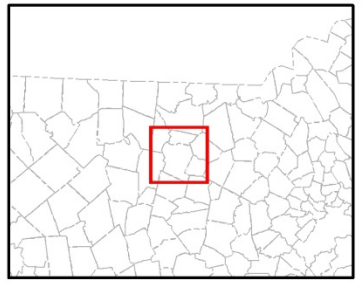
After review of watershed mapping, aerials, MassDOT plans and a field visit to confirm the desktop analysis, it was determined that runoff from MassDOT property does not discharge to Plow Shop Pond. Stormwater flows from the western portion of the MassDOT owned Route 2A/Route 111 Bridge over the Boston and Main Railroad are conveyed to the wetland system downstream of Plow Shop Pond while stormwater flows from the eastern portion of the bridge are conveyed to Schoolhouse Pond. The remaining portions of Route 2A, Route 110 and Route 111 within the Plow Shop Pond subwatershed are collected and conveyed to MassDOT stormwater outfalls that discharge to wetlands directly upstream of Grove Pond.

As defined in MassDOT's assessment methodologies,[5] since this portion of MassDOT's urban area property does not directly contribute stormwater runoff to Plow Shop Pond, further assessment of this water body is not warranted under the Impaired Waters Program. MassDOT will continue to implement the measures outlined in its Stormwater Management Plan (SWMP) statewide to minimize the impacts of stormwater from its property.

[4] MassDEP, 2008. Nashua River Watershed 2003 Water Quality Assessment Report. Available at: http://www.mass.gov/eea/docs/dep/water/resources/71wqar09/81wqar08.pdf

[5] MassDOT, 6 April, 2011. Description of MassDOT's Application of Impervious Cover Method in BMP 7U (MassDOT Application of IC Method). http://www.mhd.state.ma.us/downloads/projDev/BMP_7U_ImpairedWaterbodiesAssessment.pdf





MassDOT Roadways in Urban Area

MassDOT Roads

Total Watershed

Subwatershed

Assesed Segment

Impaired Lakes

Impaired Streams

N

0 3,750 7,500 Feet

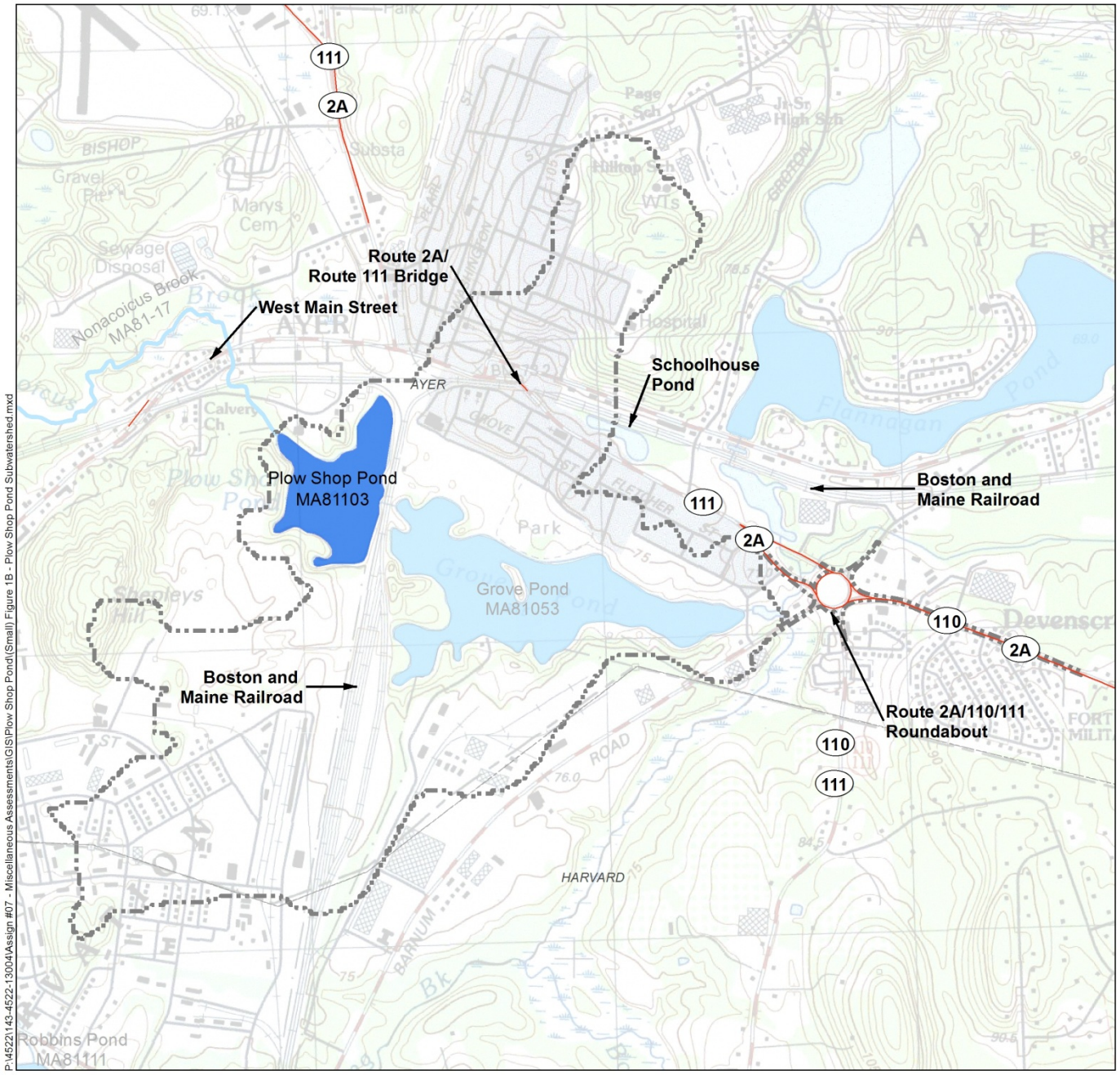
Figure 1A

Plow Shop Pond (MA81103) Watersheds

June 2014

massDOT Massachusetts Department of Transportation Highway Division

P:\4522\143-4522-13004\Assign #07 - Miscellaneous Assessments\GIS\Plow Shop Pond\(Small) Figure 1A - Plow Shop Pond Watershed.mxd



MassDOT Roadways in Urban Area

MassDOT Roads

Subwatershed

Assesed Segment

Impaired Lakes

Impaired Streams

N

0 850 1,700 Feet

Figure 1B

Plow Shop Pond (MA81103) Subwatershed

June 2014

massDOT
Massachusetts Department of Transportation
Highway Division

P:\4522\143-4522-13004\Assign #07 - Miscellaneous Assessments\GIS\Plow Shop Pond\(Small) Figure 1B - Plow Shop Pond Subwatershed.mxd

06/08/2014

Impaired Waters Assessment for Fosters Pond (MA83005)

Summary

		Stormwater	Non-Stormwater[1]
Impaired Water[2]	Impairments:	Dissolved oxygen	Non-native aquatic plants, mercury in fish tissue
	Category:	5 (Waters Requiring a TMDL)	
	Final TMDLs:	None	
	WQ Assessment:	Shawsheen River Watershed 2000 Water Quality Assessment Report CN 86.0[3]	
Location	Towns:	Andover, Wilmington	
	MassDOT Roads:	Route 125 (Andover Bypass Road)	
Assessment Method(s)	7R (TMDL Method)	☐	
	7U (IC Method)	☒	
	No Discharge	☒	

[1] MassDOT, December 2012. Impaired Waters Assessment for Impaired Waters with Impairments Unrelated to Stormwater. Available at: http://www.mhd.state.ma.us/downloads/projDev/ImpairedWaters_3/Year3_ImpairedWatersAssessment_1.pdf#page=308

[2] MassDEP, 2013. Massachusetts Year 2012 Integrated List of Waters – Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act. Massachusetts. Available at: http://www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf

[3] MassDEP, 2003. Shawsheen River Watershed 2000 Water Quality Assessment Report. Available at http://www.mass.gov/eea/docs/dep/water/resources/71wqar09/83wqar.pdf.

Site Description

Fosters Pond occupies approximately 135 acres at the border of Andover and Wilmington, Massachusetts. The contributing watershed to Fosters Pond includes approximately 990 acres in Wilmington, Andover, and North Reading, Massachusetts as shown in Figure 1. Fosters Pond is located approximately 4,700 feet upstream of Ballardville Impoundment (MA83011) of the Shawsheen River. The 2005 MassGIS landuse[4] dataset indicates that the contributing area to Fosters Pond is primarily comprised of forest, wetland, and water areas. Developed portions of the watershed are primarily comprised of low-density residential areas. MassDEP's Water Quality Assessment Report[5] for this receiving water identifies the aquatic life use as impaired because of low dissolved oxygen saturation and the presence of non-native aquatic vegetation including *lythrum salicaria* (purple loosestrife) and/or *cabomba caroliniana* (fanwort). The report also identifies fish consumption as impaired due to mercury contamination and primary and secondary contact and aesthetics as impaired due to the presence of non-native plants.

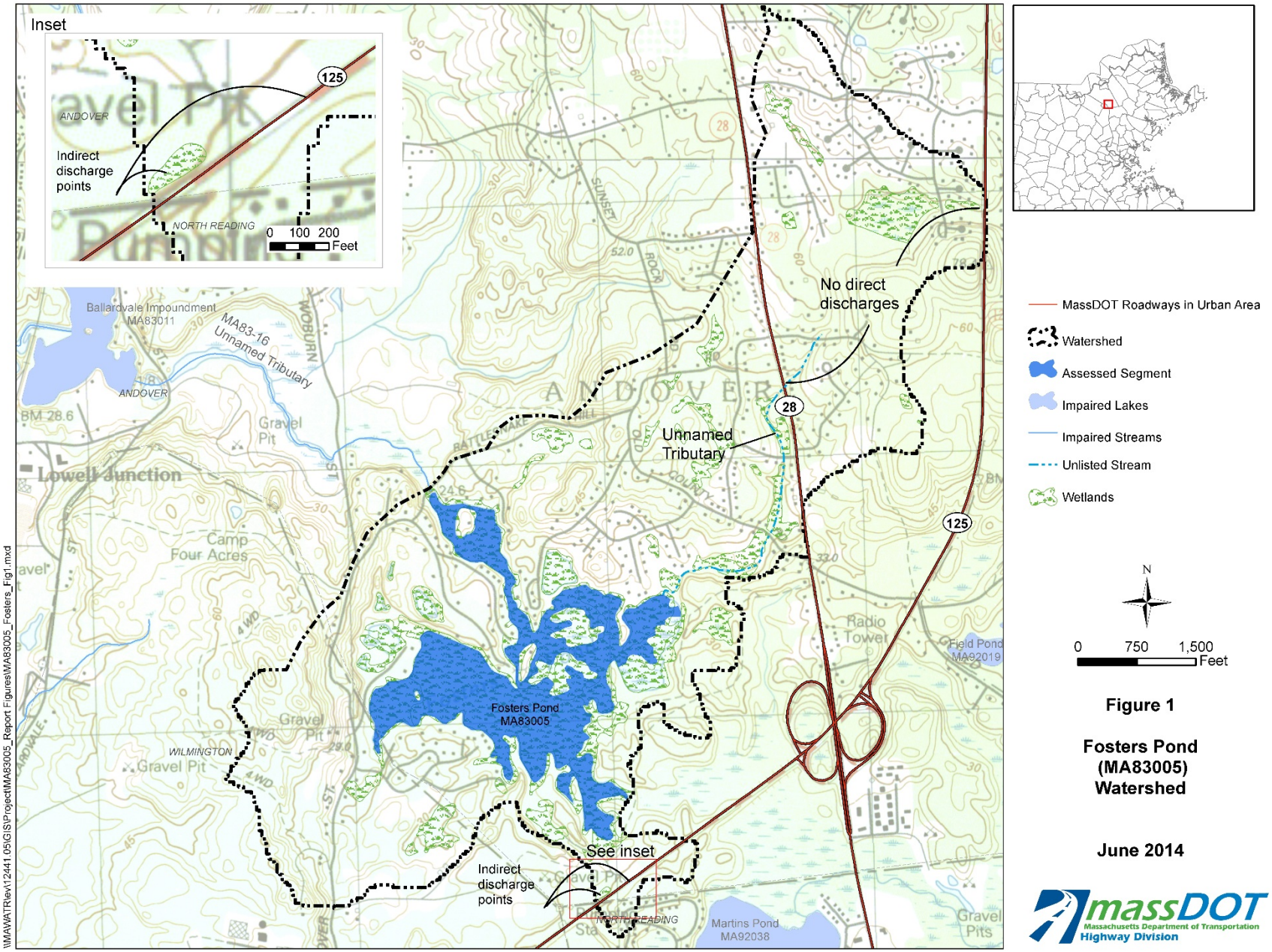
After review, the field team determined that runoff from MassDOT property does not discharge directly to Fosters Pond. A segment of MassDOT Route 125 passes within 600 feet of the pond, but runoff from the property is either intercepted by disconnected wetlands or dispersed overland through the dense forest cover. Field investigations determined that there are no conveyance channels from the road to the pond. MassDOT Route 28 and a more northerly segment of Route 125 also pass through the Fosters Pond watershed. Stormwater runoff from Route 28 and from the more northerly segment of Route 125 discharges to an unnamed, unimpaired tributary to Fosters Pond.

As defined in MassDOT's assessment methodologies,[6] because this portion of MassDOT's urban area property does not directly contribute stormwater runoff to Fosters Pond, further assessment of this water body is not warranted under the Impaired Waters Program. MassDOT will continue to implement the measures outlined in its Stormwater Management Plan (SWMP) statewide to minimize the impacts of stormwater from its property. Additional work by MassDOT on programmed projects may provide additional opportunities for construction of treatment BMPs. Programmed projects generally have a larger scope; i.e., they often include broad-scale road layout changes with flexible project limits. These assessments are limited to work in the right-of-way within the directly discharging areas. This is consistent with an iterative adaptive management approach to address impairments. MassDOT will include an update in NPDES permit annual reports to EPA regarding proposed BMP design either through programmed projects, plans for construction of BMPs, reduction achieved by finalized BMP designs.

[4] MassGIS, 2005. MassGIS Data – Land Use (2005). Available at http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/lus2005.html

[6] MassDEP, 2003. Shawsheen River Watershed 2000 Water Quality Assessment Report. Available at http://www.mass.gov/eea/docs/dep/water/resources/71wqar09/83wqar.pdf.

6 MassDOT, 6 April, 2011. Description of MassDOT's Application of Impervious Cover Method in BMP 7U (MassDOT Application of IC Method). http://www.mhd.state.ma.us/downloads/projDev/BMP_7U_ImpairedWaterbodiesAssessment.pdf



\\MAWATR\ev\12441.05\GIS\Project\MA83005_Report Figures\MA83005_Fosters_Fig1.mxd

Figure 1

Fosters Pond (MA83005) Watershed

June 2014

massDOT Massachusetts Department of Transportation Highway Division

Impaired Waters Assessment for Pocasset River (MA95-16)

Summary

		Stormwater
Impaired Water[1]	**Impairments:**	Fecal Coliform
	Category:	4A (TMDL is complete)
	Final TMDLs:	Final Pathogen TMDL for the Buzzards Bay Watershed (CN: 251.1)[2]
	WQ Assessment:	Buzzards Bay Watershed 2000 Water Quality Assessment Report[3]
Location	**Towns:**	Bourne, MA
	MassDOT Roads:	None
Assessment Method(s)	**7R (TMDL Method)**	☒
	7U (IC Method)	☐
	No Discharge	☒

Site Description

According to MassDEP's *Buzzards Bay Watershed 2000 Water Quality Assessment Report*, [3] Pocasset River (MA95-16) is impaired for shellfish harvesting due to elevated total fecal coliform bacteria. The sources are unknown, however, suspected sources include on-site treatment systems, road runoff, and municipal separate storm sewer systems (MS4s). The aquatic life use, fish consumption, primary contact, secondary contact, and aesthetics have not yet been assessed. Pocasset River is covered by the *Final Pathogen TMDL for the Buzzards Bay Watershed*. [2]

Pocasset River flows from the outlet of Mill Pond to the mouth at Buzzards Bay in Bourne. This segment has an area of approximately 0.05 square miles. [3]

1 MassDEP, 2013. Massachusetts Year 2012 Integrated List of Waters – Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act. Massachusetts. Available at: http://www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf

2 MassDEP. 2009a. Final Pathogen TMDL for the Buzzards Bay Watershed. Available at: http://www.mass.gov/eea/docs/dep/water/resources/a-thru-m/buzzbay1.pdf

3 MassDEP 2003. Buzzards Bay Watershed 2000 Water Quality Assessment Report. Available at: http://www.mass.gov/eea/agencies/massdep/water/watersheds/buzzards-bay-watershed-2000.html

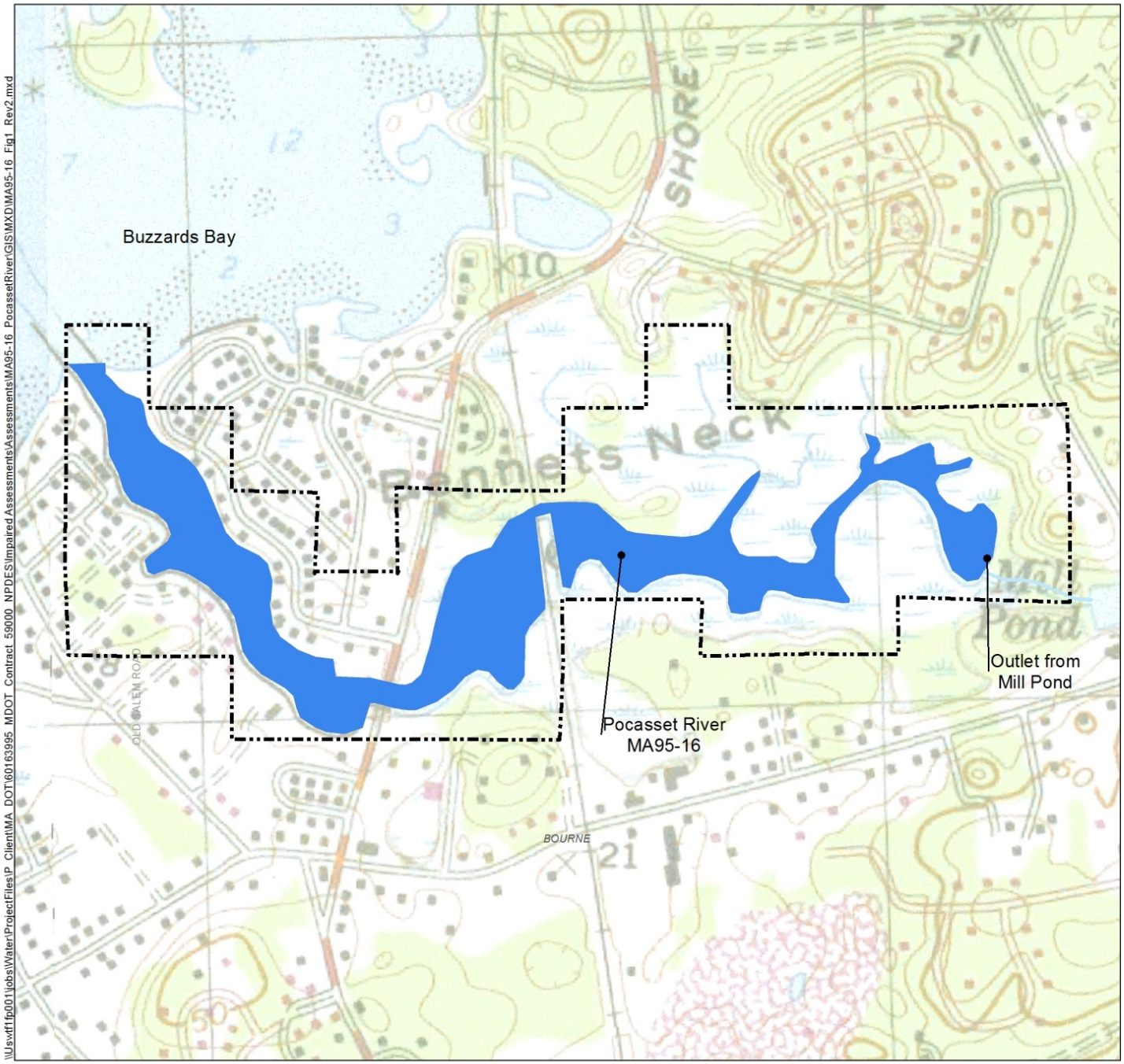
The watersheds and subwatersheds for Cape Cod were provided by USGS based on groundwater modeling developed under the Massachusetts Estuary Program (MEP) and contributing groundwater areas as delineated and published in the USGS 451 groundwater contributing areas data. [4,5] The Cape Cod watersheds are based on groundwater delineations and not ground surface topography. [5] Refer to Figure 1 for the watershed to Segment MA95-16 of Pocasset River. After review, it was determined that the MassDOT property does not discharge to Segment MA95-16 of Pocasset River. The watershed area does not include any MassDOT owned properties in urban areas, based on USGS groundwater contributing area delineations.

As defined in MassDOT's assessment methodologies, [6] since this portion of MassDOT's urban area property does not directly contribute stormwater runoff to Segment MA95-16 of Pocasset River, further assessment of this water body is not warranted under the Impaired Waters Program. MassDOT will continue to implement the measures outlined in its Stormwater Management Plan (SWMP) statewide to minimize the impacts of stormwater from its property.

4 Walter, D.A., Masterson, J.P., and Hess, K.M., 2004, Ground-Water Recharge Areas and Traveltimes to Pumped Wells, Ponds, Streams, and Coastal Water Bodies, Cape Cod, Massachusetts, Scientific Investigations Map I-2857, 1 sheet. Available at: http://pubs.water.usgs.gov/sim20042857

5 U.S. Geological Survey (USGS). (2009). Groundwater contributing areas for Cape Cod and Plymouth-Carver Regions of Massachusetts. Data Series 451 (1 of 3).

6 Massachusetts Department of Transportation (MassDOT), July 22, 2010. BMP 7R: TMDL Watershed Review. Available at: http://www.mhd.state.ma.us/downloads/projDev/BMP_7R_TMDL_WatershedReview.pdf



MassDOT Roadways in Urban Area

Groundwatershed

Assessed Segment

Impaired Streams

Impaired Lakes

MassDOT Outfalls

N

0 500 1,000 Feet

Figure 1

Pocasset River (MA95-16) Groundwatershed

June 2014

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Impaired Waters Assessment for Little Sippewisset Marsh (MA95-24)

Summary

		Stormwater
Impaired Water[1]	**Impairments:**	Fecal Coliform
	Category:	4A (TMDL is complete)
	Final TMDLs:	Final Pathogen TMDL for the Buzzards Bay Watershed (CN: 251.1)[2]
	WQ Assessment:	Buzzards Bay Watershed 2000 Water Quality Assessment Report[3]
Location	**Towns:**	Falmouth, MA
	MassDOT Roads:	None
Assessment Method(s)	**7R (TMDL Method)**	☒
	7U (IC Method)	☐
	No Discharge	☒

Site Description

According to MassDEP's *Buzzards Bay Watershed 2000 Water Quality Assessment Report*, [3] Little Sippewisset Marsh (MA95-24) is impaired for shellfish harvesting due to elevated total fecal coliform bacteria. The sources are unknown, however, suspected sources include on-site treatment systems and highway/road runoff. The aquatic life use has not been assessed. Little Sippewisset Marsh is covered by the *Final Pathogen TMDL for the Buzzards Bay Watershed*. [2]

Little Sippewisset Marsh flows from the headwaters north of Sippewisset Road and west of Marker Lane to its mouth at Buzzards Bay southwest of the end of Saconesset Road in Falmouth. The segment is approximately 0.021 square miles. There are no known discharges other than Municipal

1 MassDEP, 2013. Massachusetts Year 2012 Integrated List of Waters – Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act. Massachusetts. Available at: http://www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf

2 MassDEP. (2009a). Final Pathogen TMDL for the Buzzards Bay Watershed. Available at: http://www.mass.gov/eea/docs/dep/water/resources/a-thru-m/buzzbay1.pdf

3 Massachusetts Department of Environmental Protection (MassDEP) 2003. Buzzards Bay Watershed 2000 Water Quality Assessment Report. Available at: http://www.mass.gov/eea/agencies/massdep/water/watersheds/buzzards-bay-watershed-2000.html

Separate Storm Sewer Systems (MS4s); the Town of Falmouth has applied for coverage or these discharges under the general Phase II NPDES permit[2].

The watersheds and subwatersheds for Cape Cod were provided by USGS based on groundwater modeling developed under the Massachusetts Estuary Program (MEP) and contributing groundwater areas as delineated and published in the USGS 451 groundwater contributing areas data[4,5]. The Cape Cod watersheds are based on groundwater delineations and not ground surface topography[5]. Refer to Figure 1 for the watershed to Segment MA95-24 of Little Sippewisset Marsh.

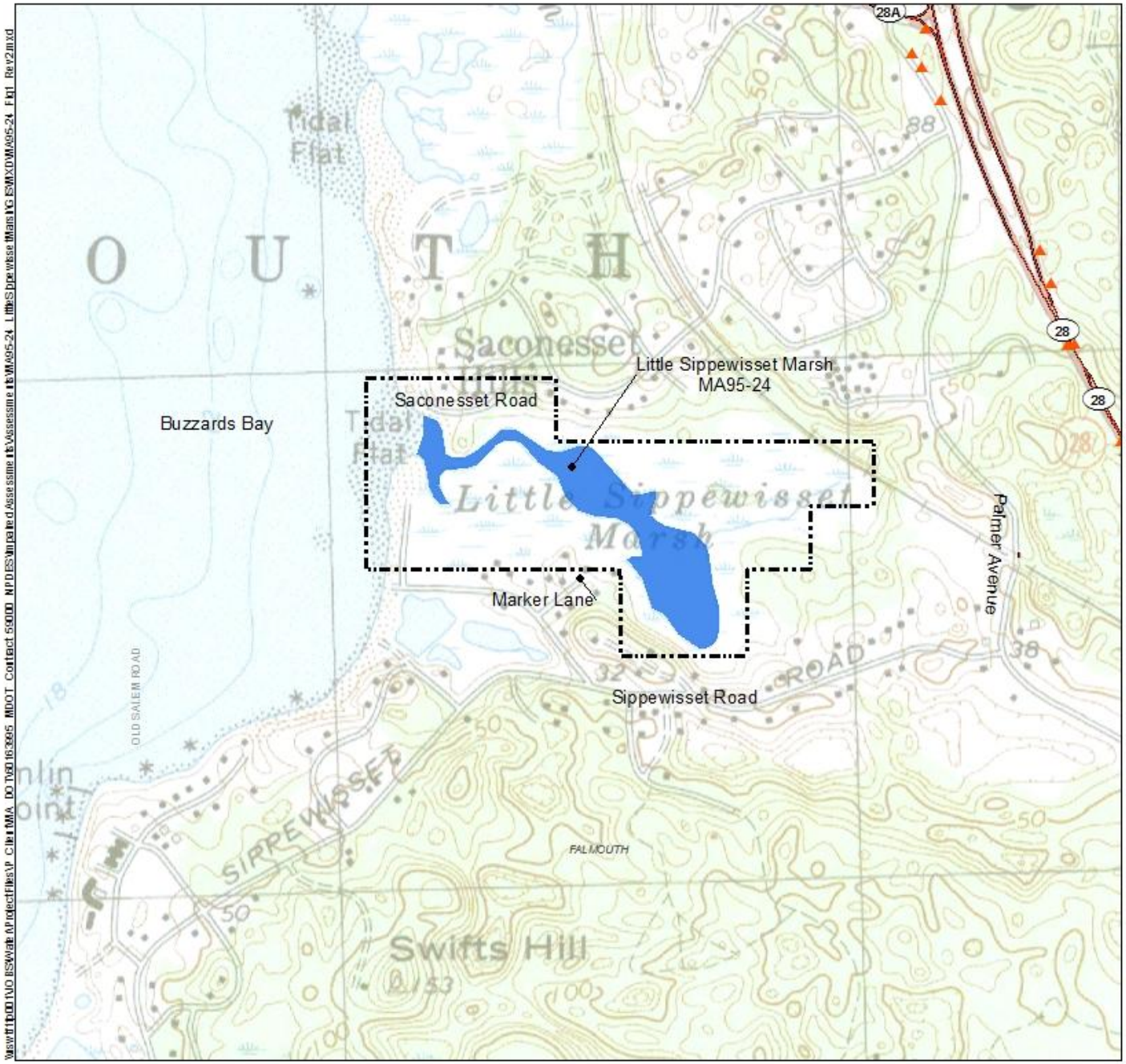
After review, it was determined that the MassDOT property does not discharge to Segment MA95-24 of Little Sippewisset Marsh. Route 28 is located nearby, but outside of the total watershed. The watershed area does not include any MassDOT urban areas, based on the groundwater delineations. Refer to Figure 1 for the location of these roadways in relation to the watershed to Segment MA95-24 of Little Sippewisset Marsh.

As defined in MassDOT's assessment methodologies[6], since this portion of MassDOT's urban area property does not directly contribute stormwater runoff to Segment MA95-24 of Little Sippewisset Marsh, further assessment of this water body is not warranted under the Impaired Waters Program. MassDOT will continue to implement the measures outlined in its Stormwater Management Plan (SWMP) statewide to minimize the impacts of stormwater from its property.

4 Walter, D.A., Masterson, J.P., and Hess, K.M., 2004, Ground-Water Recharge Areas and Traveltimes to Pumped Wells, Ponds, Streams, and Coastal Water Bodies, Cape Cod, Massachusetts, Scientific Investigations Map I-2857, 1 sheet. Available at: http://pubs.water.usgs.gov/sim20042857

5 U.S. Geological Survey (USGS). (2009). Groundwater contributing areas for Cape Cod and Plymouth-Carver Regions of Massachusetts. Data Series 451 (1 of 3).

6 Massachusetts Department of Transportation (MassDOT), July 22, 2010. BMP 7R: TMDL Watershed Review. Available at: http://www.mhd.state.ma.us/downloads/projDev/BMP_7R_TMDL_WatershedReview.pdf



MassDOT Roadways in Urban Area

Groundwatershed

Assessed Segment

Impaired Streams

Impaired Lakes

MassDOT Outfalls

N

0 500 1,000 Feet

Figure 1

Little Sippewisset Marsh (MA95-24) Groundwatershed

June 2014

MassDOT Massachusetts Department of Transportation Highway Division

Impaired Waters Assessment for Back River (MA95-47)

Summary

		Stormwater
Impaired Water[1]	**Impairments:**	Fecal Coliform
	Category:	4A (TMDL is complete)
	Final TMDLs:	Final Pathogen TMDL for the Buzzards Bay Watershed (CN: 251.1)[2]
	WQ Assessment:	Buzzards Bay Watershed 2000 Water Quality Assessment Report[3]
Location	**Towns:**	Bourne, MA
	MassDOT Roads:	None
Assessment Method(s)	**7R (TMDL Method)**	☒
	7U (IC Method)	☐
	No Discharge	☒

Site Description

According to MassDEP's *Buzzards Bay Watershed 2000 Water Quality Assessment Report*, [3] Back River (MA95-47) is impaired for shellfish harvesting due to elevated total fecal coliform bacteria. The sources are unknown, however, suspected sources include potential illicit connections of municipal separate storm sewer systems (MS4s), and on-site treatment systems (septic systems). The aquatic life use has not been assessed. Back River is covered by the *Final Pathogen TMDL for the Buzzards Bay Watershed*. [2]

Back River flows from the outlet of a small unnamed pond located downstream from Mill Pond to confluence with Phinneys Harbor in Bourne. The segment excludes Eel Pond and is approximately 0.083 square miles.

1 MassDEP, 2013. Massachusetts Year 2012 Integrated List of Waters – Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act. Massachusetts. Available at: http://www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf

2 MassDEP. (2009a). Final Pathogen TMDL for the Buzzards Bay Watershed. Available at: http://www.mass.gov/eea/docs/dep/water/resources/a-thru-m/buzzbay1.pdf

3 Massachusetts Department of Environmental Protection (MassDEP) 2003. Buzzards Bay Watershed 2000 Water Quality Assessment Report. Available at: http://www.mass.gov/eea/agencies/massdep/water/watersheds/buzzards-bay-watershed-2000.html

The watersheds and subwatersheds for Cape Cod were provided by USGS based on groundwater modeling developed under the Massachusetts Estuary Program (MEP) and contributing groundwater areas as delineated and published in the USGS 451 groundwater contributing areas data[4,5]. The Cape Cod watersheds are based on groundwater delineations and not ground surface topography[5]. Refer to Figure 1 for the watershed to Segment MA95-47 of Back River. After review, it was determined that the MassDOT property does not discharge to Segment MA95-47 of Back River. The watershed area does not include any MassDOT properties within urban areas, based on the groundwater delineations.

As defined in MassDOT's assessment methodologies[6], since this portion of MassDOT's urban area property does not directly contribute stormwater runoff to Segment MA95-47 of Back River, further assessment of this water body is not warranted under the Impaired Waters Program. MassDOT will continue to implement the measures outlined in its Stormwater Management Plan (SWMP) statewide to minimize the impacts of stormwater from its property.

4 Walter, D.A., Masterson, J.P., and Hess, K.M., 2004, Ground-Water Recharge Areas and Traveltimes to Pumped Wells, Ponds, Streams, and Coastal Water Bodies, Cape Cod, Massachusetts, Scientific Investigations Map I-2857, 1 sheet. Available at: http://pubs.water.usgs.gov/sim20042857

5 U.S. Geological Survey (USGS). (2009). Groundwater contributing areas for Cape Cod and Plymouth-Carver Regions of Massachusetts. Data Series 451 (1 of 3).

6 Massachusetts Department of Transportation (MassDOT), July 22, 2010. BMP 7R: TMDL Watershed Review. Available at: http://www.mhd.state.ma.us/downloads/projDev/BMP_7R_TMDL_WatershedReview.pdf

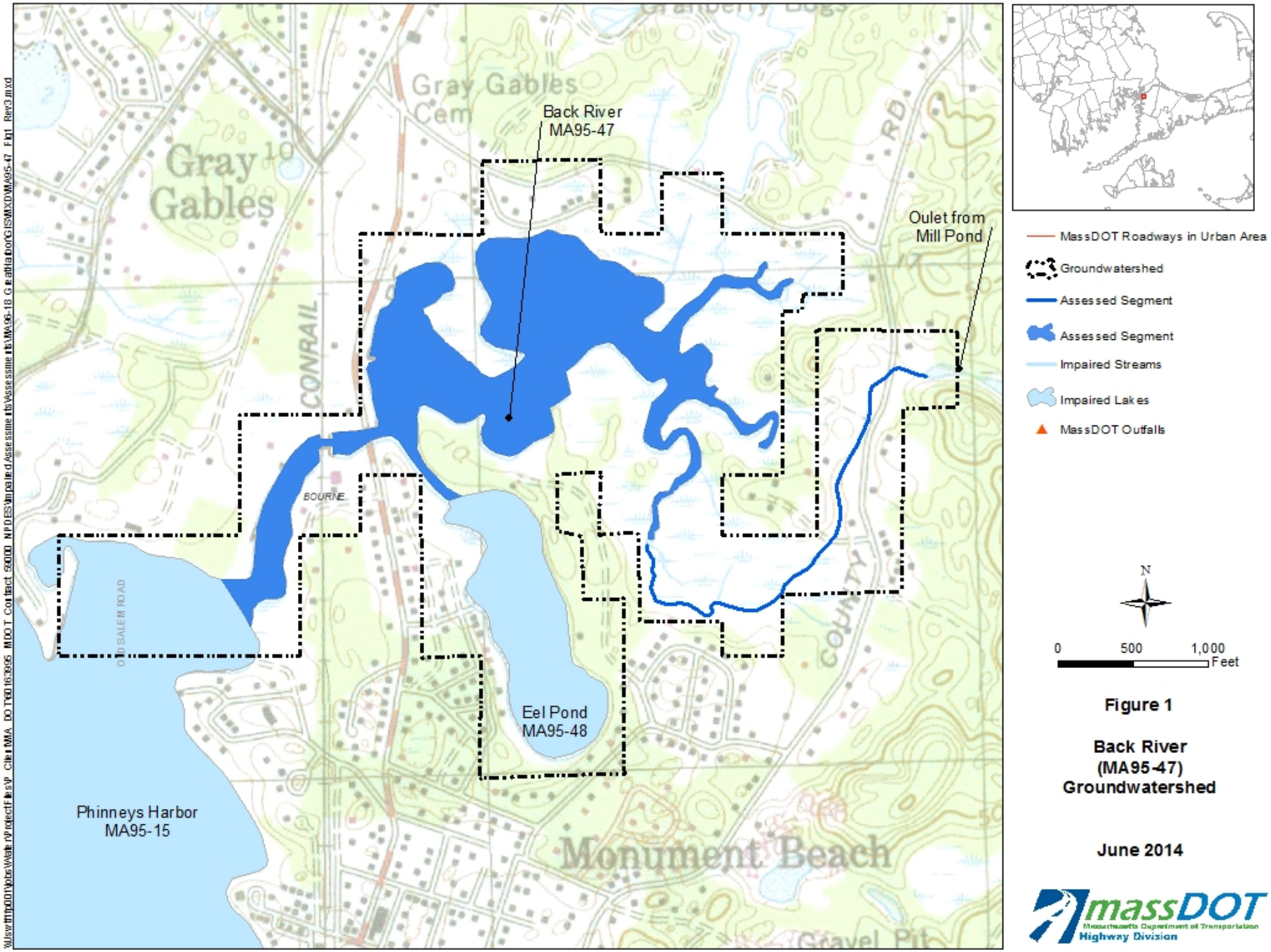


Figure 1

Back River
(MA95-47)
Groundwatershed

June 2014

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Massachusetts Department of Transportation
Highway Division

Impaired Waters Assessment for Eel Pond (MA95-48)

Summary

		Stormwater
Impaired Water[1]	**Impairments:**	Fecal Coliform
	Category:	4A (TMDL is complete)
	Final TMDLs:	Final Pathogen TMDL for the Buzzards Bay Watershed (CN: 251.1)[2]
	WQ Assessment:	Buzzards Bay Watershed 2000 Water Quality Assessment Report[3]
Location	**Towns:**	Bourne, MA
	MassDOT Roads:	None
Assessment Method(s)	**7R (TMDL Method)**	☒
	7U (IC Method)	☐
	No Discharge	☒

Site Description

According to MassDEP's *Buzzards Bay Watershed 2000 Water Quality Assessment Report*, [3] Eel Pond (MA95-48) is impaired for shellfish harvesting due to elevated total fecal coliform bacteria; however, the source is unknown. Eel Pond's specific suspected sources include potential illicit connections of MS4s and on-site septic systems. The aquatic life use has not been assessed due to lack of sufficient data. Eel Pond is covered by the *Final Pathogen TMDL for the Buzzards Bay Watershed*. [2]

Eel Pond is a salt water pond that discharges to the Back River in Bourne. Back River then discharges into Phinneys Harbor, which discharges to Buzzards Bay. This segment is considered an embayment with an area of approximately 0.03 square miles. [3]

1 MassDEP, 2013. Massachusetts Year 2012 Integrated List of Waters – Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act. Massachusetts. Available at: http://www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf

2 MassDEP. (2009a). Final Pathogen TMDL for the Buzzards Bay Watershed. Available at: http://www.mass.gov/eea/docs/dep/water/resources/a-thru-m/buzzbay1.pdf

3 Massachusetts Department of Environmental Protection (MassDEP) 2003. Buzzards Bay Watershed 2000 Water Quality Assessment Report. Available at: http://www.mass.gov/eea/agencies/massdep/water/watersheds/buzzards-bay-watershed-2000.html

The watersheds and subwatersheds for Cape Cod were provided by USGS based on groundwater modeling developed under the Massachusetts Estuary Program (MEP) and contributing groundwater areas as delineated and published in the USGS 451 groundwater contributing areas data. [4,5] The Cape Cod watersheds are based on groundwater delineations and not ground surface topography. [5] Refer to Figure 1 for the watershed to Segment MA95-48 of Eel Pond. After review, it was determined that the MassDOT property does not discharge to Segment MA95-48 of Eel Pond.

As defined in MassDOT's assessment methodologies, [6] since this portion of MassDOT's urban area property does not directly contribute stormwater runoff to Segment MA95-48 of Eel Pond, further assessment of this water body is not warranted under the Impaired Waters Program. MassDOT will continue to implement the measures outlined in its Stormwater Management Plan (SWMP) statewide to minimize the impacts of stormwater from its property.

4 Walter, D.A., Masterson, J.P., and Hess, K.M., 2004, Ground-Water Recharge Areas and Traveltimes to Pumped Wells, Ponds, Streams, and Coastal Water Bodies, Cape Cod, Massachusetts, Scientific Investigations Map I-2857, 1 sheet. Available at: http://pubs.water.usgs.gov/sim20042857

5 U.S. Geological Survey (USGS). (2009). Groundwater contributing areas for Cape Cod and Plymouth-Carver Regions of Massachusetts. Data Series 451 (1 of 3).

6 Massachusetts Department of Transportation (MassDOT), July 22, 2010. BMP 7R: TMDL Watershed Review. Available at: http://www.mhd.state.ma.us/downloads/projDev/BMP_7R_TMDL_WatershedReview.pdf

Figure 1

Eel Pond (MA95-48) Groundwatershed

June 2014

massDOT Massachusetts Department of Transportation Highway Division

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Impaired Waters Assessment for Bumps River (MA96-02)

Summary

		Stormwater
Impaired Water[1]	**Impairments:**	Fecal Coliform
	Category:	4A
	Final TMDLs:	Final Pathogen TMDL for the Cape Cod Watershed[2]
	WQ Assessment:	Cape Cod Coastal Drainage Areas 2004 - 2008 Surface Water Quality Assessment Report[3]
Location	**Towns:**	Barnstable
	MassDOT Roads:	None
Assessment Method(s)	**7R (TMDL Method)**	☒
	7U (IC Method)	☐
	No Discharge	☒

Site Description

The Bumps River is a tributary of the Centerville River. The headwaters of the river flow south, discharging into the Centerville River. The Centerville River flows southwest into the East Bay, which drains east into the Centerville Harbor. The impaired portion of Bumps River (MA96-02) begins at the Bumps River Road outlet structure, flows through Scudder Bay, and ends at the confluence with Centerville River at the South Main Street Bridge. Bumps River (MA96-02) is impaired for shellfish harvesting due to elevated total fecal coliform bacteria. The sources of the impacts are due to illicit marina/boating pumpout releases, waterfowl, and/or stormwater discharges from municipal stormwater systems. The aquatic life use has not been assessed due to limited data being available. Bumps River is covered by the *Final Pathogen TMDL for the Cape Cod Watershed*.[2]

1 MassDEP, 2013. Massachusetts Year 2012 Integrated List of Waters – Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act. Massachusetts. Available at: http://www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf

2 MassDEP, August 2009 Final Pathogen TMDL for the Cape Cod Watershed. Available at: http://www.mass.gov/eea/docs/dep/water/resources/71wqar09/96wqar12.pdf

3 MassDEP, May 2011. Cape Cod Coastal Drainage Areas 2004-2008 Surface Water Quality Assessment Report. Available at: http://www.mass.gov/eea/docs/dep/water/resources/71wqar09/96wqar12.pdf

The watersheds and subwatersheds for Cape Cod were provided by USGS based on groundwater modeling developed under the Massachusetts Estuary Program (MEP) and contributing groundwater areas as delineated and published in the USGS 451 groundwater contributing areas data.[4,5] The Cape Cod watersheds are based on groundwater delineations and not ground surface topography.[Error! Bookmark not defined.] Refer to Figure 1 for the watershed to Bumps River (MA96-02).

The watershed for MA96-02 (Bumps River) is approximately 0.1 square miles. The land use estimates show that this area is approximately 59% residential, 28% forest and 6% open land. According to MassDEP's Final Pathogen TMDL for the Cape Cod Watershed,[2] there are no regulated wastewater dischargers; however, the Town of Barnstable was in the process of applying for a NPDES permit for the MS4s at the time the TMDL report was written. Based on information on the U.S. EPA Region 1 website, stormwater discharges from the town are now covered under the Phase II NPDES general permit.

After reviewing the watershed, it was determined that the MassDOT property does not discharge to Bumps River (MA96-02). The nearest MassDOT owned property is Route 28 in Barnstable, which is greater than 1,200 feet away.

As defined in MassDOT's assessment methodologies[6], since this portion of MassDOT's urban area property does not directly contribute stormwater runoff to Bumps River (MA96-02); further assessment of this water body is not warranted under the Impaired Waters Program. MassDOT will continue to implement the measures outlined in its Stormwater Management Plan (SWMP) statewide to minimize the impacts of stormwater from its property.

4 Walter, D.A., Masterson, J.P., and Hess, K.M., 2004, Ground-Water Recharge Areas and Traveltimes to Pumped Wells, Ponds, Streams, and Coastal Water Bodies, Cape Cod, Massachusetts, Scientific Investigations Map I-2857, 1 sheet. Available at: http://pubs.water.usgs.gov/sim20042857

5 U.S. Geological Survey (USGS). (2009). Groundwater contributing areas for Cape Cod and Plymouth-Carver Regions of Massachusetts. Data Series 451 (1 of 3).

6 Massachusetts Department of Transportation (MassDOT), July 22, 2010. BMP 7R: TMDL Watershed Review. Available at: http://www.mhd.state.ma.us/downloads/projDev/BMP_7R_TMDL_WatershedReview.pdf

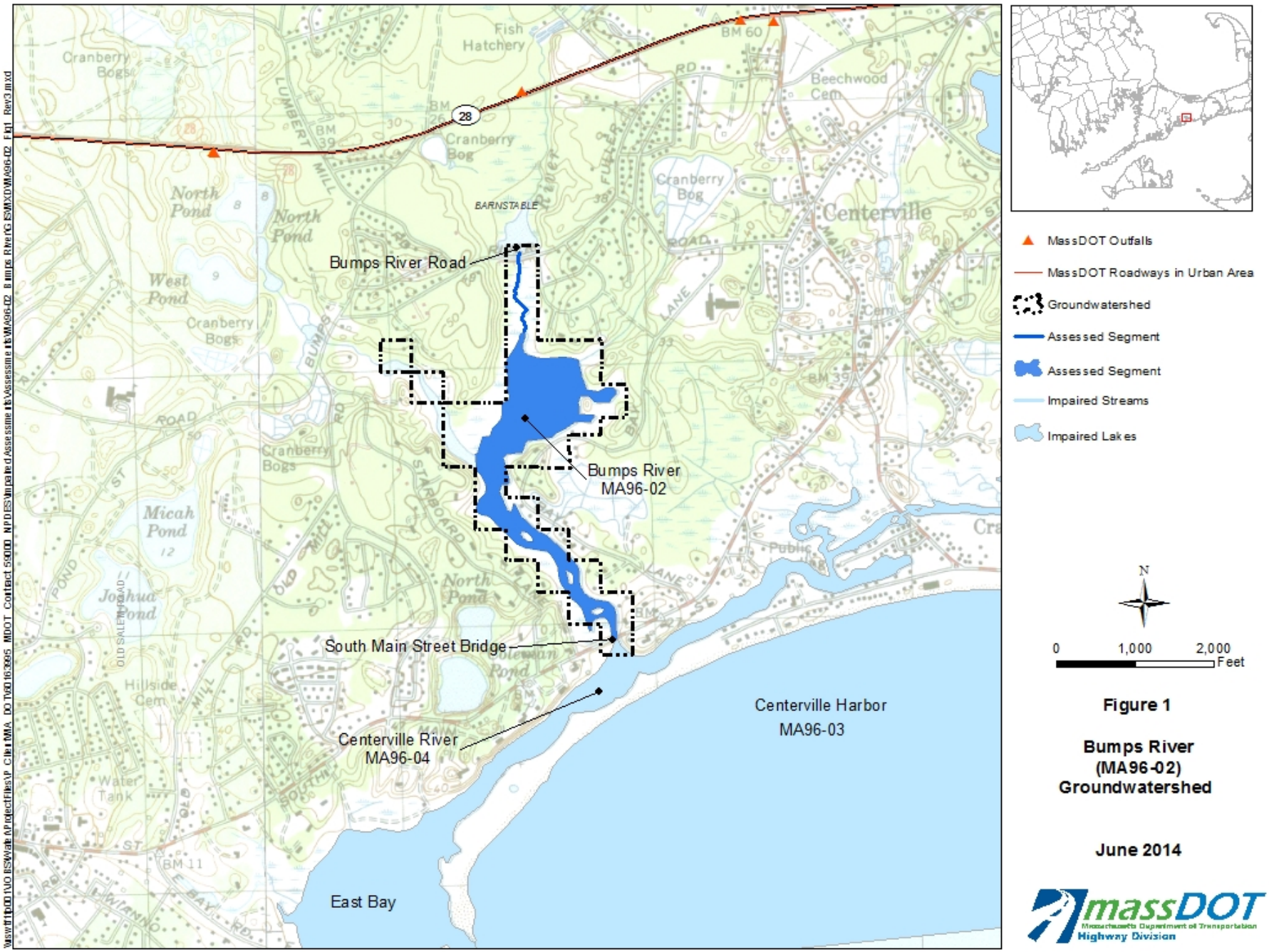

Figure 1

Bumps River
(MA96-02)
Groundwatershed

June 2014

MassDOT
Massachusetts Department of Transportation
Highway Division

Impaired Waters Assessment for Centerville River (MA96-04)

Summary

Impaired Waters[1]		**Stormwater**
	Impairments:	Estuarine Bioassessments Fecal Coliform Nitrogen (Total)
	Category:	4A
	Final TMDLs:	Final Pathogen TMDL for the Cape Cod Watershed[2]
	WQ Assessment:	Cape Cod Coastal Drainage Areas 2004 - 2008 Surface Water Quality Assessment Report[3]
Location	**Towns:**	Barnstable
	MassDOT Roads:	None
Assessment Method(s)	**7R (TMDL Method)**	☒
	7U (IC Method)	☐
	No Discharge	☒

Site Description

Centerville River is located along the southern coast line of Cape Cod, in the town of Barnstable, and the village of Centerville. The river flows east-northeast to west-southwest from the headwaters in a wetland west of Strawberry Hill Road to the confluence with Centerville Harbor, and includes the water body East Bay. The impaired segment of Centerville River (MA96-04) is approximately 0.25 square miles and is utilized for shell fishing, boating and public swimming.

The watersheds and subwatersheds for Cape Cod were provided by USGS based on groundwater modeling developed under the Massachusetts Estuary Program (MEP) and contributing

1 Massachusetts Department of Environmental Protection (Mass DEP). 2013. Massachusetts Year 2012 Integrated List of Waters – Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act. Massachusetts. Available at: http://www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf

2 MassDEP, August 2009 Final Pathogen TMDL for the Cape Cod Watershed. Available at:: http://www.mass.gov/eea/docs/dep/water/resources/71wqar09/96wqar12.pdf

3 MassDEP, May 2011. Cape Cod Coastal Drainage Areas 2004-2008 Surface Water Quality Assessment Report. Available at: http://www.mass.gov/eea/docs/dep/water/resources/71wqar09/96wqar12.pdf

groundwater areas as delineated and published in the USGS 451 groundwater contributing areas data.[4,5] The Cape Cod watersheds are based on groundwater delineations and not ground surface topography.[5] The watershed to Centerville River is shown on Figure 1.

The water quality report[6] states that possible sources of pathogens are illicit boating pump out releases, waterfowl waste, pet waste, local septic systems, municipal stormwater system, and fertilizers used for local yard maintenance. The Centerville River (MA96-04) status for aquatic life and shellfish harvesting is considered impaired. All other uses were not assessed.

The TMDL report[7] states that two sanitary surveys (1997 & 2004/2005) were conducted in and around the vicinity of Centerville River (MA 96-04). The reports identified persistent bacteria impairments but did not identify the source of the pollution. A portion of the stormwater drainage system was replaced along Main Street to mitigate some elevated fecal coliform survey results (4,200 CFU/100 ml). The report also states that Scudder Bay – Bumps River warrants further analysis, due to several up-gradient cranberry bogs.

After review, it was determined that the MassDOT property does not discharge to MA96-04 Centerville River. The nearest MassDOT owned properties is Route 28 in Barnstable, approximately 6,100 feet away. The watershed area does not include any MassDOT urban areas, based on the groundwater delineations.

As defined in MassDOT's assessment methodologies,[8] since this portion of MassDOT's urban area property does not directly contribute stormwater runoff to Centerville River (MA96-04), further assessment of this water body is not warranted under the Impaired Waters Program. MassDOT will continue to implement the measures outlined in its Stormwater Management Plan (SWMP) statewide to minimize the impacts of stormwater from its property.

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4 Walter, D.A., Masterson, J.P., and Hess, K.M., 2004, Ground-Water Recharge Areas and Traveltimes to Pumped Wells, Ponds, Streams, and Coastal Water Bodies, Cape Cod, Massachusetts, Scientific Investigations Map I-2857, 1 sheet. Available at: http://pubs.water.usgs.gov/sim20042857

5 U.S. Geological Survey (USGS). (2009). Groundwater contributing areas for Cape Cod and Plymouth-Carver Regions of Massachusetts. Data Series 451 (1 of 3).

6 MassDEP, May 2011. Cape Cod Coastal Drainage Areas 2004-2008 Surface Water Quality Assessment Report. Available at: http://www.mass.gov/eea/docs/dep/water/resources/71wqar09/96wqar12.pdf

7 MassDEP, August 2009 Final Pathogen TMDL for the Cape Cod Watershed. Available at:: http://www.mass.gov/eea/docs/dep/water/resources/a-thru-m/capecod1.pdf

8 Massachusetts Department of Transportation (MassDOT), July 22, 2010. BMP 7R: TMDL Watershed Review. Available at: http://www.mhd.state.ma.us/downloads/projDev/BMP_7R_TMDL_WatershedReview.pdf

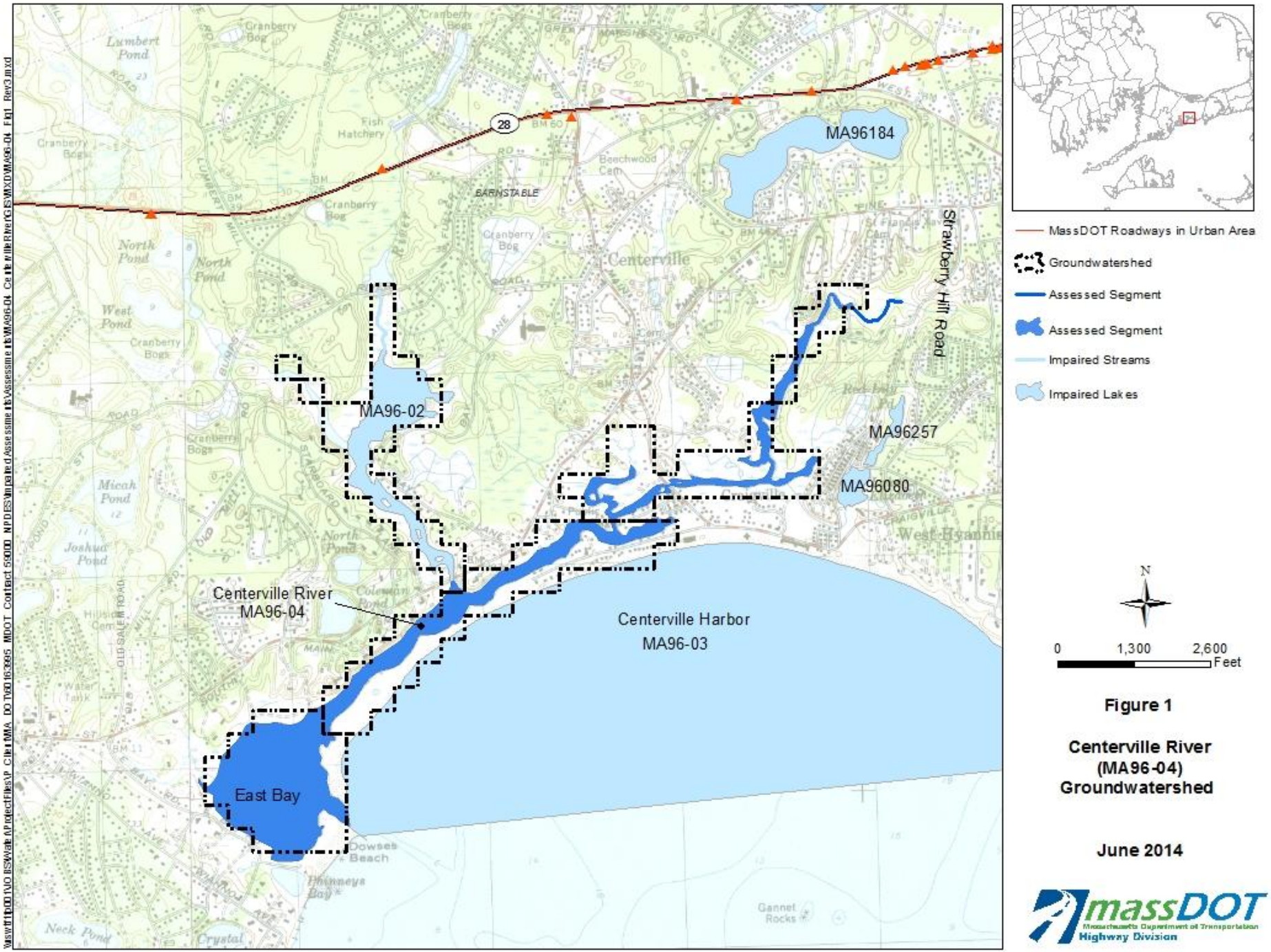

Figure 1

Centerville River (MA96-04) Groundwatershed

June 2014

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